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Will Medical Cause of Death Certifications data quality improve in the UK with the new Medical Examiner system

ABSTRACT

Objectives: There are deficits in the completeness, accuracy and timeliness of death certification internationally. In April 2023, England implemented a statutory Medical Examiners system primarily aiming to improve the quality of certification of death data. We sought to assess the current quality of death certification among general practitioners and medical examiners.

Methods: An online survey was conducted with general practitioners and medical examiners in the Yorkshire region to determine how Medical Certifications of Cause of Death (MCCD) are completed and commonly experienced sources of errors (e.g., a lack of a reported time frame, absent or inadequate reporting of comorbidities, incorrect underlying cause-of-death, and an inaccurate sequence of events).

Results: The survey was completed by general practitioners (n=95) and medical examiners (n=9). Participant responses, including to a hypothetical case, confirmed the quality of the certification was less variable among MEs compared to GPs, but still below international standards.

Conclusions: Efforts to enhance the quality of death certification require further consideration. Mandating a medical examiner system may not lead to intended improvements in the quality and cause of death data that form a critical component of mortality statistics that underpin health planning and monitoring.

INTRODUCTION

Accurate completion of the Medical Certificate of Cause of Death (MCCD) is essential for its secondary purpose of producing mortality statistics that are used to inform health policy. Currently, the quality of MCCD is mixed, and errors are common [1]. According to a recent systematic review [2], the four most common errors found in MCCDs are a lack of a reported time frame reported, absent or inadequate reporting of comorbidities, incorrect underlying cause-of-death (UCOD), and an inaccurate sequence of events.

Last year, the UK government announced the implementation of a statutory medical examiner system due to commence in April 2023, to "…introduce an additional layer of scrutiny of the cause of death by the medical practitioner, improving the quality and accuracy of the medical certificate of cause of death and thereby informing the national data on mortality and patient safety" [3].

Prior to its implementation we sought to determine whether the proposed system would lead to quality improvements in death certification when compared to other initiatives (e.g. digitalisation of certification [4, 5, 6] or the addition of medical certification training [6, 7]).

METHODS

An online survey was distributed targeting both General Practitioners (GPs) and Medical Examiners (MEs) to explore current practices around MCCD completion. For GPs, the West Yorkshire Integrated Care Board (ICB) supported the dissemination of the survey among GPs in their weekly communique to GPs, expected to reach hundreds of GPs in the area. In England, ICBs are the statutory bodies responsible for developing a plan for meeting the health needs of the population they serve. For MEs, a presentation was made at the regional

North East and Yorkshire ME meeting, responsible for 23 local ME offices, with the invitation to complete the survey. Data were collected from the 15th of February to the 14th of March 2023. The results were presented in an ICB meeting on the 15th of March 2023, as discussions took place on the implementation of the new system.

The content of the questionnaire included informed consent, training received, and questions relating to practices around the completion of MCCDs, following the WHO 1979 format [8]. Participants also completed questions about scenarios that explored how respondents would report a chain of events that directly caused the death and contributing factors. An MCCD comprises two sections: Section 1 (the sequence of events or conditions that led to death, beginning with the immediate, direct cause of death) and Section 2 (a note of other significant conditions contributing to death but not related to the disease or condition causing).

RESULTS

Respondents included GPs (n=93) and MEs (n=9). It was not possible to determine the population the survey invitation reached due to the distribution process. The majority of GPs (n=62;66.6%) reported that training in MCCD completion was very limited, although 10.5% reported receiving training that exceeded five hours. The level of confidence to fill the MCCD was good for 68.5% of respondents.

When respondents were asked about timeframes for events in Section 1 of the MCCD form (the most common MCCD completion error [2]), a small proportion of GPs (15.8%) indicated that they always write time intervals, while the majority of GP respondents (55.8%) never write it. When MEs were asked if timeframes should be present for all conditions in Section 1, only 33.3% agreed with the statement.

When asked about reporting of comorbidities in Section 2 of the MCCD form (the second most common error [2]) GP responses comprised three types of response:

- Adding all significant or relevant events from the past medical history (44%)
- Adding conditions that could have contributed indirectly to the death (41%)
- Unclear (15%), including responses such as “Don't usually put too many”, “No specific approach” or “One significant condition”.

When GPs were asked what line in the MCCD form indicated the underlying cause of death (UCOD) used for the international comparison of deaths, only 26.3% could define it correctly. This is considered the third most common error [2]. To look into more detail regarding the UCOD, as well as other errors, a case scenario was presented to GPs and MEs (see Figure 1).

Twelve different types of UCOD were reported among GPs. In order of frequency, aspiration pneumonia (24%), stroke (23%), vascular dementia (20%), pneumonia (12%), diabetes (3%), diabetes and hypertension (3%), hypertension (3%), cerebrovascular disease, diabetes and hypertension (3%), cerebrovascular disease (1%), chest infection (1%), stroke and vascular dementia (1%). Three responses were undecided between stroke or dementia depending on medical records and history (4%).

In contrast, five different diagnoses were made by MEs as an UCOD, with the most common being vascular dementia (44%). Other instances included pneumonia, stroke, hypertension, and stroke/vascular dementia.

The case was expected to be: 1a aspiration pneumonia, caused by 1b vascular dementia due to stroke, and 1c hypertension. This pattern or similar was provided by 3 GPs (3.2%) and 1 ME (11.1%). The presumption was that by defining the diabetes as “well controlled” it implied

a low HbA1c and little additional vascular impact to the already identified stroke, in which instance diabetes should be added to Section 2 (i.e., other significant conditions contributing to death but not related to the disease or condition causing).

The fourth most common error is an improper sequence of events [2]. In this sample, only 2 errors of this nature were entered by GPs, as diabetes was considered to cause hypertension in one case and stroke in another.

Regarding Section 2, an inappropriate entry of gout was found in 6 cases (6.3%). The entry of diabetes was found in 54 cases (56.8%), although it was in Section 1 in an additional 6 cases. The codes of vascular dementia, stroke and/or hypertension should not have been in Section 2 but in Section 1, although 83 cases (87.4%) were reported in Section 2. Finally, Section 2 was empty in 7 cases (7.4%). Among MEs, Section 2 was empty in 3 cases (33.3%), gout was not present, diabetes was present in 5 cases (55.6%), and dementia, stroke and/or hypertension were present in 6 cases (66.7%).

DISCUSSION

In England, medical examiners are required to be clinicians with a minimum of five-years' experience who have completed an online course (created by NHS Health Education England in collaboration with the Royal College of Pathologists (RCP)) and a day of face-to-face training offered by the RCP. One author completed the online core course (26 tutorials designed to take less than eleven hours) over a week and one day of follow-on training within three months (PMM). The focus of the course and training included how the system would work, how bereaved families should be at the heart of the service, and how to minimize delays. There was minimal training that focused on how to approach and complete a good quality MCCD form.

MEs are clinicians interested in this matter, and they will acquire experience quickly as they will be looking at MCCD forms daily. However, the effect of the new statutory medical examiner system on data quality is not understood, nor are improvements guaranteed. In the small sample involved in this study, variability and a lack of quality were issues that persisted.

The assessment of data quality was based on direct questioning as well as on the use of a case scenario. This reflects current practice in England, where three items are requested in Section 1 of the MCCD. This differs to the WHO form, which is the basis of most European MCCD forms [9], which can contain up to four items. Furthermore, in England, more than one diagnosis per line is encouraged [10] while elsewhere this is considered an error [2].

When comparing the level of errors present, there was:

- Absence of time interval reporting, from 84.2% among GPs to 66.7% among MEs.
- Inadequate co-morbidities: GPs considered contributing factors to death in 41% of cases, and in the case scenario, a diagnosis of gout (considered incorrect) was added in only 6 cases (6.3%). Diabetes was present in 63.2% of the forms, in the majority in Section 2. MEs, on the other hand, did not include gout and added diabetes in Section 2 in 55.6% of cases.
- Incorrect UCOD: In the case scenario presented, there was seemingly little interest in looking at the disease or injury that initiated the chain of events leading directly to death (i.e., the underlying cause of death). As the Office of National Statistics advises, “From a public health point of view, preventing this first disease or injury will result in the greatest health gain” [10]. The expected UCOD was still far from being encountered as frequently as it should be in the MCCDs completed. There was an improvement in hypertension as an UOCD, from 3% among GPs to 11% among MEs, but this was still

only a small proportion of respondents. Similarly, a tendency among GPs to complete a minimum amount of content (i.e. just entering information for line 1a (n=36)) resulted in 35 cases where the UCOD was recorded by GPs as aspiration pneumonia, pneumonia or chest infection (36.8%) or to one single case among MEs (11.1%).

- Improper sequence: The presence was quite low in the case presented, occurring only among two GP respondents, and no MEs.

The Medical Examiner statutory system could improve data quality, but the benefit may be limited. It can be argued that, even if doctors have been responsible for the completion of MCCDs in the UK since 1845 [11], but they may not be fully trained and engaged in the process of determining and reporting an UCOD.

The study is limited by the small number of responses in this region, but provide useful insights into the current situation, as well as the need to reflect and comprehensively evaluate the statutory approach to determine to how and to what extent data quality is affected.

CONCLUSIONS

The statutory Medical Examiners system will have a limited benefit on data quality of the MCCDs. Improvements in the training programme specific to identification of the UCOD is still required across GPs and MEs. Our data highlights the need to consider whether the additional scrutiny of the MCCD forms warrants the associated delays in the issuance of death certificates for bereaved families. The data and conclusions presented highlights the need for reform of the system and for audit and systematic multidisciplinary meetings in difficult cases.

ADDITIONAL INFORMATION

ETHICS. Approval of this service evaluation project was obtained by the West Yorkshire R&D Unit (Ref: 001-25-01-20230).

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CONFLICTS OF INTEREST. None declared.

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Figure 1: Case scenario

The 74-year-old woman was seen 2 days ago and diagnosed with aspiration pneumonia. She was on antibiotics.

Active Problems
-Vascular dementia. diagnosed 5 years ago.
-Diabetes type 2. Diagnosed 7 years ago. Well controlled.
-Stroke. Diagnosed 10 year ago.
-Hypertension. Diagnosed 30 years ago.
-Gout. Diagnosed 35 years ago.