

Automated Data Extraction from Electronic Medical Records in Rheumatology: An Ontario Best Practices Research Initiative Pilot Project

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Objectives:

To assess the feasibility of extracting clinical data from Ontario rheumatologists' Electronic Medical Records (EMR), and evaluate the integrity of the data for quality improvement and research purposes.

Methods:

In this initial phase of testing, four community rheumatologists currently participating in the Ontario Best Practices Research Initiative (OBRI) and using the Accuro EMR, agreed to participate. Fig.P Software Incorporated installed a data sync program into the rheumatologists' EMRs and developed algorithms to extract the same data as routinely collected by OBRI via faxed case report forms (CRFs). After identifying OBRI participants within each EMR, demographic data, enrollment date, follow up assessment dates, primary outcomes (patient and physician globals, tender and swollen joint counts), comorbidities and medications were extracted. Data extracted by Fig.P from each EMR was compared to data previously received (via faxed CRFs) and entered in the OBRI database. Data was only compared for OBRI patients enrolled into the OBRI after the rheumatologist started using their EMR.

Results:

Feasibility: Fig.P worked with each rheumatologist to identify where the data of interest was being entered into their EMR. While Fig.P successfully extracted data from all test sites, new computer programming/algorithms were required for each site.

Data Integrity: In total, 107 OBRI patients were identified by Fig.P. The identification of OBRI patients within the EMR varied from 23% - 100% across the four sites. Enrollment dates could only be extracted for 0-43% of the patients. Patient demographics extracted by Fig.P (including patient name, address, telephone number, date of birth, and gender) matched data in the OBRI database in 67% - 100% of cases. Agreement in patient and physician globals ranged from 34% - 94% and from 56% - 94% for tender and swollen joint counts, across the four sites. Documentation of comorbidities and medications in the EMR were not associated with dates and were therefore not compared to data found in the OBRI database.

Conclusions:

Clinical data extraction from Accuro is feasible, however there is great variability in how rheumatologists are documenting patient assessments within their EMR. Patient demographics and primary outcomes can be accurately extracted from Accuro. Assessments/values documented on the OBRI CRF were not always entered into the EMR in a standardized manner, accounting for the poor agreement at some sites. To support rheumatology care quality improvement, we recommend implementation of the agreed upon core set of clinical variables currently being finalized by the Arthritis Alliance of Canada and the development of a consensus on standardization data entry for those variables within all EMR platforms.