

Primary care data sharing (PCDS) is a time-limited, small-scale regional initiative as part of the cSWO Program to explore the value, challenges and feasibility of sharing a pre-defined dataset from primary care electronic medical records (EMRs) to be shared amongst health service providers within the patients' circle of care through the electronic health record (EHR). This proof of concept will inform the evolving provincial primary care data sharing strategy.

The evaluation and realization of value is an important component of the cSWO Program that supports and delivers the adoption of the integrated EHR across south west Ontario (SWO). By pursuing the measurement of organizational value (i.e. reduction in health care professional time required to find information) and clinical value (i.e. reduction in potential adverse drug events, PADEs) we can learn about how patients benefit from better informed clinical decision-making.

The PCDS proof of concept project team works with primary care teams to improve the quality of EMR data in the Cumulative Patient Profile (CPP) and shares that data to a clinical data repository (CDR). Clinicians along the continuum of care will be able to view CPP data as part of the integrated EHR via the cSWO Regional Clinical Viewer, ClinicalConnect™.

Value proposition

When EMR data is standardized and searchable, the potential exists to build predictive models that use this data to identify patients with complex care needs, who are most likely to be high users of the health care system. This in turn allows clinicians to address the needs of these patients and focus on providing preventative care, with the end goal of improving patient outcomes and reducing use and avoidable costs of health care resources.

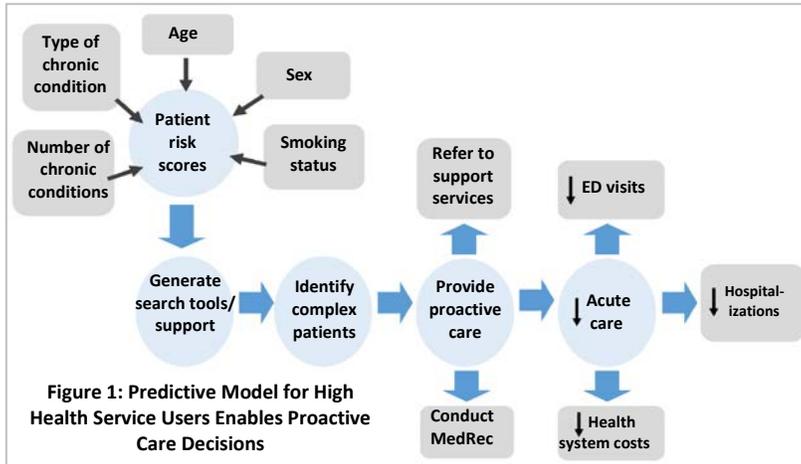
Using EMR data to identify patients likely to access acute care

In order to provide patients with increased proactive care, which has the potential to reduce admissions and other costly uses of the health care system, clinicians first need to have a way of identifying which of their patients fall into the category of "complex". Previous research has demonstrated the value of using EMR data to make clinically meaningful predictions about patients, including those who are more likely to access acute care services.¹ However, little of this research has used data that can be easily accessed by primary care providers in order to identify these patients within their own rosters due to EMR data being unstandardized and in some cases, incomplete.¹ The use of standardized EMR data within primary care practices would allow for the creation of a predictive model that could identify a listing of complex patients who would benefit from increased proactive care within the community.

Clinicians at the Centre for Family Medicine Family Health Team (CFFM FHT) recently participated in a process of using their standardized EMR data to identify potential high health service users. This predictive analytics model was developed by the eHealth Centre of Excellence and incorporated the data on number of diagnosed chronic conditions from the EMR problem list, types of diagnosed chronic conditions (selected from a list of 18 chronic conditions standardized in the EMR problem list), smoking status, age, and sex of each patient.² These variables have all been shown to be predictors of high health service use.^{3,4}

Using the CFFM FHT's patient database, the predictive analytics model was used to generate a listing of 132 patients who were predicted at 75 per cent chance or greater of accessing acute care services within the following 12 months. For manageability purposes, the list was further narrowed to 103 patients 65 years of age and older who were taking five or more medications (known as polypharmacy), as increasing age and polypharmacy are also major predictors of high health service use.⁵

Taking steps to proactively care for complex patients within primary care



As seen in figure 1 (left), standardized data elements within the primary care EMR can be used to build a model to predict which patients are likely to be high health system users. Findings from predictive modeling results can be used as criteria to build a search tool/report to aid clinicians in identifying their patients with complex medical needs. The clinician can then review those patients' records and consider opportunities for proactive care in order to better support the patient within the community, and potentially reduce their likelihood of accessing acute care services.

Opportunities for proactive care within the primary care setting include referring patients to support services such as Health Links and conducting a medication reconciliation (MedRec). Performing a MedRec with patients each time they visit their primary care provider can help to reduce polypharmacy⁶, the number of inappropriate drugs prescribed to patients⁷ and adverse drug events.⁸ CFFM FHT is currently conducting a study in which the FHT pharmacists are performing medication reconciliations with 75 patients identified using the predictive model to determine whether this approach results in fewer visits to the emergency department.

Future work to improve data standardization will be vital in enabling the use of predictive models to identify patients with complex medical needs. The literature suggests that there are other variables that were not included in CFFM FHT's predictive model – due to lack of standardization – that may also be predictive of high health system use, such as other chronic conditions, risk factors (e.g., alcohol and illicit drug use), socioeconomic status, social isolation, and functional status.⁹ Standardizing data on these variables could improve the accuracy of predictive models to identify patients likely to be high health service users.

“The identification and predictive modeling process could not have been done without clinicians standardizing the way they enter each problem in the EMR. I believe this approach could improve care in the near future by providing identified patients with more interdisciplinary support, hopefully in turn preventing ER visits and hospital admissions.”

- Kathryn Flanigan, Nurse Practitioner, CFFM FHT

Questions

For questions, comments, or to participate in cSWO Program's Benefits Realization program, please contact: Lori-Anne Huebner, Benefits Realization Lead, cSWO Change Management and Adoption Delivery Partner, eHealth Centre of Excellence: Lori-Anne.Huebner@ehealthCE.ca

Sources

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