

through the use of patient portals and personal health records, which more effectively engage patients in managing their own care.⁸

Beneficial effect on work flow

The effect of EMRs on the work lives of family physicians has been positive, as demonstrated by physicians' largely favourable perceptions of EMRs.^{1,9} Although the implementation of an EMR can lead to a subjective feeling of increased time requirements by family physicians, studies have found that implementation does not result in a significant decrease in patient access³ or a loss of billings.¹⁰ Canadian EMR research suffers from variation in vendors, study context, methods, and outcome measures. However, despite these deficiencies, studies are emerging that demonstrate numerous benefits of the EMR.³ The EMR allows clinicians to see a larger number of patients through better access to comprehensive patient histories that include clinical data, which might help physicians spend less time searching for results and reports.³ The perceived benefits include remote access to patient charts, improved laboratory result availability, medication error alerts, and reminders for preventive care.

Conclusion

We now have a critical mass of EMR users.¹ We are at a tipping point and the positive effect will escalate with increased knowledge of how to use EMR systems in a meaningful way to their full potential, as well as improved system interoperability, with seamless exchange of information from one system to another.¹ 🌱

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Competing interests

None declared

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CLOSING ARGUMENTS – YES

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- Electronic medical records improve quality of care, patient outcomes, and safety through improved management, reduction in medication errors, reduction in unnecessary investigations, and improved communication and interactions among primary care providers, patients, and other providers involved in care.
- Electronic medical records improve the work lives of family physicians despite some subjective concerns about implementation costs and time. Electronic medical records have been demonstrated to improve efficiencies in work flow through reducing the time required to pull charts, improving access to comprehensive patient data, helping to manage prescriptions, improving scheduling of patient appointments, and providing remote access to patients' charts.
- Electronic medical records capture point-of-care data that inform and improve practice through quality improvement projects, practice-level interventions, and informative research.

The parties in these debates refute each other's arguments in rebuttals available at www.cfp.ca. Join the discussion by clicking on Rapid Responses at www.cfp.ca.

NO Do electronic medical records (EMRs) improve care? There was certainly a lot of hope that they would, and quite a lot of money and effort expended based on that hope. Electronic medical records were specifically identified as critical to quality improvement activities.¹ The Romanow reports had recommended the establishment of electronic health records for all Canadians.¹ The First Ministers committed to accelerating the implementation of these electronic records as part of their 2003 accord on a 10-year plan to transform health care.² Various policies supporting and subsidizing EMRs have been implemented in most Canadian provinces, and as a result, most family physicians currently report using EMRs.³

Little evidence of improvement

However, there is still little conclusive evidence that

EMRs make a substantial difference in the quality of care provided to patients. Some studies have had positive results; those studies often used custom-built systems rather than commercial software. Other studies have had negative results. The net result, according to recent systematic reviews, has largely been neutral.⁴ More important, there is still little evidence of improvement in patient outcomes.⁴ Evidence about physician efficiency⁵ and physician or patient satisfaction continues to be conflicting.⁶ The return on investment certainly seems underwhelming given the high hopes, floods of money, and eons of time invested by the entire health care system.

I admit to being one of the early enthusiasts. When I implemented an EMR in 2006, I was certain that this would improve care for my patients. In fact, I was so certain that I embarked on a research project as part of my master's thesis to prove the fact. I compared provision of preventive services covered by a pay-for-performance program for a group of physicians implementing EMRs with a group continuing to use paper records. I looked at influenza vaccinations, Papanicolaou tests, colorectal cancer screening tests, and mammograms. Much to my dismay, the results were negative (0.7% less increase in preventive services provided for the group of physicians using EMRs).⁷ To my even greater dismay, the study won the 2012 *Canadian Family Physician* Best Original Research Article award. I also ran focus groups to find out what my colleagues thought of the EMR; there were many complaints about unexpected costs, software immaturity, system crashes, lack of connectivity with external systems, and lack of ongoing training to enable more advanced use.⁸ Although the interviews took place in 2008, the findings likely continue to resonate 7 years later for those of us using EMRs. There were some perceived benefits; for example, one physician stated, "I think patients are pleased. You know, 'Oh, finally, you are in the modern age, I see. Good for you.'"

What can we do about it?

This now begs the question, *why* are most results negative and *what* can we do about this? Perhaps we should look no further than Ralph Nader's classic book on car safety, *Unsafe at Any Speed*.⁹ In the 1950s, extra styling costs were \$700 (US) per car, while safety measures amounted to about \$0.23 (US) per car.¹⁰ The result was an appalling death toll, which was blamed on poor drivers. It seems unproductive to blame individual physicians for failing to use their EMRs properly to obtain better results; the system is not designed to produce better results. Perhaps incentives include too much emphasis on software details that are pleasing to the eye or to EMR regulators and funders, but that actually have little effect on care. Important but


hidden benefits such as efficient and interoperable database design might not have received as much attention or funding.

There are very few incentives to record patient information so that the EMR works properly to help improve care. Many of our data are in free text, which is familiar and easy to enter. However, EMRs often need structured or coded data to enable automated recalls, point-of-care reminders, and computerized decision support.¹¹ The EMRs often have rudimentary reporting, data export, and analytic capabilities.¹² As well, running a large query can crash servers. The net result is that EMR applications help record care for one patient at a time, as was the case with paper records, rather than measure and monitor quality of care in practice populations.

In addition, responsibility for running EMR queries and analyzing and interpreting results often falls to the family physician. In most companies, executives are not tasked with running queries; analysts will do this in response to queries or to produce ongoing reports on company functioning and profits. Primary care teams, including physicians, will need similar personnel to help them with data management and analysis—this is starting to happen in Ontario and Alberta. This specialized function will require a move away from autonomous practice toward larger, more organized teams.

Conclusion

Current EMRs are not making much of a difference. To enable their potential will require support for a redesign of EMR databases. We need user interfaces that make data entry for clinical decision support easy to do. As well, we require system changes, such as interoperability and functioning health information exchanges. Finally, EMRs should enable data export to applications designed for data analysis; we need funding for people to do the analyses and reporting in ways that are meaningful and usable for primary care physicians and their teams.

Without funding and regulations to support these changes, it is likely that EMRs will remain what they are today: a very expensive version of paper records. 

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Competing interests

None declared

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CLOSING ARGUMENTS — NO

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- Electronic medical records were funded and promoted because they were thought to improve care.
- The health care system did not change to allow electronic support of better care. Electronic medical records are still used in much the same ways as paper charts.
- The overall result is no improvement in care or outcomes.

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