**Classifying inpatient barriers to discharge using language models**

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**Introduction:** Timely discharge is a key requirement for patient flow in hospitals. The Gold Coast Hospital and Health Service employs a specialised team to facilitate inpatient discharge, coordinating with external organisations including aged care facilities and legal bodies. A key aspect of their role is identifying and classifying barriers that prevent medically fit patients from being discharged.
**Aims:** To develop and implement an automated system that classifies inpatient barriers to discharge from electronic medical records.
**Methods:** A cascaded large language model architecture performs multilabel classification into 6 major classes and 113 subclasses. The system processes unstructured clinical notes to identify multiple discharge barriers per patient. Performance was evaluated using multilabel classification accuracy metrics. Current subset accuracy for the major classes is 0.43 and F1 score is 0.74. For the subclasses, subset accuracy is a pitiful 0.05, which is unsurprising due to the number of subclasses. But hamming accuracy is 0.97 and F1 score is a decent 0.43, producing classifications that aid subsequent human refinement.
**Results:** The model serves as a decision support tool within a human-in-the-loop framework, providing initial discharge barrier classifications and updates when new clinical notes are added. While current accuracy levels require human verification, the system significantly reduces the time required for manual classification.
**Conclusions and Relevance:** The project was bootstrapped with a foundation LLM in order to provide utility to the discharge management team while accumulating labelled data for future fine-tuning. We anticipate that domain-specific model training will ultimately yield superior classification performance compared to foundation models.

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