

Immediate Cause of Death Identification Using Claims

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Background

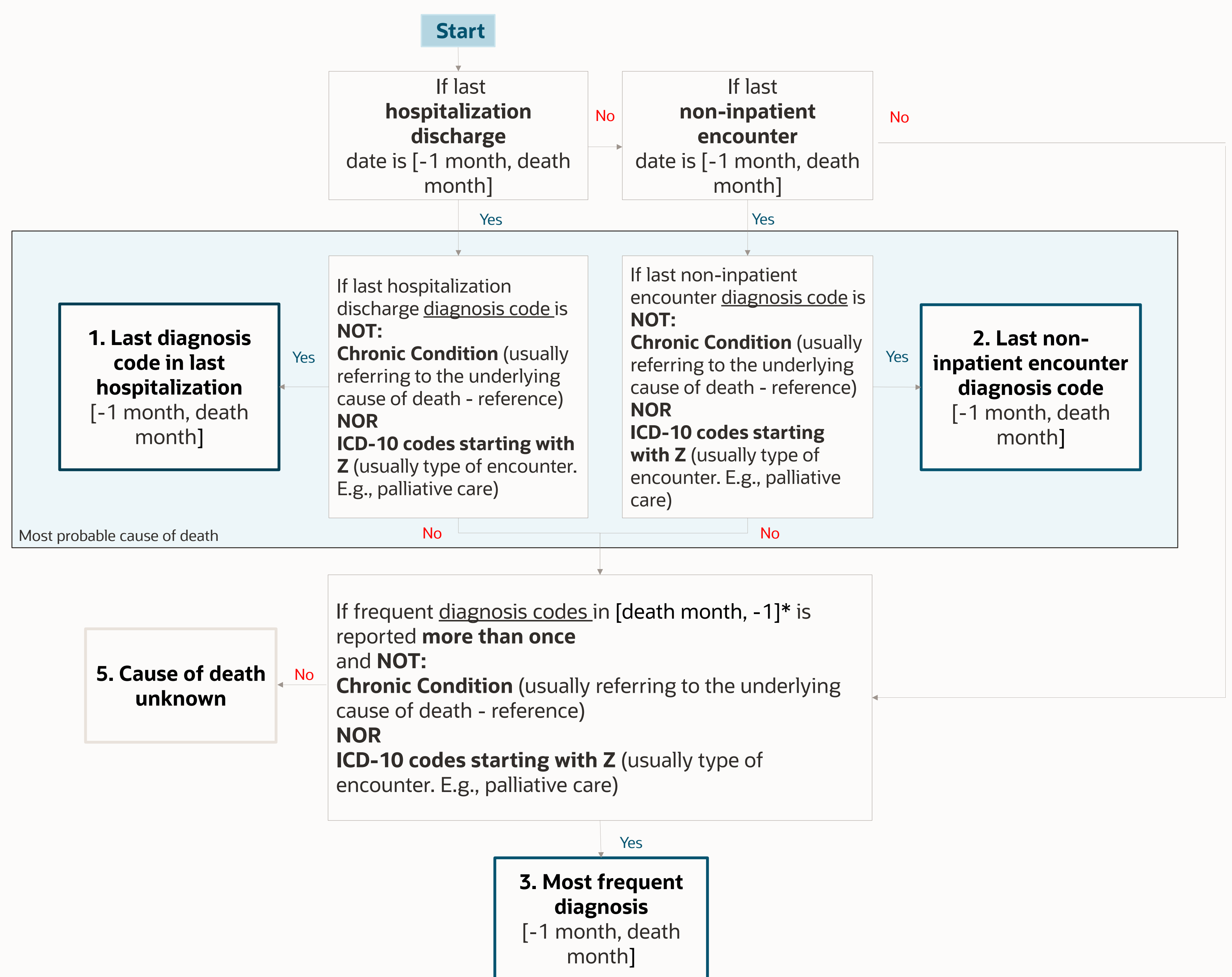
Identifying the immediate cause of death¹ is essential for mortality studies, especially in under-researched conditions.

Objective

In this study, using US claims insurance records, with unavailable death certificate data, we developed an algorithm to identify the most probable immediate cause of death and validated it in medical charts.

Methods

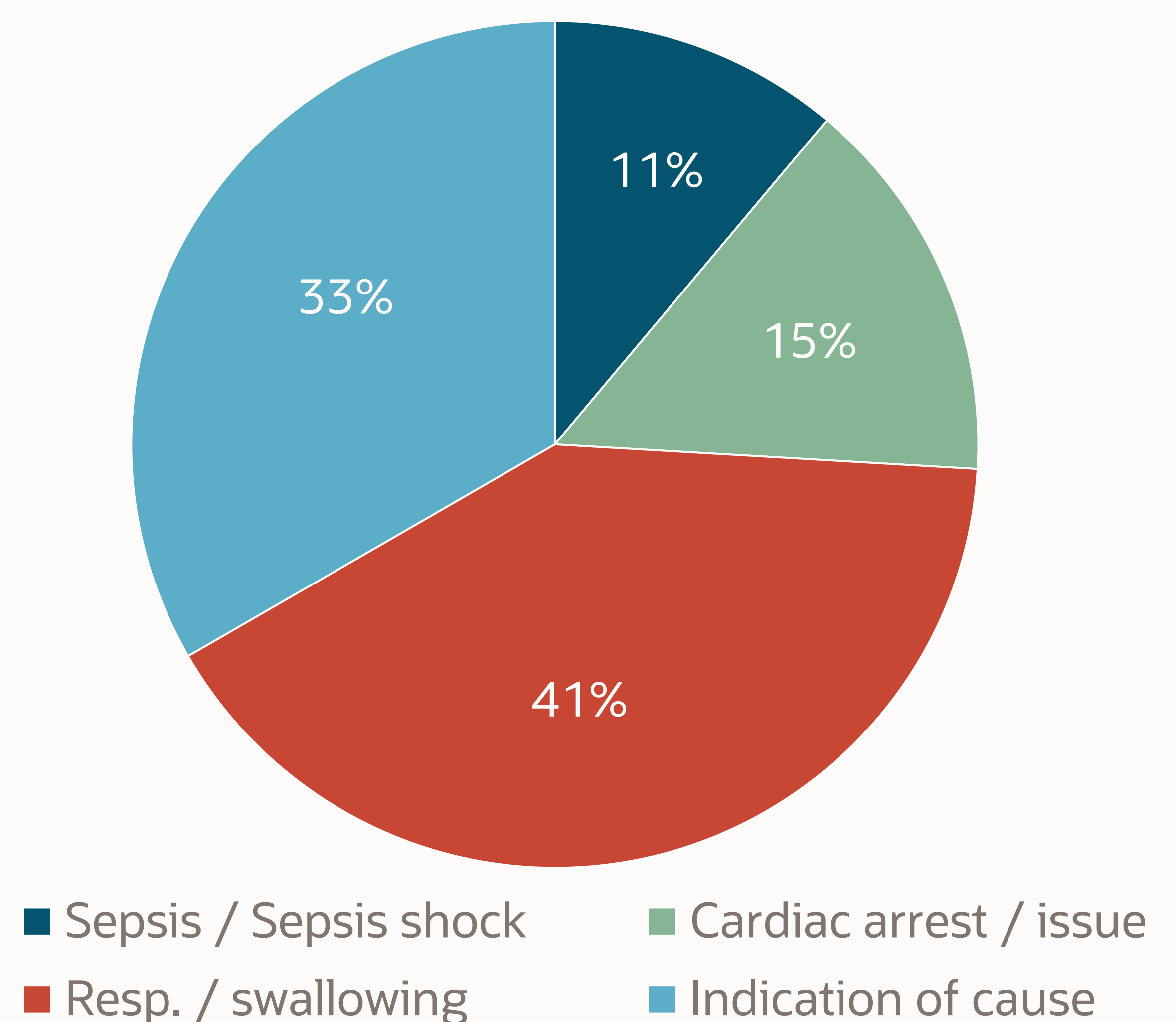
Among patients, in the United States' Oracle Life Sciences claims database, with under-researched conditions, namely GM1 or GM2 gangliosidoses between October 1, 2015, and January 31, 2023, the algorithm included as a priority (a) the last diagnosis on discharge date recorded for the last hospitalization, followed by (b) the last diagnosis in an outpatient encounter, then lastly (c) the most frequent recorded diagnosis. All identified diagnoses were limited to the month of death or the preceding month, and diagnosis codes of chronic condition² (usually referring to underlying cause), or codes of encounter types (like palliative care) were excluded. To validate the results, we reviewed corresponding medical notes before death in Oracle medical charts.



Results

- Among the 46 GM1 or GM2 gangliosidoses patients' deaths, the algorithm identified 27 patients' most probable immediate cause of death.
- 11 (41%) patients had respiratory failure/difficulty such as oropharyngeal dysphagia, 4 (15%) had a cardiac arrest, and 3 (11%) had a sepsis/septic shock.
- The remaining 9 (33%) patients had codes referring to symptoms that indicate, but not refer to, the immediate cause of death, such as fever/chest pain.
- 7 (26%) patients' charts were available for review, among which 6 (22%) had a matching immediate cause of death, and 1 with no notes prior to death.

Most Probable Cause of Death among Patients with GM1 or GM2 gangliosidoses between October 1, 2015, and January 31, 2023



Conclusion

The presented algorithm identified the most probable immediate cause of death, validated in medical notes, where data on death is unavailable. Application of this algorithm in other under-researched conditions, provides an opportunity to understand patients' state immediately before death.

References

- Instructions for Completing the Cause-of-Death Section of the Death Certificate; U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES Centers for Disease Control and Prevention National Center for Health Statistics; available from: https://www.cdc.gov/nchs/data/dvs/blue_form.pdf
- Chronic Condition Indicator Refined for ICD-10-CM. Healthcare Cost and Utilization Project (HCUP). February 2024. Agency for Healthcare Research and Quality, Rockville, MD; available from: https://www.hcup-us.ahrq.gov/toolssoftware/chronic_icd10/chronic_icd10.jsp.