

## Knowing we practise good medicine

### *Implementing the electronic medical record in family practice*

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**W**e aim to be good physicians, providing safe and effective care to our patients. But is that really the case? Family physicians deliver care through the process of our practices and the method of our consultations. To understand what sort of doctors we are, we need to evaluate both aspects of care. Your initial response is probably scepticism or disbelief. You don't have the time or the energy, and even if you did—so what?

We would be concerned if half our patients with hypertension had systolic blood pressures greater than 160 mm Hg; if our patients with suspected herpes zoster had no way of seeing us within 3 days; if we ordered a blood test, urine test, or x-ray scan at every consultation; if we didn't listen to patients; or if we finished every consultation by pushing a prescription at the patient. We don't believe these things occur, but how can we be certain? The latter issues probably require video recording of our consultations.<sup>1</sup> For the others, we need to evaluate our clinical practices. Evaluation is a cyclical process of measuring what we do, making changes if required, then measuring again.<sup>2</sup> To facilitate this we need electronic records.

In 1987, one of the authors (M.D.) introduced the first electronic medical record (EMR) into his UK practice. A “stand alone” personal computer was used for recording prescriptions and diagnoses of patients with repeat prescriptions. This came about following a lengthy and costly paper-chart evaluation promoted by the UK equivalent of the College of Family Physicians of Canada, which revealed both a lack of information and a lack of practice organization for recording factors related to cardiovascular disease, such as blood pressure.

Over the next 10 years, a full electronic record was incrementally built up so as not to interfere with clinical care and consultations. The last evaluation performed followed a talk on the potential benefits of pneumococcal vaccine after splenectomy. Twelve patients in M.D.'s practice of 7000 had had splenectomy recorded. Six had records of vaccination; of the remaining 6, 3 had records of vaccination found in their legacy paper charts, and 3 were invited in to see the nurse to discuss vaccination. The whole process was accomplished in less than 5 minutes. This anecdote reflects the substantial body of evidence for auditing health care using electronic records.<sup>3-5</sup>

### Reservations

When M.D. arrived in Canada 6 years ago, he was surprised to find that EMRs were unusual, present in less

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than 10% of practices. This was in spite of several provincial government top-down attempts to introduce them into mainstream practice. Family physicians in Canada have disclosed a number of barriers to the implementation of EMRs, which might explain why North American countries are lagging behind many other developed countries in this respect.

**Time constraints.** The SOAP (subjective, objective, assessment, plan) note—the typical medical documentation practice used to record information in a patient's chart—might be 240 words long for a complex psychiatric history, 128 for a regular history, and as few as 27 for a blood pressure check. The average typing speed for a doctor using the “hunt and peck” approach is likely to be 30 words per minute, so that a note might take 1 to 4 minutes depending on the amount of text required.<sup>6</sup> The usual number of problems recorded might be, say, 3 in primary care,<sup>7</sup> which means several SOAP notes or additions to current problem lists would take a considerable amount of time. Little has been written about handwriting speeds among professionals, but the information available suggests that most write at an average of 38 words per minute; however, when concentrating, this can drop to 16 words per minute.<sup>8</sup> The alternative to typing is either dictation software (for which every fourth sentence might not be recognized<sup>9</sup>) or tablet PC (for which you need to write legibly, decreasing writing speed).

Conversely, the time it takes to write a note on the computer will decrease as the user becomes familiar with the system. Most EMRs have customizable templates that can speed note entry and improve care.<sup>10</sup> At this time, it is true that EMR note entry is likely slower than writing by hand. However, there are other immediate benefits. For example, repeat prescribing will be faster. That second prescription for the patient who is diabetic, arthritic, hypertensive, and taking 9 different drugs will take 20 seconds to print using an EMR, compared with several minutes to write by hand. Further, you and anyone else will be able to read it, which will also save time.<sup>11</sup>

**Extended learning curve.** Physicians are recruited from the top 5% of academically articulate students, with an above average interest in people and a pragmatic, common-sense approach to managing complex problems



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No physician we have worked with has failed to successfully use the EMR; within weeks many are “expert,” sharing shortcuts with others. A training session to review the overall process is always recommended, although it is essential that implementation does not interfere with normal care. For that reason you should only use the EMR for a few patients per clinic until you have become proficient in all the basic steps. At that point, after having entered data on about 10 patients, the learning curve is largely overcome for basic functions, such as medical notes and prescribing data, and more patients can be entered; however, this should only be done at a rate that allows clinical practice to continue unimpeded.

**Electronic malfunction.** Physicians often worry that their EMR systems might crash, leaving them without any records. The rate of system crashes without backup has not been documented. However, experience in many countries indicates that most systems work despite lack of supervision and adherence to recommendations for installation and servicing. A literature search could find no reported incidences of catastrophic data loss; for most users, developing a clinical EMR in an office-based system is a safe way to proceed.

**Large investment and ongoing support costs.** In several provinces there is little to no reimbursement for implementing an EMR. This lack of resources took M.D. on a hunt for a local solution for his group practice, which comprised a centralized urgent care clinic and partner family practice clinics. One immediate and continuing barrier to cost-effective EMR implementation, he discovered, was the confusing array of prices and price structuring. What was even more irritating was the difficulty in obtaining a quote without having a salesman visit or e-mail; in the end, he was given a quote of \$2000 per user per year—approximately \$50 000 per year for the practice, before hardware costs.

The eventual answer was to find an open-source solution. Now, in Canada, we have our own system designed by one of the authors (D.C.), modified by other family physicians, and continuously being improved to meet the changing demands of primary care. Although you might think this is a dangerously amateur approach, note that the 3 systems that supply more than 80% of primary care practices in the United Kingdom were built by family physicians and modified by family physicians before becoming commercial products. Open-source software is now used by governments, global organizations, banks, and other corporate organizations.<sup>12</sup>

The entire EMR installation for M.D.’s group practice cost \$10 000, including support and training, using open-source server software.

**Interference with the doctor-patient relationship.** Undoubtedly, having a computer on the desk

does introduce a new dynamic to the patient-doctor relationship,<sup>13</sup> as does having a medical student, being interrupted by telephone calls, or other every day occurrences.<sup>13-15</sup> However, patients generally find the EMR experience to be positive.<sup>16</sup> In a study published in this issue on computer use in Canadian practices ([www.cpf.ca](http://www.cpf.ca)), Lelievre and Schultz found that computers had a positive effect on overall satisfaction with the patient-physician encounter.<sup>17</sup>

### Bottom line

Many practices in Canada have introduced EMRs, but these still represent a small minority in contrast to Australia, the United Kingdom, and the Netherlands. The ingredients for successful implementation seem to be team recognition of the advantages of such an approach, a local champion, strong support, low costs, and a practice-tailored application.<sup>18</sup>

To be able to say what sort of doctors we are as family physicians, one of the tools we require is an electronic record. Only by effectively knowing about our practices can we attempt to improve them. 

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#### Competing interests

None declared

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The opinions expressed in commentaries are those of the authors. Publication does not imply endorsement by the College of Family Physicians of Canada.

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