

## ORIGINAL ARTICLE

# OPPORTUNITIES FOR PROCESS IMPROVEMENT: IMPLEMENTING GOOD PRACTICES TO ENHANCE EFFICIENCY IN REPORTING MEDICAL CAUSES OF DEATH IN KELAMANGALAM BLOCK, KRISHNAGIRI DISTRICT

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## ABSTRACT

**INTRODUCTION:** Accurate reporting of Medical Certification of Cause of Death (MCCD) is essential for reliable mortality statistics and informed public health planning. In Krishnagiri district, Tamil Nadu, a review of internal processes was undertaken to identify gaps in documentation and electronic reporting within the Civil Registration and Vital Statistics system.

**METHODS:** A process review and audit were conducted in Kelamangalam and Denkanikottai Town Panchayats. Verbal autopsy practices, availability of Form 4 and Form 4A (MCCD), and entries in the Electronic Mortality (e-MOR) platform were assessed. Discrepancies between available hard-copy MCCD forms and electronic records were identified and escalated through district health authorities. Corrective actions, including retroactive data entry and district-wide audits, were initiated.

**RESULTS:** In Kelamangalam Town Panchayat, 79 of 85 home deaths had Form 4A available; however, 63 were not entered into e-MOR. In Denkanikottai, 54 of 173 deaths had Form 4A available, with 7 not uploaded to e-MOR. The review highlighted underutilization of available MCCD documentation and gaps in data entry processes. Following escalation, retroactive provisions enabled correction of pending entries, and a district-wide audit was initiated to standardize practices.

**CONCLUSION:** Strengthening documentation practices, improving data entry training, and instituting regular audits can significantly enhance the completeness and accuracy of cause-of-death reporting. The collaborative model adopted in Kelamangalam demonstrates a scalable good practice for improving CRS efficiency and supporting evidence-based public health decision-making.

**KEYWORDS:** Medical Certification of Cause of Death (MCCD), Civil Registration and Vital Statistics, Electronic Mortality (e-MOR), Mortality Data Quality, (e-MOR), Mortality Data Quality.

## INTRODUCTION

Vital statistics data offer the most comprehensive evaluation of the annual mortality burden and provide essential metrics for assessing both the direct and indirect impacts of mortality on public health.<sup>1</sup> Accurate estimates of injury-related deaths are crucial for setting national health priorities and developing effective prevention strategies.<sup>2,3</sup> District Civil Registration System (CRS) approach was piloted in two districts of Tamil Nadu. As part of the ongoing commitment to optimize the accuracy and efficiency of cause-of-death reporting, a review of internal processes was undertaken. This review aimed to identify areas for improving the quality of data and streamlining operations. During the evaluation, gaps were identified that presented opportunities to enhance the accuracy and timeliness of cause-of-death information. Addressing these gaps would strengthen the reliability of mortality data and contribute positively to public health monitoring and resource allocation. This report outlines the identified process gaps, their impact, and recommendations for improvement.

## IDENTIFYING OPPORTUNITIES FOR PROCESS IMPROVEMENT

In Krishnagiri district, verbal autopsies were systematically conducted to ascertain causes of death for all cases reported without a Medical Certificate of Cause of Death (MCCD) using Form 4 or Form 4A. Form 4 is used for institutional deaths, while Form 4A is used for non-institutional deaths. Verbal autopsies are carried out by Public Health Staff, who play a critical role in collecting essential information during the process. During field assessments, Public Health Staff identified instances where Form 4A was available with respondents, indicating that important documentation existed but had not been adequately utilized in the reporting process.



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Recognizing the significance of this finding, the Public Health Staff informed the Block Health Supervisor, who subsequently escalated the matter to the Block Medical Officer for further action. Under the guidance of the Block Medical Officer, a dedicated team visited the Kelamangalam Town Panchayat Office to conduct a comprehensive audit assessing the availability and utilization of Form 4A in official records. The audit aimed not only to verify documentation but also to understand the underlying processes affecting the accuracy of cause-of-death reporting. The review at the Town Panchayat Office highlighted a commendable practice of collecting comprehensive documentation related to causes of death, including Form 4, Form 4A, and FIR/postmortem reports. Among the 85 home deaths registered, MCCD documentation was available as hard copies for 79 deaths, while FIR copies and postmortem reports were available for the remaining six deaths (Table 1).

Table 1: Reporting of Home Deaths in Krishnagiri District

Registration Unit	Total Home Registered	Deaths Form Available	4A MCCD Captured in e-MOR
Kelamangalam Panchayat	Town 85	79	16
Denkanikottai Panchayat	Town 173	54	47



Figure 1: Process Flow and Identified Gaps of Cause-of-Death Documentation in Kelamangalam block, Krishnagiri district, Tamil Nadu

This proactive approach demonstrates a commitment to thoroughness and accuracy in mortality reporting. However, the review also identified an opportunity for improvement in data entry practices, as 63 out of 79 deaths with available Form 4A were not entered into the e-MOR system. As a follow-up measure, the Denkanikottai Town Panchayat Office was also audited to identify similar issues related to cause-of-death documentation. Of the 173 deaths registered, 54 had Form

4A available; however, for seven of these deaths, the cause of death had not been entered into the e-MOR platform despite the availability of supporting documentation. The identified cases were promptly escalated to district officials. Through the District Health Officer (DHO), who oversees birth and death registration activities in the district, the issue was brought to the attention of state authorities. In response, retrospective data entry provisions were enabled in the e-MOR platform to facilitate accurate and timely documentation of these cases.

To further improve the availability and utilization of MCCD during death registration, the DHO directed audits of all town and village panchayat offices in the district. This initiative aimed to ensure that all available documentation is accurately uploaded into the system, thereby improving the overall quality of mortality registration. The collaborative efforts of Public Health Staff, the Block Health Supervisor, and the Block Medical Officer in Kelamangalam exemplify a proactive approach to improving mortality data quality. Their identification of documentation gaps and coordinated response represent a good practice model for strengthening mortality surveillance systems. By ensuring effective utilization of available forms and documentation, the initiative contributes to improved public health monitoring and evidence-based decision-making. This review also highlights the need for enhanced awareness and training among data entry operators regarding the interpretation and entry of information from available documents. Regular training workshops and feedback sessions may help operators discuss challenges, share best practices, and foster a culture of continuous quality improvement. The initiative successfully identified critical gaps in the documentation process within the Electronic Mortality Registration (e-MOR) system.

## DISCUSSION

The Tamil Nadu Vital Statistics Report 2020 observed that only a small proportion (25%) of deaths in Krishnagiri district had medically certified causes of death. The present review demonstrates that timely interventions can help rectify gaps in CRS reporting. Ensuring that all deaths are accurately documented in the CRS portal can substantially improve the quality of mortality data and support more effective public health planning and intervention.<sup>4</sup> The initiative undertaken by the team was particularly important because accurate cause-of-death data are essential for public health monitoring. Identification of mortality trends enables better allocation of resources and informs targeted public health actions.<sup>5,6</sup> Despite ongoing efforts to strengthen standardized registration systems,

MCCD documentation continues to face challenges related to completeness, transparency, and accuracy. Previous findings have shown considerable gaps between reported deaths and medically certified causes of death, highlighting the need for improved documentation practices.<sup>7</sup> The present review revealed significant challenges, particularly the underutilization of Form 4A despite its availability, which compromises the accuracy of mortality data and limits the effectiveness of public health interventions. The audit at Kelamangalam Town Panchayat Office demonstrated strong documentation practices, with MCCD available for 79 out of 85 deaths. However, deficiencies in data entry practices were identified as a major concern. One key area requiring improvement is the training of data entry operators.<sup>8</sup> Ensuring that personnel are adequately trained to interpret and correctly enter information from Form 4A could substantially enhance the quality and completeness of mortality data. The collaborative efforts of Public Health Staff, Block Health Supervisors, and Block Medical Officers were instrumental in identifying and addressing documentation gaps. This teamwork model could serve as a best practice for replication in other regions. The district-wide audit initiated by the District Health Officer represents an important step toward strengthening mortality surveillance. Such comprehensive reviews can ensure adherence to standardized documentation practices across all town and village panchayat offices, thereby improving the overall quality and reliability of mortality data.

## LIMITATION

A limitation of this review is that it did not assess the underlying reasons for the non-utilization of Form 4A despite its availability, such as gaps in staff training, workload issues, or administrative barriers affecting data entry practices.

## CONCLUSION

The review of cause-of-death reporting processes in Krishnagiri district identified important gaps in the utilization of Form 4A (MCCD) during verbal autopsies and mortality registration. Audits conducted in Kelamangalam and Denkanikottai Town Panchayat Offices revealed that several deaths with available MCCD documentation had not been entered into the e-MOR system, resulting in incomplete cause-of-death data. These findings prompted the District Health Officer to initiate district-wide audits to ensure accurate and timely data entry across all registration units. The review underscores the importance of standardized training for personnel, strengthened data entry procedures, and

periodic monitoring to improve documentation practices. Implementing these measures can enhance the reliability of mortality reporting systems, support effective public health monitoring, and facilitate evidence-based decision-making at the community and district levels.

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