Knowledge transfer in primary care: the model of allergic respiratory diseases

Quebec City, Canada. 7 May 2010

Published: 10 December 2010

These abstracts are available online at http://www.aacijournal.com/supplements/6/S4

INTRODUCTION

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Introduction

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Allergy, Asthma & Clinical Immunology 2010, 6(Suppl 4):A1

A Clinical Practice Guideline (CPG) can be defined as a “systematically developed statement to assist practitioner and patient decisions about appropriate healthcare for specific clinical circumstances” [1,2]. These guidelines help summarize research findings, provide guidance on management of various conditions, and support quality control measures [3]. They usually include a review of current knowledge, following a systematic search for evidence on a specific topic, and provide graded recommendations to guide the clinician, particularly for primary care settings [4,5]. Unfortunately, guidelines implementation is often still sub-optimal, particularly for chronic diseases [4,6-8]. In the last decade, research in the field of Knowledge Transfer/Translation (KT) has identified possible strategies to improve the uptake of guidelines [9,10]. This report of the proceedings of a Canada-Sweden symposium held in Quebec City, Canada, on 7 May 2010, provides a brief overview of various components of CPG implementation, particularly on allergic respiratory diseases. The main objectives of the symposium were to: 1) Review barriers and facilitators of KT and guidelines implementation for primary care, 2) Discuss current status and recent initiatives in regard to allergy and asthma guidelines implementation in Canada and Sweden, 3) Elaborate on how to improve guidelines implementation at the patient level, for example using shared-decision interventions, and 4) Suggest models of evaluation of KT and implementation programs.

Hopefully, this summary of the presentations will bring useful information to the attention of all those interested in KT and promote new initiatives, particularly for primary care, to improve guideline implementation and evaluation of the results of these interventions.

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The burden of allergy, asthma and related immune disease is significant and growing world-wide, and while the underlying causes of these diseases are actively being studied, the origins of these diseases are still not well understood. According to the results of the International Study of Asthma and Allergies in Childhood (ISAAC) Study, Phase III (2003) results, 47% of Canadian children have suffered from allergic rhinitis; 39% have experienced wheezing; 22.4% have been diagnosed with asthma; and, 19% have experienced atopic eczema [1]. According to Health Canada, non-food allergies are now the most common chronic condition in Canadians 12 years of age and older [2]. The economic impact of these diseases in Canada is in excess of $15 billion annually, when one includes the cost of ambulatory care, in-patient stays, emergency department visits, physician and facility payments, prescribed medications and productivity losses at school, work, and at home as a direct result of these diseases [3]. This annual cost is comparable to the economic impact of arthritis and other chronic conditions. Ontario data show that 14% of all asthma-related emergency department visits occur in children between birth and 4 years of age, and that 21% of asthma prevalent cases were children and adolescents up to 19 years of age [4]. However, hospital admissions for asthma have decreased for both children and adults since 1996, and asthma as a cause of death is relatively uncommon and decreasing among all age groups in the developed world. Globally, asthma is more prevalent among the developed countries and in major city centres [5]. Among the countries with somewhat lower prevalence rates, such as India and China, which represent 37% of the global population, recent research suggests that as these countries industrialize, allergy, asthma and related immune disease prevalence rates are rising rapidly, mirroring the experience of more developed countries. Given the Canadian Institutes of Health Research’s strategic vision to position Canada as a world leader in the creation and use of knowledge derived from health research that benefits Canadians and the global community, Canadian researchers and their international partners have a significant opportunity to work in collaborative networks to accelerate the translation of research into practice, and knowledge to action, to improve allergic disease and asthma awareness, education, management and control.

A recent analysis by Teresa To, from The Hospital for Sick Children [6], reveals that for Ontarians, the lifetime risk of developing chronic asthma is 1 in 3 – the same as the risk of developing cancer and diabetes. However, unlike cancer and diabetes, the substantial lifetime risk of asthma begins at an early stage in life and persists throughout the life span, triggering heightened disease burden, potential productivity loss and other economic costs. Building upon the work done in 2004 by a team led by Rejean Landry, AllerGen developed a publicly available KT planning tool called Knowledge Translation Planning Tools for Allergic Disease Researchers. This tool provides a guide for researchers, their stakeholders and partners to collaboratively develop translational strategies and tactics that will help accelerate the rate of dissemination, uptake and application of allergy, asthma and related immune disease research to improve the quality of life for patients, facilitate optimal care by health providers and reduce the economic drag resulting from the burden of these diseases [7]. Working with national and international partners, such as the Karolinska Institute in Sweden, AllerGen is committed to facilitating efforts to improve allergic disease and asthma management and control, discover the root causes of these diseases and accelerate the application of research findings and KT activities for social and economic benefits nationally and globally.

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Knowledge brokers and how to communicate knowledge in 2010
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The importance of using healthcare evidence by policy-makers is widely recognized [1,2]. For over a decade, several strategies to improve the use of knowledge by policy makers have been promoted [3,4]. Among them, the use of individuals called “intermediaries” or “knowledge brokers” is presented as a potential strategy [5,6]. Situated at the organizational interface, these actors benefit from a strategic position allowing easier access to external knowledge [7]. Therefore, they must develop sufficient skills to be able to properly take profit of all opportunities to create the value for their organization. In fact, many authors consider brokers as true knowledge integrators that assess, interpret, synthesize, exploit and transfer relevant knowledge. Despite the availability of several studies that stress the importance of the multifaceted role of brokers, few have explored how they concretely integrate or “absorb” knowledge and especially, which skills are necessary to ensure the success of such activities.

We propose a new conceptual model on research integration by knowledge brokers and provide an empirical testing of this proposed model. This conceptual framework (figure 1) builds upon recent theoretical developments on the concept of knowledge absorptive capacity [8] i.e., starting from the following dimensions: knowledge identification (recognize value of new knowledge), acquisition, assimilation, transformation and knowledge exploitation. To test the conceptual framework, we collected survey data. The sample of 297 respondents included members of the knowledge brokerage community of practice (CoP). Data analysis allowed presenting a first portrait of the profile of knowledge brokers working in health organizations in Canada. In this perspective, several descriptive analyses, such as the distribution of knowledge brokers according to their membership organizations, their status, education (last Diploma), experience, etc., were completed. The bivariate analyses used these dimensions to compare knowledge brokers regarding their knowledge absorptive capacity and the explanatory variables documented in the literature. These results show that the brokers’ absorptive capacity of knowledge improved with higher levels of advanced education attainment, such as a PhD. However, employment status of brokers and their skills was also a factor affecting knowledge broker performance. It was found that brokers with professional status identify more knowledge than do brokers with senior managers’ status. Conversely, brokers with senior manager status transform and exploit knowledge more effectively than do brokers with professional status. Also, other organizational factors that act as facilitators or barriers to knowledge absorption by brokers are the organizational unit size where they perform their daily tasks. We found that the brokers who are assigned to medium size units are more able to identify, assimilate, transform and create opportunities of knowledge exchange in their workplace (i.e., actively exploit knowledge). Finally, these results allow us to establish the differences between the brokers according to their level of advanced education, status, organizational affiliation, and the size of the organizational unit. Further multivariate analyses are needed to identify all the factors associated with brokers’ absorptive capacity.
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What should be our approach to knowledge translation in primary care?
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Evaluations of delivered care have consistently demonstrated gaps between existing medical knowledge and current practice. Studies examining the quality of care across disciplines and jurisdictions have estimated that 30% to 45% of patients are not offered evidence-based best care, and 20% to 30% receive contraindicated and potentially harmful care [1,2].

Respiratory disease care gaps are equally alarming, with only 48% of recommended care delivered to patients with asthma exacerbations, and only 46% of routine recommended care delivered to patients with COPD [3]. Knowledge translation (KT) is a methodological approach developed specifically to address these care gaps. Because the most prevalent conditions are managed predominantly in primary care, there has been a great deal of interest in developing KT interventions targeting the primary care environment. A meta-analysis of randomized trials of guideline implementation interventions has demonstrated only modest effects on care across a wide range of disciplines, care settings, recommendation types and intervention types [4]. However, few of these studies employed behavioral theories to inform intervention design, and this lack of an appropriate theoretical underpinning may be partly responsible for their limited success [5]. A multi-step approach to KT intervention design might improve success. Knowledge implementers should start by investigating the theory-based factors that underlie existing clinical practice, in order to identify the theoretical constructs that should be targeted by an intervention. Once these factors are known, one can design interventions to enhance the processes supporting change in these specific constructs [6].

When targeting individual behaviour change, relevant theoretical categories include motivational theories (which explain how individuals wish, intend and ultimately decide to change behaviour), action theories (which explain how individuals move from intention to actual behaviour change), and stage theories (which describe an orderly progression through discrete stages toward behaviour change) [6]. Concepts of behavioural intention and self-efficacy are among the best predictors of subsequent health behaviour and are found in virtually all social cognitive models of health behaviour. Baseline factors influencing current behaviour can be identified directly through previous literature, or through direct measurement via interviews, questionnaires or group methods. An alternative approach is to analyze practice variation with respect to its determinants. With this technique, determinants identified predominantly in practices which adhere to or do not adhere to behaviour can be characterized as facilitators or barriers, respectively. Finally, researchers can analyze previously effective KT interventions to retrospectively ascertain which factors were likely influencing behaviour [7].

After having thus identified the relevant components of a behavior that should be targeted, an appropriate intervention can be developed based on approaches previously shown to be effective in other settings. General categories of interventions include educational interventions, which can be passive or interactive; audit-and-feedback; provision of just-in-time information, including reminders and clinical decision support systems; organizational changes such as role revisions or financial incentives; and patient-directed interventions such as pre-consultation questionnaires. Electronic tools are emerging as a modality to facilitate a wide range of these interventions and require further study.

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Access to information is essential to effective and efficient clinical practice. On one hand, clinicians must keep track of new scientific evidence relevant to their field of practice. On the other hand, encounters with patients generate questions requiring answers in order to provide adequate clinical care. The main challenge is to access truly useful information that is: 1) relevant to clinical practice, 2) scientifically valid, and 3) requires minimal efforts to find, to appraise and to decide to integrate or not into practice. [1] The Internet now allows both staying up-to-date and finding answers to clinical questions.

Three main strategies can be used to take advantage of Internet resources: "push", "pull" and "exchange." The "push" strategy is similar to subscribing to a paper-based medical journal. The main purpose of this strategy is to keep aware of new knowledge relevant to practice. Many organizations offer to "push" clinical information to health care providers through Web portals (e.g., amc.ca, Journal Watch), e-mails alerts (e.g., InfoPratique, InfoPoem, evidenceupdates, Dynamed Weekly updates, GFD journal alerts, Pubmed) and RSS (Really Simple Syndication) (e.g., RSS4medics). There is, however, a risk of being rapidly overloaded with useless information, either irrelevant to practice, invalid, and/or needing extensive work to appraise, if pushed information is not judiciously selected.

Information can also be actively searched for ("pull" strategy), usually for the purpose of answering clinical questions. Most often, electronic tools offer a much faster and broader access to information than searching through piles of medical journals accumulating on shelves over the years. From databases of original studies (e.g., Medline, Embase) and systematic reviews (e.g., Cochrane Library) to virtual libraries (e.g., MD Consult, Stat! Ref!), repositories of clinical practice guidelines (e.g., CMA Infobase, National Guideline Clearinghouse), critical summaries, synopsis of original articles (e.g., InfoCritique, ACP Journal Club, InfoPoem, Clinical Evidence) and evidence-based e-textbooks (e.g., UpToDate, Essential Evidence Plus, ACP PIER, Dynamed), a huge amount of clinical information can be accessed on the Web or on a personal digital assistant (PDA). Federated search engines searching simultaneous resources such as Infonclinique, TripDatabase and MacPlus can ease the process of finding answers to clinical questions in the maze of information. Most questions can be answered by a judicious combination of just a few of these resources. Reaching out to colleagues to obtain or share information about a clinical question has always been valued by health care professionals. This "exchange" strategy for keeping up-to-date and answering clinical questions is increasingly available through Web 2.0 functionalities (blogs/ tweeters, wikis, pod/podcasts). Website such as Asklepios from the Canadian Medical Association is an example of the multiple initiatives now available to foster communities of practice among health care providers who are sharing similar interests. However, we are still at the "early adapters" phase of implementation and the effectiveness of these new e-tools to improve healthcare has yet to be demonstrated. By combining selected "push" and "pull" resources, the internet can provide access to useful information to facilitate evidence-based clinical care.

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A6 Case method assisted implementation of guidelines on secondary prevention of coronary artery disease decreases mortality: a ten-year follow up of a randomized controlled study

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Previous findings show, two years after Primary Care Practitioners’ participation in an interactive pedagogic case-based learning program [1], that a significant reduction of blood lipid levels of their patients was achieved [2], and reported that the educational intervention was cost effective [3]. The aim of this study was to determine the size of any patient survival benefit from such interactive case-based learning method [1] aimed at facilitating implementation of guidelines in primary care. This was a prospective randomized controlled trial in a primary care practice setting, in Stockholm, Sweden. New guidelines for secondary prevention in coronary artery disease were mailed to all general practitioners in the area and presented at a common lecture in 1995. The general practitioners were randomized according to their Primary Health Care Center into well-matched patient/physician pairs and were randomly allocated to active intervention with either exposure to a case-based learning method or usual care. General practitioners in the intervention group participated in recurrent case-based learning dialogues at their Primary Health Care Centers during a two-year period. A locally well-known cardiologist served as the facilitator. Consecutive patients (n=255) with coronary artery disease were included. Ten-year mortality rates were obtained from the Cause of Death register and were assessed as all cause and cardiovascular mortality.

The two Primary Health Care Center groups of patients and physicians were well matched and did not differ at baseline. The attendance rate at the seminars was 82% or higher. After ten years, nineteen (44%) of the patients included in the control group had deceased compared to 10 (22%) in the intervention group (p=0.017; log rank test). The inclusion of the covarates age, sex, hypertension, smoking and diabetes did not change the results. Patients treated by a specialist died at a rate comparable to the intervention group (23%). Cardiovascular mortality was 32% in the control group and 16% in the intervention group (p=0.007).

In conclusion, case-based learning methods for general practitioners improved survival in patients with coronary artery disease. The hazard ratio (HR) of survival between intervention and usual care is 0.45 (95% CI 0.20-0.95) if the case-based learning method is used to assist implementation of evidence based care.

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Passive dissemination of guidelines to health care professionals is insufficient to change practice. Three weeks after the mailing of national Asthma Diagnosis and Treatment Guidelines to New Zealand general practitioners, only 46% of survey responders were able to locate the received guidelines, 12% had read them in detail, and only 20% indicated that it would change their practice [1]. In the face of information overload and guideline burnout among physicians [2], there is evidence that active dissemination with a simple actionable message may be more effective [3]. The Knowledge-to-Action cycle (see Figure 1 below) promoted by Graham and colleagues and strongly endorsed by the Canadian Institutes of Health Research, provides a framework for effective active dissemination [4]. It can be conceptualised in four main steps - namely planning, assessing, tailoring and learning.

The planning phase involves 1) selecting one or a few key messages as priorities for implementation from the list of guideline recommendations (e.g., long-term daily controller medication for children with asthma); 2) identifying the target population of health care professionals (e.g., general practitioners) and settings (e.g., community practice); 3) adapting the message to the target audience (e.g., prescribing by physicians; verifying adherence by pharmacists; and patient understanding of the role, safety and side effects of asthma medications by educators); and 4) selecting the action(s) to be taken and the outcomes to be measured to document adherence to the target implementation priority and its health impact.

The assessment phase includes: 1) assessing the baseline status of implementation of the selected priority(ies) preferably using objective, rather than reported, uptake by the target audience (for example, reviews of medical charts or prescriptions are superior to reported actions, which are influenced by the social desirability bias); the objective assessment of implementation may be done pre- and post-intervention or in an iterative fashion, sometimes by interrupted time series analysis, to document not only the impact of an intervention but also the sustainability of the implementation intervention. 2) Secondly, the intention to implement the specific action is an important guide to predict action. Indeed, in a large systematic review, by simply asking the target audience Sheehan discovered that 97% of those who did not intend to implement a specific action never did, while only 53% of those who intended to take the action actually did [5]. This is important as the barriers are different for intenders and non-intenders. According to the Cabana taxonomy [6,7], non-intenders face seven internal barriers related to beliefs, knowledge and attitudes and three external barriers affecting health care professionals’ ability to conform, namely barriers related to patient, guideline and environmental factors. For intenders, the intention-behaviour gap results from two main problems that can be addressed, failing to get started and getting derailed. It is critical to assess the barriers and facilitators faced by the target audience as well as the potential solutions proposed ideally by the target audience, in order to tailor the KT intervention. The omission of the assessment step is
believed to explain the low success rate of a variety of KT interventions, which hovers around 10% [8]. Tailoring the KT intervention, by selecting both the KT strategy and change theory that best fit the target audience, is thus critical. The Cochrane Effective Practice and Organization of Care Review Group is an outstanding source of reference to select KT interventions, displaying summary estimates for various interventions tested by randomized controlled trials [8-11]. Unfortunately, it is far easier to change intention than it is to change behaviour [12]. The use of action theories to bridge the intention-behaviour gap has been well described [13]. For example, implementation intentions also called the “if-then plan” has been shown to significantly improve goal attainment [12]. It consists of four steps: identifying the self-regulatory problem Y (seeing a patient with poorly controlled asthma); identifying a cognitive/behavioural response X that would help resolve the problem (write a prescription of inhaled corticosteroids); identifying a good opportunity to instigate the response, serving as a cue (asthma quiz score of two or more filled in the clinic setting) [14]; and making a plan by generating in writing a contingency plan - if it is a situation Y, then I will do X (if I see a patient with poorly controlled asthma, that is, with an asthma quiz score of two or more, I will write a prescription for the inhaled corticosteroids) [14]. Finally, both uptake and outcome measures should be monitored for sustainability. We should learn from successes and failures as the knowledge to action cycle implies improvement through iterative rotation around the cycle. Ideally, the intervention should be tested in the context of a randomized controlled trial to best assess the impact of the intervention; because of the likelihood of contamination between health care professionals working in the same setting (clinic, hospital, etc.), cluster randomisation may be ideal to address this issue [15]. Whenever possible, having a third arm to examine barriers and facilitators to the uptake of the intervention is useful to better learn from our endeavour. Alternatively, such qualitative analysis of barriers and facilitators can be done after a successful or failed intervention to understand the mechanistic pathway. In summary, the Knowledge-to-Action cycle provides the framework for designing and testing effective intervention strategies to improve implementation of guidelines by any audience, including health care professionals. The key decision remains to select a simple actionable message.

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Allergy, Asthma & Clinical Immunology 2010, 6(Esuppl 4):A8

Chronic diseases are the major cause of death and disability worldwide. Healthcare systems are reforming themselves to improve the health of people with, or at risk of developing, chronic diseases. One of the major goals of these health reforms is to provide both self-management support and decision support to patients so that they become involved and informed [1]. “Shared decision making” (SDM) is described as a process in which the health professional and patient go through all phases of the decision-making process together and in which they share the preference for treatment and reach an agreement on treatment choice [2]. It has been positioned between a paternalistic model, where the health professional assumes the leading role in treatment decision-making, and an informed patient choice model where the health professional’s role is limited to providing information and the patient is responsible for treatment decision-making [3]. SDM is recommended because of its potential to improve the quality of the decision-making process of patients for treatment choices that are informed and value-based, adherence to treatment decisions and ultimately, patient outcomes. It is one of the elements commonly considered important in patient-centered care, a gold standard to improve the quality of chronic disease care. Recently, SDM has also been advocated as a promising strategy to promote effective knowledge translation (KT) between patients and their health care provider. In that context, a KT approach to KT is defined as a process that is embedded in a specific relationship and by which both the health care provider and the patient influence each other’s cognitions, emotions and behaviours, and come to agreement about a decision [4]. Although there is a growing clinical interest in SDM, it is still not widely adopted by health professionals. Frequently reported barriers include time constraints, lack of applicability due to patient characteristics and lack of applicability related to the clinical situation. Otherwise, factors such as the health professional’s motivation, positive impact on the clinical process, and positive impact on patient outcomes are often reported as facilitating the adoption of SDM [5]. Theory-based approaches are suggested to better inform the design of SDM implementation interventions, as they provide insights on factors that may influence the adoption of SDM by health professionals and patients in a given context. In conclusion, SDM is increasingly regarded as an ideal chronic disease care strategy. SDM may enhance adherence to treatment decision, which is a major public health issue in chronic care.

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How are guidelines on allergic respiratory diseases implemented in primary care in Canada?
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Allergy, Asthma & Clinical Immunology 2010, 6(Suppl 4):A9
Asthma is still not optimally controlled in Canada, as in other countries [1,2]. As an effort to determine what could be optimal care of this chronic condition, Clinical Practice Guidelines (CPGs) have been produced and revised regularly in the last two decades, although recent reports suggest that they are not still sufficiently implemented, particularly into primary care [1-4]. Cabana et al. had reported, following a systematic literature review of studies on barriers to adherence to CPGs, that more than half of physicians were not aware of the exact content of current guidelines; common barriers to guidelines implementation included a lack of agreement and/or motivation to change, a lack of self-efficacy, inertia of previous practice, and external factors, such as lack of time and insufficient resources [4].
In regard to asthma, we previously reported data from questionnaires completed by 2,605 Canadian practitioners [5]; we observed that Canadian Asthma Consensus Guidelines (CAGC) were considered well known only by a minority of Primary care Physicians (PCP) and that significant discrepancies existed between this Guideline’s recommendations and current care, such as a low use of objective measures of airflow limitation to assist with diagnosis, difficulties with proper assessment of medication needs, a low provision of written action plans for patients and an infrequent referral to other health professionals for asthma education. In keeping with this initial study, following a recent Canadian survey, we proposed that an insufficient use of objective measures for the diagnosis of asthma explained the over-diagnosis of asthma observed [6]. More recently, using a sample of patients treated in primary care in Canada, we confirmed that many patients still do not enjoy adequate guideline-defined asthma control, particularly women, current smokers, older patients and those who lack a written action plan for exacerbation management [1]. However, primary care physicians recognized a lack of control among most asthma patients and were likely to recommend appropriate medication changes and aftercare to patients who fail to achieve guideline targets for asthma control. This, therefore, suggests that although there have been improvements in guideline implementation, some care gaps still persist.
In order to better understand how Canadian guidelines are implemented and to develop targeted strategies to improve their translation into current care, we developed a new tool, the Physicians’ Practice Assessment Questionnaire (PPAQ) [7]. As an initial assessment of this tool, implementation of fourteen key-recommendations on asthma management from the most recent CAGC was evaluated in a group of 47 general practitioners’7. Validation of the questionnaire showed good internal consistency and good test-retest, and revealed that the lowest self-reported rates of implementation were for: 1) referral for patient education; 2) provision of a written action plan; 3) regular assessment of inhaler technique; and 4) referral to a specialist for difficult to control asthma or uncertain diagnosis. This suggests that in order to improve asthma control, these specific behaviors should be addressed and translation of these recommendations facilitated.
Finally, in regard to rhinitis, under-diagnosis and under-treatment of rhinitis seems common and although international guidelines are available, we need to better understand how physicians integrate their recommendations into care [8]. Barriers and facilitators of guidelines’ translation into current care should be further addressed.

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A10
Dissemination and implementation of recommendations on hypertension: the Canadian experience
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Allergy, Asthma & Clinical Immunology 2010, 6(Suppl 4):A10
The Canadian Hypertension Education Program (CHEP) started an ambitious dissemination and implementation program (D&I) in 1999 [1]. Recent data show that control of hypertension in Canada has recently improved dramatically from 13% in 1992 [2] to 66% in 2008 [3-5]. Improved hypertension control from survey data is supported by and consistent with the data of declining Canadian standardized yearly mortality and hospitalization rates for the complications of hypertension - stroke, heart failure and acute myocardial infarction [5,6]. This achievement makes Canada a world leader in treatment and control of hypertension.
CHEP’s D&I program includes three components: dissemination, implementation and addressing barriers. Dissemination has been achieved through a passive-to-active dissemination process by publishing in multiple formats - peer-reviewed and non peer-reviewed - with contents tailored to end users, including patients and their families. Another important aspect has been the development of tools to help professionals in daily decision making for the management of hypertension [1]. Implementation happens when the information is used locally and barriers to the translation of such information are addressed. Characteristics of D&I programs usually include the following elements: multifaceted, multiple audiences, multimedia, consistent information and messages; sustainable, credible, using the appropriate language, and realistic and applicable. Each barrier is specific and should be addressed individually. A barrier can be, for example, related to access to professional services, diagnostic procedures, specific therapeutic procedures or different provincial/local

Table 1 (abstract A10)

| Branding of CHEP |
| An Implementation Task Force |
| A 5-year Business Plan |
| An endowed chair for "Knowledge Translation on Hypertension" to spearhead, coordinate, facilitate and maintain the process |
| A yearly revision/dissemination process |
| An Outcomes Research Task Force |
and available resources drives most choices in KT intervention study designs. Evaluation study designs include randomized controlled trials (the gold standard for assessing causality and impact of interventions); and non-randomized or quasi-experimental designs (e.g., controlled/uncontrolled before-after, and interrupted time series designs), which are more subject to biases but require fewer resources. These designs vary in their ability to control for bias to increase internal validity, but even the perfectly valid study may not determine the degree to which the results can be generalized to real practice conditions. Pragmatic study designs can facilitate this by maximizing the relevance of the results for real world decision-making, often for a broad range of settings. Despite a large number of studies, many knowledge gaps still remain. Rigorous evaluation of QI initiatives (using both quantitative studies to better understand “if” something works supplemented by qualitative studies to understand “why”) are needed to increase our knowledge of KT and to improve quality of care.

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A12 Recent initiatives on guidelines implementation: KT in primary care
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Allergy, Asthma & Clinical Immunology 2010, 6(Suppl 4):A12

In Canada, numerous initiatives have been developed in the recent years to improve guidelines implementation in respiratory care. Following the Canadian Thoracic Society (CTS) 1999 Canadian Asthma Consensus Guideline (CAGC), efforts have been devoted to better disseminate this document and foster its implementation. This included among others, the production of a series of publications, development of a web-site, mailings of key messages to primary care physicians, interactive workshops and integration of CAGC recommendations in educational programs.

In the past, Canadian respiratory health guidelines have been produced and disseminated according to various agendas and methods, but in the last few years, the CTS has decided to develop a common body, the Canadian Respiratory Guidelines Committee (CRGC). The goal of the CRGC is to produce, disseminate, help implement and evaluate Canadian respiratory guidelines according to uniform methods and in a collaborative fashion, with a common annual agenda [1]. The methods used to produce and assess the performance of those guidelines are described in the publication by Gupta et al. [2]. Hopefully, this new strategy will allow a better use of resources and a more efficient translation process. Initiatives aimed at improving guideline implementation have also been developed and a specific Dissemination and Implementation Subcommittee has been formed to address this. A large scale project, the “Guidelines Implementation in Primary Care” (GIPC) study, based on quality circles and mentorship for primary care physicians (PCP) and involving interactive sessions and the use of practice tools had been developed but faced difficulties in regard to physicians recruitment, stress the challenges associated in the involvement of busy PCPs is such studies. Various other means of contributing to guidelines implementation are presently considered. Documents and tools to facilitate the translation of guidelines can be found at www.respiratoryguidelines.ca.

There is, therefore, a need to promote implementation initiatives according to the most effective methods recognized and to develop innovative strategies to improve the translation of guidelines recommendations, while considering the cost-effectiveness of these interventions in addition to the needs and motivations of the targeted groups. This is also one of the key mandates of the recently developed Laval University Chair on Knowledge Transfer, Education and Prevention in Respiratory and Cardiovascular Health, and various means of translating current cardio-respiratory guidelines are being developed and will soon be available on the site www.coeurpoumons.ca.

Finally, numerous other asthma guidelines implementation initiatives have been proposed in many Canadian provinces in the last two decades (the
Improving quality of care for children with asthma by learning with an interactive approach: a prospective randomized controlled study in 14 Swedish primary health care centers

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Allergy, Asthma & Clinical Immunology 2010, 6(Suppl 4):A13

Eight to 10% of children in Sweden have asthma. The majority of these children are followed and treated in primary health care centers (PHCs). Many studies show poor compliance to written guidelines [1,2]. The purpose of this study was to evaluate whether or not the method of interactive case-based education [3] combined with audit/feedback [4], leads to a better quality of care for children with asthma, according to quality indicators from Local Practice Guidelines (LPGs) [5].

We collected data from children aged 6 months to 16 years with asthma, obstructive bronchitis or cough, attending 14 PHCs in northern Stockholm. Medical records of 20 children diagnosed with asthma were randomly selected in each PHC. Medical records of 20 children diagnosed with obstructive bronchitis or cough were also included to evaluate if these children fulfilled the diagnostic criteria of asthma. A questionnaire was addressed to general practitioners (GPs) and nurses regarding knowledge and competence in asthma management, educational needs and interest, and current equipment and routines at their PHC. The 14 PHCs were matched by pairs. Seven PHCs received the educational intervention, while 7 PHCs had this intervention only after completion of the study. Medical records were scrutinized in order to identify the following quality indicators: diagnosis on the basis of the criteria delineated in the LPGs: performance of spirometry, assessing exposure to tobacco smoke, prescription of inhaled corticosteroids, patient education and routine follow-up. The second evaluation of the medical records and questionnaire were scheduled six months after the intervention, to allow time to change behaviour. GPs and nurses from the intervention group participated in three interactive educational meetings [3] led by an allergologist and a nurse. The first two meetings used case-based learning approaches, focusing on the specific needs of each PHC and the third meeting was based on audit/feedback [4] to discuss the results obtained and address the problems identified in the first analysis of data from the participating PHCs.

Preliminary baseline data reveals that 50% of children with asthma from school age are treated with inhaled corticosteroids, prescribed by the GPs. Few patients had a spirometry test and few had received asthma education. Exposure to tobacco smoke was rarely discussed. Most children had only one visit to the PHC. Fifty per cent of the children had a planned follow-up, usually by referral to the local paediatric outpatient clinic. Twenty per cent of the preschool children had under-diagnosed asthma.

This initial analysis shows that there are many care gaps in children’s asthma management, and that educational interventions have the potential to help address these gaps.

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