ORIGINIAL ARTICLE

Paper stamp checklist tool enhances asthma guidelines knowledge and implementation by primary care physicians

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BACKGROUND: The Canadian Clinical Practice Guidelines (CPGs) for the management of asthmatic patients were last published in 1999, with updates in 2001 and June 2004. Large disparities exist in the implementation of these guidelines into clinical practice.

OBJECTIVE: The present study evaluated the knowledge of Quebec-based primary care physicians regarding the CPGs, as well as patient outcomes before and after introducing physicians to a new clinical tool—a memory aid in the form of a self-inking paper stamp checklist summarizing CPG criteria and guidelines for assessing asthmatic patient control and therapy. The primary objective of the present study was to assess whether the stamp would improve physicians’ knowledge of the CPGs, and as a secondary objective, to assess whether it would decrease patient emergency room visits and hospitalizations.

METHODS: A prospective, randomized, controlled study of 104 primary care physicians located in four Quebec regions was conducted. Each physician initially responded to questions on their knowledge of the CPGs, and was then randomly assigned to one of four groups that received information about the CPGs while implementing an intervention (the stamp tool) aimed at supporting their decision-making process at the point of care. Six months later, the physicians were retested, and patient outcomes for approximately one year were obtained from the Régie de l’assurance maladie du Québec.

RESULTS: The stamp significantly improved physicians’ knowledge of the CPGs in all Quebec regions tested, and reduced emergency room visits and hospitalizations in patients who were followed for at least one year.

CONCLUSION: A paper stamp summarizing CPGs for asthma can be used effectively to increase the knowledge of physicians and to positively affect patient outcomes.

Key Words: Asthma; Canadian Clinical Practice Guidelines; CME; Paper stamp tool

Tools for translating evidence-based guidelines for the management of asthmatic patients to primary care practice, including computerized systems and action plans, have been ineffective in the United Kingdom and Australia due to low levels of use by physicians (1-3). Guideline dissemination using both written materials and personal visits/discussions by peers has proved effective, and has resulted in asthma guideline use by physicians for approximately 67% of clinical decisions in the Netherlands; however, the major problem of nonstandardized implementation of the guidelines by the physicians has not been solved (4-6).

The recommendations of the Canadian Clinical Practice Guidelines (CPGs) Consensus Committee regarding treatment of asthmatic patients have been applied nonuniformly throughout Canada by primary care physicians (7,8). Interactive continuing medical education (CME) appears to be effective for training physicians on some, but not all, aspects of the CPGs (9,10). CME courses have been found to have a weak
or short-term impact on the application of the asthma CPGs to current medical practice, mainly because primary care physicians do not have the time or resources to implement the CPGs easily (7,11-13). A recommendation from these studies is to use CME training jointly with interventions that follow-up with patients or that provide memory aids for physicians.

Recently, Clark et al (14) showed a positive, long-term effect of medical training seminars based on the recommendations of the CPGs, coupled with patient-doctor communication training. The intervention described by Clark et al (14) involved a better utilization of the medical visit time through the use of a physician’s checklist and associated plan of action, which also had an impact on the education of the asthmatic patient. The limited time (15 min) allotted for a patient visit was seen as a limiting factor in the implementation of the CPGs; however, their charts were not reviewed.

We have developed a self-inking paper stamp memory aid tool for use by primary care physicians when they examine their asthmatic patients. The stamp provides a checklist for the physician that summarizes the eight CPG criteria for asthma control and therapy. The content of the stamp is given in Tables 3 and 4.

The self-inking paper stamp that was given to physicians in the present study was to verify whether the stamp increased the knowledge of the CPGs among primary care physicians, and whether improved knowledge was translated into improved patient outcomes by assessing emergency room (ER) visits and hospitalizations. We tested whether the stamp was more effective in translating the CPGs to the clinic than the traditional method of sending a copy of the CPGs by mail to primary care physicians. We also assessed the effects of adding an associated CME event and a physician incentive (ie, a review of the charts of six patients at the end of the study).

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TABLE 2
Comparison of the initial questionnaire baseline results (mean scores) between regions in Quebec

<table>
<thead>
<tr>
<th>Region</th>
<th>Question 1 (asthma control)*</th>
<th>Question 2 (Educ/Rx)*</th>
<th>Total (maximum of 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laval</td>
<td>2.6</td>
<td>2.4</td>
<td>5.0</td>
</tr>
<tr>
<td>Lac St-Jean</td>
<td>2.2</td>
<td>2.5</td>
<td>3.7</td>
</tr>
<tr>
<td>Montreal</td>
<td>3.6</td>
<td>2.2</td>
<td>5.8</td>
</tr>
<tr>
<td>Montérégie</td>
<td>2.5</td>
<td>2.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Saguenay</td>
<td>1.6</td>
<td>3.4</td>
<td>5.0</td>
</tr>
<tr>
<td>Total mean ± SD</td>
<td>2.2±1.7</td>
<td>2.6±1.5</td>
<td>4.8±2.1</td>
</tr>
</tbody>
</table>

*Maximum score of 8. Educ/Rx Educational and therapeutic criteria

RESULTS

Table 2 shows the analysis of physician responses to the initial two questions. No difference was found among the primary care physicians from different regions of Quebec in terms of their knowledge of criteria for asthma control, and knowledge of educational and therapeutic interventions. The physicians reported an average of 2.2 of the eight asthma control criteria, and an average of 2.6 of the eight predetermined educational and therapeutic interventions that are recommended in the CPGs for asthma. Thus, the total average scores for the asthma control and educational and therapeutic questions were 4.8 out of the 16 expected answers. No difference in responses was found between the randomly assigned groups, and no correlation was found between results and the year of graduation.

Tables 3 and 4 present a list of asthma control criteria and educational and therapeutic interventions in the same order as presented on the paper stamp. On the right, by region, are the minimum and maximum percentages of physicians reporting each criterion. As can be seen in the third column of Table 3, the number of physicians who reported each specific asthma control criterion varied depending on the criterion selected and the region where the physician was practicing. For example, in the four regions that were studied, between 38% and 91% of physicians reported the control criterion of short-acting beta-2-agonist use fewer than four times per week. Interestingly, few physicians in each region (between 13% and 45%) reported night-time awakenings less than once per week.

Table 4 shows the CPG educational and therapeutic criteria that are also listed on the paper stamp (column on the left), and the lowest and highest percentage of physicians (among the four regions studied) who reported these criteria at the beginning of the study (column on the right). Again, the percentage of physicians reporting this information varied widely depending on the criterion and the region being examined. Tables 3 and 4 show that at the beginning of the study, the physicians did not have a full knowledge of the CPGs, despite extensive educational campaigns that have been ongoing in Quebec for at least 10 years.

Table 5 presents, by group, the results of the analysis of the second questionnaire (same two questions) that was completed six months after the beginning of the study. There was no significant improvement in the knowledge of the control group (group 4), which received only the consensus guidelines by mail. In controls, knowledge of the control criteria increased from an average of 2.2 to 3.0 of the eight criteria, whereas knowledge of educational and therapeutic interventions decreased from an average of 2.6 to 2.1 criteria, with the total responses improving by only 6%. Significant improvement was...
shown in the physicians’ knowledge of the CPGs in all the groups of physicians that received a stamp.

The knowledge of CPGs improved in direct relationship to the amount of intervention that was associated with the stamp (Table 5). Group 3 (stamp sent by mail with instructions) had a total score of 7.7 out of 16, which, compared to baseline (4.8 out of 16), represented an improvement of 60%. Group 2 (stamp with CME event) had a total score of 8.2 out of 16, which represented an improvement of 71%. Finally, group 1 (stamp with CME event and incentive) had a total score of 9.0 out of 16, which represented an improvement of 87%. It is interesting that the majority of improvement could be accounted for in group 3, in which physicians were only sent the stamp by mail.

The impressions of the physicians on the utility of the stamp were obtained. Seventy-four per cent of the physicians kept the stamp on their desk, 13% in a drawer and the others in different places. Eighty-four per cent of the physicians thought the stamp was useful in daily practice and, on average, physicians reported using the stamp for 54% of their patients with asthma. Finally, 87% of physicians reported that they would continue to use the stamp at the end of the study.

Many studies have reported improvement in physicians’ knowledge with different therapeutic interventions, but few have reported changes in outcomes. Thus, it was assessed whether an improvement in physician knowledge was translated into an improvement in patient outcomes by determining the change in the number of ER visits and hospitalizations for the patients with asthma that were followed by the physicians of the different groups over a 12-month period. Table 6 shows the effect of the intervention (the paper stamp checklist that is created a new clinical tool – a memory aid in the form of a paper stamp checklist for primary care physicians to use at the point of care) on outcomes across the country (7,20). To improve the situation, we provided physicians with a standardized list of key questions to ask while examining their patients during the limited time allotted for patient visits (15 min). The use of the stamp allows physicians to rapidly make the decisions required to determine whether asthmatic patients are controlled or uncontrolled. If uncontrolled, the physician could change the medication regimen; however, if uncontrolled, the physician could change the medications or refer the patient to a specialist.

The physicians’ acceptance of using the stamp to help them to implement the guidelines in a standardized manner and to manage their asthmatic patients in daily clinical practice was high (84%). In this regard, it should be noted that the stamp...
appears to be superior to other systems, such as computerized systems, action plans, and combinations of written documents and personal approaches by peers. The latter have had either very low usage rates by primary care physician or problems with nonuniform implementation of the recommendations by the physicians (1-3,21,22).

The present study showed that use of the paper stamp check list tool by primary care physicians in Quebec significantly improved their knowledge of the CPGs for asthmatic patient treatment. The use of the stamp by physicians also increased the standardization of asthmatic patient treatment within the group of physicians tested, significantly reduced the number of ER visits and tended to reduce hospitalizations for the patients who had been followed for at least a year. The effect of the CME event that combined CPG education with a demonstration of the use of the stamp in a clinical setting was modest. There was no effect on outcomes when all asthmatic patients were included in the analysis. We may speculate that the patients who were not seen for asthma in the previous year were either new patients, noncompliant patients (not coming regularly to follow-up visits) or walk-in patients. These three groups of patients are expected to be less compliant, and the physicians may have had more time to educate those patients who come to regular visits.

REFERENCES


Asthma guidelines paper stamp for physicians

Interestingly, the benefits of the stamp were seen even in the physician group that was sent the stamp by mail (along with a written instruction sheet) but that did not attend the CME event. The results of the present study suggest a high benefit at a low cost for the use of the stamp in the clinics of primary care physicians. Based on the results published by Lajoie et al (16), the stamp could potentially reduce health care costs across Canada by decreasing the yearly number of ER visits for asthma by 5.7 visits per 100 patients and by decreasing the yearly number of hospitalizations for asthma by 1.8 hospitalizations per 100 patients, at least in regions where visits to the ER and hospitalizations are frequent, such as the red zones of Quebec (high morbidity mapping; see Lajoie et al [16]) where this study was performed.

ACKNOWLEDGMENTS: The authors thank the research coordinators Muriel Grenon, Francine Robinson and Fortunée Taieb, as well as Marie Josée Samson, for all their contributions to the success of this study.

FUNDING: Funded by the Towards Excellence in Asthma Management (TEAM) project of the Quebec Asthma Education Network.
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