



# Asthma management programs for primary care providers: increasing adherence to asthma guidelines

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## Purpose of review

This article reviews new approaches, facilitators, barriers, and opportunities to increasing guideline-adherent care for children with asthma by primary care clinicians.

## Recent findings

Primary care clinicians are challenged by the volume of guidelines and want transparent guidelines that are easy to use and that can be used in complex patients with multiple comorbidities. Programs that use decision support tools and electronic technologies and provide support from individuals new to the medical home such as panel management assistants, community health workers, patient advocates, practice facilitators, school nurses, and pharmacists may enhance use of guidelines by primary care clinicians and reduce asthma morbidity. Primary care clinician burnout and difficulty incorporating electronic asthma decision tools into current workflow are recently recognized barriers to guideline integration and improved asthma outcomes. In addition, many of these interventions are labor intensive, costly and may not be capable of being widely disseminated.

## Summary

Programs that simplify guidelines, provide decision support tools and use electronic technologies and an expanded medical team may improve the quality of asthma care provided by the primary care community to children and their families with asthma.

## Keywords

community health workers, decision support, patient navigators, school-based asthma programs

## INTRODUCTION

In 2015, the list of newly released/revised pediatric clinical practice guidelines included 13 guidelines released by the American Academy of Pediatrics (AAP), 29 additional guidelines that the AAP endorsed, and four more guidelines that they affirmed [1]. Only one of these guidelines was related to asthma (Environmental management of pediatric asthma). The impact of these 46 and myriad other guidelines on clinical practice in 2015, however, has fallen short of expectations and guidelines have only modestly changed processes of care especially for primary care clinicians. Similarly to other primary care clinicians, pediatric primary care clinicians continue to underdiagnose asthma, and underuse anti-inflammatory therapy [2]. In addition, the number of asthma treatment plans that are distributed to families and the rates of preventive asthma follow-up visits remain low [3]. The latter has been shown to result in on-going

undertreatment of persistent disease and increased morbidity [4].

## FACILITATORS AND BARRIERS TO USING GUIDELINES BY PRIMARY CARE CLINICIANS

Surprisingly, little research has been done to understand the barriers and facilitators to using guidelines in the primary care community and more importantly, how to overcome these barriers (Table 1).

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KEY POINTS

- Guidelines for asthma management continue to be underutilized by primary care clinicians.
- To increase use of guidelines, guideline writers need to incorporate greater transparency into the recommendations, simplify the recommendations and adapt them for use with complex patients with multiple comorbidities.
- Programs that are easy to use, provide decision support, utilize electronic technologies, and engage new members of the healthcare team, such as CHWs, lay assistants, and school nurses appear to be the most effective in increasing use of guidelines and improving outcomes of care for children with asthma.

Barriers have been identified at multiple levels, including the level of the clinician, the patient, and the organization and its culture. Clinician-identified barriers include the content of the guidelines, their format, the experience of the individual clinician, the need to preserve the doctor–patient relationship, professional responsibility, and practice issues [5]. The volume of the guidelines is also a major barrier [6]. Lugtenberg and colleagues [7] examined barriers to implementing guideline recommendations in Dutch general practitioners and found a broad range of barriers that differed with different guidelines. For all guidelines, however, a common theme was a lack of transparency in the guidelines concerning the underlying evidence and applicability. For asthma guidelines in particular, the major themes included: lack of familiarity of the specific content; a lack of agreement about the evidence (or lack of evidence) underlying a recommendation and its lack of applicability to specific groups of patients, especially those with

comorbidities; a lack of outcome expectancy with general practitioners not believing that applying the guideline recommendations would result in better patient outcomes; and confusing or unclear recommendations that were either not up to date or too complex and not easy to use in practice.

Studies of organizational culture in use of asthma guidelines by primary care clinicians have found that a group culture, role clarity, and job satisfaction were associated with perceived effectiveness and facilitated use of guidelines, whereas staff turnover was a barrier to guideline use [8]. Recently, burnout has been noted both as a threat to the primary care workforce and as a factor in reduced quality of medical care and poor adherence of patients to care plans [9<sup>¶¶</sup>]. Willard-Grace *et al.* [9<sup>¶¶</sup>] reported that primary care clinicians who worked in a tight team structure and who had perceptions of a greater team culture had lower levels of exhaustion, a measure of burnout. Facilitating a culture of teamwork through the establishment of ground rules, empowering staff to take on new roles, and inverting hierarchical relationships in meeting structures and processes may protect against burnout in primary care.

INTERVENTIONS TO IMPROVE USE OF GUIDELINES BY PRIMARY CARE CLINICIANS

Guideline-specific interventions directed at the primary care clinician have included interventions to increase asthma severity-specific treatment, to increase use of written asthma treatment plans and to increase follow-up office visits after an Emergency Department visit for asthma [3<sup>¶</sup>,6,10<sup>¶</sup>,11]. One such intervention program is Easy Breathing [12]. Easy Breathing is an asthma management program for primary care clinicians that is based upon

Table 1. Summary of new approaches, barriers and facilitators to guideline uptake by primary care clinicians

| Barriers to guideline implementation       | Interventions                                                                                                          | Opportunities                                                                 |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Clinician burnout                          | Decision support tools                                                                                                 | Include recommendations in guidelines for complex patients with comorbidities |
| Guideline content and transparency         | Use of MOC and CME                                                                                                     | Shorten/condense guidelines                                                   |
| Confusing/unclear guideline recommendation | Clinician and caregiver feedback                                                                                       | Increase transparency in guidelines                                           |
|                                            | Increased clinician self-efficacy                                                                                      | Integrate asthma action plans into the electronic health record               |
|                                            | Electronic health record (reminders, patient delivered questionnaire; embedded asthma treatment plans, patient portal) | Implement integrated continuity of care                                       |
|                                            | Expanded medical home team                                                                                             |                                                                               |

CME, Continuing Medical Education; MOC, Maintenance of Certification.

the 2007 National Asthma Education and Prevention Program Expert Panel Report 3 (NAEPP EPR-3) asthma guidelines [13]. The program provides decision support to guide clinicians in diagnosing asthma, in determining asthma severity and in selecting asthma severity-specific therapy with creation of an easy-to-understand asthma treatment plan in multiple languages for families. This simple, streamlined adaptation of the NAEPP EPR-3 guidelines has been widely disseminated and adopted in Connecticut, and has demonstrated 96% adherence to asthma severity-specific therapy and 94% use of a written asthma treatment plan [11]. For children insured by Medicaid, the Easy Breathing program has reduced hospitalizations by 35% and emergency department (ED) visits by 30%. The program is in its 18th year in Connecticut; currently 400 pediatric clinicians in 110 pediatric practices have enrolled approximately 150 000 children in Connecticut of whom more than 37 000 have physician-confirmed asthma. Adherence to asthma-specific therapy and use of a written asthma treatment plan have remained high (96 and 94%, respectively). Participating clinicians are offered opportunities to use Easy Breathing for Continuing Medical Education credits and to satisfy part IV of Maintenance of Certification from the American Board of Pediatrics. Both of these activities have encouraged sustained clinician participation in the program. A group self-assessment module as part of Maintenance of Certification for Family Physicians has also been shown to increase use of asthma treatment plans and has resulted in a sustained increase in asthma knowledge [6]. A recent systematic review of 68 studies designed to increase provider adherence to asthma guidelines supported as effective with moderate grade evidence interventions like Easy Breathing that provide decision support, feedback, and audit or clinical pharmacy support in increasing use of asthma guidelines by primary care clinicians [14].

Butz *et al.* [15] examined the efficacy of a clinician and caregiver feedback intervention delivered by community nurses on increasing preventive asthma care after an ED visit for asthma in urban-dwelling, low-income, primarily African-American children. There was no difference in ED visits over 12 months between the intervention and attention control group but children who had an asthma treatment plan were two times more likely to attend follow-up care visits with their primary care clinician as compared with children without an asthma treatment plan. Having an asthma treatment plan has been associated with greater adherence to therapy and asthma control [16].

In a randomized controlled trial involving 36 pediatric practices, Cloutier *et al.* examined the

efficacy of an intervention that focused on increasing clinician knowledge and self-efficacy as compared with changing organizational culture on use of a disease management program that adhered to the national asthma guidelines, and was designed for use by primary care clinicians. Although the clinician-specific intervention increased self-efficacy, the increase in self-efficacy was not associated with increased program use, a surrogate for guideline-consistent care suggesting that increasing self-efficacy, which is often used in studies as an indicator of improved guideline use, may be important but not sufficient to increase use of guidelines and improve outcomes of care [17]. Similarly, the systematic review of interventions of asthma guidelines found low-grade evidence to support organizational change and multiple component interventions [14].

## INFORMATION TECHNOLOGY

Over the past 5–10 years, the electronic health record (EHR) has become a part of the healthcare system. Promoted as a system to improve the consistency and quality of healthcare, the full potential of the EHR is still unrealized. Studies evaluating provider reminders for pharmacy, preventive services and chronic disease management have had mixed results. Lim *et al.* [18] used asthma ePrompt to remind front desk office staff to distribute an asthma management questionnaire (AMQ) [which included the Asthma Control Test (ACT), and questions about healthcare utilization and asthma triggers] to patients previously identified through the EHR as having asthma, irrespective of the reason for the visit. The AMQ was reviewed by the individual who brought the patient into an examination room (in this case a licensed practical nurse) who scored the ACT and then presented it to the clinician providing care at that clinic visit. Results from this relatively brief (3-month) study demonstrated excellent distribution of the AMQ by front desk staff and a significant difference in asthma severity documentation between intervention and control sites (63.3 vs. 12.3% for control sites). One of the strengths of this study was that clinical information was gathered for asthma assessment without a disease-specific office visit. This approach could overcome the failure of integrated care models that remind patients to schedule asthma visits, an approach that has not been successful in increasing follow-up visits [19]. Another study [10\*] embedded an electronic asthma action plan decision support tool into the medical record. Update and distribution of the electronic asthma action plan was low (10%) but when used, was associated with a

significant decrease in asthma exacerbations in children.

Web-based interactive decision aids for improving screening and care have been proposed for a variety of diseases and whereas clinicians perceived the decision aids as promising, clinicians also raised concerns about how this technology and the resultant information would be integrated into their daily practice workflow [20]. A recent systematic review evaluated the effect of computer-generated automatic reminders that were delivered on paper to healthcare professionals on processes and outcomes [21]. Computer-generated reminders achieved moderate improvement in medical practices associated with a 7% improvement in processes of care with higher rates of improvement when the reminders included a space for the clinician to enter a response and when the reminder provided an explanation for the content. One study [22] examined use of electronic prompts delivered initially to the caregiver who personally handed the prompt to the healthcare provider and demonstrated increased use of asthma treatment plans, greater use of secondhand smoke counseling, and more symptom-free days in intervention children with asthma.

Another possible technologic component to improving use of guidelines is the patient portal. The promotion of the patient portal is among the core objectives of what is now called meaningful use. The patient portal includes web-based communication with providers and practices and has the potential to improve communication and access. In a study of adults with asthma, Apter *et al.* [23] will examine asthma outcomes in adults with asthma randomized to receive either portal-based communication or portal-based communication with support from a community health worker (CHW).

In another study [24<sup>¶</sup>], the effect of copy-free secure messaging and telephone encounters on the number of follow-up office visits was examined in 18 486 adults with newly diagnosed diabetes. The number of primary care contacts increased by 28% over 12 months in association with a 10% increase in secure message threads and in telephone encounters which resulted in a 1.25 and 2.74% increase in office visits, respectively. This new form of patient-clinician communication could be used to increase patient encounters, which in turn would increase the opportunities for improved asthma care.

## EXPANDING THE MEDICAL HOME TEAM

Recent studies are exploring how to extend care by individuals new to the medical home and health-care system. One strategy that has recently been

described includes taking a population health approach to preventive services, including follow-up visits using panel management assistants in adults with hypertension and smoking [25]. Although only a project description has been published, the toolkit that was developed, if effective, could be adapted to other conditions.

Other studies describe use of patient advocates, practice facilitators, and CHWs. One pilot study [26] used patient advocates who worked with low-income minority families (primarily African-American) to model medical visits, facilitate scheduling, and overcome barriers to implementing medical advice. Both the intervention and minimal intervention comparison group demonstrated improved asthma control and quality of life. Another study [3<sup>¶</sup>] used practice facilitators who met with practices a half-day weekly or a full day every other week for 6 months to assist practices in meeting goals related to the six key guideline recommendations extracted from the NAEPP EPR-3 Report [27]. Another study [28] used CHWs to conduct home visits to improve follow-up care, provide home-based education and environmental interventions, and demonstrated asthma trigger reductions, increased caregiver asthma knowledge and reduced ED visits, hospitalizations, and asthma symptoms. Efforts to credential home visitors, to establish reimbursement policies and integrate them into the medical home are on-going in many states.

Efforts to engage schools in improving asthma care for children have had mixed results but several recent studies suggest that use of asthma educators working alongside school nurses and creation of a multicomponent program could result in asthma friendly schools and improve asthma control especially in children at greatest need [29<sup>¶</sup>,30]. Finally, a practitioner asthma communication and education program developed for general practice physicians, was adapted for use by pharmacists and assessed for feasibility and acceptance [31]. The program was embraced by pharmacists who reported greater self-confidence in communicating with families of children with asthma and who reportedly more often checked for written asthma treatment plans and proper inhaler technique.

## OPPORTUNITIES TO IMPROVE GUIDELINE USE BY PRIMARY CARE CLINICIANS

Results from recent studies suggest several strategies that could be employed to increase guideline use by clinicians and improve asthma care. Specific to interventions, studies are needed that include rather than exclude complex patients; this will increase applicability of the interventions in practice.

Related to guidelines, clinicians prefer short guideline recommendations that are easy to understand and greater transparency in the basis for the recommendations. Guideline documents, however, are continuing to increase in size with the last asthma guideline being 463 pages in length [13]. An extraction of these guidelines for the primary care clinician was created [27] but was not widely distributed and even this shortened version is 46 pages and consists of six specific recommendations for asthma. Suggestions for condensing the guidelines include using multiple formats such as simple algorithms, short summaries and electronic web-based versions with hyperlinks defining minimal or core elements as a way to engage the primary care community in using guidelines. Once these core elements are integrated into the practice workflow, clinicians may be more open to adding additional elements.

## OPPORTUNITIES TO IMPROVE ASTHMA CONTROL

Recent studies have confirmed that the use of asthma treatment plans for children with persistent disease are effective in reducing asthma morbidity and efforts to improve the ease of use, particularly integration into the electronic medical record should be encouraged. Interventions are also needed that specifically engage caregivers to increase preventive healthcare seeking behaviors.

Recent studies with patients with diseases other than pediatric asthma suggest opportunities to improve follow-up care and reduce morbidity. For example, a study in adults with diabetes demonstrated that continuity of care and specifically, follow-up visits by one provider in the first year after diagnosis, reduced diabetes complication-related hospitalizations [32<sup>22</sup>]. Finally, a re-examination of reimbursement for services for the medical home is needed as these new healthcare delivery systems are studied and evaluated. These new delivery systems could help to reduce the \$2.6 trillion dollars spent on healthcare in the United States in 2010 [33].

## CONCLUSION

Guidelines for the management of asthma in children exist and are effective when used by specialists. Adoption of these guidelines by the primary care community has been slow and modest. A better understanding of the barriers to guideline use and implementation of programs that address these barriers offer the greatest hope for decreasing asthma morbidity in children. As current guidelines are being revised, guideline authors are encouraged to

adopt greater transparency in their recommendations, simplicity, and adaptability for use in individuals with comorbid conditions.

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## Conflicts of interest

*There are no conflicts of interest.*

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- of special interest
- of outstanding interest

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