Agence d'Évaluation des Technologies et des Modes d'Intervention en Santé

Québec

Agence d'évaluation des technologies et des modes d'intervention en santé

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Agence d'évaluation
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et des modes
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EFFECTIVENESS OF SELF-MANAGEMENT PROGRAMS FOR OBSTRUCTIVE RESPIRATORY PROBLEMS

Report submitted to the

**Minister of Research, Science
and Technology of Québec**

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Québec

Agence d'évaluation des technologies et des modes d'intervention en santé

MISSION

To support the *Ministre de la Recherche, de la Science et de la Technologie* and Québec's public health system decision-makers, namely the *Ministère de la Santé et des Services Sociaux,* through the assessment of technology and methods of intervention in health issues, notably the assessment of their effectiveness, safety, cost and cost-effectiveness, as well as ethical, social and economic implications.

To support the *Ministre de la Recherche, de la Science et de la Technologie* in the development and implementation of scientific policy.

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EFFECTIVENESS OF SELF-MANAGEMENT PROGRAMS FOR OBSTRUCTIVE RESPIRATORY PROBLEMS

Obstructive respiratory problems, referring essentially to asthma and chronic obstructive pulmonary disease (COPD), have a major impact on the population of Canada. Managing them is primarily achieved by preventing a deterioration of respiratory function through self-management programs. Educational programs consist of three general approaches: understanding asthma; self-monitoring of respiratory function; and an action plan. However, questions are still being raised concerning program effectiveness, depending on the nature and severity of the respiratory problems.

The involvement of the *Agence d'Évaluation des Technologies et des Modes d'Intervention en Santé (AETMIS)* stems from a request for evaluation made during the summer of 1999 by the *Direction de la Santé Publique de Montréal-Centre*. The *Conseil d'évaluation des technologies de la santé*, replaced in June 2000 by *AETMIS*, was asked to evaluate the effectiveness of the use of peak flow meters, by patients suffering from obstructive respiratory problems, in decreasing the number of emergency room visits. However, it was deemed appropriate to extend the analytical framework to include all obstructive respiratory problems so as to provide a more general overview.

In conclusion, *AETMIS* considers that, for the adult population, self-management programs for asthma are an accepted and effective way to decrease several indicators of morbidity. According to the experts, such programs should target patients who are failing to adequately control their disease. Program effectiveness for the pediatric population remains uncertain. Finally, for patients with COPD, research is going on, but preliminary data from a Québec study suggest very promising results with regard to the effectiveness of this technology.

By disseminating this assessment report, *AETMIS* wishes to provide the best possible information to policy-makers concerned with the implementation of self-management programs at various levels of the Québec health services network.

Renaldo N. Battista
President and CEO

SUMMARY

INTRODUCTION

At the beginning of the 1990s, the Quebec health network embarked on a new course of action that favoured the direction of services away from the inpatient setting and more towards outpatient care. Within the context of this shift to ambulatory care, self-management programs for patients with obstructive respiratory problems (principally asthma and chronic obstructive pulmonary disease, COPD) were developed and diffused. However, questions continue to arise concerning the effectiveness of such programs depending on the nature and severity of these respiratory problems.

For this reason, during the summer of 1999, the *Direction de la santé publique de Montréal-Centre* asked the *Conseil d'évaluation des technologies de la santé* (*CÉTS*)* to evaluate the effectiveness of the use of peak flow meters, by patients with obstructive respiratory problems, in decreasing the number of emergency room visits. *CÉTS* deemed it appropriate to broaden the analytical framework to include all obstructive respiratory problems and to provide a more general overview. The purpose of this document is therefore to support decision-making efforts by institutions and regional boards currently studying methods to implement self-management programs for this case group. The evaluation deals with asthma and COPD separately.

Asthma

In 1995, 5.65% of males and 6.20% of females aged 16 and over in Canada were diagnosed as asthmatic. Children, particularly the very young, are the population group in Canada that experienced the greatest increase in the prevalence of asthma between the onset of the 1970s and the end of the 1980s. This disease represents a heavy burden; according to statistics from 1990, the direct and indirect costs of asthma in Canada were estimated to be between $504 and $648 million.

Asthma is a chronic disease, the treatment of which aims to prevent the deterioration of respiratory function by avoiding environmental risk factors and using symptomatic anti-inflammatory drug therapy. Self-management programs are educational programs that teach patients about asthma, train patients to self-monitor respiratory function, and provide an action plan. Self-management programs form an integral part of recent Canadian practice guidelines for asthma.

For adults, self-management programs significantly contribute to controlling the disease by decreasing, on average, nocturnal asthma attacks by 47%, absenteeism by 45%, unscheduled visits to the doctor by 43%, emergency room visits by 29%, and hospital admissions by 43%.

Strong evidence for the efficacy of self-management programs on the whole does not, however, permit the determination of the relative importance of each of the various aspects of self-management. An analysis of various studies shows that education is a vital, but not sufficient, component of self-management programs for asthma. The analysis also shows that approaches based on the use of peak flow meters and

* Following an order-in-council issued by the *Conseil des ministres* of the Government of Quebec on June 28, 2000, *CÉTS* became the *Agence d'évaluation des technologies et des modes d'intervention en santé (AÉTMIS).*

symptom scales are equally effective for the self-monitoring aspect of such interventions.

Several characteristics of self-management programs have not been sufficiently validated. Few studies have been carried out to examine the optimal frequency of use of peak flow meters, and no study appears to have examined the validity of the standard approach of implementing three or four action plan areas.

Regarding target populations among adults, expert recommendations tend to favour self-management programs for patients with insufficient control of their asthma.

Clinical trials on the efficacy of self-management programs indicate that their mechanism of action implies several different elements, such as information on the disease, the detection and early treatment of disease exacerbations, the optimal use of drug therapy, and perhaps a change in care management. In Quebec, the percentage of asthmatic patients receiving optimal drug therapy is low, but a good educational infrastructure for asthma does exist. Given this context, the effectiveness of the systematic use of self-management programs by adults with asthma could be quite high. For children, there is currently conflicting evidence for the efficacy of self-management programs.

Chronic Obstructive Pulmonary Disease

The prevalence of chronic obstructive pulmonary disease (COPD) among persons aged 55 and older in Canada is 5.7%, and among those 65 years and older, COPD represents the fourth and seventh leading cause of death for males and females, respectively. In comparison to asthma, mortality attributable to COPD in Canada is at least ten times higher and impact on the health system is greater. Control over harmful agents such as cigarettes remains the sole etiological treatment.

Contrary to the situation with asthma, the various practice guidelines available around the world do not contain any reference to self-management programs, or the use of peak flow meters, for patients with COPD. In Quebec, however, a randomized trial that started in 1998 has begun to produce information of this nature for COPD patients. According to preliminary results from this study, patients who participated in a self-management program experienced a decrease in the number of hospitalizations and emergency room visits, as well as an improvement in their quality of life, when compared to patients receiving standard care. These promising results are generating much interest in the field of clinical practice.

Conclusion

For the adult population, asthma self-management programs are an accepted and effective approach with strong evidence for their role in decreasing several indicators of morbidity, including number of nocturnal asthma attacks, unscheduled visits to the doctor, emergency room visits, hospitalizations, and days of absenteeism. According to the experts, patients with insufficient control of their asthma should be the target group at highest priority during the systematic establishment of self-management programs.

The implementation of these programs must favour organizational models that permit close collaboration between attending physicians—particularly those in private clinics—and educators in asthma education centres. Evaluative research should be carried out to measure the effectiveness of self-management programs in terms of quality of life and reduction in health services utilization.

Concerning the role of self-management programs for asthma in the pediatric population, available information concerning their efficacy is conflicting. Since these programs are already in

use, it would be inappropriate to modify their operation at this point. The situation can be re-examined in the light of results that will be provided by a meta-analysis, currently under preparation, which integrates the most recent published data for this age group.

Finally, for patients with COPD, preliminary results from a rigorous study suggest that they might benefit from the self-management approach. However, these results on efficacy remain to be confirmed by other studies or in the context of selective implementation projects, inasmuch as these initiatives are closely followed and generate data that will permit better specification of indications for use and the evaluation of effectiveness. This stage, if proven conclusive, may then lead to a gradual and coordinated implementation of self-management programs for COPD in more varied settings.

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Acknowledgements

GLOSSARY

Action plan: Written document containing customized levels of action that allows the patient to adjust his or her level of medication and facilitates medical help-seeking based on the results of self-management.

Asthma: Inflammatory disorder of the airways characterized by paroxysmal or persistent symptoms such as dyspnea, chest tightness, wheezing, sputum production and cough, associated with variable airflow limitation and hyperresponsiveness to various endogenous or exogenous stimuli.

Chronic obstructive pulmonary disease (COPD): Disease state characterized by airflow obstruction caused by chronic bronchitis or emphysema. The airway obstruction is generally progressive. It may be accompanied by hyperreactivity and may be partially reversible.

Effectiveness[*]: Measure of the benefit of a technology used under normal conditions in the health care system, also known as field or end-user effectiveness.

Efficacy[*]: Measure of the benefit of a technology used under optimal conditions, such as those encountered in experimental situations, also known as trial or potential effectiveness.

Health care technology: An expression which, according to AÉTMIS, encompasses not only the instruments, equipment, medications and procedures used in the delivery of health care services, but also the support mechanisms for health care delivery infrastucture, information technology and system organization.

Obstructive respiratory problem: Chronic respiratory disease characterized by bronchial obstruction, essentially comprising asthma and chronic obstructive pulmonary disease (CODP).

Periodic health examination: Periodic consultation by a physician, at predetermined intervals, in order to evaluate the patient; a reminder system is usually used to ensure the examinations take place.

Self-management: Regular measurement of respiratory function based on the peak respiratory flow or symptoms, or a combination of the two. Measurements can be recorded in a notebook.

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[*] The use of the terms *efficacy* and *effectiveness* is made in accordance with the definitions presented by Drummond and colleagues (35).

Self-management program: Education program that teaches patients about the disease, the self-monitoring of respiratory function and action plans. A self-management program may include a periodic health examination.

1. INTRODUCTION

At the beginning of the 1990s, the Quebec health care network embarked on a new course of action that favoured the implementation of alternate solutions to use of inpatient hospital services [29]. This major policy change, referred to as "the shift to ambulatory care," aimed to develop services in CLSCs (local community service centres), in the community and in the home, while maintaining or improving the quality of health care. Within this context, self-management programs were developed and diffused among patients with obstructive respiratory problems. However, questions continue to arise concerning the effectiveness of such programs, depending on the nature and severity of these respiratory problems.

For this reason, during the summer of 1999, the *Direction de la santé publique de Montréal-Centre* asked the *Conseil d'évaluation des technologies de la santé* (*CÉTS*)[1] to evaluate the effectiveness of the use of peak flow meters, by patients suffering from obstructive respiratory problems, in decreasing the number of emergency room visits.

CÉTS deemed it appropriate to broaden the analytical framework to include all obstructive respiratory problems and to provide a more general overview. The purpose of this document is therefore to support decision-making efforts by institutions and regional boards currently studying methods to implement self-management programs for this case group.

Following a description of obstructive respiratory problems, this report provides separate analyses of the effectiveness of self-management programs for asthma and chronic obstructive pulmonary disease (COPD). The section on asthma offers a more in-depth review and proposes an analysis model for the qualitative assessment of the effectiveness of self-management programs for the adult population.

[1] Following an in-council order issued by the *Conseil des ministres* of the Government of Quebec on June 28, 2000, *CÉTS* became the *Agence d'évaluation des technologies et des modes d'intervention en santé* (*AÉTMIS*).

Introduction

2. GENERAL CONSIDERATIONS

2.1 Methodology

This evaluation is based on a review of the published scientific literature addressing the use of self-management programs by patients with obstructive respiratory problems. The main databases consulted were MEDLINE and COCHRANE. The review was completed with references cited in articles identified in the databases, with references suggested by external reviewers and by a document search on the World Wide Web.

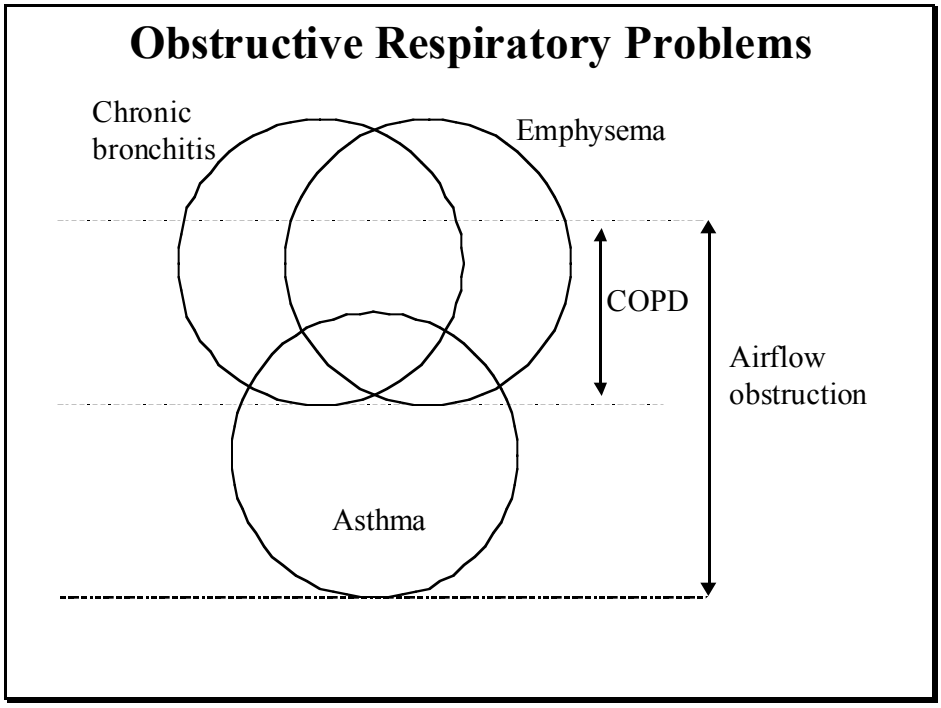
Our critical review used a quality-rating system of the evidence for effectiveness in order to assess the methodological validity of studies on the benefit of self-management programs. We chose the classification system of the American Agency for Health Care Policy and Research (AHCPR), which allows a certain distinction between the level of evidence based on a meta-analysis of randomized trials and that based on at least one randomized trial [1]. A copy of this classification system can be found in Appendix A.

2.2 Definition of obstructive respiratory problems

Obstructive respiratory problems essentially include asthma and chronic obstructive pulmonary disease (COPD). However, different clinical definitions exist for COPD. According to the British Thoracic Society, patients suffering from emphysema or chronic bronchitis are included in the COPD population. According to the American Thoracic Society, some patients with chronic bronchitis or emphysema do not present with airflow obstruction and therefore do not belong to the COPD population. Figure 1 shows the links between asthma, COPD, chronic bronchitis and emphysema.

In terms of symptoms and evolution of the disease, asthma and COPD may present a continuum for certain sub-populations of patients. The main differences between these clinical entities are the frequent connection between allergies and asthma, the important causal link between smoking and COPD, and the high degree of reversibility of airflow obstruction in asthma [23]. In light of the differences between asthma and COPD, it was necessary to analyze the effectiveness of the applicable interventions separately.

Figure 1*



* Adapted from the American Thoracic Society [3]

3. ASTHMA

3.1 Fundamentals

The Canadian Consensus Conference on Asthma defines the condition as a disorder of the airways "characterized by paroxysmal or persistent symptoms such as dyspena, chest tightness, wheezing, sputum production and cough, associated with variable airflow limitation and a variable degree of hyperresponsiveness of airways to endogenous or exogenous stimuli." [15] This definition, as well as many others,[2] reflects the fact that the term "asthma" refers to a clinical entity characterized by a set of symptoms.

In spite of the enormous progress made in our understanding of this chronic disease and its risk factors, the etiology of asthma remains unknown [108]. A combination of genetic factors and exposure to environmental allergens are responsible for the development of the disease. In children and adults suffering from asthma, most exacerbations are triggered by viral infections, particularly rhinoviruses [21, 46]. Research in recent years has demonstrated the central role of an inflammatory process in airway limitation and hyperresponsiveness [20, 108]. The relationship between these different elements is illustrated in Figure 2.

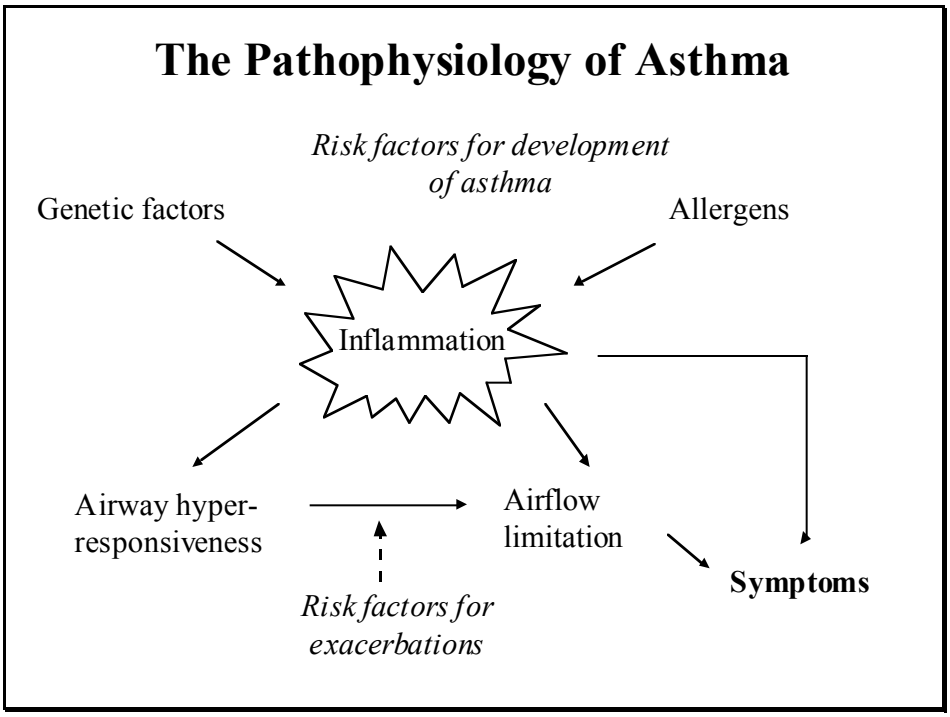
In 1995, 5.65% of males and 6.20% of females aged 16 and older in Canada were diagnosed as asthmatic [93]. Children, particularly the very young, were the population group in Canada that experienced the greatest increase in the prevalence of asthma between the onset of the 1970s and the end of the 1980s [45, 58, 63]. In Canada, hospitalizations attributable to asthma increased during the 1970s to stabilize between 1980 and 1990. In Quebec between 1988/89 and 1994/95, the hospitalization rate for children less than one year old doubled, reaching 12.3 per 1000 inhabitants per year [75]. Mortality rates attributable to this condition and standardized according to age have decreased since the early 1960s, in spite of a transient increase in the mid-1970s [71].

This disease represents a heavy burden, since statistics from 1990 indicate that direct and indirect costs attributable to asthma in Canada were estimated to be between $504 and $648 million [68]. Asthma also has a major impact on patients' quality of life. Reduction in quality of life relates in part to a decrease in respiratory function, which limits certain activities requiring physical exertion. The negative effect on social relationships and emotional well-being persists beyond the recovery of respiratory function [106]. However, it should be noted that effectiveness studies have rarely explored impact on quality of life.

The accumulation of knowledge has revolutionized the conceptualization of asthma, previously considered to be a broncho-constrictive disease with intermittent symptoms, and now seen as a disease characterized by chronic inflammatory processes responsible for airway hyperresponsiveness. This new paradigm has led to a change in asthma pharmacotherapy. A decade ago therapy consisted of symptomatic treatment of exacerbations by $ß_2$ agonists, whereas the contemporary approach—as reflected in practice guidelines—attaches singular importance to anti-inflammatory agents, essentially inhaled corticosteroids [12, 38, 87, 91].

[2] See Table 1 prepared by Woolcock [107].

Figure 2*



* Adapted from slide no. 7 of the Global Initiative for Asthma (GINA) Teaching Slide Set, available at http://www.ginasthma.com, consulted on September 8, 1999.

The emergence of the conceptualization of asthma as an inflammatory disease gave rise to a certain amount of confusion concerning notions of severity and asthma control [26]. Contrary to popular perception, "well-controlled" asthma is not synonymous with "mild" asthma and "poorly controlled" asthma is not synonymous with a "severe" form of the disease.

The notion of asthma control refers to specific treatment objectives, which are the same for all degrees of disease severity [26, 38, 76]:

- few or no symptoms;
- few or no exacerbations;
- no visits to the emergency room;
- little or no use of $ß_2$ agonists;
- no limitations on daily activities;
- peak expiratory flow near normal.

Meeting these treatment objectives indicates that the asthma is well controlled, irrespective of the level of medication required to achieve this control. It is expected that nearly all asthmatics who are treated control their disease properly, the only exception being patients with asthma so severe as to require such high corticosteroid doses per kg that they lead to undesirable side effects [26].

Asthma severity is considered independent of the extent of control achieved and corresponds instead to the level of medication required to control asthma symptoms: mild asthma may require only occasional doses of $ß_2$ agonists, whereas severe asthma requires high doses of inhaled corticosteroids and long-acting corticosteroids *per os*.

The targeted objective of self-management programs is improvement of asthma control. The

purpose of this document is to evaluate the effectiveness of such programs.

3.2 Asthma self-management programs

The treatment of asthma as a chronic disease aims to prevent the deterioration of respiratory function through the avoidance of environmental risk factors (allergens, irritants) and the use of pharmacotherapy: anti-inflammatory agents (corticosteroids and others such as leukotriene-receptor antagonists) and symptomatic medication ($ß_2$ agonists). The asthmatic patient must live with the disease and make decisions concerning steps to take if his or her health deteriorates, such as a change in activity level or medical help-seeking. The decision-making process involved in asthma—as in other chronic diseases—is formalized in self-management programs. These programs provide education and training on asthma, self-monitoring of respiratory function and an action plan.

Formal development of educational programs for asthmatic patients began in the early 1970s [104]. During this period, morbidity and mortality attributable to asthma increased in several countries, in spite of the availability of new bronchodilators ($ß_2$ agonists) [45, 60]. The increase sparked growing interest in programs aimed at this disease. Currently, clinical practice guidelines for asthma treatment place great importance on education [38, 76, 87]. However, the great variety of approaches to asthma education and the lack of specific information on each program make comparisons between programs very difficult [98].

The development of a portable peak flow meter by Wright and McKerrow [109] in 1959 paved the way for applications outside the hospital environment. Various research projects in the 1960s validated the use of peak expiratory flow measurements to evaluate respiratory function in asthmatic patients. The size and cost of the device ($300) hampered extensive distribution [32]. The introduction of a more compact model (Mini-Wright) towards the end of the 1970s favoured the development of self-management programs based on an objective evaluation of respiratory function. In 1978, in one of the earliest self-management programs, Taplin and Creer showed the utility of the peak flow meter to predict asthma attacks. Use of the device also confirmed that patients could judge the severity of their asthma attack based on the symptoms experienced [32].

Contemporary self-management programs teach asthmatic patients how to self-monitor respiratory function using a peak flow meter or a symptom scale. The results of self-monitoring can be recorded in a notebook and can guide patient decision-making. At the onset of an exacerbation, patients must adjust their level of medication and—in the case of a more severe exacerbation or one that fails to improve—they must resort to health services. Such instructions are made available to the patient in the form of a written document called an action plan.[3]

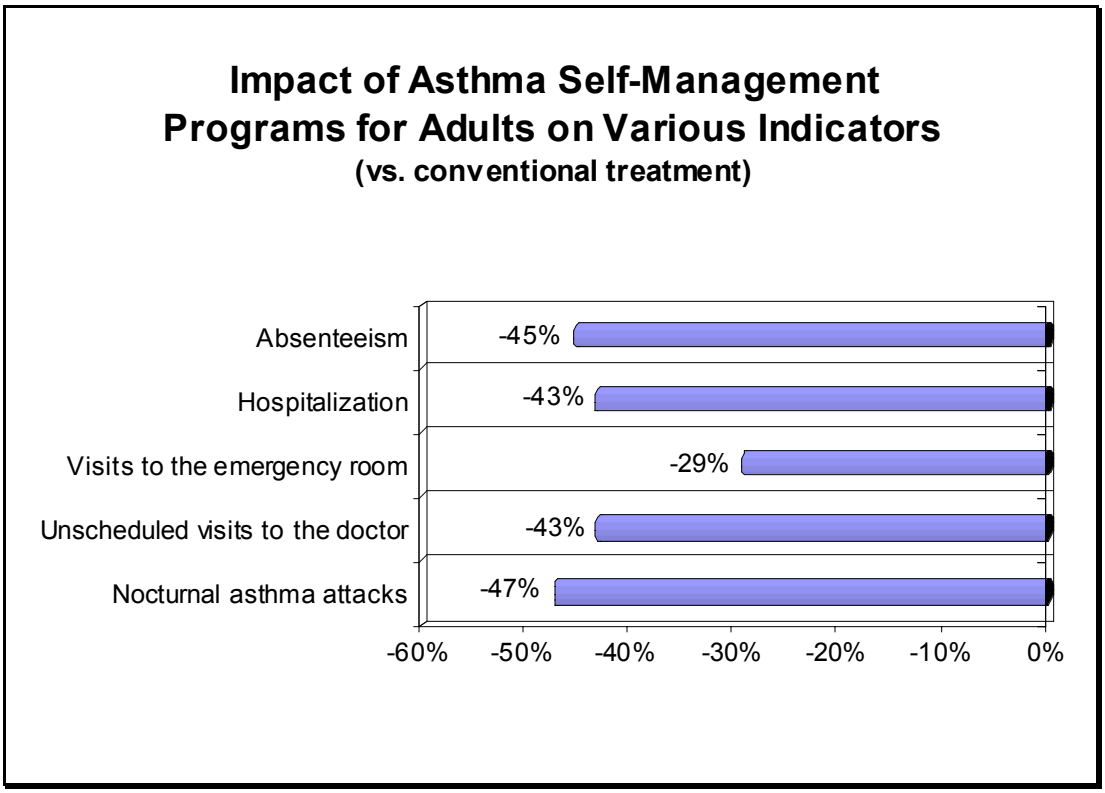
The role of peak flow meters in self-management programs varies around the world. While the device is used by the majority of asthmatic patients in several English-speaking countries, in Quebec it is offered most often to those who wish to occasionally measure pulmonary function, particularly during exacerbations, or to

[3] For examples of action plans, see Appendix B of this document or refer to http://www.mayohealth.org/mayo/9904/htm/plan.htm (consulted on October 10, 1999).

patients with limited awareness of their bronchospasms.[4]

[4] Personal communication with Louis-Philippe Boulet, MD, Pneumology Centre of Hôpital Laval, December 14, 1999.

Figure 3



Source: Gibson and colleagues [46]

Various practice guidelines addressing the treatment of asthma recommend the integration of an educational approach and a specific self-management program in the care of asthmatic patients [15, 76, 87, 91].

3.3 Efficacy of asthma self-management programs for adults

A meta-analysis carried out by the Cochrane Collaboration [48] aimed to (1) verify whether asthma self-management programs, including an educational component and a periodic health examination, led to an improvement on several indicators associated with asthma; and (2) identify the characteristics of such programs. Their evaluation addressed 24 randomized trials of education programs aimed at asthma self-management by adults.

On the basis of the results of 22 trials that compared self-management to conventional treatment, the meta-analysis confirmed that the self-management intervention led to an improvement on various indicators among asthmatic patients, including: a decrease in the proportion of subjects requiring hospitalization (odds ratio, OR: 0.57; 95% confidence interval, CI: 0.38 to 0.88); a decrease in the number of emergency room visits (OR: 0.71; 95% CI: 0.57 to 0.90); a decrease in the number of unscheduled visits to the doctor (OR: 0.57; 95% CI: 0.40 to 0.82); a reduction in the number of days of sick leave due to asthma (OR: 0.55; 95% CI: 0.38 to 0.79); and a decrease in the number of nocturnal asthma attacks (OR: 0.53; 95% CI: 0.39 to 0.72) (see Figure 3).

These effects are significant from both a statistical and clinical point of view and a graded effect was observed. Thus, interventions that include a written action plan allowing patients to adjust their medication, self-monitoring based on peak flow meter measurements or observation of their symptoms and a periodic health examination are more beneficial than more limited interventions (e.g. periodic health examination only [48]).

On the basis of these results, the authors of the meta-analysis conclude that a self-management program that includes an action plan and a periodic review of the patient's case should be offered to adults with asthma. Self-monitoring may be conducted using peak flow meter measurements or through observation of symptoms.

This meta-analysis, carried out by Gibson et al. [48], provides excellent evidence (level of evidence 1a)[5] for the efficacy of self-management programs in terms of reduction in nocturnal asthma attacks, unscheduled physician consultations, emergency room visits, hospitalizations and absenteeism.

These results indicate that asthma self-management programs are efficacious in improving asthma control in adults (that is, few or no symptoms, few or no exacerbations, no visits to the emergency room, little or no use of $ß_2$ agonists, no limitation of daily activities and peak expiratory flow approaching normal) at Level 1a in the classification of strength of evidence. In light of its recognized efficacy and use in a large number of countries, the asthma self-management program approach can be considered as an accepted technology, according to *AÉTMIS* definitions [28, page 2].

However, the strong evidence for the efficacy of self-management programs does not allow for distinction between the different components of self-management programs, nor an understanding of their mechanism of action. In the next section we will propose a logic model for the action of self-management programs that will allow us to carry out a qualitative assessment of the effectiveness of this approach in the Quebec context.

3.4 Logic model of self-management programs

Asthma self-management programs are complex interventions in which effectiveness is based onchanges in patient behaviour. Education aims to increase the patient's knowledge of his or her disease and teach about self-monitoring of respiratory function and use of an action plan. The outstanding improvement in control of asthma by adults following implementation of self-management programs is difficult to explain if based solely on a more rapid treatment of exacerbations (through self-monitoring and an action plan). It is probable that other factors influence the sequence of effects.

In the field of program evaluation, the term "logic model" is used to designate a plausible model of logical links between components of a program, intermediary effects and program impact [65, 81, 83, 96]. This section suggests the use of such a model to conceptualize the action of self-management programs on asthma control. We will examine, in sequence, the state of knowledge on education, self-monitoring, action plans, the target population for self-management programs and optimizing medication use. The logic model will be of particular utility in judging the

[5] The classification of the strength of evidence used in this document can be found in Appendix A.

effectiveness of self-management programs in the Quebec context.

3.4.1 Education

Self-management programs are educational. The mechanism of their action is thus intimately related to information transfer, which must lead to a change in behaviour or allow the acquisition of new abilities. Asthma programs identified as educational usually include a significant amount of general information on the disease, its causes, the means of avoiding allergens and pharmacotherapy. These education programs may or may not be combined with instruction provided by a self-management program.

Another meta-analysis carried out by the Cochrane Collaboration analyzed the efficacy of information transfer without self-management training. On the basis of 11 randomized trials, this meta-analysis showed that the approach had no impact on the morbidity indicators studied, namely number of hospitalizations, number of unscheduled doctor visits, quality of respiratory function and use of medication. However, in one of the trials, asthma education provided during an emergency room visit was associated with a significant decrease in the number of subsequent emergency room visits [49].

Self-management programs may act through the early detection of deteriorating respiratory function and early treatment associated with the action plan. Following with this reasoning, the implementation of these programs could be limited to training on techniques that lead to early detection of deteriorating function and instructions on measurements required for use of a symptom severity scale. Hence, this approach would consist of an educational component limited to training on self-monitoring and the action plan. Two randomized trials [52, 64], with 504 and 72 participants respectively, followed this logic by experimenting with interventions limited to instruction on the peak flow meter and the action plan. No positive impact was observed.

In light of the very limited efficacy of educational approaches excluding self-management instruction and the lack of benefit from self-monitoring and action plans without asthma education, it appears that both the "education" and "self-monitoring/action plan" components are essential and synergistic aspects of asthma self-management programs.

3.4.2 Self-Monitoring and Action Plans

Death attributable to asthma occurs most often outside the hospital setting and may be explained in large part by an underestimation of the severity of the attack by the patient or by his or her entourage [8, 18]. Facing this situation, the concept of self-management programs was advanced in the 1970s in order to enhance the ability of patients to detect early signs of deteriorating respiratory function and thereby reduce mortality associated with asthma.

Approaches based on the use of a peak flow meter or a symptom scale were deemed equally efficacious in the meta-analysis by Gibson et al. [48]. In terms of optimum frequency of use of peak flow meters, experimentation with early devices in the 1960s led to the establishment of an optimal strategy based on one peak expiratory flow measurement in the morning and one in the evening [32]. No other study appears to have been published on optimum use. Furthermore, no study has been published which addresses symptom scales.

Most action plans use the image of a traffic light to illustrate the different states of respiratory function. The green light means normal function, the amber light indicates deterioration and the red light corresponds to an emergency state. When a patient is functioning in the amber or red zones, the action plan dictates a change in medication or

recourse to medical attention. Few studies have been conducted to validate the three-zone approach in action plans [32]. A study that compared the three-zone approach to one used in quality control showed that the zone approach was less specific and less sensitive. The quality control approach defines an action threshold based on a statistical analysis of previous measurements, rather than a simple comparison with a predetermined threshold [50].

Considering the almost exclusive use of the three-zone approach and its inclusion in recent Canadian clinical practice guidelines [14, page S17], the lack of conclusive evidence on the ideal action plan structure is, to say the least, surprising.

3.4.3 Target Population

A review of the published literature did not come up with a single clinical study on indications for self-management programs in terms of severity or level of control over asthma. Experts' recommendations in this respect tend to favour patients with moderate to severe asthma as the target group for self-management programs [10, 95]. In light of the discussion on the difference between levels of control and severity (see section 3.1), target group recommendations should focus on patients with insufficient control of their disease, rather than those with more severe asthma.

In fact, a patient whose level of medication use corresponds to moderate or severe asthma, yet who has few exacerbations, would probably benefit less from a self-management program than would a patient with milder but poorly-controlled asthma. The level of evidence concerning preferential use of self-management programs by patients with insufficient asthma control remains weak (level 4, evidence supported by expert opinions). The low acceptance rate of the self-management strategy by patients with well-controlled asthma could influence this choice of target group [30, 43, 101].

3.4.4 Optimizing Drug Therapy

In various clinical practice guidelines, optimization of drug therapy plays a fundamental role in asthma control [38, 82, 91]. Indeed, this factor was the principal determinant of the decrease in emergency room visits, hospitalization rates and absenteism in a randomized trial comparing three approaches: education only; education combined with an action plan based on the use of a peak flow meter; and education combined with an action plan based on the observation of symptoms [31]. Studies show that sub-optimal treatment is often at the root of emergency room visits [33], hospitalizations [59] and near-fatal asthma crises [22, 66].

A population study evaluated the effectiveness of use of inhaled corticosteroids in decreasing rates of re-admission to hospital with a cohort of newly-diagnosed asthmatics hospitalized for the first time due to asthma. Following a 16-day delay corresponding to the latency period for a course of this medication to take effect, the use of inhaled corticosteroids decreased the risk of re-admission by 40% (OR=0.6, 95% CI: 0.4 to 0.9) [9].

According to this population study, the optimization of drug therapy plays a crucial role in disease control. However, this approach faces two obstacles: weak adherence to recommended guidelines by physicians [42, 59, 90] and weak compliance with treatment by patients [67].

Self-management programs address these two

obstacles by favouring physician adherence to recommendations in clinical practice guidelines (the desired increase in the prescription of inhaled corticosteroids [36, 47, 100]) and an increase in patient commitment to treatment [5, 74]. A second population study showed that asthmatic patients harbour unfounded fears of inhaled corticosteroids and that these fears and negative perceptions explain weak compliance with treatment [11]. Among other issues, this study stresses the importance of education in order to increase the success rate associated with optimization of drug therapy.

3.4.5 Complex Causal Model

Other factors not yet formally studied could have intermediary roles. The introduction of self-management programs requires a change in asthma care management owing to the interdisciplinary approach characterizing such programs. Research is necessary to study the role of this type of organizational change in explaining the efficacy of self-management programs.

The efficacy of self-management programs for asthma control among adults thus appears to be based on a set of factors, namely the transfer of information on the disease itself (asthma education), detection and early treatment of exacerbations, optimization of drug therapy, compliance with treatment by the patient and possibly changes in care management.

Considering the likelihood of complex interactions between these different factors, the causal links between a self-management program and asthma control can be envisaged as a web of causality. The metaphor of a spider web was introduced by MacMahon and colleagues in 1960 [77] to illustrate complex causal links, as an alternative to simple linear models. Causal models that propose a series of consecutive steps allow only limited consideration of the complex interactions of the chain elements and the relations between these elements and their results (see [69], p. 890). The current state of knowledge on the mechanism of action of self-management programs corresponds well with the image of a web of causality (Figure 4).

This logic model of plausible links between program components, intermediary effects and program impact on asthma control is useful for the assessment of program effectiveness in the Quebec context. The model could also contribute to the development of evaluation methods for self-management programs.

3.5 Effectiveness of asthma self-management programs for adults

Chapter 3.3 examined the efficacy of asthma self-management programs for adults. This efficacy relates to experimental situations that do not correspond to actual conditions in the health care system. The assessment of benefit under normal conditions addresses effectiveness. These two types of benefit are not dichotomous entities; rather, they are the extremes on a continuous scale [61, Chapter 2]. Depending on the protocol used, randomized trials may address questions of efficacy or effectiveness and are thus described as "explanatory" or "pragmatic" trials, respectively [61, Chapter 2] (Figure 5). The randomized trials studied in the Cochrane Collaboration meta-analysis on the benefit of self-management programs were rather explanatory in type; thus, they are providing evidence for efficacy rather than effectiveness.

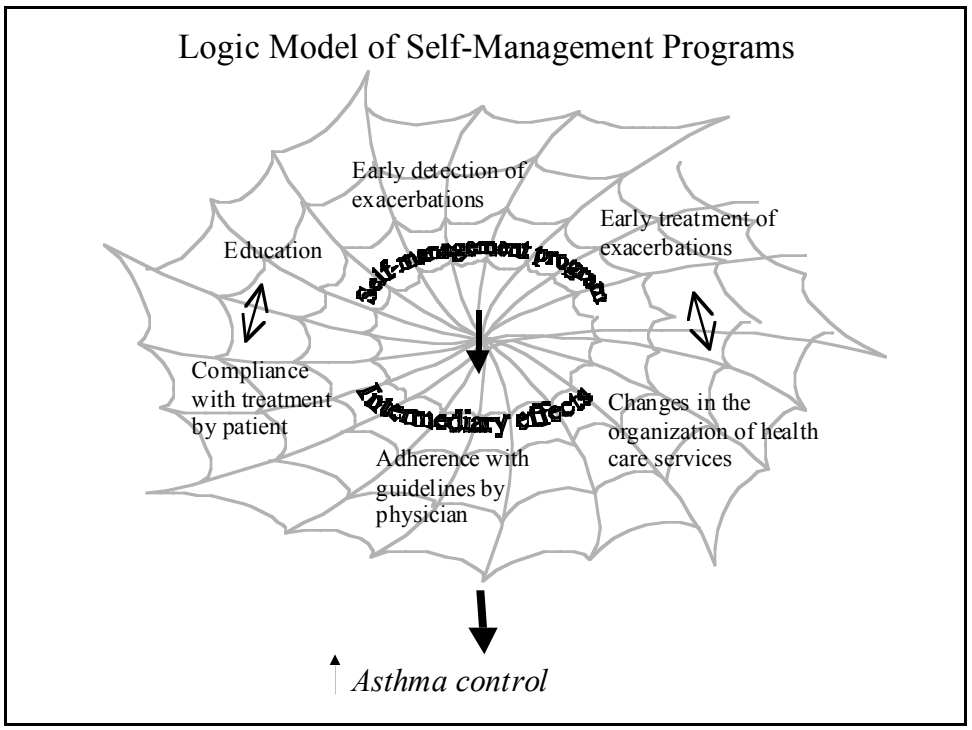
According to Fay and Jones, evidence for efficacy is insufficient in order to recommend implementation of this approach in primary care offered to asthmatics [40]. In fact, no study on

the effectiveness of self-management programs appears to have been published.[6] Notwithstanding a lack of evidence, recent Canadian practice guidelines retain a self-management program approach in health care services for asthmatics [14].

In order to support decision-making, the evaluation of health technologies must not only consider efficacy, but also effectiveness [34]. Due to a lack of published research, the present

[6] Research on the effectiveness of medical technologies is also referred to as outcomes research (92).

Figure 4



document attempts to provide a qualitative assessment by examining base levels of certain factors in Quebec that intervene in the pathway between self-management programs and impact on asthma control (Figure 5).

3.5.1 Pharmacological Optimization in Quebec

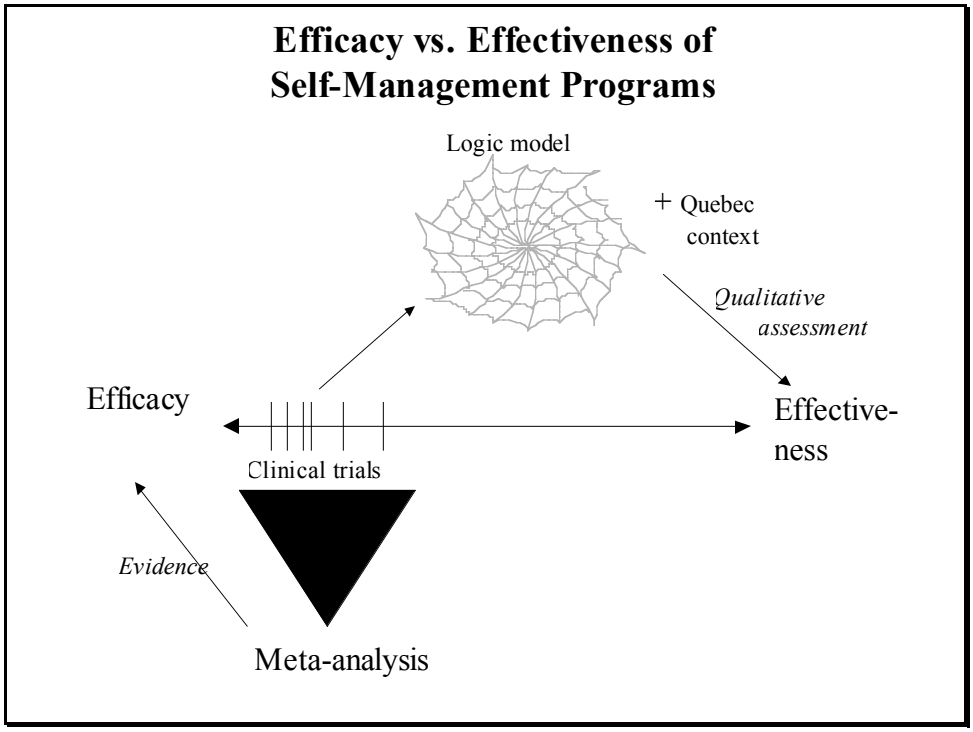
We have noted that adherence to practice guidelines concerning the use of corticosteroids is one of the major determinants of asthma control [9, 31]. This optimization of drug therapy also appears to be one of the factors that intervenes between self-management programs and asthma control. If the percentage of asthmatic patients already receiving optimal pharmacotherapy is high, the addition of self-management programs will probably contribute less to asthma control in this population than if the percentage is low.

A study by Health Canada's Laboratory Centre for Disease Control on the asthma management practices of physicians [62] provides some information on current physician practice in Quebec relating to practice guidelines and asthma self-management programs. According to the preliminary results of this study (unpublished at the time of writing), there is a significant difference between the practices of Canadian and Quebec physicians and the clinical practice guidelines.[7] This finding has also been confirmed in a study carried out by the *Comité de revue d'utilisation des médicaments* (CRUM) of the *Régie d'assurance-maladie du Québec*. Based on prescriptions filled by pharmacists in Quebec

[7] Personal communication with Louis-Philippe Boulet, MD, Pneumology Centre of Hôpital Laval, September 29, 1999, in reference to an upcoming publication.

between August 1997 and April 1998, researchers noted excessive use of $ß_2$ agonists and

FIGURE 5



significant under-utilization of inhaled corticosteroids [27].

In light of the considerable gap that seems to exist between current clinical care of asthmatics and relevant practice guidelines, the systematic implementation of self-management programs for adult asthmatics with insufficient control of their disease could prove to be a very effective means to reduce morbidity indicators such as emergency room visits, hospitalization rates and days of sick leave.

3.5.2 Asthma Education in Quebec

The current state of education provided to asthmatic patients in Quebec is another important factor in assessing the effectiveness of systematic use of asthma self-management programs in this province.

The educational program of the Quebec Asthma Education Network (QAEN)[8] was set up under the aegis of the Quebec Lung Association in 1994. QAEN became an independent organization in 1998. The network is well established in Quebec, with more than one hundred asthma education centres in operation in 1999. QAEN supports the establishment of these centres through training programs and the accreditation of educators, and by ensuring the availability of various tools validated by a scientific committee. Thus, this network is a useful infrastructure for the organization of the educational aspect of self-management programs,

[8] See the network web site at: http://www.rqea.com.

and favours the achievement of a high level of effectiveness by programs aimed at asthma control for adults in Quebec.

The education centres for asthmatics offer specialized educational services to referred patients and can provide non-medical consultants for attending physicians. Self-management programs are central to the network. The teaching approach is based on theoretical models of health education, in particular the *PRECEDE* model ("**p**redisposing, **r**einforcing, and **e**nabling **c**onstructs in **e**ducational **d**iagnosis and **e**valuation") [53], developed at the end of the 1970s on the basis of a randomized trial on asthma education. It has become the standard approach for planning and assessing interventions in patient education, health education and health promotion [13].

QAEN has identified several obstacles to a systematic implementation of self-management programs. These include failure to integrate asthma education into medical practice, communication problems between education centre teachers and attending physicians and the uncertainty of funding for the network infrastructure. Indeed, the network is presently being funded by the *Ministère de la Santé et des Services Sociaux* since termination of funding by the pharmaceutical industry. Among other reasons, communication problems arise as a result of the interdisciplinary approach taken by asthma education centres, an approach which physicians—particularly those in private practice—are sometimes reluctant to support, owing to a lack of training or interest. Moreover, when educational specialists in these centres act as non-medical consultants, linking with attending physicians can prove difficult. Considering these organizational issues, concerted action by all players involved in the care of asthmatics can only help the more generalized implementation of self-management programs.

At present, several studies are underway addressing the integration of these education centres in the health care network. In collabora-

project aims to establish an automatic referral system to education centres for patients seen in emergency rooms or hospitalized for asthma. Another project, in collaboration with CLSCs in the Quebec City region, is assessing the possibility of direct referral of asthmatic patients to education centres[9] by *Info-Santé* services. A third research project underway in the Laurentian region is evaluating the effectiveness of an asthma care strategy that integrates the QAEN education model in a concerted regional approach;[10] preliminary results will be available towards the end of 2000.

QAEN's model of caregiving, based on a system of specialized educational resources and with the advantage of being accessible to attending physicians, appears to be unique in the world. A review of the literature on the effectiveness of different organizational models in asthma care highlighted the absence of rigorous studies [37]. In principal, the QAEN model appears to be an acceptable organizational model but its effectiveness remains to be assessed and compared with other modes of organization.

The large disparity between medical practice and recommendations in asthma practice guidelines in Quebec appears to be conducive to the implementation of a self-management program approach. Since the barriers to implementing clinical guidelines in medical practice are well known [55, 57], it would be interesting to verify to what extent implementation of asthma self-management programs could indirectly influence the general adherence to guidelines concerning this disease.

3.6 Efficacy of asthma self-management programs for children

A meta-analysis published in 1995 analyzed the efficacy of self-management programs for the pediatric population (patients under 18 years of age). In this analysis, 12 of 23 randomized trials published between 1970 and 1991 were excluded for various reasons. One specific meta-analysis retained only five trials to evaluate impact on absenteeism from school, number of hospitalizations, duration of hospitalization and number of emergency room visits; in another, only three trials were used to measure the effect on number of asthma attacks. The results indicated that self-management programs in the pediatric population did not decrease absenteeism from school, number of hospitalizations, duration of hospitalization, emergency room visits nor asthma attacks [7].

However, the authors of this meta-analysis observed that randomized trial results did not address impact on various aspects of quality of life. They agreed that self-management programs for children would probably be beneficial if they targeted a population well defined in terms of age, socio-economic factors, severity of the disease and pharmacological treatment [7].

On the other hand, Evans concluded that this meta-analysis failed to reflect reality, since the results of the five retained trials were influenced by the strongly negative results in one study [39]. Since publication of this meta-analysis, other randomized trials have shown a decrease in the number of emergency room visits among the pediatric population [54, 70, 78, 94, 102]. A meta-analysis within a Cochrane Collaboration protocol is currently being prepared and could

[9] Personal communication with Louis-Philippe Boulet, MD, Pneumology Centre of Hôpital Laval and preliminary version of an article on QAEN.

[10] Personal communication with Huguette Crête, Coordinator of Research, Knowledge/Surveillance and Evaluation, Department of Public Health, *Régie régionale de la Santé et des Services Sociaux des Laurentides*, and information taken from the research protocol.

provide some answers before the end of 2000 [105].

According to experts, self-management programs would be effective for the pediatric population if developed on the basis of behavioural theory and applied by specialized educators capable of motivating parents and enlisting their participation in the program.[11]

Faced with conflicting information, where the negative results of a meta-analysis oppose the positive impact shown in recent studies or presumed by experts, it is difficult to come to a conclusion on the efficacy of asthma self-management programs for the pediatric population. This judgement could be reconsidered when the results of the meta-analysis currently underway [105] become available. We will then perhaps be able to confirm the efficacy of the approach for specific groups of patients, as suggested by the most recent data.

3.7 Safety of asthma self-management programs

What is the likelihood of self-management programs having adverse effects on the health of patients using them? In no instance did studies of the effectiveness of self-management programs include questions of safety in their assessments. In light of the absence of specific studies, we had to limit our review to a theoretical examination of the safety of self-management programs. The fact that intervention criteria are more stringent for self-treatment protocols than for emergency room treatment protocols [82] constitutes a safety factor in self-management programs.

A comparative survey of general practitioners in The Netherlands, where asthma self-management programs are not very common, and of general practitioners in England, where this type of program is well implemented, highlighted differences in perception concerning the safety of these programs. Whereas Dutch physicians expressed fear that necessary emergency consultations might be delayed as a result of improper self-assessment of symptoms and inappropriate self-treatment decisions made by patients, their British colleagues reported no knowledge of such incidents among their patients [99]. Patients' commitment to self-management plans appears to depend on the severity of their asthma. In one study, this commitment varied from 29% among patients with mild asthma to 100% among those with severe asthma [74].

Special attention must be paid to the definition of the different levels of necessary intervention (in terms of percentage decreases in peak expiratory flow), which should lead to a change in medication. We were unable to find an analysis of empirical data on the risk of underestimating the severity of an asthma attack through use of current signals for intervention. Despite this lack of evidence, some experts have lowered the percentage decreases necessary to prompt an increase in medication [41]. Accordingly, this amendment leads to an earlier change in medication when respiratory function deteriorates and decreases the theoretical risks of under-medication during rapidly-deteriorating asthma attacks. At the same time, this change increases the number of false-positives among exacerbations requiring additional medication [50]. Solid evidence for the positive effects of self-management programs on health status indicators demonstrates that the adverse effects

[11] Personal communication with Louis-Philippe Boulet, MD, Pneumology Centre of Hôpital Laval, October 4, 1999.

of the intervention are less significant than the benefits.

In order to guarantee the highest possible level of safety, it is essential that research including questions of safety be initiated. On the basis of this information, we can improve self-management programs in order to maximize their beneficial effects and minimize their adverse consequences.

3.8 Organizational contexts of asthma self-management programs

As indicated previously, a self-management program is an educational program that includes teaching about asthma, instruction on self-monitoring of respiratory function, training related to an action plan and, possibly, a periodic health examination. Different organizational models have been developed to integrate this aspect of specialized education into health care services for asthmatics.

In England, the availability of financial incentives for the management of chronic diseases (the "general practice contract health promotion package") has led to an increasing number of general practitioners who have implemented specialized asthma clinics in their medical practice. These clinics are often run by nurses [4, 37]. A 1993 survey revealed that 77.2% of those who responded to a questionnaire sent to 14,251 general practitioners' offices in the United Kingdom offered asthma clinics. Of these, 48.8% were directed by nurses and 47.9% were managed jointly by nurses and physicians [4]. The survey did not contain specific questions on self-management programs.

Contrary to the British approach, where changes to the pay structure have altered asthma care management, Quebec relies on an organizational support approach through the Quebec Asthma Education Network (QAEN), which supports the establishment of asthma education centres. This Network acts at the patient level and also provides ongoing training to physicians.

The examples of England and Quebec illustrate two different modes of organizing asthma education. However, if one attempts to assess the effectiveness of different organizational

models of asthma care based on a review of the literature, it is not yet possible to determine which model has been the most effective or even to identify the organizational elements contributing to this effectiveness. The authors of one such survey deplore the lack of rigorous studies on this subject (37].

Following an increase in deaths attributable to asthma in the early 1980s, New Zealand implemented a series of measures which directly contributed to a decrease in mortality and morbidity caused by the disease. These measures included national educational campaigns, the implementation of a multi-disciplinary approach, widespread use of self-management programs and organizational changes facilitating more rapid access to health care services [44].

Despite the lack of studies on the relative effectiveness of various organizational approaches to the general care provided to asthmatics—as well as the specific elements at play in asthma self-management programs—the positive experience in New Zealand demonstrates the importance of integrated, concerted action in the organization of health care services.

4. CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

4.1 Fundamentals

As indicated at the beginning of this document, chronic obstructive pulmonary disease (COPD), according to the definition commonly used by the American Thoracic Society, is "a disease state characterized by the presence of airflow obstruction due to chronic bronchitis or emphysema; the airflow obstruction is generally progressive, may be accompanied by airway hyperreactivity, and may be partially reversible" [3].

An international initiative sponsored by the World Health Organization (WHO) is currently developing clinical practice guidelines for COPD in the Global Initiative for Obstructive Lung Disease.[12] COPD is defined as follows: "COPD is characterized by the presence of partially reversible airflow obstruction secondary to exposure to harmful agents in the form of particles or gas."[13] Hence, the definition incorporates the recognition of well-known risk factors associated with the disease, particularly cigarette smoking and harmful agents in the work environment. Genetic factors—except those associated with alpha$_1$-antitrypsin deficiency, a rare cause of emphysema—have yet to be identified [19]. While the structural mechanisms characterizing airway obstruction are quite well known [89], the cellular mechanisms responsible for the pathogenesis of COPD remain to be elucidated.

The prevalence rate for COPD in Canada is 5.7% among those aged 55 and older and the disease ranks 4th and 7th, respectively, as the cause of death of men and women aged 65 and older [72]. In comparison with asthma, mortality caused by COPD in Canada is at least ten times higher [80] and its impact on the health care system is more important [25].

The increase in understanding of respiratory rehabilitation among patients with COPD has modified the conceptualization of COPD as essentially a respiratory disease. COPD is characterized by the presentation of respiratory symptoms of which the most important is dyspnea on effort. However, as the disease progresses, systemic complications materialize. Dyspnea prompts patients with COPD to adopt an increasingly sedentary lifestyle, leading to peripheral muscle weakness and a decrease in exercise tolerance [6, 51, 79]. The systemic pathology of COPD has an impact on quality of life [97] and mortality rates [103], irrespective of the degree of pulmonary incapacity.

The only etiological treatment remains control over harmful agents such as cigarette smoking. For those already suffering from COPD, care objectives are aimed mainly at control of the disease, its exacerbations and resulting physical and psychosocial consequences.

4.2 COPD self-management programs

Contrary to the situation with asthma, the various clinical practice guidelines available internationally contain no reference to COPD self-management programs or the use of peak

[12] See http://www.goldcopd.com.
[13] Personal communication with Jean Bourbeau, MD, McGill University Health Centre, January 5, 2000.

flow meters by patients with COPD [24]. Guidelines recommend respiratory rehabilitation including an exercise program in the therapeutic plan for patients who, despite optimal pharmacological treatment, lack adequate control of their symptoms and present functional limitations in activities of daily living. Respiratory rehabilitation for patients with COPD decreases dyspnea and improves exercise tolerance and quality of life [73]. Observational studies and non-randomized clinical trials with control groups report positive effects on the duration and number of hospitalizations, but those results have yet to be confirmed by randomized clinical trials [2].

Rehabilitation programs include an educational component. However, since they usually do not include instruction on self-monitoring of respiratory function and an action plan, they do not correspond to genuine self-management programs.

Deterioration of respiratory function as a result of airway obstruction is frequently the origin of emergency room visits, both for patients with asthma and for those suffering from COPD. For about 50% of patients with COPD, the emergency room visit is preceded by a gradual decline in the peak expiratory flow [85]. It appears that the use of a peak flow meter provides valid measurements for this population [86] and is
deemed acceptable by patients [84]. To date we have not identified a single major study published on the benefit of self-management programs for patients with COPD. In a 1998 report, the New Zealand Health Technology Assessment organization (NZHTA) reported that the available literature did not permit assessment of the effectiveness of self-management programs for patients with COPD [88].

In Quebec, a randomized trial on the benefits of a self-management program for patients with moderate to severe COPD was initiated in 1998. This trial is examining the effects of an intensive intervention combining rehabilitation elements and telephone follow-up with a self-management approach. According to preliminary results of this study, patients who received the intensive intervention experienced a 47.4% decrease in emergency room visits and a 47.5% decrease in hospitalizations for severe exacerbations of the disease [16]. Moreover, the study showed a significant positive impact on patients' quality of life [17]. Rehabilitation tools developed during the project will also permit the transfer of certain rehabilitation activities from tertiary care hospitals to primary care services.

These very promising preliminary results on the efficacy of a self-management approach to COPD are generating much interest in the medical field, and creating a pressing demand for support and training to implement these program tools and develop a specialized network.[14]

[14] Personal communiation with André Amesse, Quebec Asthma Education Network (October 26, 2000) and Jean Bourbeau, MD, McGill University Health Centre (November 3, 2000).

5. CONCLUSION

Obstructive respiratory problems essentially refer to asthma and chronic obstructive pulmonary disease (COPD). The available data on the efficacy of self-management programs for each of these diseases vary markedly. On the one hand, self-management programs for adults with asthma must be considered as an accepted health technology backed by strong evidence for their efficacy in terms of asthma control.

On the other hand, in the case of patients with COPD, only one rigorous study carried out in Quebec provides preliminary results on the efficacy of this approach. Although promising, these results remain to be confirmed by other studies or in the context of selective implementation projects, inasmuch as these initiatives are closely followed and generate data that will permit better specification of indications for use and the evaluation of effectiveness. This stage, if proven conclusive, may then lead to a gradual and coordinated implementation of COPD self-management programs in more varied settings.

Concerning the role of asthma self-management programs in the pediatric population, available information concerning their efficacy is conflicting. Since these programs are already in use, it would be inappropriate to modify their operation at this point. The situation can be re-examined in the light of results that will be provided by a meta-analysis, currently under preparation, which integrates the most recent published data for this age group [105].

For the adult population, asthma self-management programs are an efficacious technology for the decrease in several morbidity indicators, including the number of nocturnal asthma attacks, unscheduled visits to the doctor, emergency room visits, hospitalizations and ab

senteeism. Patients with insufficient control of their asthma, as in the case of patients who visit the emergency room, should be the target group at highest priority during the systematic establishment of self-management programs (according to level of evidence 4).

In Quebec there is a large divergence between clinical practice guidelines and actual medical practice in asthma care. However, this gap could progressively decrease as a result of the generalized implementation of self-management programs actively supported by the Quebec Asthma Education Network, an infrastructure that is already well organized and established. Implementation efforts on a broader scale should favour program organization models that permit close collaboration between attending physicians and educators at asthma education centres. Moreover, a concerted effort on the part of those involved in providing health care services to asthmatics, and particularly general practitioners in private practice, can only help the more generalized implementation of self-management programs. Joint-action efforts, for instance, could be promoted through the new regional general practice departments.

It would be desirable that the systematic implementation of self-management programs for asthma—and eventually COPD—be complemented by evaluative research. Efforts in this direction should first explore how to measure the effectiveness of these programs, that are an important aspect of care offered to persons with obstructive respiratory problems; this effectiveness relates to improvements in quality of life as well as reduction in use of health services. Furthermore, research should also aim to identify organizational models or modes that enhance the effectiveness of these interventions.

Conclusion

APPENDIX A:
CLASSIFICATION OF EVIDENCE ASSOCIATED WITH TYPES OF CLINICAL TRIALS

Appendix A: Classification of Evidence Associated with Types of Clinical Trials

Classification of Evidence Associated with Types of Clinical Trials[15]

Level of Evidence	
Category	**Description**
Level 1a	Evidence obtained from meta-analysis of randomized controlled trials
Level 1b	Evidence obtained from at least one randomized controlled trial
Level 2a	Evidence obtained from at least one well-designed, controlled study without Randomization
Level 2b	Evidence obtained from at least one other type of well-designed quasi-experimental study
Level 3	Evidence obtained from well-designed nonexperimental studies, such as comparative studies, correlation studies, and case studies
Level 4	Evidence obtained from expert committee reports or opinions and/or clinical Experience of respected authorities

[15] This classification originates from an AHCPR document [1]. The classification used by the Canadian Task Force on the Periodic Health Examination does not make a distinction between levels of evidence 1a and 1b [56, page xliii].

Appendix B: Asthma Education Centre Action Plan – Resource (Hôpital Laval, Quebec City)

APPENDIX B:
ASTHMA EDUCATION CENTRE ACTION PLAN – RESOURCE (HÔPITAL LAVAL, QUEBEC CITY)

Appendix B: Asthma Education Centre Action Plan – Resource (Hôpital Laval, Quebec City)

PRÉPARATION AUX VISITES MÉDICALES

NOTEZ :

- Le nom de vos médicaments
- La quantité réelle de chacun des médicaments utilisés
- La fréquence et le type de symptômes d'asthme:
  Avez-vous des symptômes tous les jours ? ❑
  L'asthme vous éveille-t-il parfois la nuit ? ❑
  Avez-vous des sécrétions bronchiques ? ❑
- Si vous êtes moins bien, depuis quand ? _____

MESUREZ :

- Vos débits de pointe matin et soir pendant quelques jours (une semaine si possible) avant de rencontrer le médecin et lorsque vous avez des symptômes d'asthme.

PARLEZ À VOTRE MÉDECIN DE :

1) Vos préoccupations concernant l'asthme ;
2) Des actions à prendre si l'asthme se détériore ou si vous faites un rhume ou une grippe ;
   ❑ Tel qu'indiqué dans ce plan d'action ?
   Sinon,
   ❑ Quelle médication prendre pour :
   - soulager les symptômes : _____
   - stabiliser l'asthme : _____
   - nombre de bouffées _____
   - nombre de jours d'ajustement _____
3) La date de la prochaine visite médicale.

RECOMMANDATIONS GÉNÉRALES

Toujours garder ce carnet en votre possession.

N'oubliez pas de prendre vos médicaments régulièrement tel que prescrit. Si vous développez des effets secondaires (indésirables) communiquez avec votre médecin.

NOTES : (allergies, etc.)

_____
_____
_____
_____
_____

QUESTIONS À POSER À VOTRE MÉDECIN :

_____
_____
_____
_____
_____
_____

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2725, chemin Sainte-Foy
Sainte-Foy (Québec) G1V 4G5

Centre d'enseignement sur l'asthme- Ressource (CEA-R)

PLAN D'ACTION

Nom : _____

Dossier : _____

Médecin : _____

Téléphone : _____

Date : ____/____/____

Date de la prochaine visite médicale :
____/____/____

Centre d'enseignement sur l'asthme - Ressource
656-8711-5263 ou 656-4800

ASTHME STABLE

V

FEU VERT =
SIGNES DE MAÎTRISE

- ☐ Idéalement, aucun symptôme;
- ☐ Les symptômes (toux, respiration sifflante, essoufflement, sécrétions, oppression) ne gênent pas les activités quotidiennes;
- ☐ Besoin du bronchodilatateur (_____) pas plus de ___fois par jour ou par semaine;
- ☐ Bonne tolérance à l'activité physique;
- ☐ Absence de symptômes pendant le sommeil ou au réveil;
- ☐ Débits de pointe stables avant bronchodilatateur : _____

BRAVO !
Continuez votre traitement habituel.

Traitement habituel : _____
_____
_____
_____

HL-8157

ASTHME DÉTÉRIORÉ

J

FEU JAUNE =
DÉTÉRIORATION LÉGÈRE

1 ou plusieurs de ces signes pendant 24 heures

- ☐ Apparition de symptômes plus régulièrement ou lors des activités quotidiennes _____
  _____
- ☐ Besoin accru du bronchodilatateur _____
  _____
  ou plus de _____
- ☐ Symptômes la nuit ou au réveil _____
- ☐ Limitation dans les activités quotidiennes ou diminution de la tolérance à l'effort
- ☐ Chute des débits de pointe entre _____ et _____.
- ☐ Si infections respiratoires (rhume, grippe, sinusite, etc.).

Ajustement du traitement :

_____
_____
_____
_____

ATTENTION ! Si vous observez des signes d'aggravation, il est important d'ajuster rapidement la médication anti-

ASTHME DÉTÉRIORÉ

O

FEU ORANGE =
DÉTÉRIORATION MODÉRÉE

1 ou plusieurs de ces signes

- ☐ Pas d'amélioration dans les 48 heures malgré ajustement de la médication anti-inflammatoire
- ☐ Essoufflement à l'effort léger
- ☐ Chute des DEP plus bas que _____

RÉAGIR RAPIDEMENT ! Avisez votre médecin et : _____
_____

R

FEU ROUGE =
DÉTÉRIORATION SÉVÈRE
1 ou plusieurs de ces signes

- ☐ Persistance des symptômes après l'utilisation du bronchodilatateur; ou soulagement qui dure moins de 4 heures.
- ☐ Respiration bruyante et rapide.
- ☐ Toux persistante avec ou sans crachats.
- ☐ Essoufflement avec difficulté à parler ou à marcher.
- ☐ Fatigue, anxiété et transpiration.
- ☐ Impossible de dormir à cause de l'asthme.
- ☐ Chute des DEP plus bas que : ____

URGENCE ! Présentez-vous à l'urgence

Appendix B: Asthma Education Centre Action Plan – Resource (Hôpital Laval, Quebec City)

Appendix B: Asthma Education Centre Action Plan – Resource (Hôpital Laval, Quebec City)

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