

# Scoping Review of Digital Tools for Mortality Surveillance in Sub-Saharan Africa

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IDM, May2023 (Seattle)



# Background

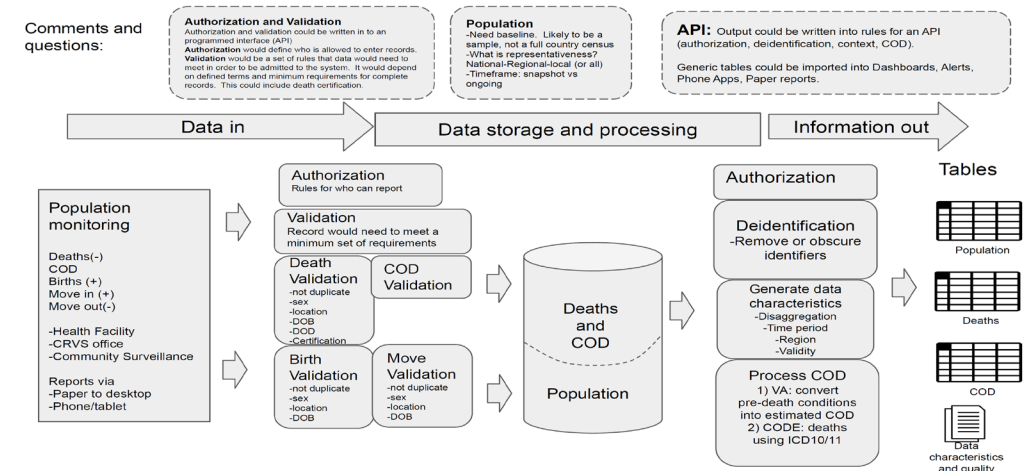
- 25% of births globally and **46% of SSA births are unregistered**<sup>1</sup>
- 4 in 10 of world's deaths are unregistered, **dropping to 1 in 10 deaths recorded in African Region**
- **Two-thirds of LMICs have established a standardized system to report causes of death**, demonstrating the importance and priority of these systems, but still require strengthening to help respond to health

The **lack of fully functioning CRVS systems in many LMICs** is an obstacle for adequate monitoring of many SDG indicators



# Goals

- Support the **development and strengthening** of a comprehensive national mortality surveillance system that relies on digital solutions
- Propose a **conceptual system architecture** for a functional digital mortality surveillance system

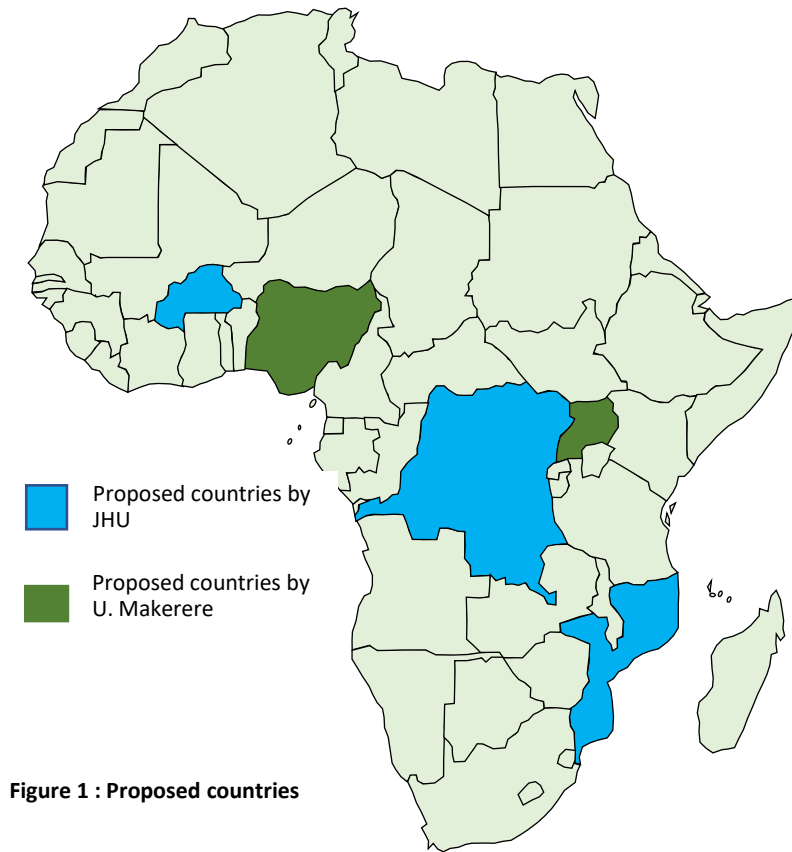


# Mortality surveillance defined

- ❑ **Continuous near-real-time data collection** on births, deaths, and causes of deaths, consistently with existing global or national standards
- ❑ Ideally, should include **updated population counts by age and sex**
- ❑ **Geographically contained**, whether national or subnational, with population representativeness
  
- ❑ Data generated are analyzed to **produce reliable and interpretable estimates** of all causes and cause-specific mortality with relevant disaggregation (by age, sex, and other selected characteristics)
- ❑ **Regular data release** for use in policy and program decision-making, learning, and research

# Methods

- **Landscape review** at global and selected country levels
  - Burkina Faso, DRC, Mozambique (JHU)
  - Nigeria and Uganda (U. Makerere)
- **Comprehensive literature review (2005-2022)**
- **Country Key informant interviews (senior officials and technical officers, n=122)**
  - existing digital tool for mortality surveillance
  - experience in the adoption and implementation of digital tools
  - Stakeholders' perspectives on digital tools for mortality surveillance



# Global mortality data platforms: Data elements

SURVEILLANCE SYSTEMS	DATA ELEMENTS					
	Population count	Pregnancies	Births recording	Death recording	Cause of death method	Socio-economic & demographic characteristics
Civil registration and vital statistics (CRVS) / Population registers	No	No	Yes	Yes	Yes	Limited
Routine Health Information System (RHIS)	No	Partially	Partially	Partially	Partially	Limited
Maternal and Perinatal Death Surveillance and Response /Integrated Disease Surveillance and Response	No	No	No	Partially	Partially	No
Sample Vital Registration System with cause of death	Yes (sample)	Yes	Yes	Yes	Yes	Limited
Repeated Household surveys	Yes (sample)	Yes	Yes	Yes	Limited	Yes
Population censuses	Yes	No	Limited	Limited	No	Yes
Health and Demographic Surveillance Systems	Yes	Yes	Yes	Yes	Yes	Partially
Community worker reporting of vital events	Limited	Yes	Yes	Yes	Yes (if included)	Limited
Burial sites surveillance/morgues	No	No	No	Yes	Limited	Limited
National ID systems	Limited	No	Limited	Limited	No	Limited

# Global mortality data platforms: Other features

SURVEILLANCE SYSTEMS	OTHER FEATURES							
	Notification linked to CRVS	National / subnational scope	Geographic representativeness	Short term scale up nationally	General country capacity for implementation at scale	Digital solutions	Frequency of Data Collection	Mortality surveillance capacity
Civil registration and vital statistics (CRVS) / Population registers	Yes	National & subnational	Limited	Challenging	Developing	OpenCRVS; eCRVS; mCRVS	Continuous	Limited on short
Routine Health Information System (RHIS)	No	National & subnational	No	Limited	Yes	DHIS-2	Continuous	Partially
Maternal and Perinatal Death Surveillance and Response / Integrated Disease Surveillance and Response	No	Limited	No	Yes	Yes	None	Weekly/monthly	Limited
Sample Vital Registration System with cause of death	No	National / Limited for subnational	Yes	Yes	Limited	Multiple	Continuous with regular surveys	Yes
Repeated Household surveys	No	National / Limited for subnational	Yes	Yes	Yes	Multiple	Annual	Yes
Population censuses	No	National & subnational	Yes	Limited	Yes	CSPro (limited)	Every 10 years	No
Health and Demographic Surveillance Systems	No	No	Yes	Yes	Limited	Multiple	Continuous with regular surveys	Yes
Community worker reporting of vital events	No	No	Limited	Yes	Limited	Multiple	Continuous	Limited
Burial sites surveillance/morgues	No	No	No	Yes	Yes	SORMAS, ANACoD3	Continuous	Limited
National ID systems	Yes	National & subnational	Limited	Challenging	Limited	No	Continuous	Limited

# Mortality data platforms at the country level are limited and fragmented

Surveillance systems	Burkina Faso	DRC	Mozambique	Uganda	Nigeria	
Civil registration and vital statistics (CRVS) (6)	Yes	Yes	Yes	Yes	Yes	
Routine Health Information System (RHIS) – (5)						
DHIS2 (ENDOS, SNIS, SISMA_MGDH)	Yes	Yes	Yes	Yes	Yes	
Registries (Police, Military, Cancer, Mortuaries, Refugees – UNHCR, Electoral, District and Community)				Yes	Yes	
Stelab (SIMR)	Yes	NA	NA			
Afenet	Yes				Yes	
ONSP	Yes					
leDA (pcime-maternity)	Yes					
One health	Yes					
MS (COVID19)	Yes					Yes
SISMA_APE		NA		Yes		
OPenMRS			Yes			
Maternal and Perinatal Death Surveillance and Response/Integrated Disease Surveillance and Response (MPDSR) (7)	NA	Yes	NA	Yes	Yes	
Sample Vital Registration System with cause of death (1)		NA	Yes	NA	NA	
Repeated Household surveys (2)						
DHS	Yes	Yes	Yes	Yes	Yes	
SMART	Yes					
RAMMPS	Yes	Yes	Yes			
Population censuses (10*)	Yes	Yes	Yes	Yes	Yes	
Population surveillance Systems (3)						
HDSS	Yes (n=5)	Yes (n=1)	Yes (n=3)	Yes (n=3)	Yes (1)	
CHAMPS			Yes			
Burial sites surveillance/morgues (9)		Yes	Yes			
National ID systems (8)	NA	NA	NA	Yes		





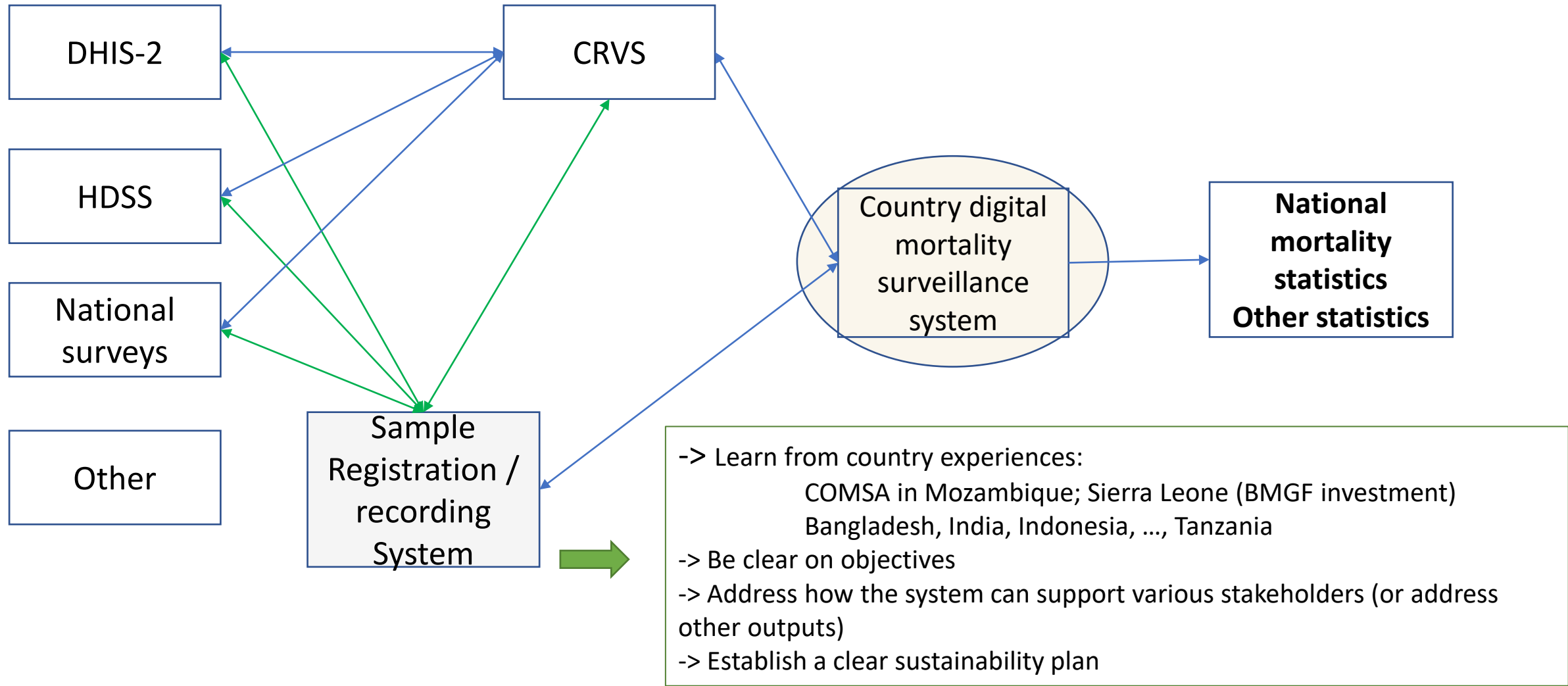
# Summary of country reviews

1. **General agreement and recognition** of the need and importance of mortality surveillance
2. Mortality data implicates **many actors beyond the Ministry of Health**
  - Coordination and alignment are a challenge
  - Many duplications
3. Long-standing experience in implementing diverse platforms for mortality data collection: **some countries more than others**
  - Continuous platforms are not operating optimally for mortality
  - No linkages and coordination
  - Interoperability is an after-thought and not implemented
  - Poor data on cause of death and consistency with international data standards such as ICD
4. Multiple experiences in the use of digital tools for data collection exist but are **fragmented and generally recent and evolving**
  - Multiple tools are being used but often ad hoc, often led by external partners
  - No coordinating body or regulatory framework for implementation

# Features of a Country Digital Mortality Surveillance System (DMSS)

1. **National and subnational** representativeness (data from facility and community)
2. **Prioritizes digital solutions** for data collection, transformations, and release
3. **Efficiency through linkages** (or integration) with existing mortality data platforms on data collection, analysis/triangulation, and release
4. **Continuous and recent data** on mortality statistics
5. Data consistent with **international data norms** (e.g., ICD; data quality measures)
6. Responds to **real-time data queries** from the public using a digital solution
7. Addresses the need of the **MoH programs and country stakeholders** for specific mortality statistics
8. **Releases period mortality statistics** no more than annual time periods

# Add/Identify a platform that produces reliable mortality statistics and is linked with and strengthens existing platforms



# Challenges

- There is currently a **weak vision and commitment** to a national mortality surveillance system
- **Leadership and governance:** who will lead the effort?
- **Financial and human resources** (availability, capacity)
- **Logistical challenges:** infrastructure, equipment, electricity, internet
- **Technological:** capacity to design, implementation and maintenance of digital tools; following global data standards
- Challenges in **extending existing platforms** to the community level to improve data completeness
- Challenges to **digitalize data collection processes** despite increasing interest in digital data
- **Maintaining reliable data** with high quality
- **Private sectors not fully involved** or tapped into

# Thanks

**Johns Hopkins Team:** Agbessi Amouzou, Smisha Agarwal, Almamy Malick Kante, Alain Koffi, Abdoulaye Maiga, Fred Van Dyk, Kelsey Zack

**Burkina Faso Country Team:** Hervé Bassinga, Bassiahi Abdramane Soura, Bruno Lankoandé, Karim Ouattara, Yacouba Sawadogo

**DR Congo Country Team:** Pierre Akilimali, Clarisse Biongo Kabole, Dynah Kayembe, Maurice Mutuale Kabango, Charles Kasongo Katolo, Michel Kayembe Bikuku, Joel Kiniati, Richard Mubikay, Guy Ngindu, Darius Makindu

**Mozambique Country Team:** Etelvina de Fátima Mbalane, Khelvon de Araújo

**Makerere University and Uganda Team:** Joseph Akuze, Peter Waiswa, Muhumuza K Rornald, Doris Kwesiga, Simon Kasasa, Stella Kakeeto, Phillip Wandulu, Hosea Mitala

**Nigeria country Team:** Elizabeth Omoluabi, Mojubaoluwa Afolabi, Ime Asangansi

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