

Evaluation of Practice Tools for Asthma and Cough in Primary Care: A Knowledge-to-Action Perspective

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Asthma and cough are two common chronic conditions whose incidence could be reduced with appropriate prevention and treatment measures. Practice tools can be effective in helping to translate emerging research evidence into clinical practice. This study assesses the extent to which two asthma and cough practice tools are used in primary care. Thirty-six primary care physicians completed a questionnaire on the use, usefulness, and relevance of the two tools, and identified barriers to their use. Results show that the tools are seldom used, even though physicians find them useful and adapted to their practice. Time constraints are the primary barrier to use, followed by a lack of organizational resources. Findings from the study will inform the continued development of effective knowledge transfer tools that are aligned with the specific practice contexts of primary care physicians.

KEY WORDS: Clinical practice tools; evaluation; asthma; cough; knowledge translation.

Research shows that there continue to be gaps between current healthcare practice and best practices, particularly in the diagnosis and treatment of chronic conditions such as arthritis, diabetes, and cardiovascular and respiratory diseases: many of which could either be avoided or reduced with appropriate prevention and treatment.^{1,2} Advances in our understanding of the causes of chronic conditions and the discovery of new or more effective treatments have not been paralleled by improvements in healthcare delivery and health outcomes.³ Therefore, a central challenge to improving care is the effective translation of emerging research evidence and its integration into everyday medical practice.^{4,5}

Current research on knowledge translation shows that practice tools, such as reminder systems and clinical practice guideline (CPG) summaries, can be effective for synthesizing research evidence.^{4,5} Today, guidelines for common conditions are published regularly to translate knowledge for primary care physicians and allied health professionals who have to manage an increasing volume of medical information and more complex patient profiles while constrained by time.⁶ Research shows that guideline implementation is influenced not only by guideline-related factors

such as content, format, and credibility of the evidence, but also by a number of user-related, social, and contextual factors.^{7,8} In the past decade, a number of efforts, such as the Appraisal of Guidelines Research and Evaluation (AGREE) instrument, have been undertaken to improve the development of high quality guidelines.⁹ In addition, increasing attention is being given to the development of methods to assess the effectiveness and use of guidelines in medical practice. However, there continues to be a need to improve the uptake of guideline recommendations and their subsequent impact on physician knowledge and behavior, and, ultimately, on patient outcomes.¹⁰⁻¹²

The main goal of this pilot project was to assess how and to what extent practice tools for asthma and cough, which were developed by two of the coauthors (GC, LPB) within a larger program of research, are used in the current context of primary care. An additional goal of the study was to identify barriers to the use of the practice tools with the goal of increasing adherence to guideline effectiveness. The study builds on the knowledge transfer model developed by Graham et al.¹³ that is founded on planned action theories (Figure 1). The model describes the pathways leading from scientific discovery or knowledge creation to knowledge

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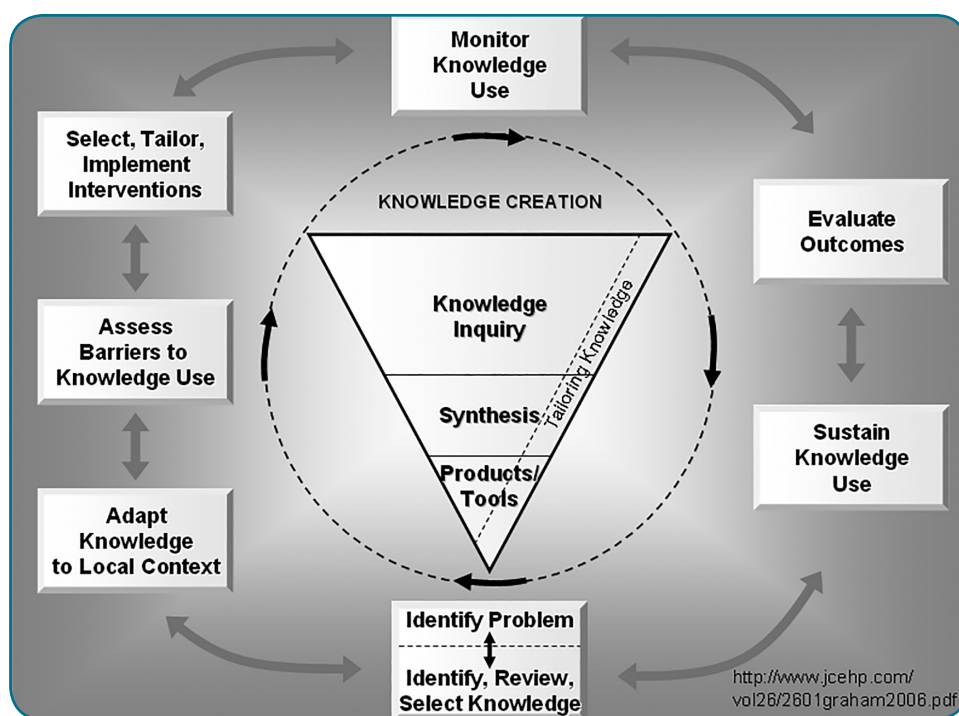


Figure 1. Model of the knowledge transfer process. (Reproduced with permission from Graham et al. Lost in knowledge translation: time for a map? *J Contin Educ Health Prof.* 2006; 26(1):13-24.)

synthesis, and the development of knowledge translation tools such as guidelines, practice tools, syntheses, etc. More specifically, the proposed instrument highlights the need to elucidate problems to be addressed by an intervention—in this case, the two practice tools, and (1) to identify potential barriers to their use; and (2) based on the above information, design and improve the tools to meet the needs of practitioners in their specific contexts or circumstances (e.g. resource structure or linguistic, cultural, and socioeconomic contexts).

The tools tested in the study are based on asthma¹⁴ and cough guidelines¹⁵ that were current at the time of the study. Summaries of the guidelines were developed by two of the coauthors (GC, LPB) as multicolored four-page documents, and are available in French (the original language of the study) on the site of the Heart Lung Knowledge Transfer Chair at www.coeurpoumons.ca/professionnels/pneumologie/outils-daide-a-la-pratique/.

METHODOLOGY

Participant Recruitment and Data Collection

One hundred primary care physicians practicing in the province of Québec, Canada, were invited to participate in the study. Participants attended a meeting held under

the auspices of the Laval University Chair in Knowledge Translation, Education and Prevention in Respiratory and Cardiovascular Health (KT Chair) to introduce the practice tools and invite participants to use and evaluate them. After six months, participants who had neither used nor evaluated the tools were sent an e-mail or telephone reminder. Data collection for the project took place over a 15-month period beginning November 15, 2011, and ending February 15, 2012. Respondents completed a written questionnaire that was sent by staff of the KT Chair (see Appendix). Participants answered questions on the frequency of use, relevance to practice, and barriers to the use of tools in both routine practice and decision-making. A total of 36 participants completed the questionnaires: 14 completed the asthma questionnaire and 22 the cough questionnaire.

Data Analysis

Data were analyzed using Microsoft Excel. Descriptive analyses examined the characteristics of sample respondents by gender, years in medical practice, region and type of medical practice, training, and number of practice hours worked per week. Follow-up analyses used frequency to examine how participants responded to the central questions of the study, specifically: (1) How often were the tools used?; (2) How useful were the tools for primary care?; and (3) What were the barriers to the use of the practice tools?

Table 1. Sample Sociodemographics

Variable		Practice Tool	
		Cough No. (%)	Asthma No. (%)
Sex	Male	9 (41)	6 (43)
	Female	13 (59)	8 (57)
Years in practice	≤10	3 (13.6)	3 (21.4)
	11–20	5 (22.7)	3 (21.4)
	21–30	10 (45.5)	6 (42.9)
	31–40	4 (18.2)	2 (14.3)
Type of medical practice*	Individual practice	3	3
	Group practice	4	4
	Family medical group	7	7
	Community health service center	4	4
	Hospital setting	2	2
	Emergency room	3	3
	Other	1	1
Medical training†	Family medicine	18 (90.0)	13 (100)
	Postdoctoral training	1 (5.0)	–
	Specialty	1 (5.0)	–
Hours worked per week‡	≤20	3 (13.6)	1 (7.1)
	21–40	9 (40.9)	5 (35.7)
	≥41	9 (40.9)	8 (57.2)

*Nine out of 22 cough tool respondents and 6 out of 14 asthma tool respondents reported more than one type of medical practice.

†Two out of 22 cough tool respondents and 1 of 14 asthma tool respondents did not indicate what training they had received.

‡One of the 22 cough tool respondents did not report the number of hours worked per week

RESULTS

Sample Demographics

As shown in Table 1, participants in the study were predominantly women: 57% for the asthma tool and 59% for the cough tool. The distribution of respondents by number of years in practice was similar in most regards for both the asthma and cough tools. In both cases, a majority (63%) of respondents had between 16 and 30 years of practice. However, and in contrast to cough tool respondents, who represented all ranges of experience, there were no asthma tool respondents with mid-range experience (i.e., 11–15 years of practice).

An examination of the distribution of respondents by region of medical practice shows that most of the regions in

the province of Québec were represented, although most of the respondents came from Québec City. The distribution of respondents by type of medical practice shows that the majority in both groups worked in family medicine groups, followed by group practice and community health centers. Furthermore, the number of respondents in individual practice, hospital settings, emergency departments, or other settings was smaller. The majority of respondents, for both the asthma and cough tools, were trained in family medicine and worked more than 40 hours per week.

Use of the Tools

Table 2 displays results on the frequency of use of the tools. The results for the asthma tool show that although a third of respondents sometimes used the tool, the majority of

Table 2. Frequency of Use of the Tool

Use of tool by primary care physicians		Does Not Apply or Missing	% Respondents					
			Never	Rarely	Sometimes	Often	Very Often	Median
Used in routine professional practice	Asthma	14	28.6	35.7	35.7	0	0	2
	Cough	21	38.1	19.0	19.0	14.3	9.5	2
Cited the evidence to colleagues	Asthma	13	69.2	14.3	14.3	7.1	0	1
	Cough	22	59.1	9.1	22.7	9.1	0	1
Cited the evidence presented to patients	Asthma	14	42.9	21.4	14.3	14.3	7.1	2
	Cough	21	42.9	19.0	19.0	14.3	4.8	2
Encouraged colleagues to use the tool	Asthma	14	71.4	0	21.4	7.1	0	1
	Cough	22	63.6	9.1	18.2	4.5	4.5	1

Table 3. Usefulness of the Tool for Primary Care

The practice tool...		Does Not Apply or Missing	Responses*					
			1	2	3	4	5	Median
Is useful for my practice	Asthma	12	8.3	8.3	8.3	25.0	50.0	5
	Cough	17	5.9	5.9	17.6	35.3	35.3	4.5
Meets my needs	Asthma	12	8.3	0	16.7	33.3	41.7	4.5
	Cough	18	5.6	5.6	5.6	50.0	33.3	4
Is my primary source of info	Asthma	12	8.3	8.3	33.3	25.0	25.0	4
	Cough	18	16.7	0	27.8	27.8	27.8	4
Is adapted to my practice	Asthma	12	8.3	0	25.0	41.7	25.0	4
	Cough	18	11.1	11.1	22.2	33.3	22.2	4

*Frequencies of responses: 1, strongly disagree; 2, disagree; 3, neither disagree nor agree; 4, agree; 5, strongly agree.

respondents rarely or never used it. Furthermore, the vast majority of respondents never or rarely cited the evidence presented in the tool to either colleagues or patients, and never or rarely encouraged colleagues to use the tool. Results for the cough tool show a similar pattern, although respondents reported using it and citing the evidence presented to patients slightly more often than the asthma tool. These results are reflected in the low medians.

Usefulness of the Tools for Primary Care

Results on the usefulness of the tools are shown in Table 3. The majority of respondents found that both tools were useful for their routine professional practice and met their needs. In addition, both tools were reported to be a primary source of information and adapted to the realities of their practice. Consistent with these findings, the medians for these scales indicate that the asthma and cough tools were useful for many respondents.

Barriers to Use

A final goal of the study was to identify the barriers and facilitators of the use of the tools (Table 4). An examination

of barriers to the use of both the asthma tool and the cough tool shows that time constraints were the main barriers to use. The format of the tools, particularly the asthma tool, was an additional, but lesser, barrier. While a lack of resources was a barrier to the use of the asthma tool, it was less frequently reported as a barrier to the use of the cough tool. A review of the medians for the cough tool mirrors the findings that time constraints, format, and, to some extent, organizational resource constraints are the primary barriers to the use of the tools. Here again, results indicate that the majority of respondents did not question the usefulness of the tools, their adaptation to practice, or the extent to which patients would adhere to the recommendations. In fact, and as shown in Table 4, the medians for these items were low.

DISCUSSION

Practice tools are one of a number of strategies that have been developed to synthesize emerging research findings and to translate this knowledge to improve medical practice and patient outcomes. However, and as suggested by the model of knowledge transfer process, it is necessary to

Table 4. Barriers to the Use of Asthma and Cough Practice Tools

Barriers to use		Does not Apply or Missing	Responses*					
			1	2	3	4	5	Median
Time constraints	Asthma	13	0	7.7	30.8	30.8	30.8	4
	Cough	20	15.0	5.0	30.0	30.0	20.0	3.5
Lack of knowledge	Asthma	12	50.0	25.0	0	25.0	0	2
	Cough	19	26.3	31.6	15.8	15.8	10.5	2.5
Lack of resources	Asthma	12	25.0	16.7	16.7	33.3	8.3	3.5
	Cough	19	26.3	21.1	26.3	10.5	15.8	3
Evidence not adapted to routine practice	Asthma	12	33.3	25.0	25.0	16.7	0	2.1
	Cough	19	26.3	26.3	26.3	15.8	5.3	3
Tool not adapted to routine practice	Asthma	12	66.7	33.3	0	0	0	1
	Cough	18	61.1	16.7	16.7	0	5.6	1
Patients will not adhere	Asthma	12	25.0	58.3	16.7	0	0	2
	Cough	19	36.8	31.6	31.6	0	0	2
Format of the tool	Asthma	14	28.6	0	28.6	28.6	14.3	3
	Cough	22	27.3	13.6	27.3	22.7	9.1	3

*Frequencies of responses: 1, strongly disagree; 2, disagree; 3, neither disagree nor agree; 4, agree; 5, strongly agree.

continuously determine how these tools can be improved to better meet the needs of practitioners and contribute more effectively to medical practice. The purpose of this study was to assess the extent to which asthma and cough tools were used by primary care physicians involved in the care and management of patients with these conditions, and to examine the barriers to their use.

Findings from the study clearly show that physicians favor the use of asthma and cough practice tools to facilitate decision-making and to improve patient follow-up, even though the cough tool was used more often than the asthma tool. Our findings also show that although physicians report that the tools are useful and relevant to their daily practice, their use is limited both in extent and purpose. In fact when clinicians use the tools they are used as reminder systems, knowledge checks, decision-making supports, or to show evidence to patients. Time constraints were the most important barrier to the use of both the asthma and cough tools.

These findings not only confirm previous research on the use of guidelines but also provide further insight into user-related, social, and contextual factors that influence how, how often, and with whom (i.e., themselves, colleagues, or patients) the tools are used. For example, Ting¹⁶ examined the causes of poor adherence to asthma guidelines by primary care physicians (PCPs) and developed the Multicolored Simplified Asthma Guideline Reminder (MSAGR) as a practical tool to facilitate adherence. The MSAGR provides patient-specific recommendations, based on asthma guidelines and informed primary care physician interventions, to improve asthma outcomes and reduce

both emergency room visits and hospitalizations. However, the MSAGR is a reminder system intended to change physician behavior and does not address broader contextual barriers that influence guideline adherence without providing direct guidance on changes that could be made to the guidelines themselves.

There are two main limitations to the study. The first is the relatively small sample, which limits the ability to generalize findings to a broader group of physicians and healthcare providers with different socioprofessional characteristics and experiences and limits our ability to conduct confirmatory analyses of the instrument used to assess the practice tools. In addition, data were collected over a fairly long period of time, which means that not all participants had the same level of exposure and knowledge of the practice tools, possibly influencing assessments not only of the guidelines but also the extent to which they can be implemented.

CONCLUSION

A growing number of practice tools are being developed. Their use is influenced by a range of factors: their format and content; the manner in which the tool is presented to the user; certain user characteristics, such as the user's motivation to use the instrument; and a number of contextual factors such as time and resources. Unfortunately, practice tools are rarely evaluated based on their impact. We tested an instrument to assess practice tools that aims to increase their use and, ultimately, their effectiveness for care. The instrument can be used to assess several factors

that influence the use of practice tools, such as physician knowledge and motivation, relevance of the tools, resource constraints, and patient motivation.

Our findings also show that practitioners use the asthma and cough tool examined both as a memory aid and to guide the decision-making process, but that time constraints limited their use, suggesting a need to better integrate the tools into the realities of everyday practice. Furthermore, the results of both the closed- and open-ended questions suggest that there is a growing need for and interest in other formats, such as wireless tools (e.g. electronic tablets, or smart phones) that further facilitate access, knowledge translation, and the continued professional development of primary care physicians. Findings from the study will inform the development of effective knowledge transfer tools and strategies that are aligned with the specific practice contexts of primary care physicians. ■■

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Appendix. Assessing the Pertinence of Asthma Practice Tools for Primary Care Physicians

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Section 1. Use of the Asthma Tool

☛ Please check the answer that applies

Never	Rarely	Sometimes	Often	Very often	Not applicable
1	2	3	4	5	6
How often, in the last 6 months, have you:					
Used the asthma tool in routine professional practice					
Cited the evidence presented in the asthma tool to colleagues					
Cited the evidence presented in the tool to patients					
Encouraged colleagues to use the asthma practice tool in their routine practice					

Section 2. Usefulness of the Tool

☛ Please check the answer that applies

Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

The asthma practice tool:	1	2	3	4	5	6
Is useful in my routine practice						
Meets my needs						
Is a privileged source of information for this condition						
Is adapted to my practice						

Note: Section 3 is not reproduced in this article**Section 4. Barriers to the use of the asthma tool***

☛ Please check the answer that applies

Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

Barriers to the use of the asthma tool are:	1	2	3	4	5	6
Time constraints						
A lack of knowledge about how to apply the recommendations						
Resource constraints (e.g. structure of work, lack of material resources)						
The information provided in the tool is not adapted to my practice.						
I do not find the tool useful for my routine professional practice.						
I do not think the patient will implement the recommendations.						
The format of the tool						
Other, please specify: _____						

Section 5. Comments or Suggestions to Facilitate the Use of the Tool in your Routine Practice

	Comments and Suggestions
What are the strengths of the tool?	
What are the weaknesses of the tool?	
What would you change to make the tool more useful for your routine practice?	
Format	
Content	
Other	

Section 6. Socioprofessional Profile

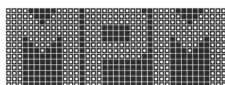
Gender	M___	F___
Number of years in medical practice	_____	
Region in which you practice	_____	
Type of medical practice	Solo practice _____ Group practice _____ Family Medicine Group _____ Local Community Service Centers _____ Primarily hospital based _____ Emergency medicine _____ Other _____	
Training	Family medicine _____ Postdoctoral training _____ Specialty training _____	
Number of hours of medical practice per week	_____	
Approximate number of patients consulted for asthma each week	_____	

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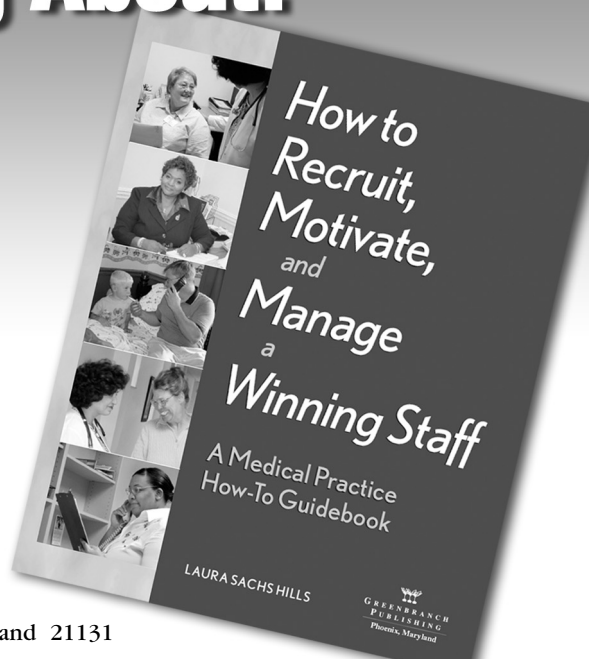


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