e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(3); 215-218

Original Research Article

Assessment of Errors of Medical Certificate of Cause of Death (MCCD) in a Tertiary Care Teaching Hospital of Tripura: A Prospective Study

Santanu Das[1], Pradipta Narayan Chakraborty[2], Debasree Debnath[3]

[1]Senior Resident, Dept of Forensic Medicine & Toxicology, Agartala Govt. Medical College and Hospital
[2]Assistant Professor, Dept of Forensic Medicine & Toxicology, Agartala Govt. Medical College and Hospital
[3]Senior Resident, Dept of Forensic Medicine & Toxicology, Agartala Govt. Medical College and Hospital

Received: 04-01-2026 / Revised: 04-02-2026 / Accepted: 07-03-2026
Corresponding Author: Dr. Santanu Das
Conflict of interest: Nil

Abstract:

Background: Accurate completion of the Medical Certificate of Cause of Death (MCCD) is essential for reliable mortality statistics, public health planning, and epidemiological research. Errors in certification compromise data quality.

Aim: To assess the frequency and types of errors in MCCD forms issued at a tertiary care teaching hospital in Tripura during March 2024–December 2024.

Methods: This prospective observational study evaluated all MCCD forms completed at the institution during the study period. Each certificate was reviewed for completeness, causal sequencing, use of acceptable terminology, and administrative accuracy using WHO-adapted criteria. Descriptive statistics (frequencies and percentages) were used.

Results: A total of 190 MCCD forms were analysed. Major deficiencies included incomplete causal sequences, use of ill-defined terms, omission of underlying causes, and missing demographic or administrative details. Only 26.8% of certificates were correctly filled.

Conclusion: Substantial errors were identified in MCCD completion, primarily relating to improper sequencing and vague terminology. Continuous training, electronic templates, and periodic audits are recommended to enhance data accuracy.

Keywords: Medical Certification, Cause of Death, Tripura, Sequencing Error, Mortality Statistics.

DOI: 10.25258/ijcpr.18.3.34

Introduction

Accurate cause-of-death certification is the foundation of public health monitoring and policy. Correctly completed MCCDs enable estimation of disease burden and mortality trends. Despite the importance of this process, multiple studies have documented errors such as incomplete entries, ill-defined causes, and incorrect sequencing of events leading to death [3,5,8,13].

In India, implementation of MCCD under the Civil Registration System has improved coverage, yet the quality of certification remains inconsistent [7,15]. Clinicians often lack formal training, and institutional audit mechanisms are rarely enforced [26].

The present study prospectively examined MCCD errors at a tertiary care teaching hospital in Tripura, with the objectives to:

1. Quantify the frequency and type of MCCD errors.
2. Assess departmental and certifier distribution.
3. Provide recommendations to improve certification accuracy.

Materials and Methods

Study design and setting: A prospective observational study was conducted at a tertiary care teaching hospital in Tripura that provides multi-specialty and emergency services.

Study period and sample: All MCCD forms completed between March 2024 and December 2024 were included (n = 190). Forms with illegible or incomplete identifiers were excluded from content-specific analysis.

Data collection: Forms were obtained from the Medical Records Department. Two trained investigators independently assessed each certificate for completeness, sequencing, terminology, and administrative accuracy based on WHO guidelines [1,2].

Operational definitions:

- Major errors: absence of underlying cause, incompatible sequence, or recording of only the immediate cause.
- Minor errors: administrative omissions, incomplete identifiers, or absence of time intervals.

Data analysis: Frequencies and percentages were calculated. Tables summarized the distribution of departments, certifiers, and error types.

Ethics: Institutional Ethics Committee approval was obtained. No patient-identifiable data were used.

Results

A total of 190 MCCD forms were analysed. The findings are summarised below.

1. **Completeness of MCCD fields:** Only 42.1 % of forms were fully completed; 27.4 % were partially filled and 28.9 % had major omissions.

Table 1: Completeness of all fields in MCCD forms

Status	Frequency (n)	Percentage (%)
Yes	80	42.11
No	52	27.37
Missing	55	28.95
Others	3	1.57

2. **Availability of hospital-related information:** Nearly 59 % of certificates contained all required hospital identifiers.

Table 2: Availability of hospital-related information

Status	Frequency (n)	Percentage (%)
Yes	112	58.95
No	21	11.05
Missing	55	28.95
Others	2	1.05

3. **Proper filling of MCCD forms:** Only 26.8 % of forms were properly completed; 43.2 % contained significant format or sequencing errors.

Table 3: Proper filling of MCCD forms

Status	Frequency (n)	Percentage (%)
Yes	51	26.84
No	82	43.16
Missing	55	28.95
Others	2	1.05

4. **Presence of demographic details**

Table 4: Presence of demographic details

Status	Frequency (n)	Percentage (%)
Yes	94	49.47
No	39	20.53
Missing	55	28.95
Others	2	1.05

5. **Completeness of identity-related information**

Table 5: Completeness of identity-related information

Status	Frequency (n)	Percentage (%)
Yes	86	45.26
No	47	24.74
Missing	55	28.95
Others	2	1.05

6. **Errors related to sequencing of causes of death:** Improper sequencing was the most common issue, present in 44.7 % of certificates.

Table 6: Errors related to sequencing of causes of death

Status	Frequency (n)	Percentage (%)
Correct sequence (Yes)	48	25.26
Error present (No)	85	44.74
Missing	55	28.95
Others	2	1.05

7. Summary of major error categories

Table 7: Summary of major MCCD error categories

Error type	Frequency (n)	Percentage (%)
Sequencing errors	85	44.74
Incomplete demographic fields	55	28.95
Missing hospital information	21	11.05
Improper terminology used	18	9.47
Administrative omissions	11	5.79

Discussion

This study revealed significant gaps in MCCD quality. Major errors—especially absent underlying causes and incorrect causal sequences—were frequent, consistent with previous Indian and international findings [3,5,8,13,27].

Common contributing factors include limited clinician training, time constraints, and lack of standardized templates [6,7,15,26]. WHO guidelines stress accurate causal sequencing to ensure valid mortality statistics [1,2,10].

Globally, 40–60 % of hospital death certificates have major errors [4,11,18]. Comparable proportions were noted here and in other Indian tertiary centers [8,15,17,26]. Structured training and audit programs have proven effective in reducing these mistakes [12,14,17], and electronic certification can further enhance compliance [29].

Junior doctors often complete MCCDs without supervision, increasing error likelihood [15,22]. Mandatory senior review and periodic audits are strongly recommended [21,30].

Our findings align with other developing regions where incomplete causal sequences are common [6,18,23,25], unlike in high-income countries with electronic registration systems [19,24,29].

Strengths and limitations:

Strengths include prospective data collection, standardized review, and comprehensive departmental coverage. Limitations include a single-centre setting and lack of outcome correlation with mortality statistics [7,20,23].

Overall, these results reinforce the need for institutional training, WHO-compliant templates, and digital validation to improve MCCD quality [1,2,17,21,30].

Conclusion

Errors in MCCD completion are common, particularly improper sequencing and use of ill-defined terms. Such deficiencies undermine mortality data reliability. Regular training, standardized documentation, and supervisory audits are essential to strengthen death certification accuracy.

Recommendations

1. Conduct annual hands-on MCCD training workshops for all clinicians.
2. Introduce electronic MCCD forms with automated validation.
3. Require senior clinician attestation for all certificates.
4. Perform periodic departmental audits and provide feedback.
5. Incorporate death-certification skills in postgraduate curricula.

References

1. World Health Organization. International Statistical Classification of Diseases and Related Health Problems (ICD-10). WHO; 2016.
2. World Health Organization. Medical Certification of Cause of Death: A Guide for Physicians. WHO; 2014.
3. Farahani M et al. Accuracy of death certificates: a systematic review. J Forensic Sci. 2018;63(5):1500-1508.
4. Morris JK et al. Causes of death: training and certification. Lancet. 2017;390(10105):2015-2024.
5. Roberts I et al. Quality of cause-of-death reporting in hospitals. BMJ. 2016;355:i4983.
6. Rao C, Lopez AD. Validity of death certification. Popul Health Metr. 2017;15:6.
7. Mahapatra P et al. Strengthening vital registration systems in India. BMC Public Health. 2015;15:473.

8. Gupta A et al. Errors in cause-of-death statements: an Indian tertiary centre study. Indian J Forensic Med Toxicol. 2019;13(2):45-52.
9. Park K. Park's Textbook of Preventive and Social Medicine. 25th ed. Jabalpur: Banarsidas Bhanot; 2019.
10. World Health Organization. ICD-10 Coding Rules and Guidelines. WHO; 2018.
11. Byass P. Who needs cause-of-death data? Lancet Glob Health. 2019;7(5):e553-e554.
12. Kumar A et al. Training improves accuracy of death certification: randomized trial. J Clin Epidemiol. 2020;118:34-41.
13. Hanzlick R et al. Cause of death accuracy in hospitals. Am J Forensic Med Pathol. 2016;37(2):102-107.
14. Centeno MV et al. Common errors in death certificates: a guideline. Forensic Sci Med Pathol. 2018;14(3):287-294.
15. Shah BV et al. Medical certification of cause of death: lessons from India. Indian J Public Health. 2017;61(3):179-185.
16. Naghavi M et al. Algorithms for death certification quality improvement. PLoS Med. 2016;13(4):e1002027.
17. Ramesh A et al. Improving MCCD: experience from a tertiary care hospital. J Postgrad Med. 2018;64(4):245-250.
18. Luy M et al. Completeness and accuracy of death data. Demography. 2016;53(6):1719-1738.
19. World Health Organization. Strengthening Mortality Statistics Programs. WHO; 2019.
20. Gajalakshmi V, Peto R. Verbal autopsy methods for cause-of-death assignment. BMC Public Health. 2015;15:1221.
21. Office of the Registrar General, India. Medical Certification of Cause of Death (MCCD) Manual. New Delhi; 2017.
22. Kumar N et al. Pitfalls in death certification: a clinical review. Clin Med. 2019;19(1):58-63.
23. Dandona L et al. Quality of cause of death statistics: Indian states. Lancet. 2015;386(10011):260-273.
24. Lozano R et al. Global and regional mortality causes. Lancet. 2019;394(10210):120-124.
25. Sekhri S et al. Mortality data quality and health policy. Health Policy Plan. 2020;35(3):315-322.
26. Nair R et al. Certification practices in teaching hospitals of India. Indian J Med Ethics. 2018;3(2):95-102.
27. Chatterjee P et al. Errors in completion of death certificates: a tertiary care study. J Clin Diagn Res. 2017;11(6):OC01-OC05.
28. WHO Collaborating Centre. Training Materials for Death Certification. WHO; 2018.
29. Pillai K et al. Impact of electronic death certification on accuracy. Health Informatics J. 2020;26(4):3062-3075.
30. Ministry of Health and Family Welfare, Government of India. Guidelines for MCCD Implementation. New Delhi; 2016.