Reprinted from *Canadian Healthcare Technology*, May 2008 issue

CANADIAN Healthcare Technology

www.canhealth.com

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The three Rs of medical quality: Reminder, Record and Review

Incorporating clinical practice guidelines into EMR systems leads to improved quality of care.

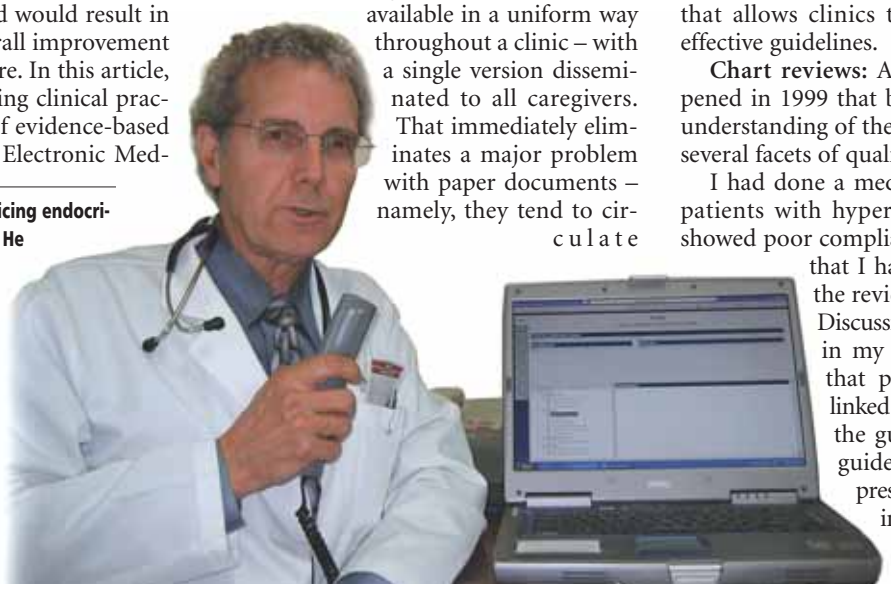
BY CLAYTON L. REYNOLDS, MD

To date, most physicians in clinics and hospitals have delivered healthcare in a non-standardized fashion. The range of treatments applied to particular diseases can be quite wide – and the clinical outcomes rather varied.

It has been argued, with good reason, that evidence-based medicine would reduce that variation, and would result in better outcomes and overall improvement in the quality of healthcare. In this article, I suggest that incorporating clinical practice guidelines – a form of evidence-based medicine – directly into Electronic Medical Record systems would lead to dramatic improvements in healthcare quality.

In brief, the electronic medical record can be a boon as we try to apply, use and evaluate the effectiveness of clinical practice guidelines (CPGs). The EMR cannot replace the process of construction of the CPG, but it can make their distribution much easier and more complete than a paper-based system.

Through integration with the EMR, clinical practice guidelines can be made available in a uniform way throughout a clinic – with a single version disseminated to all caregivers. That immediately eliminates a major problem with paper documents – namely, they tend to circulate in multiple versions, many of which are out-of-date.



Any EMR could be customized to display clinical guidelines, using a 'dashboard' approach and word processing and spreadsheet programs. Moreover, as providers employ the EMR in their daily use of CPGs, they can send messages by internal email to the clinic managers, who can make appropriate use of comments to revise and improve the CPG. As a result, there is quick and continuous feedback that allows clinics to develop the most effective guidelines.

Chart reviews: A curious thing happened in 1999 that brought me to a new understanding of the relationships among several facets of quality of care.

I had done a medical chart review on patients with hypertension. The review showed poor compliance with the criteria that I had used in setting up the review.

Discussion with the providers in my department revealed that poor compliance was linked to poor knowledge of the guidelines. In fact, the guidelines had never been presented to the providers in my department!

We easily concluded that the guide-

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lines should be presented to all members; they should be available to everyone at all times while seeing clinic patients; and the providers should record relevant aspects of their care of patients with hypertension. Then, and only then, could one apply a meaningful review to check compliance.

Having seen these factors at work, I developed the theory of the 'Three Rs' of healthcare quality – Reminder, Record and Review. While initially devised through my experience with the hypertension review, the process could be easily applied to any and all patient encounters.

Theory of the three Rs: Right off the bat, a clinical practice guideline serves as a Reminder to the provider of what actions are required for particular patients or groups of patients. The provider performs the work (i.e., follows the guideline) and enters the information in the medical Record. Then a Review of the recorded data is performed to see if the guideline was followed.

Clinical application of the theory: Now, to understand how this theory applies to all aspects of patient care, I had to change my idea of what a clinical practice guideline is. It isn't simply a set of cookbook rules put out by a national organization.

Instead, a clinical practice guideline is any rule that a clinician uses to determine the management of any aspect of a patient's care under any given set of circumstances.

A clinical practice guideline can be formal or informal. It can be written or verbal. It may be old or recent. It can be explicit or implicit. A CPG can be valid or invalid. A CPG can include elements pertaining to the evaluation of patients and their problems, recording of data and management of patient populations and their medically related problems.

In short, a clinical practice guideline exists for every clinical decision the healthcare provider makes.

Let me give two brief examples:

• A provider encounters a patient with anxiety, goiter, low serum TSH and normal serum free T4. The provider decides that the patient has hyperthyroidism and starts treatment with anti-thyroid medication.

The clinical practice guideline followed in this example is that a patient with symptoms of hyperthyroidism, goiter and low TSH (even with a normal free T4) has hyperthyroidism and should be treated.

• A provider encounters a patient with anxiety, goiter, low serum TSH and normal serum free T4. The provider orders a serum free T3 measurement.

The clinical practice guideline being followed in this example is that a patient with symptoms of hyperthyroidism, goiter, low TSH and normal free T4 is not diagnosed to have hyperthyroidism (and hence should not be treated with anti-thyroid medication) until at least one of the serum thyroid hormones is shown to be elevated. This CPG uses the concept of 'subclinical hyperthyroidism' and recommends that no anti-thyroid treatment be instituted if the two circulating thyroid hormones are within normal range at the time of testing.

Ideally, providers must be informed which of the two stated clinical practice guidelines is to be followed in their clinics. Thereafter, providers can be held to the stated CPG.

The BC Medical Association has established a program to incentivize GPs and family docs to comply with three CPGs.

Administrative application of the theory: There are several steps in the process of implementation of any clinical practice guideline:

• construction of the CPG and agreement on its wording;

• distribution of the CPG;

• ascertaining that the text of the CPG is available for use by providers at all times;

• performance of reviews, for evaluation of compliance with the CPG;

• distribution and discussion of results of reviews; and

• modification of the CPG and reiteration of steps 1 through 5.

Ironically, each of these steps is also a barrier to the implementation of the CPG. Who is to construct the CPG and what published data should be used? How should the CPG be distributed, considering that the CPG may apply to providers in a variety of clinics? Whose job should it be to monitor the availability of the CPG in a particular clinic? Who should perform the reviews for compliance? How should the review results be displayed and discussed with the providers? Who determines that a modification of the CPG is necessary and carries out the changes?

As any provider who has done chart reviews can attest, reviews of paper-based medical records are time-consuming, inefficient, error-prone and frustrating. Let's see how computerization can help.

The role of the Electronic Medical Record: The EMR can make available the clinical practice guidelines in full text or as a summary, and in a diagnosis-specific presentation. The EMR can be used to modify an official version of a CPG to conform with local conditions.

The EMR has the capability of line item display, an important feature for those CPGs which have multiple elements – witness the need for A1c, urine albumin/creatinine ratio and lipid measurement on different time schedules in diabetics. And the EMR can use a dashboard display, to show the provider what elements of a CPG are up-to-date for a particular patient at any given date of clinic visit.

The EMR can easily handle requirements for diagnostic or therapeutic procedures and act as a clinical decision support system. For example, when a provider orders a CT of the head, an icon can appear, indicating the guidelines for appropriate ordering of a CT scan (e.g., the Canadian Rules for CT Scan of Head in Trauma Patients), are available for viewing. The provider will have the option of viewing or not viewing the guideline and of not following all elements of the guideline, even when viewed.

In the instance in which the provider elects not to follow the guideline or any particular element thereof, the provider can be asked to give an explanation. In this way, each user becomes part of a CPG virtual development team. Over a period of time, the guidelines become more relevant to day-to-day practice. Real clinical outcomes (not just simple statistical data such as the percentage of female patients over 50 years of age who have had a mammogram) can be tracked and related to the use of specific guidelines.

EMR-enabled display of CPG-related data: Two dimensions of the display of CPG-related data have already emerged.

The first dimension uses the 'dashboard' metaphor. Patient-specific information is projected onto the computer screen when the healthcare provider is

either seeing the patient or perusing the chart for adherence to the elements of the CPG. The dashboard will reveal current line-item information that details those elements of the CPG which have and have not been met. The provider can then order the missing elements.

Usually, this process will be carried out by medical staff, although others can be trained to perform this task. This information would not normally be accessible to any third party.

The second dimension involves the export of data derived from completed CPGs to a word processor or spreadsheet program. The data can then be redacted, manipulated and collated for transfer to the province (or third-party payor in the U.S.) for reimbursement. Financial incentive programs based on compliance with specific disease-related CPGs are in effect in the United States as 'Pay for Performance' and in British Columbia as 'Expanded Full Service Family Practice Condition-based Payments'.

The British Columbia Medical Association, in collaboration with the British Columbia provincial government, has established its program to incentivize general practitioners and family physicians to comply with three specific CPGs.

Quoting from their brochure: "This incentive program is aimed at supporting high quality management of congestive heart failure, diabetes and hypertension. Physicians will now receive an annual payment for each patient with diabetes and/or congestive heart failure whose clinical management is consistent with recommendations in the BC Clinical Practice Guidelines. In addition, an annual $50 incentive payment is now available for BC Clinical Practice Guidelines treatment of hypertension where this care is not part of treating diabetes or congestive heart failure."

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Both Pay for Performance and Expanded Full Service Family Practice financial incentive programs would benefit from application of the new theory. In order for providers to comply with the line-item CPGs, they must know what the elements of each CPG (the Reminder) are, and they must be able to document which elements have been met (the Record). Then they must be able to export the provider-specific, patient-specific and CPG-specific information for use by third party payers (the Review).

In British Columbia, the physicians use Flow Sheets to remind themselves of the elements of the CPG. Data related to each element (e.g., hemoglobin A1c in the management of diabetes) are entered into the flow sheet (the Record). The Reminder and the Record are one and the same. The third part of my theory refers to Reviews of such data. While I see no mention of a Review mechanism in the BC document, it is likely that eventually, such a mechanism will be instituted.

Quality of healthcare and this theory: If quality in the healthcare field means, 'Doing the right thing at the right time to the right patient or population and using the right resources,' then application of the theory of the three Rs will be highly beneficial in ensuring and documenting high quality of care.

The theory of the three Rs helps guide the process of CPG construction, implementation, evaluation and improvement. The clinical practice guideline is the Reminder of what to do; the written case is the Record of what was done; and the Review matches each of the other two elements of the theory. These three Rs are identical. When used in an integrated fashion, they represent the vanguard of improvement in quality of healthcare.