Getting to usable EMR data

Karim Keshavjee MD MBA CCFP CPHIMS   Tyler Williamson PhD   Ken Martin MSc   Rick Truant
Babak Aliarzadeh MD MPH   Ahmad Ghany MSc   Michelle Greiver MD MSc CCFP FCFP

In Canada, use of electronic medical records (EMRs) continues to rise. More than 64% of primary care physicians now use EMRs.[1] However, the full potential of these systems has yet to be realized. In theory, EMRs can lead to fewer medication errors, offer the ability to monitor the quality and efficiency of practice, and result in benefits to the health care system by allowing better monitoring of diseases in the population and facilitating research.[2] For these benefits to occur, data entered into primary care EMRs need to be standardized (so that they are comparable), of high quality, available in a timely manner, and in a form usable by researchers and system planners. Currently, EMR vendors operate in silos; each system applies its own approach to capturing data. As a result, data recorded in one system cannot easily be compared to data from another. What can be done to ensure that data captured by our EMRs are more usable by clinicians and by our health care system?

One potential solution is the "EMR Content Standard"[3] being developed by the Canadian Institute for Health Information and Canada Health Infoway, which stipulates key data elements to be used in all EMRs.[2] These important policy players are considering 3 approaches to standardization. The first places responsibility for data quality in the hands of physicians: at the time they document care, physicians would use drop-down menus, check boxes, and other tools built into the EMR to enter standardized information. This approach would increase the burden on physicians, ultimately taking time away from patient care. Also, because of the inherent ambiguity and uncertainty in primary care diagnoses, physicians would likely resist the constraints of structured data entry.

The second approach puts the responsibility on the data's end users—researchers, policy makers, and system managers. This approach would allow physicians to continue using their current data collection approaches and would not require them to spend precious time standardizing documentation; it would instead put the burden on researchers and system planners, who would code and clean the data. This approach does not guarantee that data would be coded and cleaned consistently, and could lead to conflicting reports and conclusions. Also, given how difficult it can be to clean and code EMR data, this approach would increase the cost of data and create delays in analysis, since each end user would have to conduct its own validation studies to confirm its findings.

The third approach is to have EMR vendors provide automated data cleaning. This would not interfere with physician practice and could result in high-quality data. However, there are approximately 25 certified EMR vendors in Canada,

and most do not have the expertise or capacity to provide this service. Validating and certifying 25 different data-cleaning processes would be costly and time-consuming. This approach would shift the problem without solving it.

CPCSSN has demonstrated another way to approach this challenge: to have a third party, such as CPCSSN, perform automated cleaning of EMR data. This approach neither incurs increased physician burden (first approach) nor necessitates data cleaning and coding by multiple end users (second approach) or EMR vendors (third approach). CPCSSN can easily address issues of transparency by publishing its data-cleaning algorithms and validation methodology in peer-reviewed journals and on its website. Data are cleaned and validated once and usable by many different end users. This approach also results in reports and analyses comparable across different institutions using EMR data. CPCSSN has the added credibility of having shown it can produce high-quality, timely data with primary care researchers and providers working together.

This is not a comprehensive analysis of potential approaches to improving EMR data quality, nor is it an exhaustive evaluation of the EMR Content Standard. Considerable work is being done by world-class Canadian researchers studying other methods for improving EMR data quality. Among the options, CPCSSN provides one low-cost, low-physician-burden method of data collection that is capable now of providing high-quality EMR data in a timely manner and for a host of potential users across Canada. 🍁

References
1. College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada. *National Physician Survey 2013.* Mississauga, ON: College of Family Physicians of Canada; 2013. Available from: **www.nationalphysiciansurvey.ca**. Accessed 2013 Dec 20.
2. Greiver M, Keshavjee K, Jackson D, Forst B, Martin K, Aliarzadeh B. Sentinel feedback: path to meaningful use of EMRs. *Can Fam Physician* 2012;58:1168 (Eng), e611-2 (Fr).
3. CIHI [website]. *EMR content standard reports.* Ottawa, ON: CIHI; 2014. Available from: **https://secure.cihi.ca/estore/productSeries.htm?pc=PCC553**. Accessed 2014 Mar 7.

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