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**Title**

*Identification of Medication Discontinuations in the EHR via Text String Search and Clinical Data Algorithms*

**Priority 1 (Research Category)**

Research methodology and instrument development

**Presenters**

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**Abstract**

Context. There is an urgent need to develop novel methods that accurately identify medication discontinuations in the electronic health record (EHR) to generate evidence to inform deprescribing. Chart review methods require extensive human, financial and organizational resources, and are difficult to use at scale to assess the effectiveness and safety of deprescribing. Objective. Develop and validate a text string search tool to identify medication discontinuation that will be adaptable and scalable across studies and settings. Study Design and Analysis. We developed text strings to identify cases with a high likelihood of medication discontinuation for two different medication classes, oral hypoglycemics and statins, in a population of older adults (age 65+). Text strings were based on verbatim clinical documentation of discontinuations extracted from chart reviews. We then combined these text strings with EHR pharmacy order and dispensing data to create algorithms most likely to identify medication discontinuations. Text strings and algorithms were specific to each medication class to account for clinical documentation reflecting the indicated use. Using sensitivity and specificity, text strings and algorithms were developed in development cohorts and tested in validation cohorts for each medication group. We also explored factors affecting differences in sensitivity and specificity. For example, treating all statins as interchangeable using dispensing data markedly improved algorithm performance as it accounted for frequent adjustments between statins made as part of treatment intensification. Results. For oral hypoglycemics (N=467), the best performing algorithm had a sensitivity of 82% to 87% and specificity of 83% to 84% in identifying true discontinuations in developmental (N=233) and validation (N=234) cohorts, respectively. Text strings alone had a sensitivity of 69% to 86% and specificity of 79% to

78% in development and validation cohorts. For statins (N=282), the best performing algorithm had a sensitivity of 77% to 85% and a specificity of 79% to 86%. Text strings alone had a sensitivity of 44% to 60% and specificity of 90% to 90% in development (N=141) and validation (N=141) cohorts. Conclusions. Applying text string search methods combined with clinical data can identify medication discontinuations and help generate evidence to inform deprescribing.

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