

A Group Visit for High-Risk Pediatric Asthma Patients: A Quality Improvement Initiative to Improve Asthma Care

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1–6

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Abstract

Introduction. Asthma disproportionately affects poor and minority children. Limited parental knowledge and confidence in asthma management, as well as stress from chronic illness, may contribute to poor outcomes. Novel approaches for providing care are essential for this vulnerable population. Our objective was to evaluate the feasibility and impact of an asthma group visit for high-risk children. **Methods.** Our primary care practice cares for more than 2600 children with asthma. The majority have public insurance. Children classified as high risk (≥ 1 asthma-related emergency department visit/hospitalization in the preceding 2 years) were eligible. Children received brief physical examinations, medication review, and updated Asthma Action Plans. Educational sessions were held for children and parents. Pre and post surveys were used to assess parents' experience and changes in confidence in asthma management. **Results.** Twenty children and their parents participated. Mean parent confidence scores (5-point Likert-type scale, 5 indicating greatest confidence) improved in managing their child's asthma symptoms (3.60, 4.40, $P \leq .005$), managing their child's asthma medications (3.85, 4.30, $P \leq .005$), using their child's Asthma Action Plan (3.79, 4.45, $P \leq .02$), communicating with the school about their child's food allergies (4.32, 4.72, $P \leq .03$), and helping their child relax to reduce emotional triggers of asthma (3.25, 4.47, $P \leq .01$). All families reported that they would return to a group visit. **Conclusion.** Group visits are feasible for providing care, education, and peer support to a vulnerable population. Parents expressed satisfaction and improved confidence in aspects of asthma management. Group visits have the potential to improve asthma outcomes for high-risk families.

Keywords

asthma, pediatric group visits, vulnerable populations, chronic disease

Introduction

Approximately 7 million children in the United States have asthma.¹ Asthma disproportionately affects children from minority groups and children of low socioeconomic status.^{2,3} Additionally, racial and ethnic disparities exist in asthma outcomes, as black children have higher rates of emergency department (ED) visits, hospitalizations, and death than white children.² Insufficient understanding regarding aspects of preventative asthma care⁴ and parental reports of limited self-efficacy in managing their child's asthma⁵ may contribute to poor asthma outcomes. Additionally, both children with asthma and their parents may experience stress related to the chronic disease.^{5,6} This stress may affect their disease management.

During group visits, multiple patients receive care for a chronic illness, including both medical assessments and education about their chronic conditions. Group visits offer extended time for patient interaction with their care team and peers and are associated with benefits including increased patient satisfaction, decreased ED

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visits,⁷ and improved biophysical outcomes.⁸ Though group visits have been well established in adult care, pediatric group visits models are now evolving as an innovative format for delivery of high-quality, comprehensive care for children with chronic illness and their families.⁸⁻¹⁸ Focus groups of low-income, ethnically diverse families have supported the use of group visits for well-child care, as they allow for learning and support from other parents.¹⁹ Further research is needed to understand the feasibility of a group visit format for vulnerable patients who may be at high risk for poor asthma outcomes.

The objective of our study was to assess the feasibility of an asthma group visit for high-risk pediatric asthma patients. We sought to determine if the group visit format was an effective means to provide comprehensive care, peer support, and education to a vulnerable population of low income and ethnically diverse families.

Methods

Setting

Our clinic is a large, urban hospital-based primary care practice that cares for more than 2600 patients with asthma. The patient population is ethnically and socio-economically diverse with many families who live in low-income neighborhoods and receive public insurance. As part of an ongoing quality improvement initiative, a multidisciplinary asthma program provides comprehensive care for asthma patients. This pilot quality improvement study was conducted to understand the feasibility of implementing group visits for asthma management.

Intervention

Program Design. Our team conducted semistructured interviews with parents of children with asthma to elicit their input and interest in group visit program development. Interviews were conducted both in person when families presented to the clinic for routine asthma care and during intervisit phone calls. Topics discussed included interest in and concerns about participation, comfort sharing thoughts with other families, educational topic interests, obstacles to participation, and timing of group visits.

Curriculum Design. We designed developmentally appropriate, parallel curricula for the children and their parents. The learning objectives for the children's curriculum focused on understanding asthma medications and Asthma Action Plans (AAPs), identifying and managing fall asthma triggers, and general asthma self-management. We

used the principle of backward design to ensure alignment of activities with learning objectives. The lesson included use of multiple strategies to engage patients including a combination of large group and small group activities that targeted multiple learning modalities. The parent session was formatted as a moderated discussion that allowed for questions, exchange of ideas, and education with a focus on communicating with the school about asthma and food allergies, medication adherence, and barriers to asthma care at home and at school.

Patient Recruitment. The asthma program in our clinic maintains a registry of patients with a diagnosis code of asthma who have been followed in the clinic over the preceding 2 years. Patients are classified as "high risk" if they have had at least 1 asthma-related ED visit or inpatient hospitalization for asthma in the preceding 2 years (July 1, 2014, to June 30, 2016) or if a provider has identified them as at risk for poor asthma outcomes due to psychosocial factors. Children aged 6 to 12 years who were classified as high risk and any siblings with a diagnosis of asthma, regardless of risk, were eligible to participate. Families were recruited by phone calls and by a mailing. Families received a reminder phone call the week prior to the group visit.

Group Visit. The format of our group visit is outlined in Figure 1. Each family checked in at the clinic reception and received a packet that included a welcome letter, a confidentiality notice, a list of group norms, the Asthma Control Test, a school medication authorization form, and a prescription refill request form. Prior to their individual assessments, children and their parents gathered in a conference room where they completed the forms. Children also completed a worksheet to prepare for an icebreaker activity. Children and families were then individually seen by 1 of 2 pediatricians or a nurse practitioner who conducted a history and brief physical examination, adjusted medications, and updated the child's AAP. The providers also refilled prescriptions and completed medication authorization forms for school nurses.

After the medical assessment, a brief orientation to the full group visit was provided, including a review of the agenda, discussion of confidentiality, and an ice breaker. The children and their families were then separated into their peer groups. The children's group consisted of an interactive discussion of fall asthma triggers and asthma management strategies, an introduction to the relationship between stress and asthma, and a deep breathing exercise for stress management. The children's session also offered a Jeopardy game that included both knowledge-based, close-ended questions

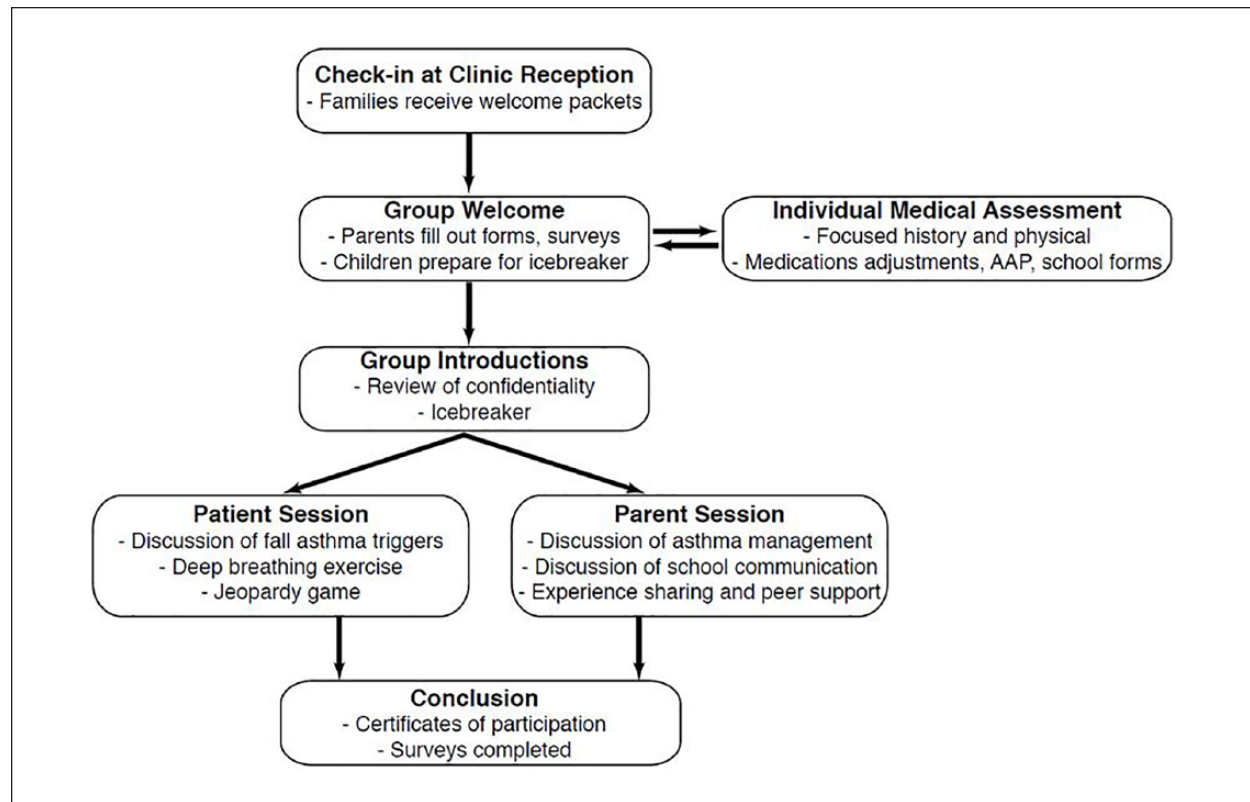


Figure 1. Group visit format.

as well as open-ended questions designed to encourage discussion and experience sharing. The parents' discussion on asthma management, readiness for the fall, and challenges regarding communication with school staff about asthma and allergies was facilitated by the asthma nurse educator.

After the separate sessions, the parents' and children's groups combined for lunch. Certificates of participation, donated backpacks and school supplies were distributed.

Group Visit Evaluation

Parents completed pre-intervention and post-intervention surveys on the day of the group visit. The pre-intervention survey assessed parent confidence in 9 aspects of asthma management. The questions used a 5-point Likert-type scale (with 1 meaning poor and 5 meaning excellent) for each of the 9 questions on parental confidence. "I don't know" was also an option for each question. The post-intervention survey assessed parent confidence in the same 9 aspects of asthma management and also included 4 questions regarding their satisfaction with the group visit, as well as 2 open-ended questions:

"What was the most helpful information you learned today?" and "What additional information would you like to learn?"

Statistical Analysis

Analyses were performed using SAS statistical software, version 9.3 (SAS Institute Inc, Cary, NC). We present mean scores of parental confidence and satisfaction for each question. To take into account that the satisfaction scores are nonparametric, we used the Kruskal-Wallis test to compare the pre- and postscores.

Results

A total of 20 patients from 15 families participated in the group visit. Table 1 displays baseline characteristics of the group visit participants. The mean age was 10.05 (SD: 2.7) with a range of 6 to 16 years. Approximately equal numbers of male (11) and female (9) patients participated. Seventy-five percent (15) of the patients identified as black or African American, and 40% (8) identified as Hispanic/Latino. Eighty-five percent (17) of participants had public insurance. Participants had

Table 1. Patient Demographics.

Characteristics	Number of Patients (%)
Mean age, years (SD)	10.05 (2.7)
Gender	
Female	9 (45)
Male	11 (55)
Race	
Black or African American	15 (75)
White	1 (5)
Other	4 (20)
Ethnicity	
Hispanic/Latino	8 (40)
Not Hispanic/Latino	11 (55)
Declined to answer	1 (5)
Insurance	
Public	17 (85)
Private	3 (15)
Asthma severity	
Intermittent	1 (5)
Mild persistent	8 (40)
Moderate persistent	8 (40)
Severe persistent	3 (15)
Controller medications	
None	1 (5)
ICS	8 (40)
ICS/LTRA	6 (30)
ICS/LABA	5 (25)
Food allergies	7 (35)
Risk	
Patients with at least 1 ED visit/IPH in 2 years preceding intervention (July 1, 2014, to June 30, 2016)	12 (60)

Abbreviations: ICS, inhaled corticosteroid; LTRA, leukotriene receptor antagonist; LABA, long-acting β agonist; ED, emergency department; IPH, inpatient hospitalization.

varying levels of asthma severity with 15% (3) having severe persistent asthma and more than 50% on 2 or more controller medications. Sixty percent (12) of participants had one or more ED visits or inpatient hospitalization in the 2 years preceding the intervention (July 1, 2014, to June 30, 2016).

Parents reported significant improvement in confidence in managing their child's asthma symptoms, managing their child's asthma medications, using their child's AAP, communicating with the school about their child's food allergies, and helping their child relax to reduce emotional triggers of asthma after the group visit compared with before the intervention (Table 2). There was no statistically significant change in parents' confidence in managing their child's asthma during the fall season, identifying fall asthma triggers, working with

the school to manage their child's asthma, or preparing their child to exercise at gym and recess. In addition to increased confidence in asthma management, parents also expressed high levels of satisfaction with the group visit. The parents of 19 of 20 children completed the satisfaction questions on the post-visit survey, and 100% of them indicated that they received enough information at the visit, that they would come again to an asthma group visit, and that they would recommend an asthma group visit to a friend or family member. The parents of 79% (15) of the children rated the quality of care at the group visit as "excellent," while the parents of 21% (4) of the children rated it as "very good."

In response to the post-survey question about the most important thing parents learned at the group visit, responses included the following: "about meds," "talking to the doctor about asthma," "how asthma affects everyone different," "learning about meds," "keeping up with my child's meds," "my child isn't the only one who suffers with this problem," "I learn about different asthma from parents," and "the parents' information group session." In response to the post-survey question about additional information that parents would like to learn, responses included "doctor telling us we are taking the right steps," "managing the amount of meds," "managing my child's meds," "why do they wait so long to diagnose when all the signs and symptoms are there," and "as much as possible."

Discussion

Our project demonstrated that group visits are a feasible way to provide care, education, and peer support to high-risk children with asthma and their families. We were able to provide comprehensive care to a population with primarily public insurance who is at risk for high rates of ED visits and hospitalizations for asthma. After the group visit, parents reported significant improvement in confidence in several areas of asthma management and high levels of satisfaction with the group visit. Overall, our results suggest that group visits may be an effective strategy to empower patient families to care for children with asthma.

Recent studies have examined group visits for pediatric patients with a variety of chronic conditions.¹⁰⁻¹⁸ Our results support other groups' findings regarding satisfaction with pediatric group visits for type 1 diabetes and post-heart transplant care.^{10-12,14,15} To our knowledge, there is only one study of a pediatric asthma group visit. This study found similarly high participant satisfaction for a patient population that was mostly white and privately insured.¹⁷ Our findings suggest that asthma group visits are also well received by diverse families with

Table 2. Mean Pre- and Post-Group Visit Confidence Scores^a.

Question	Pre-Visit, Mean (SD)	Post-visit, Mean (SD)	P
<i>What is your confidence in</i>			
1. Managing your child's asthma symptoms	3.60 (1.05)	4.40 (0.75)	.005
2. Managing your child's asthma medications	3.85 (0.75)	4.30 (0.73)	.005
3. Using your child's Asthma Action Plan	3.79 (1.40)	4.45 (0.60)	.02
4. Managing your child's asthma during the fall season	3.76 (1.20)	4.26 (0.87)	.13
5. Identifying asthma triggers during the fall	3.53 (1.17)	4.35 (0.86)	.13
6. Working with the school to manage your child's asthma	3.95 (0.89)	4.50 (0.69)	.055
7. Communicating with the school about your child's food allergies	4.32 (0.75)	4.72 (0.57)	.03
8. Preparing your child to exercise at gym and recess	3.47 (1.07)	4.47 (0.70)	.06
9. Helping your child relax to reduce emotional triggers of asthma	3.25 (1.02)	4.47 (0.70)	.01

^aParent confidence was rated on a 5-point Likert-type scale, with 1 indicating the least confidence and 5 indicating the greatest confidence.

mostly public insurance. Moreover, our study also demonstrated improvements in parent confidence in various aspects of asthma self-management. Other studies have found that group visits for adults were associated with improvements in disease knowledge,^{20,21} but one of these found no significant impact on patient self-confidence in disease self-management.²¹ Differences in group visit structure, content and differences in disease-specific management may account for this difference in results regarding the impact of participation on confidence in self-management.

Our intervention has several additional strengths. First, the intervention targeted children who were classified with high-risk asthma in order to reach the families who could most benefit from additional education, peer support, and time with the care team. Second, the intervention included minority children with mostly public insurance, a population that faces a disproportionate burden of asthma.^{2,3} Third, the group visit format offered these vulnerable families more time with the care team and opportunities for peer support. Finally, the group visit provided separate educational interventions for parents and children to maximize age-appropriate education, discussion, and peer support. Prior studies of pediatric group visits in which patients and parents were combined found that patients did not participate more in discussions during group visits as compared with individual appointments, despite their longer duration. The authors hypothesized that this finding could be due to child reluctance to participate with parents present.¹⁵ Others found that patients participated less if parents were present at group visits,¹³ and parents of children who participate in group visits favor separation of children from parents.¹² Likewise, the adult session allowed parents to exchange ideas and support, an important opportunity as prior studies have demonstrated that

parental social support is associated with improved asthma control among their children.²²

Despite its strengths, our study also had several limitations. First, our sample size was small. Additionally, while parent confidence improved significantly in certain areas of asthma management, our pre-intervention confidence scores were quite high, perhaps reflecting the fact that all of our patients receive comprehensive asthma care through our program, which includes individualized asthma education sessions for high-risk patients. As surveys were completed at the group visit and collected by members of the team, our results are subject to social desirability bias. Finally, while we were able to demonstrate parent satisfaction and feasibility of group visits for high-risk patients, we did not examine, in this study, the impact of group visit participation on symptom control or health care utilization.

In conclusion, group visits are a promising way to provide care to high-risk asthma patients. Parents express satisfaction with the group visit model and report improved confidence in asthma management. An important area and next steps of future research will be the exploration of the impact of pediatric asthma group visits on health outcomes for high-risk asthma patients.

Author Contributions

FFH-N conceptualized and led the QI project. JC provided mentorship and project oversight. All authors contributed to project design and implementation. MF developed the curriculum materials. FFH-N, MF, ACW and LH developed the data collection instrument. LH supervised data collection. TC, SP, EC and JS performed patient recruitment and survey collection. ACW, FFH-N and MF performed data analysis. FFH-N, MF, ACW, JC and LH contributed to writing the manuscript. All authors approved the final manuscript.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr Faye F. Holder-Niles and Linda Haynes have served on the Scientific Advisory Board for Vectura.

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