

## A Greedy Alignment Algorithm Supporting Medication Reconciliation

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**Abstract :** Reconciling patient medication lists from multiple sources is a critical task supporting the safe delivery of patient care. Manual reconciliation is a time-consuming and error-prone process, and recently attempts have been made to develop efficiency- and safety-oriented automated support for professionals performing the task. An important capability of any such support system is automated alignment - finding which medications from a list correspond to which medications from a different source, regardless of misspellings, naming differences (e.g. brand name vs. generic), or changes in treatment (e.g. switching a patient from one antidepressant class to another). This work describes a new algorithmic solution to this alignment task, using a greedy matching approach based on string similarity, edit distances, concept extraction and normalization, and synonym search derived from the RxNorm nomenclature. The accuracy of this algorithm was evaluated against a gold-standard corpus of 681 medication records; this evaluation found that the algorithm predicted alignments with 99% precision and 91% recall. This performance is sufficient to support decision support applications for medication reconciliation.

**Keywords :** clinical decision support, medication reconciliation, natural language processing, RxNorm

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