health
Department:
Health
REPUBLIC OF SOUTH AFRICA

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| Date: | **26 June 2025** | | |
| To: | **Dr PA Motsoaledi, MP**<br>**Honorable Minister of Health** | From: | **Ministerial Advisory Committee**<br>**Foodborne Illnesses** |

**SURVEILLANCE OF FOODBORNE ILLNESSES – INTEGRATION**

**Problem Statement and Task - Committee of Workstream 1**

**Improving the availability and quality of data for prompt public health action through the integration of surveillance and mortality data.**

## Background

Public health surveillance is defined as the systematic and continuous collection, analysis, and interpretation of data on health events for the purpose of planning and public health action, closely integrated with the timely dissemination of these data for those who need to know[1]. Timely data avoids reliance on unverifiable facts or rumours, historical trends, or hearsay, to provide the evidence for a comprehensive, accurate, and relevant response to an emerging issue. Timely mortality data is a critical element of epidemic surveillance and response[2].

The absence of integration and collaboration between multiple and diverse data systems in South Africa has led to substantial delay and underreporting of pesticide poisoning and other medical conditions. Cause of death data (COD) is essential for describing the burden of disease. The underlying cause of death is defined as: "(a) the disease or injury that initiated the sequence of events leading directly to death, or (b) the circumstances of the accident or violence that produced the fatal injury"[3]. Unfortunately, the current official cause of death data has been found not to be "fit for purpose" due to an estimated 4-year delay in dissemination. In addition to not being available in near to real time, data are not accessible to health officials at any level for public health action. There are considerable data quality concerns including, under-reporting[4], inaccurate injury profile and a high proportion of unusable cause codes[2].

1.Stephen B. Thacker, Ruth L. Berkelman, Public Health surveillance in the United States, *Epidemiologic Reviews*, Volume 10, Issue 1, 1988, Pages 164–190, https://doi.org/10.1093/oxfordjournals.epirev.a036021

2. A call to action for cause-of-death reporting in South Africa: An assessment of cause-of-death data for public health use. March 2024 https://www.samrc.ac.za/sites/default/files/attachments/2024-06/CODpolicyBrief.pdf

3. WHO Recommendations for conducting an external inspection of a body and filling in the Medical Certificate of Cause of Death. Geneva: World Health Organization; 2022. License: CC BY-ND 3.0 IGO.https://cdn.who.int/media/docs/default-source/classification/icd/cause-of-death/who-recommendations-for-conducting-an-external-inspection-of-a-body-and-filling-in-the-medical-certificate-of-cause-of-death-_vf_published.pdf

4. Groenewald P, Nannan N, Joubert JD, Glass T, Cheyip M, Maqungo M, Funani N, Zinyakatira N, Awotiwon O, Nojilana B, Kallis N, Laubscher R, Bezuidenhout F, Clark SJ, Kabudula C, Martin L, Kahn K, Price J, Lombard C, Morof D, Nichols E, Rao C, Bradshaw D.South African National Cause-of-Death Validation Project: Agreement and corrected cause specific profiles based on data linkage. Cape Town: South African Medical Research Council, 2024. ISBN 978-1-928340-78-2.

An unusable ICD code is also referred to as a 'garbage code' that cannot be considered an underlying cause of death, such as septicaemia, senility or headache, and that has no use in informing public health policy[4]. The main reason for the high proportion of unusable codes is due to the quality of data entered onto the DHA-1663 form by medical doctors. COD coding is not formally part of the medical curriculum and is complicated by concerns of patient confidentiality and the lack of a feedback loop of COD data quality to medical doctors.

The inaccurate injury profile is due to how the underlying cause of death is coded when the manner of death is missing. The manner of death is not captured on the DHA-1663 form[4]. The manner of death refers to the "determination of the way in which the death occurred" or the context in which death occurred (namely disease, accident, intentional self-harm, assault, legal intervention, could not be determined, pending investigation, unknown). The capturing of these data is recommended by WHO.[3]

The Statistics Act [No. 6 of 1999] does not allow sharing of individual level data with the National Department of Health (NDOH) even though the data is generated by medical doctors from both public and private sectors. While treatment in the private sector is well coded for billing purposes, coding of morbidity and mortality are not well recorded. Both public and private sector hospitals assign cause of death on the Department of Home Affairs DHA-1663 form which is then sealed and sent to the Department of Home Affairs for issuing a death certificate, and thereafter to Stats SA for official statistics. Although medical doctors generate the data, there is currently no mechanism for the NDOH to systematically collect and store the cause-of-death information written on the DHA-1663 form.

While fact (record that someone has died) and some cause of death data are recorded on many disease-specific surveillance platforms and mortality audit systems (outlined in Table 1 below), these systems are not interoperable and do not provide readily available data to inform public health action and decision-making[5].

Efforts should therefore be streamlined to ensure that:

(a) nationally representative cause of death data are readily available to the NDOH and other relevant stakeholders and

(b) harmonisation of morbidity data reporting from across different sources should be implemented, to better inform public health action.

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3. WHO Recommendations for conducting an external inspection of a body and filling in the Medical Certificate of Cause of Death. Geneva: World Health Organization; 2022. License: CC BY-ND 3.0 IGO.https://cdn.who.int/media/docs/default-source/classification/icd/cause-of-death/who-recommendations-for-conducting-an-external-inspection-of-a-body-and-filling-in-the-medical-certificate-of-cause-of-death-_vf_published.pdf
4. Groenewald P, Nannan N, Joubert JD, Glass T, Cheyip M, Maqungo M, Funani N, Zinyakatira N, Awotiwon O, Nojilana B, Kallis N, Laubscher R, Bezuidenhout F, Clark SJ, Kabudula C, Martin L, Kahn K, Price J, Lombard C, Morof D, Nichols E, Rao C, Bradshaw D.South African National Cause-of-Death Validation Project: Agreement and corrected cause specific profiles based on data linkage. Cape Town: South African Medical Research Council, 2024. ISBN 978-1-928340-78-2.
5. Continental Framework on Strengthening Mortality Surveillance Systems in Africa https://africacdc.org/download/continental-framework-on-strengthening-mortality-surveillance-systems-in-africa/

**Table 1**: Data sources, stakeholders, and data types involved in pesticide-related data with requirements to improve integration and efficiency:

| Data Source | Stakeholders | Data types | Comment |
|---|---|---|---|
| DHA-1663 form or Death Notification Form (DNF) as part of the Civil Registration and Vital Statistics System | Department of Health data generator from medical doctors completing the DNF<br><br>Department of Home Affairs (update population register)<br><br>Department of Statistics (StatsSA) - official coding and reporting of cause of death | • Demographics<br>• Cause of death<br>• Place of death<br>• Date of death | Manner of death is missing from the official DNF (DHA-1663 form)<br><br>The DHA-1663 is sealed once the doctor signs the certificate, and the form is only opened by StatsSA for official coding. The time interval from death to that death being reported in statistics is on average 4 years with data shared up to 5 years later. |
| Department of Agriculture, Land Reform & Rural Development (DALRRD) | DALRRD<br>CropLife<br>Medical doctors | Data on pesticide composition and active ingredients:<br>• Trade name<br>• Active ingredient<br>• Manufacturer name<br>• Production date<br>• Import source<br>• Production<br>• Distribution<br>• Location<br>• Pesticide class<br>• Quantities<br>• MSDS<br>• Controls in place | • Not publicly available<br>• Clinicians must request CropLife database access for active ingredient details<br>• Requirement to report sales data only recently introduced for HHPs<br>• Recently, an NGO has made a pesticide listing available on its website [5] |
| Community-Based Surveillance | NDOH (Integrated Disease Surveillance & Response IDSR programme) Community Health Workers (CHW)<br>Environmental Health Practitioners (EHPs)<br>Community reporters | All pesticide-related incidents & deaths | • In development under IDSR, this should cover all events, not just infectious diseases<br>• Accelerate training for CHWs, EHPs & community reporters |
| South African Police Service (SAPS) | SAPS<br>NDOH | Event/incident reports (e.g. poisoning calls, scene investigations) | • Requires integration with NDOH to link exposure with laboratory data & outcomes |
| Forensic Chemistry Laboratories (FCL)<br>NHLS | NHLS<br>Chemical Expert Committee | • Cholinesterase & pseudocholinesterase concentrations<br>• Intact pesticide residues (organs/contents)<br>• Metabolites in blood, urine or tissue | • Provide service for living and deceased people/patients<br>• Can implement data-triangulation alerts |

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| Forensic Pathology Services (FPS) | FPS (NDOH-mandated)<br>SAPS | Medico-legal cause of death determinations | • Legally mandated for all unnatural/sudden deaths<br>• Data should feed into national electronic cause of death system<br>• Relatively high levels of information protection because of medico-legal context<br>• Refer laboratory testing to NHLS forensic pathology |
| Workplace surveillance and exposure | Department of Employment & Labour (DoEL)<br>National Institute for Occupational Health (NIOH)<br>Employers | COIDA injury & illness statistics | • No systematic death reporting at NIOH<br>• Review what employee data DoEL currently collects<br>• COIDA data are under-reported, released late<br>• Poor capture of illnesses compared to injuries |
| Environmental Health Services | Local authorities<br>Environmental Health Services (EHS)<br>NDOH District Health Information<br>System (DHIS) | • Pesticides/ chemical incident report form<br>• Other environmental health surveillance forms | Review all forms for content, storage, aggregation & use |
| Notifiable Medical Condition Surveillance (NMCS) | NICD (for NDOH)<br>NHLS<br>Private Sector Clinicians<br>Public Sector Clinicians<br>NMC 30 000 users | • Morbidity and mortality data for notifiable conditions<br>• Line-listed notifications including “death” status updates | • National line list available to NMC users<br>• Deaths captured & updated on existing notifications |
| Clinical data<br>Poison Information Centre (PIC)<br>Mortality audits<br>DHIS | Poison Information Centre (PIC)<br>DOH facilities<br>Clinicians<br>NDOH | • Poison Helpline data:<br>- Demographics<br>- Place of poisoning<br>- Circumstances<br>- Type of toxin<br>- Clinical severity<br>• Clinician-driven mortality audit data<br>• DHIS routine reports | • PIC data available real-time<br>• Mortality audit systems include:<br>Child PIP (under-5)<br>PPIP (perinatal)<br>MaMMAS (maternal)<br>• Coordination across PIC, facility mortality audits & DHIS required |
| Clinical data (electronic medical record) | DOH<br>Private facilities | Inpatient<br>Outpatient<br>Emergency Medical Services data (diagnoses, treatments, outcomes) | • Dependent on coding accuracy<br>• Subject to POPIA constraints<br>• Need to establish EMR status at NDOH (e.g. Single Patient Viewer) |

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| Medical Aid data | Medical schemes (via NMC API)<br>Private labs | • Insurance claims data (ICD-11 codes)<br>• Pseudocholinesterase or Red Blood Cell Cholinesterase alert concentrations | • Can be accessed via NMC API link<br>• Complements private-sector lab data |
| Research data | Academic<br>Hospitals<br>Research institutions | • Prospective/periodic studies linking exposure to clinical presentation with lab results and outcomes<br>• KAP survey data | • Review existing & opportunistic research<br>• Plan prospective studies to fill gaps |

**Evidence review**

The MAC on Foodborne Illness has established that more than 175 deaths per annum in South Africa are attributed directly to Terbufos poisoning. There is currently no national mortality surveillance system in place to determine cause of deaths that enable the prevention of future deaths[2].

The objectives of national mortality surveillance as part of a broader national integrated surveillance system should include:

- Unified information systems with mutually exclusive data capture and flow processes linked to CRVS data
- Digital recording and storage of data at time of certification for near real-time availability of cause of death data (electronic medical certification of cause of death, eMCCD).
- Routine training of medical doctors on cause of death coding for high quality information with minimal unusable or ill-defined codes
- Development of an integrated electronic data management program compliant with international quality standards
- National institutional capacity for data curation, data analysis, and reporting
- Build capacity at all levels of the health care service with appropriate data dissemination[3].

A review of South African data systems for cause of death has highlighted the urgency for electronic medical certification of cause of death (eMCCD) as part of an electronic death registration system (eDRS)[6]. There are tools for eMCCD that can be considered but they are likely to need modification and testing to ensure that they meet the needs of all stakeholders. These can also provide support to medical certifiers at the time of data entry to improve the data quality[6].

**5.**https://unpoison.org/wp-content/uploads/2025/02/UnPoison-SA-HHPs-Database-JMPM-criteria_GHS_ECHA_FEBRUARY-2025..pdf

2**.** A call to action for cause-of-death reporting in South Africa: An assessment of cause-of-death data for public health use. March 2024 https://www.samrc.ac.za/sites/default/files/attachments/2024-06/CODpolicyBrief.pdf

Design requirements of an eMCCD should include:

1. Reporting requirements of each institution interfacing with eMCCD
   1.1 Data sharing with local health services and death audit systems (enterprise architecture)
   1.2 Linkage with other reporting systems (NMC, CRVS death registration system)

2. User experience and requirements
   2.1 Electronic tools must be accessible and easy to use
   2.2 Data items should be captured once at source to avoid duplication and overloading front-line staff
   2.3 Feedback loops to be provided to users to enhance quality and increase data use

3. Coding and analysis requirements
   3.1 Tools to facilitate the use of data to be developed alongside the digital solution
   3.2 Support with mortality data analysis may be required

4. Evaluating current and potential tools for mortality data collection.

Major mortality data quality concerns need to be addressed alongside technical solutions, these include:

1. Manner of death as recommended by WHO
2. Validation checks, prompts, and downloadable guidance on eMCCD
3. Compulsory training in medical certification of cause of death for all medical doctors
4. Data quality assurance processes at all levels to facilitate feedback to certifiers
5. Explore solutions for capturing community and out-of-facility deaths with all stakeholders

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6.Nannan N, Bradshaw D, Laubscher R, Mazinu M, Nkwenika T, Neethling I, Awotiwon O, Groenewald P on behalf of the Strengthening Mortality Surveillance project team. Rapid assessment of cause-of-death data collection and public health use in South Africa. Cape Town: South African Medical Research Council, 2023. ISBN: 978-1-928340-69-0. https://www.samrc.ac.za/sites/default/files/attachments/2023-11/RapidAssessment.pdf

**We propose the following recommendations**

1. Given that there is currently no system in place to timeously determine cause of deaths that can help to prevent future deaths, a broader stakeholder engagement with both public and private sectors to scope and design the surveillance architecture for real-time cause of death mortality reporting is urgently required

2. A detailed assessment of existing systems and subsystems, as well as their processes as indicated in Table 1 above is required.

3. Establishment of Governance Mechanism - a high level CRVS Steering Committee should create a guiding document signed off by relevant Ministers to ensure coordinated implementation across departments with a single accountability institution for monitoring, evaluation and reporting.

4. NAPHISA is planned as the legislated institution with the mandate for coordination and accountability and includes a Division for Environmental Health. We urge the NDOH to initiate the establishment of this function whilst we wait for the NAPHISA Act 1 of 2020 to be proclaimed and request that the National Institute for Communicable Disease be capacitated to perform the function of surveillance coordination in the interim.

5. Develop a plan of action with a phased approach to implementation that includes capacity building, sustainability and continuous monitoring and evaluation.

**Rationale for the recommendations**

The lack of timely, nationally representative and quality information on deaths and poisonings in South Africa is challenging. The recent crisis of pesticide poisoning among children has highlighted this and the necessity for integrating what are currently siloed surveillance systems.

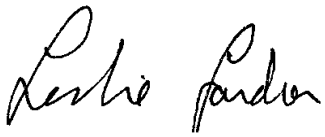
The Presidential recommendation of reporting of deaths as a result of pesticide poisoning is critical to link exposures and outcomes to inform and monitor interventions to reduce the morbidity and mortality associated with pesticide poisoning in South Africa.

Multiple opportunities have been identified by various experts in existing institutions in South Africa. A single institution should be given the responsibility to curate and integrate data from multiple different data sources including those that are collected outside the health sector to understand the burden of disease as a result of pesticides. This requires an intersectoral and whole of government approach and will require a mandate and support from all Ministers.

It is proposed that the NAPHISA be recognized as the institution to take on this role with environmental capacity support (as a Division for Environmental Health in NAPHISA). In the interim, because of NICD's role in coordinating most disease surveillance including the NMC platform, it would be appropriate to make use of the NICD skills and platform to build this wider surveillance and data function.

An electronic medical certification of cause of death system (eMCCD) must be developed for the country with high-level stakeholders agreeing on a guiding document. The SAMRC is optimally placed to facilitate and advise this process in as timeous and effective a manner as possible.

Thank you for your consideration



**PROF LESLIE LONDON**
**CHAIRPERSON: MINISTERIAL ADVISORY COMMITTEE ON FOODBORNE ILLNESSES**
**DATE: 26 JUNE 2025**
**CC:**

» **Dr SSS Buthelezi (Director-General: Health)**

**Abbreviations/acronyms**

API Application Programming Interface
COD Cause of Death
CDC Centre for Disease Control
Child PIP Child Healthcare Problem Identification Programme
CHW Community Health Worker
CVRS Civil Registration and Vital Statistics
COIDA The Compensation for Occupational Injuries and Diseases Act 130 of 1993
DALRRD Department of Agriculture, Land Reform & Rural Development
DoEL Department of Employment & Labour
DOH Department of Health
DHA Department of Home Affairs
DHA-1663 Four-page death notification form printed by DHA
DHIS District Health Information System
DNF Death Notification Form
EHP Environmental Health Practitioner
EHS Environmental Health Services
EMS Emergency Medical Services
FCL Forensic Chemistry Laboratories
eDRS Electronic Death Registration System
eMCCD Electronic Medical Certificate of Cause of Death
EMS Emergency Medical Services
EMR Electronic Medical Record
FPS Forensic Pathology Services
ICD-10 International Classification of Diseases 10th Revision
ICD-11 International Classification of Diseases 11th Revision
IDSR Integrated Disease Surveillance and Response
KAP Knowledge Attitudes and Practice
MaMMAS Maternal Mortality and Morbidity Audit System
NAPHISA National Public Health Institute of South Africa
NICD National Institute for Communicable Disease
NIOH National Institute for Occupational Health
NHLS National Health Laboratory Service
NDOH National Department of Health
NMCS Notifiable Medical Condition Surveillance
PIC Poison Information Centre
POPIA The Protection of Personal Information Act 4 of 2013
PPIP Perinatal Problem Identification Programme
SAMRC South African Medical Research Council
SAPS South African Police Services
Stats SA Department of Statistics South Africa
WHO World Health Organisation