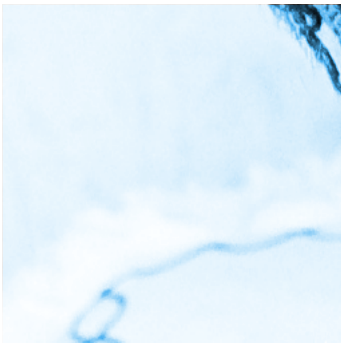
World Health Organization

WHO civil registration and vital statistics strategic implementation plan 2021-2025



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Contents

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Partners

Bloomberg Data for Health Initiative, Centers for Diseases Control and Prevention, Global CRVS Group, International Development Research Center – CRVS Center of Excellence, United Nations Department of Economic and Social Affairs, United Nations Development Program, United Nations Economic Commission for Africa, United Nations Economic and Social Commission for Asia and the Pacific, United Nations Economic and Social Commission for Western Asia, United Nations Population Fund, United Nations International Children's Emergency Fund, United Nations Legal Identity Agenda Task Force, University of Melbourne, University of Oxford, Vital Strategies and Resolve to Save Lives, and the World Bank.

Abbreviations

AFRO	Regional Office for Africa
APAI-CRVS	Africa Programme on Accelerated Improvement of CRVS
CDC	Centres for Disease Control and Prevention
CHAMPS	Child Health and Mortality Prevention Surveillance Network
COD	Cause of Death
CRVS	Civil Registration and Vital Statistics
CRVS-DGB	CRVS Digitisation Guidebook
EHR	Electronic Health Records
EMRO	Regional Office for the Eastern Mediteranean
EURO	Regional Office for Europe
GFF	Global Financing Facility
GPW 13	Thirteenth General Programme of Work, WHO
HIS	Health Information System
HQ	Headquarters
ICD	International Classification of Diseases
ICT	Information and Communication Technology
IHME	Institute for Health Metrics and Evaluation
LMIC	Low- and Middle-Income Country
MCCD	Medical Certification of Cause of Death
NCD	Non-Communicable Disease
PAHO	Regional Office for the Americas
RAF	Regional Action Framework
SDG	Sustainable Development Goal
SEARO	Regional Office for South-East Asia
SOP	Standard Operating Procedures
TWG	Technical Working Group
UHC	Universal Health Coverage
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNICEF	United Nations Children’s Fund
VA	Verbal Autopsy
VIPER	Verbal Autopsy Interpretation, Performance and Evaluation Resource
WHOFIC	World Health Organization Family of International Classifications
WPRO	Regional Office for the Western Pacific

Rationale

Good public health decision-making is dependent on reliable and timely data on births and deaths, including cause of death (COD), best collected through a well-functioning civil registration and vital statistics (CRVS) system.

There is no single blueprint for establishing and maintaining such systems and ensuring the availability of sound vital statistics. Each country faces a different set of challenges and burden of disease, and strategies must be tailored accordingly.

A well-functioning CRVS system, through inputs into and exits from a population register, provides governments with critical information on their population by age, sex and location, on which to develop policies and plan services, amongst a range of other purposes (Annex 1).

Individual cause of death assignments, when amalgamated into population statistics, provide the essential public health intelligence for understanding the burden of disease and emerging health needs as well as monitoring the impact of disease and injury control efforts. These assignments should preferably be performed by an attending physician using the International Form of Medical Certificate of Cause of Death (2016) and coded according to the International Classification of Diseases (ICD) rules[a].

However, few low- and middle-income (LMIC) countries have systems that produce cause of death statistics of sufficient quality to guide public health decision-making. About one-third of countries, representing about one-quarter of the world's population, regularly produce cause-of-death data through CRVS systems which are of sufficient quality to support policy action, mostly in Europe and the Americas. A further third of countries representing about 50-55 per cent of the world population produce lower-quality cause-of-death data, with significant biases, while another third of countries lack such data altogether *(1)*.

Overall, only about two-thirds of the 55 million annual deaths worldwide are registered or notified to CRVS systems, and of these, up to half are either not assigned a cause of death or are assigned an ill-defined or intermediate cause which is of limited public health value *(1)*.

The health sector has an important role to play in strengthening CRVS systems. It is in the best position to notify births and deaths and assign cause of death, since health workers are most likely to be present at, or shortly after, such events, but many low- and middle-income countries have not taken advantage of this. Linking the health sector to civil registration will facilitate timely birth and death notification and more accurate information on causes of death. This informs planning and the traditional functions of registration to provide legal identity, citizenship, facilitate inheritance and insurance claims, and prove family relationships which are all important to promote wellbeing through the social determinants of health.

The WHO and UNICEF have formally recognized the need for the involvement of the health sector in CRVS to improve maternal and child health *(2,3,4)*. This is particularly relevant since reducing maternal, and child mortality are both a priority for the UN Sustainable Development Goals (SDGs).

a. https://www.who.int/classifications/icd/en/

Additionally, heart disease and stroke, cancers, diabetes, chronic respiratory diseases and other noncommunicable diseases (NCDs) cause tens of millions of deaths per year, the majority of which occur during the most productive years of life. A well-functioning CRVS system can provide essential intelligence on trends and premature mortality due to NCDs, also an SDG indicator.

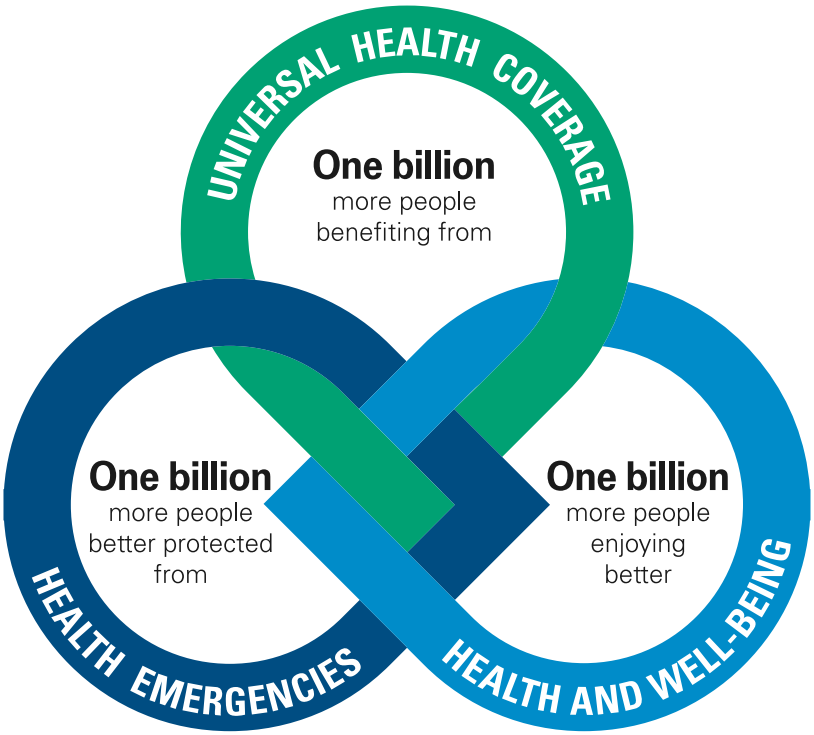
Universal Health Coverage, the UN Sustainable Development Goals, and WHO's GPW 13

The need for improved accountability, particularly in the era of the SDGs, has been a primary motivator towards CRVS system strengthening. The goal of Universal Health Coverage (UHC), itself an SDG target, relies on counting all deaths by age and sex and on cause of death information on which to base health services delivery.

CRVS is ideally suited to measure progress towards the SDGs because it provides a timely and continuous source of data, by national and sub-national levels, and by key indicators such as age, sex, and indigenous status. For SDG3 alone, 17 indicators require cause-specific mortality and population data for their calculation. Moreover, the cross-cutting nature of CRVS means that it is essential for measuring many of the non-health related SDGs (Annex 2).

In March 2019, the WHO embarked on the most substantial reforms in its history to better align its vision with the SDGs and the needs of all 194 Member States. The WHO's Thirteenth General Programme of Work (GPW 13) aims to capture the recent transformation within the Organization, with strategic priorities underpinned by the WHO's bold 'triple billion' targets (Figure 1) *(5,6)*. CRVS strengthening is essential for achieving and measuring these targets, providing reliable population data and forecasts to inform UHC progress, alerting governments to health emergencies and their impact and supporting health policy decisions to improve overall health and well-being.

FIGURE 1: GPW 13 Triple Billion targets



The digital revolution

Rapid advancement of digital technologies has provided unprecedented opportunities to strengthen information systems for health, in particular to accelerate improvements in data for health and for CRVS systems worldwide.

Digital health platforms are facilitating better management of health information from data collection to knowledge production and use. Electronic Health Record systems, and other health indicator reporting software, are facilitating the prompt exchange of data from and to health facilities.

Improved access to the internet and mobile networks enable health workers in relatively remote locations to collect health data using a tablet or mobile phone. Open-source platforms have been built to help countries establish digital CRVS systems[b] and guidance is available on how to build these systems[c].

However, countries can only benefit from these technological advances if they strengthen existing data collection and management systems for both health and civil registry. This ensures that reliable, unbiased, accurate and relevant information is being collected and used. It also imposes standards so that the security and confidentiality of the information and the data interoperability are assured. This will greatly improve the efficiency of CRVS systems and data access whereby reliable and policy-relevant information is collected once and used several times by several different sectors.

The recent 11th revision of the International Classification of Diseases (ICD-11) has been built for a digital world. Besides improvements of the scientific content and structure for classification of diseases, it allows recording at the desired level of detail and the ability to still aggregate the data for reporting at a population level. The technical features allow easy integration into any recording software and allows easier coding thus reducing the need for capacity building[d]. Capacity building on Medical Certification of Cause of Death (MCCD), based on the ICD coding, remains a key intervention for strengthening information on the cause of death in health facilities.

Utilizing available technologies is a key concern for WHO and partners looking to improve CRVS and health systems more broadly *(7,8,9)*. WHO has underlined the importance of the new digital era to support the 'vision of health for all' through the production of a global strategy on digital health that prioritises global collaboration, good governance and a people-centred focus *(10)*.

Global and regional initiatives

In 2007, the Lancet series 'Who Counts' highlighted the inability of countries to effectively register all births and deaths as the 'single most critical failure of development in the last 30 years' *(11)*. What followed was a concerted global focus on strengthening CRVS systems worldwide, including strong country commitment to this agenda and numerous global and regional initiatives to support these efforts *(12)*.

Since then several efforts have been made to advance this agenda. In Africa these include the UN Economic Commission for Africa (UNECA), with African Member States passing a resolution establishing a decade of civil registration and vital statistics 2017-2026 with the goal of "leaving no child out" and "leaving no country behind". The Africa Programme on Accelerated Improvement of CRVS (APAI-CRVS)[e] was also created. In Asia and the Pacific, they include the UN Economic and Social Commission for Asia and the Pacific (UNESCAP) Regional Action Framework (RAF) *(13)* and 'Get Everyone in the Picture' CRVS Initiative[f].

These regional initiatives have been supported by WHO regional strategies, including those of the South-East Asia Regional Office (SEARO) *(14)* and the Eastern Mediterranean Regional Office (EMRO) *(15)*, promoting and facilitating the role of the health sector in CRVS strengthening and providing indicators by which Member States can monitor progress. The Region of

b. https://www.opencrvs.org/
c. http://www.crvs-dgb.org/en/
d. https://icd.who.int/en
e. https://uneca.org/stories/eca%2C-partners-develop-framework-to-transform-%26-accelerate-crvs-and-legal-identity-in-africa
f. https://www.getinthepicture.org/

the Americas (PAHO) has their own 'Strategy for the Strengthening of Vital Statistics in the Countries of the Americas' which was renewed with new targets for the 2017-2022 period. Member States also approved a holistic Plan of Action for the Strengthening of Information Systems for Health[g].

Other CRVS strengthening initiatives have been launched to capitalise on this momentum, including efforts supported by the Bill and Melinda Gates Foundation, Bloomberg Philanthropies, the Global Financing Facility, and the Global Fund.

Joint statements and initiatives on CRVS between global development partners and WHO, such as UNICEF *(2)* and the World Bank *(9)*, emphasise the importance of collaboration on regional CRVS initiatives and opportunities for sharing of information and expertise. They also use Information Communication Technology advances to accelerate progress and providing global and regional evidence-based guidelines for countries to follow towards stronger CRVS systems.

Notwithstanding these initiatives, Member states and WHO have not tapped the full potential of the health sector to improve their CRVS systems. With this new strategy, WHO has given priority to supporting and demonstrating how the health sector can effectively support CRVS strengthening efforts in all countries, building on its unique relationship with the population at the beginning and the end of life, as well as through its continuum of health care services over the life course.

Opportunities for and responsibilities of the health sector in CRVS

Stronger CRVS systems align closely with the mission of the WHO to 'promote health, keep the world safe and serve the vulnerable'. Strengthening the pivotal role of the health sector in improving CRVS systems is entirely consistent with this overarching goal, providing the essential evidence needed by countries to monitor health progress in populations.

Since the civil registry often falls under Ministries of the Interior, Justice or Local Government, strengthening the role of the health sector in CRVS needs to be done in close collaboration with other sectors to avoid duplication, ensure critical data gaps and population sectors are covered and to promote the effective use and sharing of data across government.

Reproductive, maternal, newborn and child health services are a significant opportunity for capturing births and deaths. For example, by utilizing high coverage of immunization to notify births to the civil registry not reported through the routine system *(16)* or through the linking of CRVS with maternal and child death surveillance systems *(3)*.

For the purposes of health statistics, information from disease-specific surveillance programmes (such as AIDS, Tuberculosis and Malaria) as well as from cancer registries and other NCD surveillance programmes, can and should be used to improve mortality data for specific diseases.

For external causes of death data from coronial enquiries or mortuaries are particularly useful *(17)*. However, since collecting data is not the primary function of these activities, such information is typically not integrated back into the routine CRVS system. This leads to discrepancies and inaccurate results on which to build and evaluate policies for disease and, particularly, injury control. For some important causes of death, such as road traffic accidents, integrating relevant information from police reports and the health sector can significantly improve the accuracy and hence the policy relevance of cause of death data for these events.

In a public health emergency, such as the COVID-19 pandemic, basic CRVS processes including birth and death notification and registration, MCCD and mortality coding are vital to inform and support both national and global responses, including supporting up to date monitoring of the spread of fatalities. Mortality surveillance – the reliability of

g. https://iris.paho.org/handle/10665.2/51617

which depends on the quality of a country's system of notification, medical certification, and coding of deaths – provides crucial evidence to monitor the impact of the emergency (such as disease progression within a population) and assess the impact of interventions.

Three priority areas for countries to focus on to ensure that their mortality surveillance systems are of maximum benefit for policy include:

1. Improving the notification of deaths, especially deaths occurring in the community
2. Improving medical death certification, particularly for the cause of death likely to be affected by the emergency (e.g. COVID-19, injuries from tsunamis)
3. Building capacity to routinely measure and monitor excess mortality resulting from the public health emergency

While longer-term efforts are needed to embed and sustain improvements in a more permanent way, immediate action can and should be taken to strengthen these processes (Annex 3).

The health sector, with its unique access to the population through its network of services, has a clear responsibility for, and a keen interest in strengthening CRVS systems. New guidelines *(3)* have been developed by WHO and UNICEF, designed to assist governments on how the health sector can best contribute to improving registration of vital events. However, the success of CRVS strengthening efforts will ultimately depend on the coordinated action of stakeholders, effectively addressing the organisational, technical, and behavioural challenges that affect CRVS performance.

Scope

The WHO CRVS Strategic Implementation Plan 2021-2025 aims to empower Member States to more effectively mobilize their health sector to lead, or contribute to, CRVS system strengthening efforts in order to ensure maximum benefit from routine data systems for policy and development. Detailed guidelines are available that outline how this might happen in practice and what Member States need to consider when implementing health-related CRVS strengthening activities *(3)*.

Registration of vital events is generally beyond the remit of health, therefore the WHO CRVS Strategic Implementation Plan will use its competitive advantage to strengthen the systems for notification of births and deaths, and work with partner agencies towards linking this information with registration systems. In addition, since other UN agencies have prioritised birth registration, the WHO CRVS Strategic Implementation Plan will have a major focus on improving notification of deaths and cause of death, which are where WHO and health has the most to contribute.

The Strategic Implementation Plan is heavily evidence-based. It draws on the findings and evaluation of the application of several years of CRVS interventions in countries and seeks to leverage the research outcomes and data emerging from several global initiatives to improve the scientific basis for cause of death.

A good example is the Child Health and Mortality Prevention Surveillance Network (CHAMPS) initiative which aims to provide the most accurate diagnosis of the causes of child death for a small sample of child deaths subject to intensive clinical, pathological and innovative investigation methods, including Minimally Invasive Tissue Sampling. By partnering with the CHAMPS initiative, WHO and countries can expect to benefit from knowledge and experiences in diagnosing 'gold standard' cause of death data for child deaths. This rich data set can be used to calibrate the diagnostic accuracy of much more cost-effective verbal autopsy methods, leading to a more reliable and detailed understanding of child health and survival priorities than current data collection practices imply.

Purpose

To improve the availability and quality of birth, mortality and cause of death data, and to improve capacity to analyse, interpret and use these data. This will better support health and development strategies in Member States through a stronger evidence base derived from an improved CRVS system.

Focus

The focus of the WHO CRVS Strategic Implementation Plan is on empowering the health sector in Member States with the tools, knowledge and training to:

- Improve coverage of the notification of births and deaths
- Improve certification practices of causes of death
- More effectively exploit research and information technology advances to improve the diagnosis of home deaths
- Build capacity to more effectively analyse and use mortality and cause of death data to support policy and for monitoring progress with national and international development goals

This Strategic Implementation Plan is based on four strategic objectives that are detailed later in this paper and can be tailored to regional and country priorities, according to need.

Guiding principles

The WHO CRVS Strategic Implementation Plan 2021-25 will adhere to several guiding principles consistent with the WHO GPW 13 that emphasize: strong leadership in health and the normative function of WHO; scientific rigour and evidence-based interventions; flexibility and building on local capacity; and putting countries at the centre of CRVS strengthening efforts.

Consequently, the WHO CRVS Strategic Implementation Plan will:

- Connect the leadership, core functions and standard-setting mandate of WHO in the health sector
- Harness the comparative advantages of the health sector in countries
- Ensure a proactive, sustainable, cost-effective, science-based and strategic approach to strengthening CRVS at a national, regional and country level
- Promote country leadership and ownership by using and building on existing local capacity, systems and expertise
- Align with global health development monitoring efforts, e.g. SDGs, UHC
- Complement existing CRVS development initiatives
- Facilitate close collaboration with related program work areas in WHO, such as the maintenance, development and application of the ICD, to ensure Member States benefit from a whole-of-WHO approach to CRVS strengthening
- Utilize digital advances for accelerating progress on vital event notification and cause of death assignment and be consistent with international standards for interoperability, the development and adoption of Electronic Health Records (EHR), among other technical standards
- Include marginalised populations to ensure no one is left behind

The coordinating and normative function of WHO

WHO has an important role to play in coordinating the inputs of global partners and ensuring that all interventions implemented through its CRVS Strategy are based on a careful, comprehensive and scientifically rigorous assessment of national and international experiences and lessons learned. WHO headquarters will perform its normative function to inform WHO regional and country staff on appropriate guidance for countries implementing CRVS strengthening activities through the health sector.

These include strategies to:

- Improve coverage of the notification of births and deaths (by age and sex)
- Set standards for the implementation of the current international medical certificate of cause of death and ICD, as formulated by the WHO Family of International Classifications network
- Implement verbal autopsy for diagnosing community deaths based on lessons learned
- Ensure the use and interpretation of analytical methods to assess and monitor the health situation and trends, including data quality

It is important that the WHO CRVS Strategic Implementation Plan is closely aligned with the efforts of other partners to prevent duplication and ensure consistency of approaches and technical support.

Prior to the development of this Strategy, and associated Workplan, a broad consultation was carried out. This included a discussion on work performed under existing regional initiatives. It also looked at work within WHO on CRVS priority

areas such as the development and implementation of ICD-11 and training programs for physicians in correct cause of death certification. It identified which Member States are currently being supported to conduct specific CRVS strengthening initiatives, highlighting opportunities for funding and cross-partner collaboration in CRVS strengthening activities.

Working across the three levels of WHO

The WHO CRVS Strategic Implementation Plan will utilize the relative advantages of functions at different levels of the organization, ensuring a whole-of-organization approach.

Figure 2 describes the relationship between the health-sector CRVS strengthening functions at the three levels of WHO. It shows how these functions and broad activities might work together to produce an enabling environment for strengthening CRVS systems.

The program of work will be streamlined throughout the organization, by strengthening capacity at headquarters and in regional and country offices, promoting a holistic, coherent, and supportive workplan towards health and CRVS system strengthening globally.

Agency coordination and partnership

The strategic objectives of the WHO CRVS Strategic Implementation Plan emphasise the role of the health sector in strengthening CRVS systems and are intended to complement and accelerate important CRVS work being done outside the health sector, supported by other UN and partner agencies.

In addition to leading health sector CRVS system strengthening activities, WHO will seek strategic collaborations with partner agencies, recognising their relative strengths to collectively advance CRVS objectives. For example, WHO could partner with UNICEF in efforts to improve birth notification through Reproductive, Maternal, Newborn and Child Health programmes as well as ensure the notification of maternal and child deaths to and through the routine CRVS system. WHO will collaborate with partners to help link CRVS with legal identity, and strongly advocate the use of birth and death notification as the basis for identity management to ensure that current inequities in access to services are addressed.

WHO will work with regional partners that are currently active in improving CRVS systems, notably UNECA and the African Union through the APAI-CRVS, and UNESCAP and partners implementing the Regional Action Framework for CRVS in Asia and the Pacific.

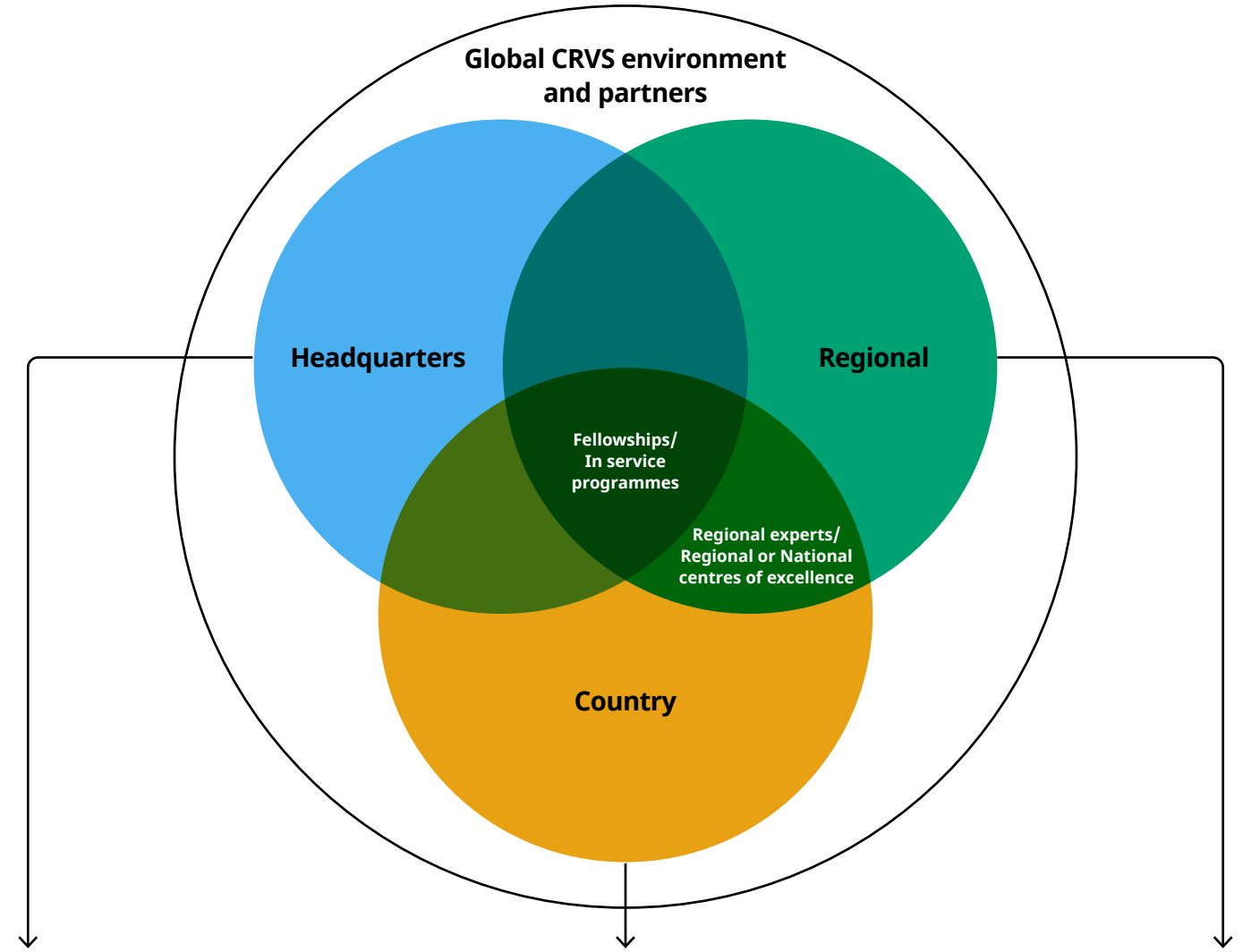
Synergies will also be sought with the Africa Mortality Surveillance work being carried out under Africa CDC and with the activities of the GFF. WHO will also draw heavily on the scientific community and existing networks such as CHAMPS to ensure that recent research advances in analytical, diagnostic and data collection methods, and knowledge about how best to leverage these advances to scale up CRVS systems in countries, are fully incorporated into support being provided to Member States and regions.

In order to ensure that the technical assistance provided to all recipients is based on the best possible science, and to draw on years of implementation experience, WHO will rely heavily on the experience and training materials of technical partners in academia and other research institutions to develop, deliver and evaluate interventions across the range of strategic objectives, focussing particularly on 2, 3 and 4 (Figure 4).

Where appropriate, WHO will promote CRVS strengthening through different methods and flexible learning, such as the World Bank CRVS eLearning Course.[h] It will also explore the options for courses on health-related CRVS topics through the WHO Academy.

h. https://olc.worldbank.org/content/civil-registration-and-vital-statistics-systems-basic-level-self-paced-format and https://olc.worldbank.org/content/civil-registration-and-vital-statistics-systems-advanced-level-facilitated-1

FIGURE 2: Relationship between functions at different levels of WHO



Coordination and normative function

- **Coordinating and convening CRVS partners, setting standards, advocating for health in CRVS**

- Convening CRVS partners to support/coordinate work on core CRVS functions (health focus)
- Training in International Form of Medical Certificate of Cause of Death (MCCD)
- Curricula for certifiers and coders; Medical Schools
- Application and interpretation of verbal autopsy, and support for its integration into CRVS systems
- Mortality and cause of death reporting standards; capacity building for vital statistics data and data quality analysis including causes of death

Implementing function

- **Direct technical assistance for implementing CRVS interventions**
- **Coordination by WHO country office**

- Support to establish or strengthen notification of vital events through the health system
- Training and implementation of CRVS interventions (e.g. MCCD, verbal autopsy, data quality assessment)
- Strengthening country capacity for data collection, analysis and use

Supporting function

- **Regional coordination**
- **Regional capacity building on CRVS related topics**

- Supporting Regional initiatives (e.g. UNECA, UNESCAP) on CRVS strengthening activities
- Regional workshops on CRVS-specific topics; data analysis; data quality assessment
- Development of region-specific guidelines/standard operating procedures
- WHO CRVS Centres of Excellence to support CRVS strengthening activities in Member States

Direct technical support to Member States

WHO intends to support all countries in their CRVS strengthening endeavours. It is also envisaged that enhanced technical support will be provided to a selected sample of countries[i] in each region that are committed to CRVS strengthening at the highest levels and have taken demonstrable steps towards this goal.

The criteria for country selection for this intensive support will include an assessment of the likely sustainability and impact of this support on strengthening the CRVS system through the health sector, and will depend on:

1. The stage of CRVS development, legislative framework, and likely impact of, and need for assistance
2. Demonstrated government commitment towards CRVS system strengthening and evidence of sustainability of health-related interventions

Other criteria for country selection include priority countries of GPW 13, opportunities for funding CRVS through the Global Fund, GFF or other partners, and minimising overlap with the work of other development partners.

Figure 3 illustrates the potential activities that may be implemented for countries at different stages of CRVS development with some countries needing a higher degree of system-level support and some more targeted assistance to improve the quality of their birth, death and causes of death data. These activities are indicative only, and specific activities will be negotiated with the Member States according to their specific needs and priorities for CRVS strengthening and building country capacity.

i. It is envisaged that lessons from these countries can later be applied to countries at a similar stage of CRVS development that demonstrate strong commitment towards CRVS strengthening

FIGURE 3: Direct technical assistance according to country CRVS progress scenarios

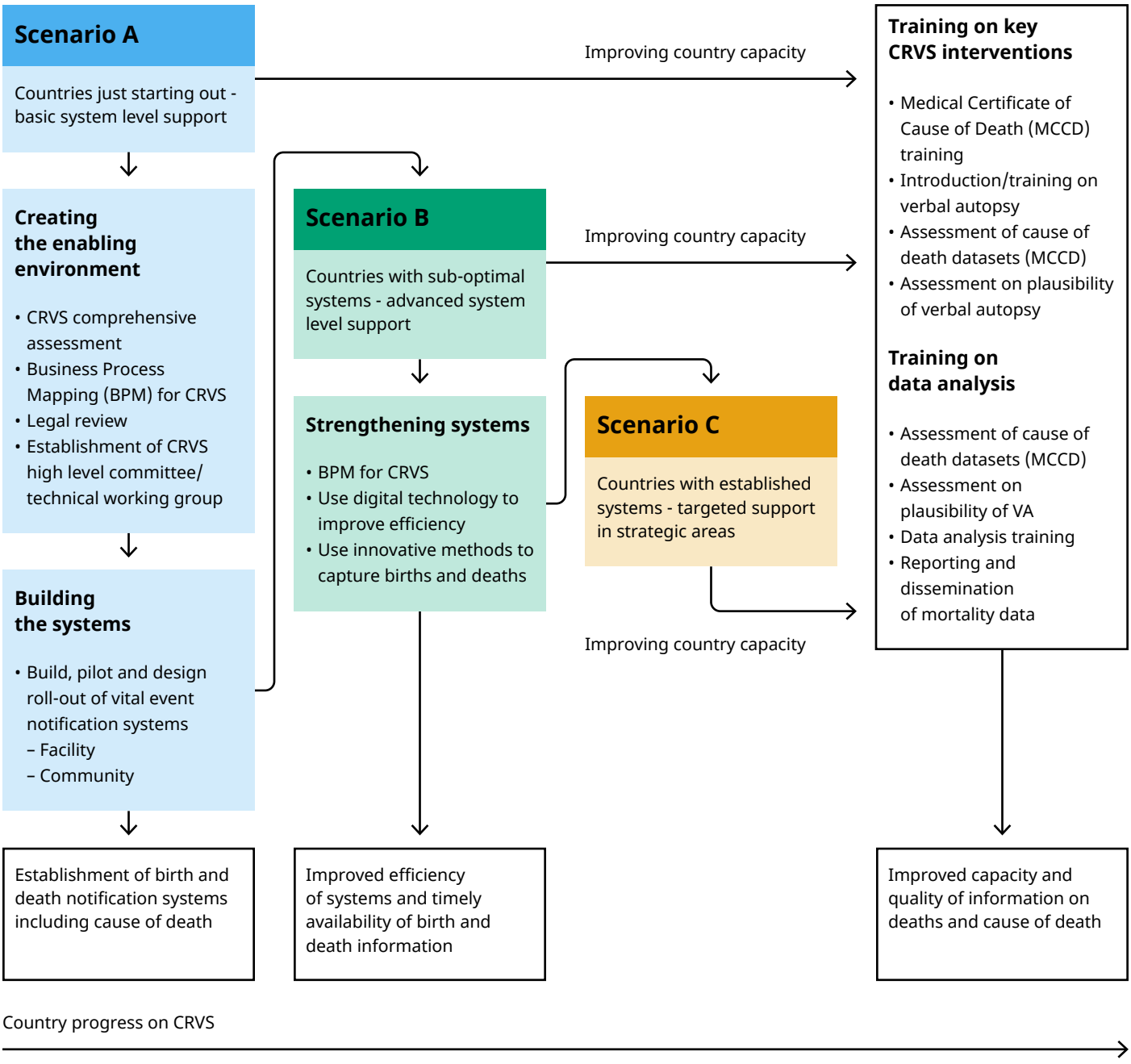
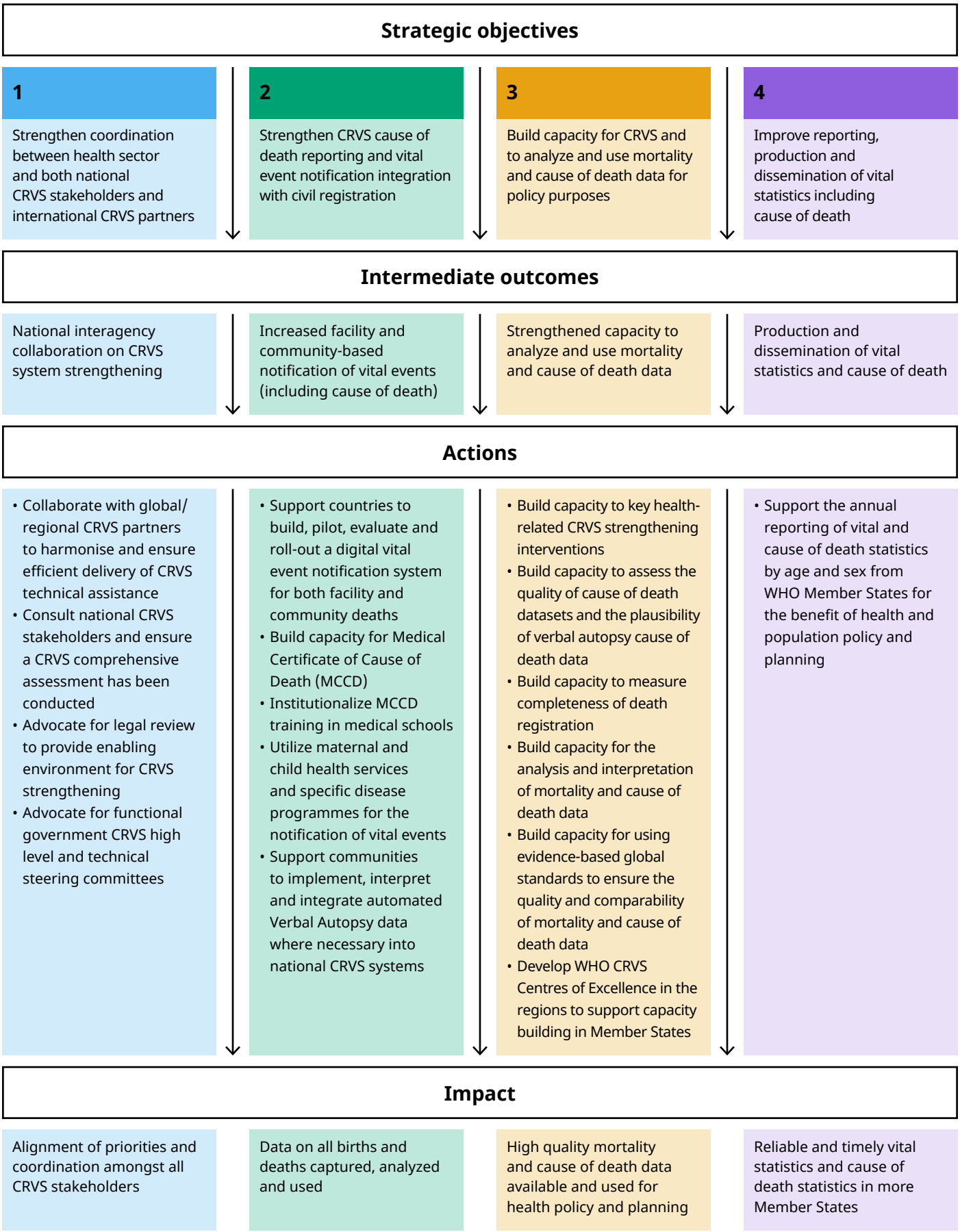


FIGURE 4: Implementation of strategic objectives according to country progress on CRVS



Strategic objectives

The WHO CRVS Strategic Implementation Plan is based on four strategic objectives to accelerate CRVS system strengthening in Member States through more effective engagement and leadership by the health sector.

The overall goal, activities and expected impact of each strategic objective are illustrated in Figure 4 and will be delivered through a combination of the following methods:

1. Knowledge management and interpretation to ensure support to countries is based on best possible scientific and implementation evidence
2. Direct technical assistance to select countries in each WHO region
3. Capacity building at the regional level for all Member States, and WHO regional/country staff

1. Strengthen coordination between health sector and other national CRVS stakeholders and international CRVS partners

This objective recognizes the multi-sectoral nature of CRVS. A multitude of partners at both national and international levels are involved in CRVS strengthening activities. The health sector has a primary role as a major producer and user of information generated from good quality vital statistics. WHO will use its convening function to bring together stakeholders to discuss complementary, innovative, and cost-effective approaches to CRVS system strengthening in the context of the GPW 13 strategic shift towards "Health in All Policies".

This strategic objective also aims at harmonising with the various initiatives led by other UN agencies, academia, philanthropy, and development partners towards strengthening CRVS systems. WHO will take the leadership role amongst international partners in coordinating and guiding initiatives related to mortality and cause of death, as well as areas which naturally fall under its mandate and where the health sector has most to contribute. This is expected to strengthen the role of health in CRVS, ensuring alignment with current WHO Regional CRVS strategies addressing the key concerns of the different regions.

WHO activities will include:

- Convene and actively participate in meetings of global and regional CRVS partner agencies to accelerate health sector contributions to CRVS initiatives and to facilitate knowledge generation and sharing, with the aim to improve collaboration, partnership, and funding alignment
- Ensuring that the potential role of the health sector is fully exploited in existing regional CRVS initiatives such as APAI-CRVS in Africa and 'Get Everyone in the Picture' initiative in Asia and the Pacific
- Provide leadership and disseminate country experiences and knowledge regarding the health sector role through opportunistic forums such as the CRVS global group, UN global and regional events (e.g. Statistics Commission) and WHO regional meetings
- Provide leadership and disseminate international standards in collaboration with technical allies and WHO CRVS Centres of Excellence

Country and regional prioritisation of CRVS, especially towards measuring progress on the SDGs, means that many countries already have in place a CRVS framework or action plan. At a country level, multi-sectoral discussions with countries and their stakeholders will be facilitated to identify specific health sector activities that could be implemented to accelerate current efforts. Activities under this strategic objective include ensuring that the health aspect of comprehensive CRVS assessments has been completed or updated. Proper business process mapping of the vital events is needed to identify gaps or inefficiencies in the system.

The active participation of the health sector in national high level and technical working groups for strengthening CRVS is also critical under this strategic objective to provide cross-sectoral support and guidance for the implementation of health-related interventions and to monitor progress at regular intervals. (See https://www.who.int/healthinfo/en/)

Potential Country Activities[j] include:

- Conduct or update CRVS comprehensive assessments using available tools
- Developing a national CRVS improvement plan as a road map toward country-level CRVS improvement efforts
- Where needed, support national CRVS stakeholders to conduct business process mapping (BPM) sessions to understand the current CRVS system and identify reforms or changes in practice to ensure a more efficient system
- Where relevant, advocate for a legal review to enhance the enabling environment for health sector strengthening of CRVS
- Establish or revitalize inter-agency high level and technical working groups (TWG) for strengthening CRVS, ensuring that the health sector has an active role in these committees

2. Strengthen CRVS cause of death reporting, vital event notification and integration with civil registration

Medically certified cause of death information adhering to the standards and definitions of the ICD in use is the gold standard for recording and reporting causes of death. Wherever a physician is available, in facilities or in the community, correct medical certification of cause of death should be the prime goal. The health sector is also ideally placed to improve vital event notification since it is typically involved in providing services for both vital events. Physicians or other health workers are perhaps best placed to identify deaths and share this information with civil registration authorities.

This over-arching strategic objective has been subdivided into two major components (2a and 2b) reflecting the very different interventions required in health facilities and in the community to achieve the broad goals identified under strategic objective 2 above.

2a. Strengthen cause of death reporting and vital event notification in health facilities, and integration with civil registration systems

The health sector is ideally placed to improve vital event notification. When births and deaths occur in facilities the health sector is often mandated to inform the civil registry of these vital events. Strategic objective 2a aims to ensure that such a notification system exists and procedures are in place to facilitate and ensure the notification of all births and deaths that occur in facilities to the civil registration authorities, and that the cause of each death is correctly certified.

Programmes currently collecting mortality data on specific causes of death could also be encouraged to notify cases to the CRVS system. Whilst a functioning birth and death notification system is being developed, it is essential that all avenues for capturing such events within the health system are explored. Maternal and Child Health programmes offer a range of services where births not previously

j. Direct technical support for the implementation of activities to be provided by WHO

captured could be notified. Programmes currently collecting mortality data on specific causes of death should also be supported to notify cases to the CRVS system.

In some countries, physicians are also required to certify community deaths prior to burial. While these are not strictly deaths in facilities, the procedures and training for correct MCCD are similar to the needs of certifying doctors in health facilities.

This strategic objective will utilise the digital advances that enable the linking of data from different programmes, including notification of births, deaths, and CODs through integrated health information systems (HIS) or digital CRVS databases. This will enable more efficient use of data by health and other government agencies towards service provision and priority-setting.

Activities under this strategic objective will vary according to the current level of the country CRVS system. A stepwise approach will be used, informed by lessons learned from other initiatives and partner expertise, drawn upon in the implementation of this strategic objective. Existing standards, tools, curricula and documentation of country experiences will support the strengthening efforts (See https://www.who.int/healthinfo/en/; https://crvsgateway.info/)

Potential country activities[k]:

- Ensure there is a legal requirement for hospitals to notify the fact and cause of death occurring in their facilities to the civil registry
- Using Business Process Mapping (BPM), build or strengthen birth and death notification systems in facilities and links to the CRVS system
- Support hospital leadership to ensure all hospital deaths are notified with good quality MCCD
- Support all hospitals to implement the use of the international form of the medical certificate of cause of death
- Develop a plan for implementing and sustaining MCCD in hospitals including physician training and evaluation
- Establish or strengthen digital notification systems in hospitals including MCCD
- Conduct periodic testing of the quality of MCCD in target hospitals
- Introduce MCCD training as part of pre-service training in medical schools using existing curricula
- Make MCCD according to ICD standards part of continuous education, drawing on established curricula
- Centralize coding infrastructure (where feasible) and train coders to correctly identify the underlying cause of death using ICD rules
- Where feasible, introduce automated coding tools (e.g. Iris)
- Introduce functioning electronic death notification platforms in health facilities
- Facilitate the utilization of other health services, such as immunization services, to improve the completeness of vital event notifications

2b. Strengthen cause of death reporting and vital event notification for deaths in the community and integration with civil registration

In many countries, the majority of vital events take place at home without medical attention and are typically not reported to the health sector or civil registration authorities. As health services extend their outreach services, they are in the best position to notify births and deaths in the community and in many countries are mandated to do so. The health sector should engage with all relevant sectors, including the Justice and Home Affairs Departments, to ensure that the causes of death for all deaths that take place in the community are diagnosed using efficient and sustainable methods.

The challenge for developing community death (and birth) information is two-fold: first a system to localise and report household deaths needs to be

k. Direct technical support for the implementation of activities to be provided by WHO

established; and second a system to diagnose the cause of death needs to be instituted. If existing health staff are used, the challenge will be to ensure that the additional tasks will not significantly increase their current work burden, possibly by engaging more staff or through more efficient reporting methods. Exploration of innovative methods of death notification, such as mobile phone networks and engaging existing community structures such as churches, mosques, temples or funeral services to collect and report data on births and deaths, should be considered.

Ideally, all deaths – including community deaths - should be medically certified by a physician with an accurate MCCD. However, in many countries where there are few physicians, this is not possible, and assignment of a probable cause of death through a verbal autopsy is the only alternative. Verbal autopsy should be seen as an interim method towards full medical certification of causes of death. Recent validation studies of verbal autopsies have demonstrated that efficient automated diagnostic methods are now available which perform as well as, or better than physicians in diagnosing causes of death from interviews with a family member. These methods are quick, cheap, reliable and standardise the diagnosis of cause of death via computer algorithms. Unlike notification, verbal autopsy may only be needed for a representative sample of deaths in order to gain a good understanding of the leading causes of community deaths *(3)*.

This strategic objective will utilize technological advances, that enable the collection of data on mobile devices and the automation of verbal autopsy functions, to increase the efficiency of community notification systems and cause of death diagnosis. WHO will provide guidance to countries on the most appropriate methods for the digital collection, transfer, diagnosis, aggregation, and interpretation of data on community deaths, ensuring that countries can confidently analyse and use these data for monitoring the leading causes of death.

The introduction of verbal autopsy methods into CRVS systems may call for further country investment and CRVS system adaptation. Close stakeholder collaboration prior to scale-up of verbal autopsy is a pre-requisite for integration into the existing CRVS system *(18)*.

A series of methods, tools and curricula (https://www.who.int/healthinfo/en/; https://crvsgateway.info/file/17827/4266) exist to support the implementation of verbal autopsies into country CRVS systems.

Potential country activities[l]:

- Engage with all relevant sectors, including the Justice and Home Affairs Departments, to ensure that all vital events that take place in the community are notified to the health sector
- Conduct BPM activities to understand how best to integrate digital information on community births and deaths and cause of death into the routine CRVS system
- Establish or strengthen community vital event notification systems
- Use burial grounds, religious authorities, local government personnel or people with an official community function to improve reporting of the fact of death
- In parallel, initiate or accelerate steps for implementing and sustaining MCCD in country areas, including physician training and evaluation
- Conduct periodic evaluations of the quality of MCCD in target areas using established tools
- Utilize mobile networks to implement digital notification of births and deaths, and causes of death
- Implement automated verbal autopsy on a representative sample of deaths in the community to establish probable cause of death patterns in the population
- Establish a monitoring and evaluation framework for community vital event notification and cause of death data collection

l. Direct technical support for the implementation of activities to be provided by WHO and its technical partners

3. Build capacity to analyse and use mortality and cause of death data for policy purposes

As mortality and cause of death data are generated, it is important that countries can analyse and use them effectively, and with confidence, to support policy. Tools and techniques are available to understand the quality of mortality data based on MCCD and to implement strategies to improve it. Verbal autopsy is an important source of routine mortality and cause of death data, where no other alternative exists, but should be carefully assessed for plausibility, feasibility and sustainability.

This strategic objective is focussed on building the capacity of countries to better understand and interpret health-related CRVS interventions and CRVS data more broadly and strengthening their ability to analyse and use mortality and cause of death data. This will allow countries to more confidently evaluate the impact and sustainability of interventions (such as training of doctors on MCCD or the introduction of verbal autopsy) designed to improve the completeness and quality of their mortality data. Development of a methodology for joint use of data from various sources, including verbal autopsy, that complements cause of death information will be necessary.

Under this strategic objective at the regional level, a range of capacity building exercises will be conducted including training on the assessment of routine mortality and cause of death data to understand the quality of the data and to identify specific weaknesses in the data that require attention through targeted interventions. For countries implementing verbal autopsy, this will include tools to assess the plausibility of mortality and cause of death data generated by verbal autopsy methods https://www.who.int/standards/classifications/other-classifications/verbal-autopsy-standards-ascertaining-and-attributing-causes-of-death-tool; https://crvsgateway.info/VIPER

In tandem with direct technical assistance to specific countries, the regional offices of WHO will facilitate capacity building workshops around critical health-related CRVS interventions. Regional capacity-building tailored to the needs of the region and country will also provide the opportunity for sharing experiences in CRVS strengthening, and thus peer-to-peer knowledge exchange.

Activities facilitated through WHO HQ are focused on building capacity of both WHO country staff and government staff working on CRVS strengthening efforts in their country. To fully support countries in their health-related CRVS strengthening efforts, WHO staff need to be fully aware of the range of these interventions and what their expected impact is likely to be. To promote a sustainable knowledge base, WHO will facilitate training development opportunities with partners for CRVS staff working in the Member States.

To support the training outlined above, WHO will draw on technical expertise in leading CRVS knowledge and research centres throughout the world and will support the development of such capacity via CRVS fellowships or an in-service programme of work in priority CRVS topics.

Regional capacity in CRVS will also be facilitated through WHO CRVS Centres of Excellence. These Centres, ideally one per WHO Region, will be tasked with training and supporting organizations and institutions in countries in their region on priority aspects of CRVS strengthening.

Potential WHO regional or country activities or workshops[m] are expected to focus on the following topics:

- CRVS 'Bootcamp' covering the basics of CRVS interventions available through the health sector
- Assessing the quality of mortality and cause of death datasets
- Assessing the plausibility of verbal autopsy data
- Methods to assess the completeness of birth and death reporting
- Improving skills for critical data quality analysis
- Digital platforms for health data

m. As far as possible such workshops will be tailored to the context and needs of the recipient countries

WHO HQ activities under this strategic objective are likely to include the following:

- Establish WHO CRVS Centres of Excellence in all regions to support CRVS interventions and analytical capacity building in Member states, drawing on existing collaborations and WHO collaborating centres
- Identify and assign specific staff in WHO country offices to focus on CRVS and equip them with necessary skills for this function
- Facilitate short-term assignment opportunities to improve CRVS skills and knowledge for WHO country and regional staff with CRVS responsibilities
- Facilitate fellowship or in-service programmes for government staff working on CRVS
- Explore the potential of the WHO Academy to develop state-of-art training materials for health-related CRVS strengthening interventions
- Amendment of CRVS-related standards and guidance based on feedback from the field

4. Improve reporting, production and dissemination of vital statistics including cause of death

This strategic objective acknowledges the need for countries to not only collect, validate and consolidate vital statistics, but also make them available to users in a timely manner. In many countries, birth and death data exist but may be fragmented or otherwise not in a format for national planning or for reporting to international agencies such as the WHO.

Strategic objective 4 aims to assist countries in improving compilation, validation and reporting of such data on a regular basis using standard formats for comparability. This will ensure that the Member States fully understand the policy utility of good and timely vital statistics. It will provide an opportunity for the WHO to feedback information on limitations in their current data and how these might be addressed. It also provides guidance to Member States about how to use existing data to assess burden of disease and monitor progress with national and global health and development goals.

WHO proposed activities:

- In collaboration with national statistics offices and Ministries of Health, conduct regional capacity-building workshops on i) the compilation and interpretation of vital statistics using different sources of data and ii) the use of vital statistics for health policy/programming/planning and in monitoring progress with national and global health development goals
- Developing and supporting implementation of a quality assurance framework for vital statistics
- Strengthening procedures to facilitate annual reporting of mortality and cause of death statistics to WHO and establish feedback mechanism to improve data quality and use
- Provide ongoing mentoring to countries to support them to generate, analyse, disseminate and interpret CRVS data

Monitoring progress

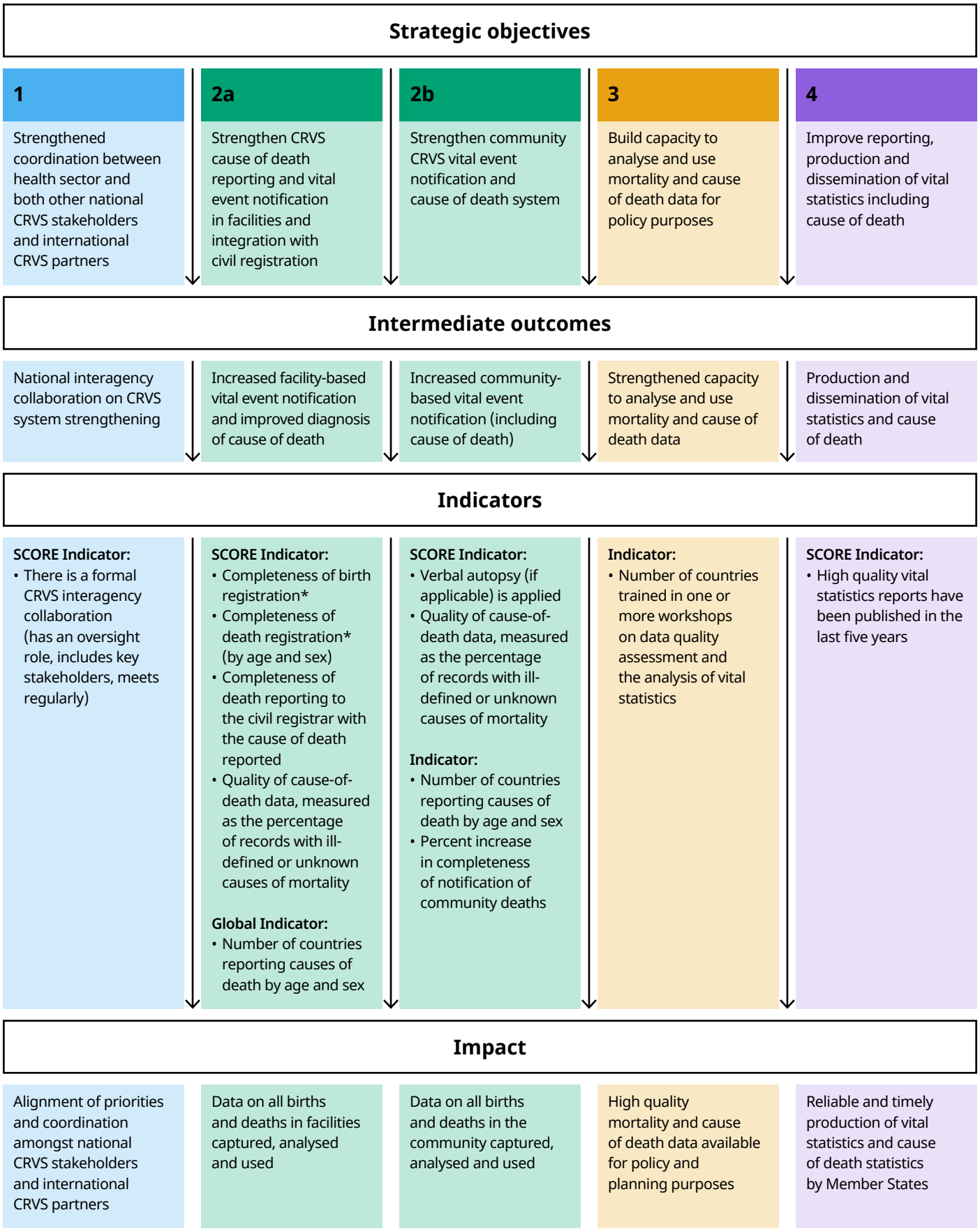
The monitoring framework for the WHO CRVS Strategic Implementation Plan is aligned with the GPW 13 Results Framework[n]. The expected outcomes of the WHO CRVS Strategic Implementation Plan relate to strengthened country capacity and innovation. This provides the mechanism to measure progress towards GPW 13 targets, the outcomes of CRVS improvements, and many of the SCORE indicators.

For Member States receiving direct technical support, a monitoring framework and related outputs and performance indicators will be drawn up based on the current status of the CRVS system and the tailored health-related interventions for CRVS strengthening. Country progress will be closely monitored to ensure interventions are being implemented as expected (process indicators) and that these interventions are producing the outputs expected at a country level, such as improvements in birth and death notification and assignment of the cause of death. These results and lessons learned will also help to design and implement interventions in other countries with similar CRVS strengthening goals in the future.

In addition, the following summarises the potential set of indicators that could be used to monitor progress across all Member States with the WHO CRVS Strategic Implementation Plan. In order to reduce the burden on country reporting, many of these indicators (and definitions) are taken from the 'SCORE for Health Technical package' *(19)* which includes key CRVS indicators.

n. https://www.who.int/about/what-we-do/thirteenth-general-programme-of-work-2019---2023

FIGURE 5: Indicators to monitor progress



*Relates also to 2b

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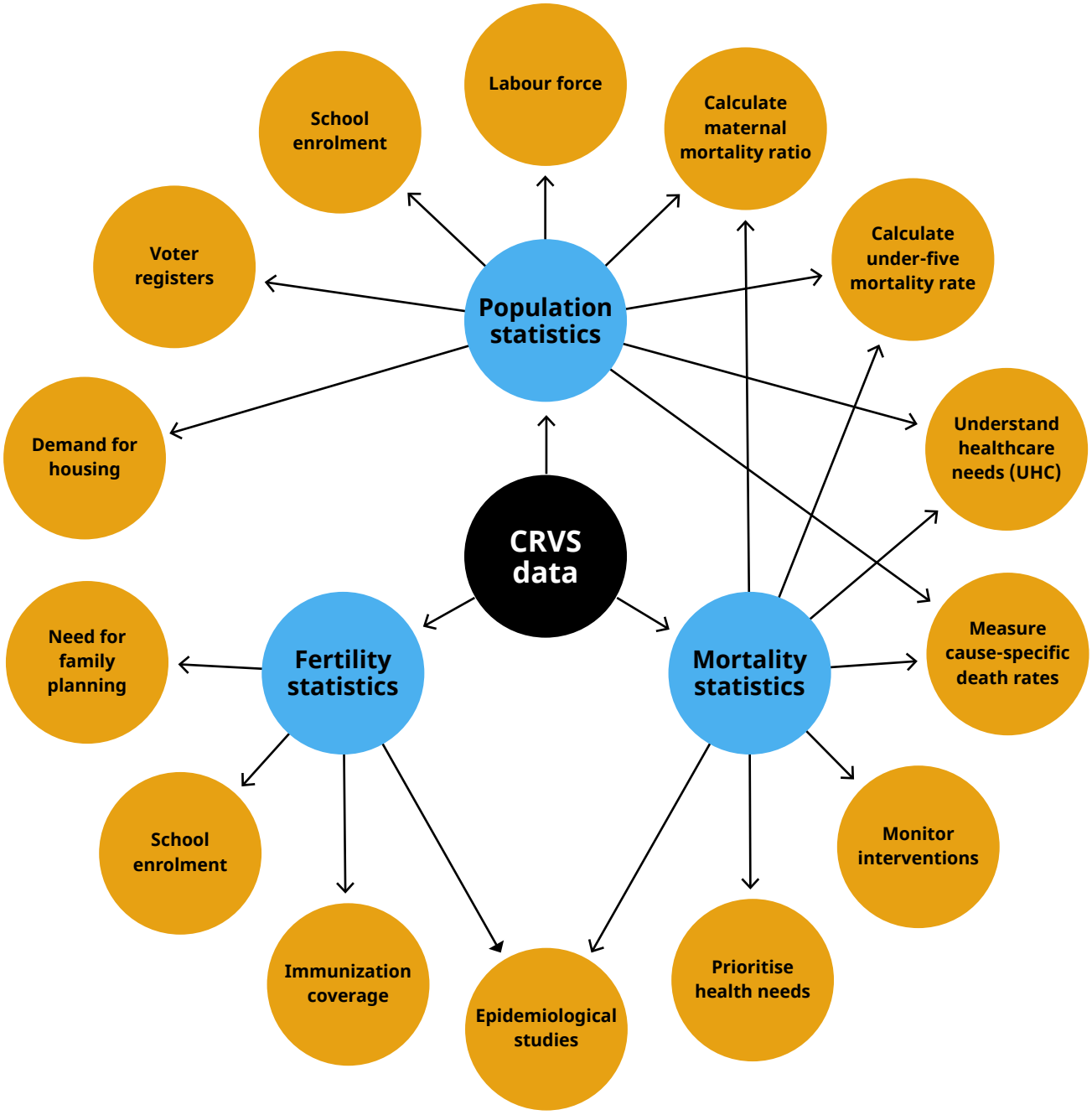
Annexes

Annex 1: Uses of CRVS data

CRVS is a public good since it not only provides individual benefits but creates a wealth of information that can be used by numerous agencies to help plan services (e.g. school enrolment), understand the labour force, maintain electoral registers, and contribute to research and development (Figure 6). The applications of CRVS information outside of the health sector therefore contribute to overall health and wellbeing of populations through social determinants of health.

FIGURE 6: Statistical uses of CRVS data including SDG monitoring



Annex 2: SDGs and CRVS

Achievement of the SDGs significantly relies on global CRVS system development, due to the timely and continuous data produced by these systems, stratified by a multitude of factors. The interconnectedness of the SDGs and CRVS is exemplified by:

16 SDG targets and 24 indicators requiring data that are best generated from a CRVS system

- e.g. Target 16.9: By 2030, provide legal identity for all, including birth registration
- e.g. Indicator 11.5.1: Number of deaths, missing persons and persons affected by disaster per 100,000 people

7 of the 17 SDGs, and 17 of their corresponding indicators, requiring cause-specific mortality data that only a functioning CRVS system can generate

- e.g. Target 16.1: Significantly reduce all forms of violence and related death rates everywhere
- e.g. Indicator 8.8.1: Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status

106 of the 232 SDG indicators being population based, and will thus benefit from the up-to-date and disaggregated birth and death data generated from CRVS systems

- e.g. Indicator 1.1.1: Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)
- e.g. Indicator 8.6.1: Proportion of youth (aged 15-24 years) not in education, employment or training

102 SDG indicators depending on people having access to birth, death and marriage certificates; a critical service that only CRVS systems can provide

- e.g. Indicator 1.5.1: Number of deaths, missing persons and persons affected by disaster per 100,000 people
- e.g. Indicator 5.3.1: Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18

SDG3 being linked to around 50 health-related targets across the SDGs, and greatly relying on CRVS data to achieve many of its targets, including:

- Reducing maternal, newborn and child mortality (Targets 3.1 and 3.2)
- Reducing deaths due to epidemics of communicable diseases (Target 3.3), non-communicable diseases (Target 3.4), and road traffic accidents (Target 3.6)
- Strengthening country capacity for early warning, risk reduction and management of national and global health risks (Target 3.D)

Annex 3: Maintaining civil registration services during a public health emergency

Death notification is the gateway to all administrative, legal, and statistical processes related to the vital event. Notification of deaths, particularly deaths in the community, requires special attention and will likely require specific interventions tailored to a country's existing CRVS system. Routine death notification activities should be continued, while protecting the safety of CRVS staff, because of the importance of basic data on the fact of death to be able track the mortality impact of the emergency.

Comparison of aggregated weekly or monthly numbers of deaths for each notification or registration point should be made with data from previous years to identify if there is any adverse impact of the emergency on the operation of the death notification system and, if necessary, rectify this. Furthermore, timely reporting and transfer of death notification data to the national level are of utmost importance during an emergency, and the CRVS system should facilitate this.

Medical death certification provides a description of the order, type and association of events that resulted in death. These diagnoses are coded and then analysed for use both nationally and internationally to monitor disease progression, assess mortality risks across a population, inform health policy and planning and assess the impact of interventions.

Without access to quality cause of death data, it is difficult for countries to understand and respond appropriately to a public health crisis. Physicians should be provided with guidance for correctly certifying deaths from the cause(s) of death affected by the emergency. In the case of infectious diseases such as COVID-19, such guidance is important given potential confusion due to whether the disease has been confirmed by a laboratory test, as well as the heightened risk of mortality for those with co-existing chronic illnesses. Additionally, guidance should be provided for both Iris automated mortality coders and manual mortality coders on the correct procedures for coding medical certificates of cause of death for the causes(s) reported.

Excess mortality is defined as the number of deaths reported (or estimated) to have occurred during the public health emergency, in excess of the number of deaths that would have been expected to have occurred during the same period based on past trends. Excess deaths are not precisely defined by the number of deaths where the particular emergency (such as COVID-19) is the cause, because other factors influence this. Analysing excess mortality, therefore, provides a comprehensive picture of the impact of the emergency. While measuring excess deaths is easier in countries where the CRVS system has captured most (or all) deaths in a timely and accurate manner, it is still possible to produce reliable estimates even with incomplete registration.

Analysts within the Ministry of Health or national statistical office should receive training on measuring excess mortality using robust methods. Incomplete CRVS systems can produce biased estimates of excess mortality, so analysts in these countries in particular need to be trained in methods to measure excess mortality in this context. Only a small number of analysts should need to be trained in these methods in each country, making regional training workshops particularly useful.

Important resources available on the CRVS Knowledge Gateway to support CRVS priorities during emergencies and pandemics.

Approaches and methods for estimating excess deaths due to COVID-19 https://crvsgateway.info/file/18071/4128
Correctly certifying deaths due to COVID-19: Guidance for physicians https://crvsgateway.info/file/17062/3922
Correctly coding deaths due to COVID 19: Guidance for manual mortality coders https://crvsgateway.info/file/17870/4134

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