



Cancer Mortality: Sources of Misclassification in Death Certificates

Alexandra Morgan, Judy Rees MD, PhD, Sylvia Guerra, MTS, Valeria Luna



AIM

The purpose of this research is to identify the main sources of bias and misclassification in the completion of the cause of death section on death certificates.

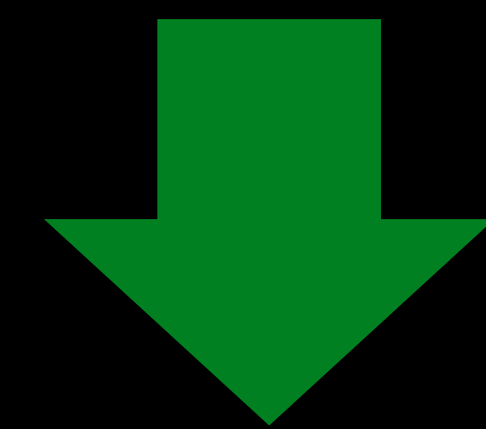
BACKGROUND

Inaccurate Diagnosis:

A study comparing true death certificates with clinical summaries from medical records found that **51% of the death certificates had major errors**¹

Limited Quality:

Another study found that **45% of cancer death certificates were of limited quality** with nonspecific causes of death or only one nonterminal cause of death²



Consequences for Cancer Research:

A 2011 study found that inaccurate reporting of deaths from rectal cancer significantly **increased the 5-year cause-specific survival rate** for the cancer³

METHODS

- **Focus Groups:** Four 60-minute long groups, each with 4-8 local providers
 - Residents, attendings, and nurse practitioners
 - Providers from hospital medicine, palliative care, and community practices
- **Transcription:** Each group was recorded and transcribed in full
- **Analysis:** Transcripts were analyzed with Constant Comparison Analysis, a research method developed by Glaser and Strauss to group data into units and categories which are then used to identify larger themes

RESULTS: MAIN THEMES

Challenges providers face when completing death certificates

Procedural Challenges

Changes in technology
Restrictive form
Variation in training
Lack of Feedback

"If you have someone who has had cancer over a long period of time with many changes and recurrences the form on the death certificate is not conducive to listing those out in a meaningful way"

Clinical uncertainty

Gaps in patient care
Unexpected deaths

"Sometimes the cause of death is ambiguous because the patient is comfort measures only"

Provider approaches to determining the cause of death

Broadest Diagnosis

Cardiac arrest
Respiratory failure
Hypoxic brain death

"It's never really that black and white which is a little bit frustrating. If you are uncertain you can easily argue that the patient died of a cardiac arrest or from brain hypo perfusion"

Clinical judgement on a specific diagnosis

Demographics
Medical record, PCP

"I think its important to remember that it is a medical opinion, so you don't have to have all the facts"

Completing death certificates for patients with cancer

Immediate cause of death

Cancer can be the immediate cause

"I was always taught that people don't die of cancer, there is something that causes the eventual organ failure and that cancer is a contributing factor"

Heightened documentation requirements

"For us to include cancer as a cause of death on the death certificate we would want to have a tissue diagnosis or a radiological diagnosis"

CONCLUSIONS

Considering the specific challenges providers face in the completion of death certificates identified through thematic analysis of focus groups, there are two major areas for intervention:

1. **Training and regular feedback** to ensure more consistency in the data obtained from death certificates
 - Electronic forms allow for implementation of more strict standards as well as immediate feedback
2. **Careful data-centered approach to the cause of death**, especially in patients with cancer
 - The data-centered approach many oncologists and palliative care physicians take to completing the death certificate is an excellent model for all providers

NEXT STEPS

Additional Focus Group with individuals from the New Hampshire State Cancer Registry, the state medical examiners office and staff at Vital Records

Work with the Geisel School of Medicine and residency programs at DHMC to pilot training materials centered around completing death certificates accurately

Share our data with Vital Records to assist in their creation and implementation of a new app for completing death certificates in New Hampshire

REFERENCES

1. McGivern, Lauri, et al. "Death certification errors and the effect on mortality statistics." *Public Health Reports* 132.6 (2017): 669-675
2. Falci, Laura, et al. "Examination of Cause-of-Death Data Quality Among New York City Deaths Due to Cancer, Pneumonia, or Diabetes From 2010 to 2014." *American journal of epidemiology* 187.1 (2017): 144-152
3. Yin, Daixin, et al. "Effect of misclassified underlying cause of death on survival estimates of colon and rectal cancer." *Journal of the National Cancer Institute* 103.14 (2011): 1130-1133