

# Measuring Maturity of Use for Electronic Medical Records (EMRs) in British Columbia: The Physician Information Technology Office (PITO)

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## Abstract

**This article examines British Columbia (BC)'s Physician Information Technology Office's efforts to measure and improve the use of electronic medical records (EMRs) by select practices in BC with an assessment of their progress using a maturity model, and targeted support. The follow-up assessments showed substantial increases in the physicians' scores resulting from action plans that comprised a series of tailored support activities. Specifically, there was an increase from 21% to 83% of physicians who could demonstrate that they used their EMRs as the principal method of record-keeping.**

## Electronic Medical Records: What, Where and How

An electronic medical record (EMR) is a computer-based medical record tailored to a clinician's practice or organization. These records detail demographics, medical and drug history and diagnostic information such as laboratory results and findings from diagnostic imaging, as well as care plans and future recalls. EMRs often integrate clinical functions with tools to manage practice administration activities such as billing and scheduling (PricewaterhouseCoopers 2013).

The use of EMRs by Canadian physicians has increased dramatically over the past few years, although the level of use varies widely across provinces. In 2007, for example, only 24% of primary care physicians used EMRs; by 2014, that number had increased to 77% (National Physician Survey 2007, 2014). The adoption of EMRs by community-based specialists has also

increased, from 28% of physicians in 2007 to 64% in 2014 (National Physician Survey 2014).

Despite these gains, the use of EMRs in primary care in Canada lags behind that of many other countries, such as Australia, New Zealand, the United Kingdom and the Netherlands, where more than 90% of primary care physicians use EMRs (Schoen et al. 2012; Canada Health Infoway 2013).

Clinicians, patients and the health system reap substantial benefits from EMR adoption, including efficiencies, reduced duplication and improved collaboration. However, some important benefits to clinical practice and patient outcomes are only seen when primary care physicians and their clinical teams begin using these systems in an advanced manner (PricewaterhouseCoopers 2013; COACH 2013).

A number of recent studies/assessments have underscored the importance of increasing the level of maturity of use of EMRs to achieve greater clinical value and healthcare quality (Chaudhry et al. 2006; Friedberg et al. 2009; Johnston et al. 2003; Klein Woolthuis et al. 2007; Loo et al. 2011; Poon et al. 2010; Tundia et al. 2012). Even in countries with high levels of EMR use, there is wide variation in maturity (Schoen et al. 2012). This ongoing challenge – to improve the use of EMRs – is the focus of a number of initiatives in Canada.

## EMR Adoption in Canada: Initiatives and Evaluation

While Canadian EMR usage has increased significantly in the past few years, wide variations do exist between provinces in the

rate and maturity level of adoption. Primary care physicians in British Columbia (BC) are among the highest adopters, at 83% (National Physician Survey 2014), and are among the more advanced users. For example, in 2012, 50% of BC physicians routinely use electronic prescribing of medication, 61% can easily generate a patient list by diagnosis and 54% can provide clinical summaries for their patients (Health Council of Canada 2013).

EMR adoption in Canada has been driven by investments from physicians, provincial and territorial governments and Canada Health Infoway. Along with Alberta, Ontario and Nova Scotia, BC was an early initiator of a provincial EMR program in 2008. All four of these provinces have primary care EMR adoption rates above the national average of 77% (National Physician Survey 2014). In many cases, provincial EMR programs complement financial support for practices with other tools and resources such as clinician peer support networks, which help clinicians choose an EMR and support more mature use of the system.

Three jurisdictions – BC, Alberta and Ontario – have been leaders in creating assessment tools and initiatives to measure the level of EMR adoption maturity (COACH 2013).

Since 2006, the Physician Information Technology Office (PITO) has been conducting a targeted evaluation of the impact of EMRs, including an applied adoption model assessment around physicians' level of "meaningful use" of EMR technology (PITO 2013).

### **The Mature Use of EMRs**

Meaningful use is a concept that was developed in the United States' healthcare sector, which sets specific objectives that healthcare professionals and hospitals must achieve to qualify for Medicare and Medicaid incentive programs. Infoway has similarly employed adoption targets and "clinical value" levels as mechanisms to drive mature use across digital health technologies in its investments.

Practically, more mature use of EMRs includes things like richer functionality (e.g., decision support), more complete and structured data, and redesigning processes for clinicians and administrative staff. The evidence shows that these kinds of attributes of maturity are essential drivers of the increases in efficiency and effectiveness that clinicians and healthcare system planners are seeking from EMR investments (PricewaterhouseCoopers 2013).

### **PITO and the Adoption Model**

The project discussed in this article included PITO's own Clinical Value Model, followed by a series of post-implementation support activities and, finally, a period of reassessment. The findings noted that there was a significant improvement in scores once physician practices went through this process.

PITO "supports physicians and clinic staff preparing for, adopting and optimizing EMRs." This support includes:

- funding,
- planning,
- implementation and transition support,
- post-implementation support,
- communities of practice and peer support and
- clinical innovation support.

The model development began by taking the concepts of meaningful use and adoption models as used in other jurisdictions (including the United States and some Canadian provinces), and creating a tailored operational model to assess the level of meaningful use of EMRs by primary care physician practices in the province.

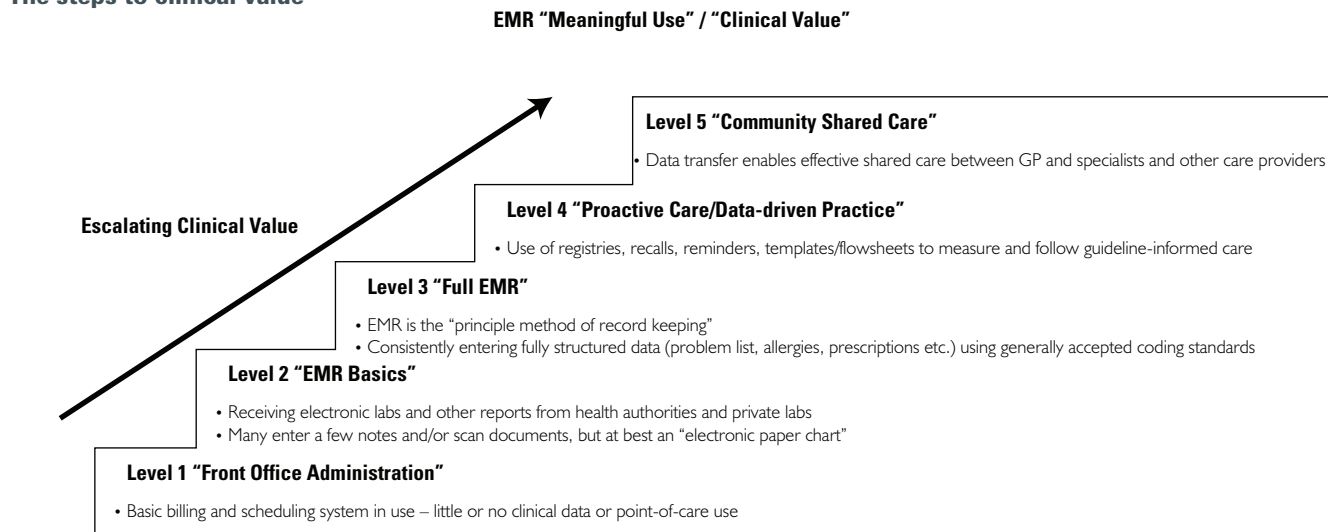
The model created and used by PITO for assessment is centred around a five-level scale (Figure 1), each level of which contains a number of key functionalities. For example, Level 1 use of an EMR is the simplest, encompassing patient registration, scheduling and billing functions. When a physician reaches Level 3 (what PITO considers to be a "baseline" level of maturity), he or she is using a suite of EMR functionalities to create structured medical summaries; record drug interactions, medications and lab results; create patient handouts and chart summaries; create and track referrals; and conduct advanced scheduling and billing. At Level 3, the EMR is considered to be the clinician's principal method of record-keeping.

At Level 5, the highest level of use, integrated care plans are developed and shared across the care team; proactive population health management procedures and reporting on associated quality indicators are standard practice; and patients have online access to scheduling and their patient record, and can also request referrals or consult with a practice clinician about a health matter or concern (Figure 2).

To ascertain which level a physician practice had reached, PITO's practice automation coaches (PACs) used a subjective assessment tool – a questionnaire comprising 80 questions that address a range of different workflow areas. The questionnaire was conducted via in-person interviews with physicians enrolled in the program, to uncover how well, and how routinely, clinicians were using their EMRs across the clinical and practice domains in the model. PITO's approximately two dozen PACs work as facilitators of change, helping practices identify gaps, plan next steps to achieve their goals, create value and, eventually, work on more complex tasks to help refine how a practice's EMR can support its specific needs. The coaches have complex skill sets and come from diverse backgrounds.

After completing the questionnaire, physicians were given two scores: one for clinical effectiveness, the main focus of the assessment, and one for practice efficiency, so that they could

**FIGURE 1.**  
The steps to clinical value



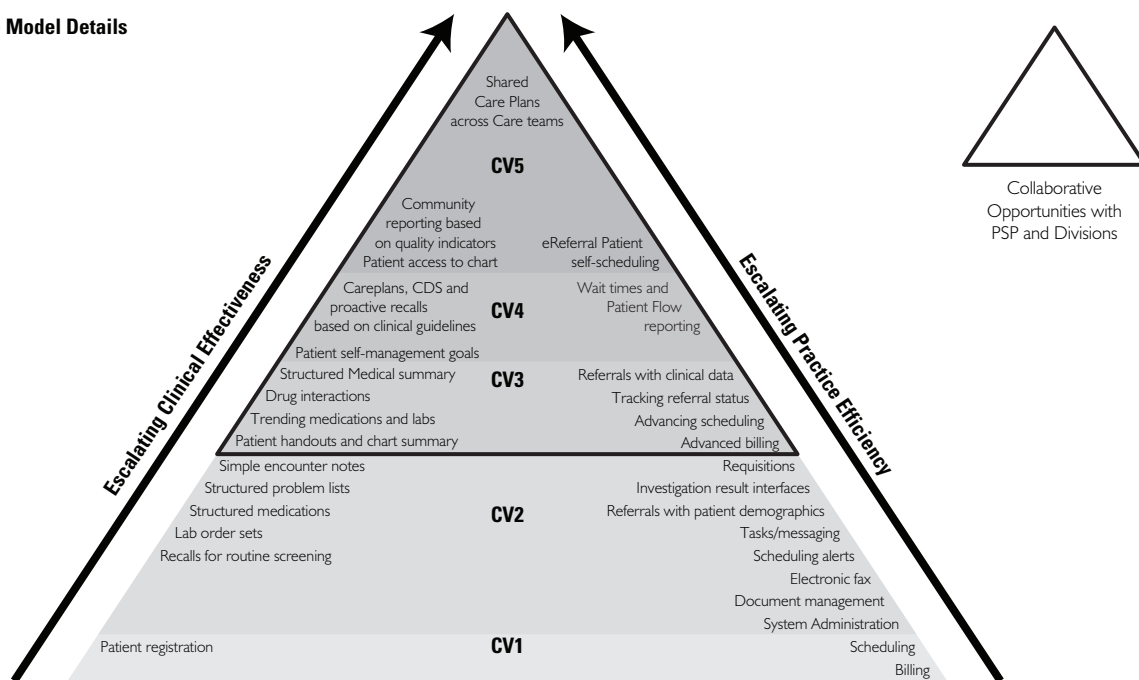
understand what they could be doing better, and where the gaps in their level of use could be supported by actionable opportunities for improvement. Following the initial assessment, each PAC created an action plan that identified gaps and pinpointed what changes and/or modifications physicians needed to make to bring them up to at least a Level 3. Action plans were created collaboratively by a practice's physicians, medical office assistants and the PAC, and were based on the practice's clinical

and practice efficiency goals as identified through the initial assessment. The action plan becomes a "road map" or project plan through which a practice can achieve the specific goals they have set. It includes tasks, responsible owners and timelines for completion.

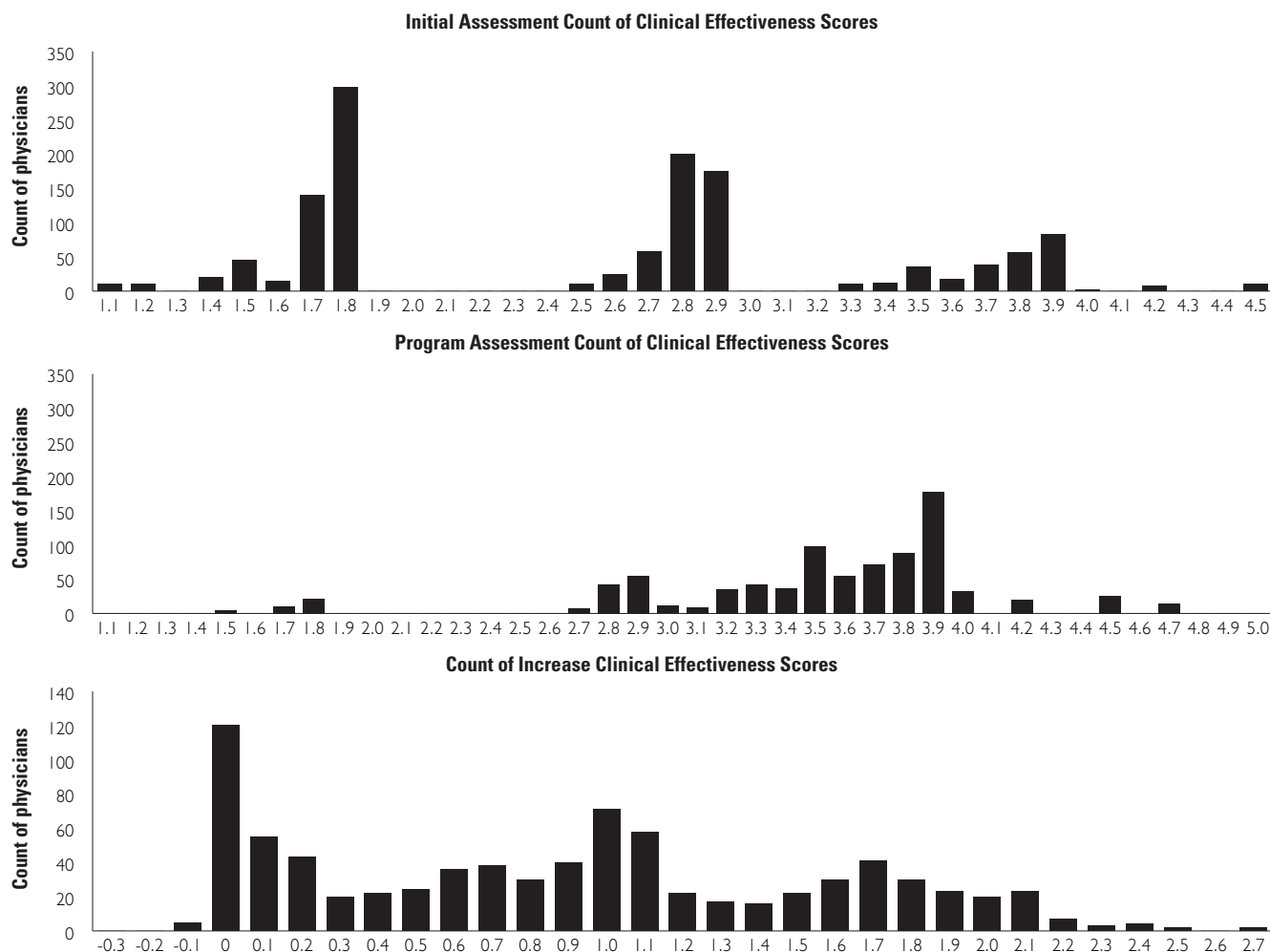
In a 2013 survey of 561 participants in the programs, 95% felt that the clinical value assessment reflected their level of EMR use either "well" or "very well." Ninety-four percent felt

**FIGURE 2.**  
The clinical value model

**GP Clinical Value Model Details**



**FIGURE 3.**  
Clinical value model assessment results



that the practice optimization plan addressed the needs identified during the assessment (PITO survey results).

Between October 2011 and March 2014, PITO’s coaches conducted an initial assessment with 1,217 physicians from across BC. Post-support assessments were completed by 802 physicians. The physicians’ average score increased consistently across the post-implementation assessment period. At the initial assessment, only 21% of the 1,217 participating physicians indicated that the EMR was their principal method of record-keeping and was routinely used as a mechanism for reminders, alerts or creation of templates (i.e., Level 3 or above). After the PACs’ assessment and action plan interventions, 83% of the 802 physicians participating in the progress assessment were at Level 3, an increase from an average score of 2.5 to 3.5 (Figure 3). Level 3 includes consistently entering fully structured data (problem list, allergies, prescriptions, etc.) using generally accepted coding standards.

### Discussion

The increase in average scores in this project, and the specific kinds of functionality adopted, are relevant for increasing the value of EMRs to clinicians and patients. The support provided by PITO was observed to be an important factor in these maturity improvements.

One participant, for example, a general practitioner and emergency department physician who implemented an EMR in his practice before the PITO project began in 2010, noted that PITO’s support was crucial to moving his peers towards higher levels of meaningful use of the EMR. PITO’s ongoing coaching was also critical because his peers endeavoured to attain higher levels of clinical value domains in the PITO model. This participant subsequently became a PITO peer mentor to other physicians in his area.

Beyond the assistance offered by PACs, the Peer Mentor Support Network (part of Infoway’s Clinician Peer Support

Network) and Community of Practice forums are vital to helping physicians both successfully adopt EMRs and move up the meaningful use scale. An evaluation of PITO's Peer Network found that 88% of the respondents felt that their peer mentor had the appropriate skills and experience to meet their needs, and stated that they would recommend the peer engagement service to their colleagues (PITO 2013). Physicians who are on the same EMR system meet regularly to share their expertise and knowledge, and address common issues.

As well, PITO's Community of Practice forums, which focus on local community needs, is a more structured way to provide support. The Cowichan Valley Community of Practice, for example, developed a project to support and improve understanding of the unique needs of maternity care clinics, and support the advancement in capability of EMRs to meet those needs. Other post-implementation support systems include medical office assistant peer mentors, educational events, a resource library, support from EMR vendors and more.

Complimenting support activities such as these with a structured approach to measuring maturity appears to be an important combination. The measurement provides a basis for understanding the current state and developing actions to achieve the desired future state. Importantly, the measurement also provides a basis for demonstrating the impact of support activities. One desirable outcome from this project would be an increased focus on researching the relationship between post-implementation support, maturity and benefits from digital health solutions in general. This could inform and encourage such critical activities.

## Conclusion

Although PITO is well on the way to moving physicians in BC up the maturity scale in the use of their EMRs, it is clear that the process is a long-term project to improve physicians' use of the system, because it is extremely labour-intensive. EMR programs and digital health organizations across Canada continue to seek new processes to provide effective and efficient post-implementation support.

PITO's findings add to the evidence confirming that physicians do need ongoing support and training – before, during and after EMR implementation – to be able to integrate their EMRs into their practice, and to use them to their full range of capabilities.

PITO's structured approach to measuring maturity allowed physicians to concretely understand where they were *vis-à-vis* their level of meaningful use of EMRs, and to target where they would like to be and how to get there. The initiative's customized support to physicians through PITO's PACs and peer mentors networks, accompanied by its structured measurement approach, has clearly helped physicians increase the maturity of use of their EMRs.

The continued focus on maturity and related concepts by EMR programs across Canada, research organizations like the Commonwealth Fund, associations like COACH and clinicians seeking greater value from their EMRs promises to keep this discussion in the forefront. The challenge will be how to continue moving from discussion to meaningful, measurable progress, not just for community EMRs but for all sorts of digital health solutions. The work of PITO, as described in this article, is clearly very important as an example of a practical approach that demonstrates progress and leads to increased value from investments. It is an approach that could be adapted and applied across the country and indeed across solutions. Ideally in the future, discussions with clinicians about how to use technology available to them will be as commonplace as discussions about preferred treatment options, and similarly based on evidence. **HQ**

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