Using your electronic medical record to deliver evidence-based diabetes care

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Today, most family physicians use electronic medical records (EMRs) to document and manage their patients' care.[1,2] Electronic medical records have the potential to reduce medical errors and improve patient safety by improving information retrieval and the clarity of prescriptions.[3] Using EMRs to manage chronic diseases such as diabetes has other potential advantages. In this article, we describe how to use your EMR to improve the evidence-based care of patients with diabetes. Additionally, we describe examples of how to leverage your practice data to improve the care of patients in your practice. Our focus is on effectively using EMR tools to decrease reactive visit-by-visit care and improve proactive care in your practice population.

Improving reactive visit-by-visit care

Imagine Jim, who is 72, retired, and enjoys spending time with his 2 young grandchildren. He's been your patient for 12 years, during which time his body mass index has gone from 26 to 34 kg/m² and he has gone from a diagnosis of "prediabetes" to having uncontrolled blood glucose levels despite prescriptions for metformin and glyburide. Today when you open his chart during his visit, you realize you have not seen him for 15 months and he has not had bloodwork done or a blood pressure check in all that time.

Where do you start? Do you have a way to make sure you provide him optimal care during this visit? Flow sheets are common tools that were often used in paper form to prompt optimal management of diabetes and other conditions. Some have been converted to basic EMR tools. While some of these are cumbersome, others have advanced features such as identifying the previous laboratory examination values and dates. Checklists or flow sheets can help provide consistent care, which is why they are used by airline pilots and engineers alike to reduce errors of omission. The new Diabetes Canada guideline has updated flow sheets that can be incorporated into EMRs.[4] We suggest trying some of the advanced features that many EMRs offer so you are not just using "electronic paper" but taking advantage of the computing power on your desk.

Providing proactive care

What about all of the other patients in your practice who have not had their hemoglobin A_{1c} level or blood pressure measured in a while? Do you have elderly patients in your practice for whom you have prescribed insulin or sulfonylureas that you might consider stopping, given increasing evidence that the risks might outweigh the benefit for many patients with well-controlled hemoglobin A_{1c} levels?[5]

Using your EMR to find these patients might be more straightforward than you think. In **Table 1**, we describe the steps required to provide proactive chronic disease management using your EMR. Most EMR vendors have user groups or online communities providing details on how to search for patients with specific characteristics in your practice. This information can be downloaded. In many cases, you can copy and paste an existing approach that another clinic EMR user has created.

Of course, not all EMR products available in Canada will have the exact functionality to carry out all of the tasks encouraged to provide optimal care. Additionally, when performing searches in your EMR it is important to be sure that the data in the system are of adequate quality to give an accurate representation of the patients in your practice. While a complete discussion of best practices for advanced EMR use (such as quality improvement activities and assessing data quality) is beyond the scope of this article, a recent online guide prepared by experts from the College of Family Physicians of Canada and Canada Health Infoway is an excellent resource for detailed practical guidance in this area.[6] In general, if there are concerns that the quality of the data in your EMR might limit the accuracy of your searches, it is a good idea to focus on areas where data are already structured (eg, laboratory values or prescriptions) or to start by assigning a staff member or student to improve or clean up inconsistent historical data in your EMR.[7]

We have found that using EMRs in this way can yield dramatic results, even if it is something we might not have been doing routinely in the past. Providing proactive care by identifying patients who might benefit from a visit also fosters improved relationships. That being said, it is not always easy. Time is a very limited commodity in most family practices, and finding time both to identify patients proactively and to fit them in for appointments might be a challenge. However, the old adage "an ounce of prevention is worth a pound of cure" applies. In our experience, finding the time for this kind of activity is easier during quieter clinical times such as August or December. Using our EMR in this way can help us provide evidence-based, patient-centred care for patients at risk of hypoglycemia or microvascular and macrovascular complications of diabetes. In our experience, patients typically appreciate knowing that their doctor is showing concern by being proactive.

Table 1. Using your EMR for proactive chronic disease management

GENERAL STEPS	APPLICATION FOR DIABETES	NOTES
Search for patients who have the condition of interest (eg, diabetes)	Search for 1 or more of ... • a billing code for diabetes (ICD-9-CM starting with 250) • a problem list entry for *diabetes* • medications that lower blood glucose level (eg, metformin, insulin) • an HbA_{1c} test result > 6.5%	Consider the role of coding your patient diagnoses for common conditions to improve search results. Make sure you know how diabetes is entered into the billing section or problem list (eg, ICD-9 or ICD-10, free text)
Identify patients who might benefit from reassessment	Search for ... • the date of the most recent HbA_{1c} test result • the date of most recent BP measurement • patients with a prescription for insulin or sulfonylureas aged > 80 y	Consider saving the search strategy so you can rerun it a few times each year
Ensure patients are aware of their status	In many cases, office staff can assist in reminding patients to do tests and arrange appointments	Consider whether your EMR has the capacity to send bulk messages or tasks, send batch e-mail or text messages, or create labels for mailings

BP—blood pressure, EMR—electronic medical record, HbA_{1c}—hemoglobin A_{1c}.

Conclusion

The new Diabetes Canada guideline is accompanied by a number of helpful tools that can assist you in leveraging your EMR to enable improvements in the delivery of evidence-based care at individual visits and proactively affect your entire practice.[8] We believe that embracing the tools available in today's modern medical office can help us improve the quality of the care we deliver.

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Competing interests

Drs Singer and **Ivers** are members of the Diabetes Canada Implementation and Dissemination Committee.

References

1. College of Family Physicians of Canada, Canadian Medical Association, Royal College of Physicians and Surgeons of Canada. National Physician Survey, 2014. National results by FP/GP or other specialist, sex, age and all physicians. Mississauga, ON: College of Family Physicians of Canada; 2014. Available from: **http://nationalphysiciansurvey.ca/wp-content/uploads/2014/08/2014-National-EN-Q7.pdf**. Accessed 2018 Sep 27.
2. Collier R. National Physician Survey: EMR use at 75%. *CMAJ* 2015;187(1):E17-8.
3. Lau F, Price M, Boyd J, Partridge C, Bell H, Raworth R. Impact of electronic medical record on physician practice in office settings: a systematic review. *BMC Med Inform Decis Mak* 2012;12:10-20.
4. Appendix 3. In: Diabetes Canada Clinical Practice Guidelines Expert Committee. Diabetes Canada 2018 clinical practice guidelines for the prevention and management of diabetes in Canada. *Can J Diabetes* 2018;42(Suppl 1):S309-10.
5. Farrell B, Black C, Thompson W, McCarthy L, Rojas-Fernandez C, Lochnon H, et al. Deprescribing antihyperglycemic agents in older persons. Evidence-based clinical practice guideline. *Can Fam Physician* 2017;63:832-43 (Eng), e452-65 (Fr).
6. College of Family Physicians of Canada. *Best advice. Advanced and meaningful use of EMRs*. Mississauga, ON: College of Family Physicians of Canada; 2018. Available from: **patientsmedicalhome.ca/resources/best-advice-guides/best-advice-guide-advanced-and-meaningful-use-of-emrs**. Accessed 2018 Nov 27.
7. Greiver M, Drummond N, Birtwhistle R, Queenan J, Lambert-Lanning A, Jackson D. Using EMRs to fuel quality improvement. *Can Fam Physician* 2015;61:92 (Eng), e68-9 (Fr).
8. Diabetes Canada [website]. *Health-care provider tools*. Toronto, ON: Canadian Diabetes Association; 2018. Available from: **guidelines.diabetes.ca/health-care-provider-tools**. Accessed 2018 Sep 28.

This article has been peer reviewed. *Can Fam Physician* 2019;65:43-4

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