Background

Clinical Scenarios

Specific cases where the current EHR has failed

- A patient with a "new" finding of unequal pupils prompting a STAT head CT – only to discover patient had "anisocoria" documented in prior neurology notes.
- A patient presenting with a fracture bleeding profusely
- A patient with a blood clot in her lungs, whose treatment was never instituted because this was lost in a handoff.

QPIMed: A Search Engine for the EHR

- Uses regular expressions, a type of pattern matching language to perform Natural Language Processing (NLP) on all data (notes, labs, imaging, etc.) in the EHR
- Traditionally used to perform single word or phrase searches, which have frequently low sensitivity for their desired clinical content
- QPID can also be used to generate much more complex and accurate queries which can be pre-validated against a reference cohort

Query Design and Development

- Over 150 NLP queries based on regular expressions
- Each query compared against 500 randomly-selected, manually-annotated records

Results

Query Performance

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Comparison of sensitivity (Sn) and specificity (Sp) of the single word/phrase (manual) and more complex, pre-defined (QPIMed) versions of the most common search concepts

Future Work

- Plan to study nuances of usage patterns to guide development of contextually aware dashboards (e.g. optimized for rounds, swing, admissions, cross-cover, floors, ICU, etc.)
- Simulation of hospital admissions with and without QPIDMed to understand impact on efficiency and accuracy of data collection
- Plan to study clinical impact of application use including correlation of usage patterns with test ordering, documentation patterns, and clinical outcomes
- Development of next iteration of application with medication administration management, inpatient rounding, and off-hours support

QPIMed: A Search-Driven Automated Chart Biopsy Dashboard

Gaurav Singal MD, Will Gordon MD, Andrew Bishara BS, Zaven Sargsyan MD, Doug Wright MD PhD, Andrew Karson MD

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Screenshots of QPIDMed in Use

- Top: Default screen for a patient with pre-populated queries
- Middle: Placing mouse over "Code Status" icon reveals all occurrences of code status discussion in patient's record
- Bottom: Highlighting an entry shows full content of that note

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