

Using Natural Language Processing to Assess Goals of Care Conversations for Patients with Cancer

Melissa K. Greene, MS, Gloria Broadwater, MS, Donna Niedzwiecki, Ph. D, Thomas W. LeBlanc, MD, MA, Jessica E. Ma, MD, MHSc, David J. Casarett, MD, MA, Brittany A. Davidson, MD

Scholarship/funding: Kirkpatrick Gynecologic Research Scholarship

Background

Goals of care (GOC) discussions during advanced serious illness and end-of-life (EOL) care are critical. Institutions are increasingly tracking the frequency and timing of GOC documentation, but large-scale content assessments have been limited. We aimed to use natural language processing (NLP) to assess GOC documentation quality and associations with EOL care for patients with cancer.

Methods

This is a retrospective review of patients at a single center who died with cancer between 2018-2022 and had documented GOC notes in the last 12 months of life. Eight GOC components were identified: current understanding of illness, information preferences, prognostic disclosure, goals, fears, acceptable function, trade-offs, & family involvement. NLP software searched for the aggregate presence of these components within extracted GOC notes. We evaluated associations between these 8 components and receipt of aggressive EOL care (chemotherapy within 14 days of death, no hospice care, or hospice admission ≤ 3 days of death).

Results

2,031 patients met inclusion criteria. The most common GOC component addressed was family involvement (75.0%) and the least common was fears (21.1%). Only 5.4% had all 8 components documented. More comprehensive GOC notes were associated with lower rates of aggressive EOL care; 73.2% received aggressive care when 0/8 components were documented, compared to 56.8% and 50.3% with 6 or 7 components discussed, respectively. In multivariate logistic regression, GOC components documented (≤ 6 vs ≥ 7) and primary tumor site were independent predictors of aggressive EOL care (p-values < 0.0001).

Conclusion

Increasingly comprehensive and higher quality GOC documentation is associated with a lower likelihood of receiving aggressive EOL care. Opportunities to improve both the quality and documentation of GOC conversations may impact EOL care for patients with cancer.