ATS Highlights 2026:
Critical Care Assembly Early Career Professionals

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Tell us about yourself.

I am a pulmonary and critical care physician at the University of Minnesota. I completed my residency at Rush University Medical Center and my fellowship training at Boston University.

Tell us about your research.

I conduct health services research focused on patterns of care near the end of life and identifying practices that minimize non-beneficial care. My work examines decision making around DNR orders, CPR, and palliative care utilization.

Where do you see yourself in 5 years?

In five years, I hope to be a productive and independent researcher conducting work on end-of-life care that has meaningful translational impact at the bedside.

How has the Critical Care Assembly contributed to your career?

The Critical Care Assembly has connected me with a strong network of early-stage investigators, which has been invaluable for collaboration. In particular, engaging with colleagues through the CLIF network has been an especially rewarding experience.

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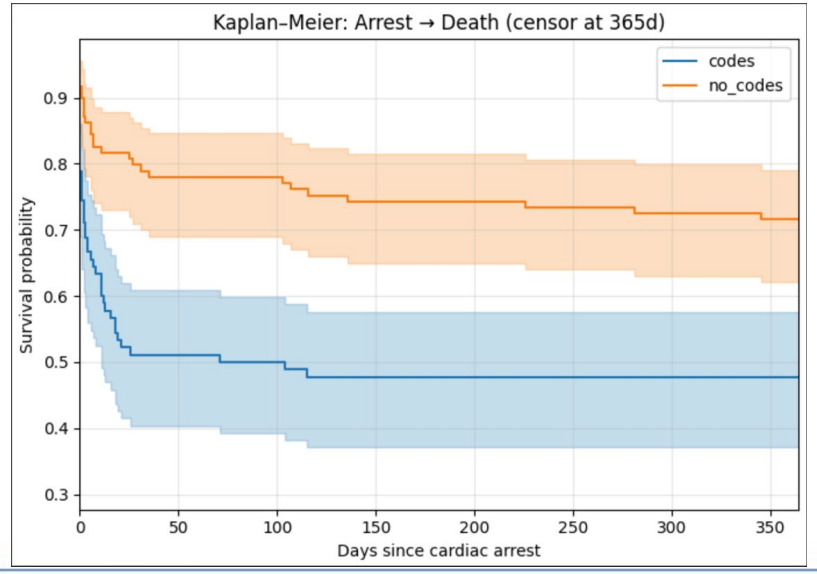
Table 1: Exemplary notes from cohort without ICD-10/CPT code identification
LLM model ICHA event (True Positive)
"Code blue called. Patient is unresponsive. No pulse detected. Provider at bedside. See Code Blue flowsheet."
"Patient had a code blue yesterday in the ER. Patient was intubated and placed on IV pressors."
"He had a 2 minute PEA arrest on 9/14."
LLM model ICHA event (False Positive)
"he presented with hypotension following a syncopal episode"
"However, patient does have a hx of cardiac arrest secondary to respiratory arrest."
"0830 Bedside US performed by Radiology confirms no fetal cardiac activity…[later in the note] RRT paged STAT at 0842
"Tonight shortly prior to arrival the patient was being arrested when he reported to the police that he had swallowed approximately 1 gram of methamphetamine wrapped in cigarette paper"



In-Hospital Cardiac Arrest – Using a Large Language Model to Identify Cases

Rationale: In-hospital cardiac arrest (IHCA) is a catastrophic event associated with a high risk of mortality. IHCA research is limited by the low sensitivity of administrative data and the absence of a structured electronic health records (EHR) field to reliably capture these events.[1] Large language models (LLMs) offer a unique opportunity to identify and extract salient information about cardiac arrest from clinical texts.
Methods: We used EHR data from an 11-hospital health system formatted using the Common Longitudinal ICU data Format (CLIF). Our convenience sample included 311,000 random notes from adult hospital encounters between 2020 and 2022. We used a zero-shot Llama 8b model to classify each note for the occurrence of an IHCA and to extract an event timestamp and a 200-character snippet as evidence. The prompt was, "You are a clinical NLP assistant. You read raw clinical text and decide if a definite in-hospital cardiac arrest event happened (not a risk, concern or rule-out). Only consider the actual text and extract the best timestamp for the event if present." We also identified IHCA using *International Classification of Diseases, Tenth Revision* (ICD-10) (not present on admission) and *Common Procedural Terminology* (CPT) codes. We analyzed the 90-day mortality stratified by identification method (either ICD-10 or notes-only based).
Results: There were a total of 311,000 notes representing 26,207 unique patients. The median age was 49 [IQR 33-67], 57.6% were female, and 74.9% were non-Hispanic White. There were 264 (1.0%) IHCA events identified using ICD-10/CPT codes and an additional 259 (~1%) identified using only LLM-model. A total of 1985 notes were marked as having an IHCA event, representing 462 patients. Using 150 manually reviewed notes, the positive predictive value (PPV) was 26/100 (26%) in the patients without corresponding ICD-10 codes and 30/50 (60%) in the patients with corresponding ICD-10 codes. The model captured instances of IHCA that did not meet the clinically accepted context including pulselessness during death examination or cardiac surgery requiring cessation of cardiac activity.
Conclusions: Despite cardiac arrest being a highly documented event with unique and distinct terminologies that would otherwise not be used routinely (i.e., cardiac arrest, CPR), an open-source foundation model had low PPV in identifying IHCA through clinical notes. Future methods should focus on fine-tuning LLM models using manually curated and enriched notes from ICD-10/CPT identified patients.

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