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**POSTER ABSTRACT****Timely access to Canadian primary care electronic medical record data for secondary use**

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***Introduction***

To enable population-wide research and quality improvement, practice-based research networks (PBRNs) across Canada have been extracting and aggregating patients' Electronic Medical Records (EMR) data from primary care clinics to their servers in a privacy-preserving way. These PBRNs have the capability of producing quarterly extractions of de-identified data from multiple EMR vendors. However, current EMR data extraction processes only include limited data fields, and are manual and laborious, time-consuming and costly. As such, projects using PBRN-processed data are often less comprehensive and time-lagged, making project findings not as actionable for policymakers as they could be.

***Aims Objectives Theory or Methods***

To improve the timeliness and comprehensiveness of PBRN data acquisition processes, we developed and implemented a novel frequent, extract-transform-load (ETL) tool. The tool extracts patient EMR data from six OSCAR EMR-using clinics and automatically loads the data onto one of five target PBRN servers in either Ontario or B.C. A four-step method of Design, Develop, Test and Deploy was used. This encompassed building a fit-for-purpose system architecture, connectivity, tooling, and ETL application logic. Queries to validate the business logic were regularly executed against the transformed data. At project end, loaded data were then human-validated for completeness, accuracy, and timeliness.

***Highlights or Results or Key Findings***

Two types of deployment options were developed: 1) Distributed deployment, where an ETL server is located at a clinic's site; and 2) Centralized deployment, where an ETL server is located at the PBRN, with Virtual Private Network connections to a clinic's server. For each of the six clinics, the ETL tool was deployed in the production or back-up server environment using one of the two deployments options and has since been scheduled to automatically run daily. For one test clinic, the results indicate that with 22,122 patients included in the extract, 100% of all intended data fields were captured, including the progress note data tables, and data quality was significantly improved as compared to the previous manual extraction process. In this test clinic, extraction

runtime dropped from 240 minutes to 54 minutes to extract all records, and to 9.5 minutes for the novel daily incremental extract.

### ***Conclusions***

We have succeeded in demonstrating a real-world ETL proof-of-concept that enables access to timely, high-quality primary care EMR data for secondary use in select clinics associated with the following PBRNs: UTOPIAN, NOSM-PBRN, EON, MUSIC and BC-PHCRN. Since operationalized, one research group has already requested access to the tool's data.

### ***Implications for applicability/transferability sustainability and limitations***

Primary care EMRs contain rich clinical data for health services research unavailable anywhere else. For this project, EMR vendor cooperation was limited. Ideally in the future, using this privacy-compliant, automated ETL tool at scale for all PBRN-affiliated clinics and EMR vendors could make project findings more comprehensive and timely.