A Group Visit for High-Risk Pediatric Asthma Patients Improves Parent Confidence

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

Date: 26 February 2017

Student Name: Margaret Fallon MEd

Scholarly Report Title: A Group Visit for High-Risk Pediatric Asthma Patients Improves Parent Confidence

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ABSTRACT

A Pilot Group Visit for High-Risk Pediatric Asthma Patients Improves Parent Confidence

Margaret Fallon, MEd, Linda Haynes, MS, PPCNP-BC, AE-C, Tatiana Cadet, BS, Sheila Petrosino, BS, RN, AE-C, Esther Cazeau, BA, Jessica Solis, BA, Joanne Cox, MD, Ann Wu, MD, MPH, Faye Holder-Niles, MD, MPH

Purpose
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. As part of a quality improvement initiative, we developed and implemented a pilot asthma group visit to: 1) evaluate the feasibility of the group visit format for high risk children with asthma, 2) assess parents’ experiences with the group visit, and 3) assess the impact of participation on parents’ confidence in asthma management.

Methods
Our primary care practice provides care for over 2,600 children with asthma. Many have public insurance. Children classified as high-risk (≥1 asthma-related emergency department visit/hospitalization in the preceding two years) were eligible to participate. During the group visit, children received brief physical exams, medication reviews, and updated Asthma Action Plans (AAPs). Separate educational sessions were held for children and parents. Pre- and post-group visit 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 (five-point Likert scale, 5 indicating greatest confidence) improved in: managing their child’s asthma symptoms (3.60, 4.40 p≤ 0.005), managing their child’s asthma medications (3.85, 4.30 p ≤0.005), using their child’s AAP (3.79, 4.45 p≤ 0.02), communicating with the school about their child’s food allergies (4.32, 4.72 p≤0.03), and helping their child relax to reduce emotional triggers of asthma (3.25, 4.47, p≤0.01). 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 engage high-risk families and improve asthma health outcomes.
Student Role

Introduction

I worked with the Primary Care Asthma Program at Boston Children’s Primary Care at Longwood to complete my scholarly project. The asthma team consists of my mentor Dr. Faye Holder-Niles, Dr. Ann Wu, asthma nurse practitioner Linda Haynes, asthma nurse Sheila Petrosino, population manager Tatiana Cadet, patient navigator Esther Cazeau, and research assistant Jessica Solis.

Program Design and Development

Under the mentorship of Dr. Holder-Niles, I created a logic model in which we outlined the activities required to develop, implement and evaluate a group visit program. I then developed a semi-structured parent interview guide in order to elucidate families’ interest in and concerns about participating in group visits, comfort sharing in a group setting, interest in different educational topics, as well as obstacles to participation and preferred group visit timing. I conducted 20 semi-structured interviews and synthesized the results for the asthma team. I also completed a literature review focused on identifying best practices for group visit design and implementation. Incorporating family input from interviews as well as information from this literature review, we designed the group visit structure and curriculum.

Using continuous quality improvement tools including PDSA cycles and small tests of change, we then conducted two initial pilot group visit/educational workshop sessions for patient families with a focus on winter and spring asthma topics. Using lessons learned from our experiences with these initial sessions, in addition to the family input from interviews and the best practices from literature review, we created and implemented a formal “back-to-school” group visit program.

Program Execution

The asthma team maintains a registry of asthma patients who are classified as “high risk” for having one or more ED visits or inpatient hospitalizations in the preceding two years. Families of patients who were identified as high risk through the registry, as well as families who were identified by providers as having high risk due to psychosocial factors, were eligible to
participate. They were recruited via phone calls and a mailing. The group visit included individual medical assessments and parallel education session for adults and children in order to maximize developmentally appropriate education and peer support. The children’s session included an icebreaker to encourage sharing, direct instruction regarding seasonal and general asthma management, and a game that fostered interaction with peers, sharing experiences, and applying new knowledge. The parent session was formatted as a moderated discussion that allowed for questions, exchange of ideas, and education.

To evaluate our program, we reviewed the literature for surveys regarding self-efficacy, as well as surveys previously used by the asthma team and developed a survey instrument to assess parent confidence in asthma management and parent satisfaction with the group visit. The data from our group visit is presented in the manuscript below.

I participated in and played a key role in all aspects of program development, execution, and evaluation. This included working to develop the group visit format, developing the children’s educational curriculum, and working with the team to develop the format for the parent session. I worked closely with the team in the development of the survey instrument and in the recruitment of patient families. During the group visit sessions, I provided an orientation for the families and led the children’s educational session.

Data Analysis

I collected, recorded and organized the results of our parent surveys. Together, we reviewed and analyzed the results of the parent surveys.

Writing

I drafted the manuscript provided in the appendix below. Throughout the writing process, Drs. Holder and Wu met with me regularly to provide critical feedback, review and edits to the manuscript. All other co-authors edited and provided feedback for the final manuscript.
Appendix

Original Article

A Group Visit for High-Risk Pediatric Asthma Patients Improves Parent Confidence

Margaret Fallon, MEd1,2, Linda Haynes, MS, PPCNP-BC, AE-C1, Tatiana Cadet, BS1, Sheila Petrosino, BS, RN, AE-C1, Esther Cazeau, BA1, Jessica Solis, BA1, Joanne Cox, MD1,2, Ann Chen Wu, MD, MPH1,3, Faye Holder-Niles MD, MPH1,2

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ABSTRACT

Background

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.

Objective

Evaluate the feasibility and impact of an asthma group visit for high-risk children.

Methods

Our primary care practice cares for over 2,600 children with asthma. The majority have public insurance. Children classified as high-risk (≥1 asthma-related emergency department visit/hospitalization in the preceding two years) were eligible to participate. Children received brief physical exams, medication reviews, and updated Asthma Action Plans (AAPs). Separate 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 (five-point Likert scale, 5 indicating greatest confidence) improved in: managing their child’s asthma symptoms (3.60, 4.40 p≤ 0.005), managing their child’s asthma medications (3.85, 4.30 p ≤0.005), using their child’s AAP (3.79, 4.45 p≤ 0.02), communicating with the school about their child’s food allergies (4.32, 4.72 p≤0.03), and helping their child relax to reduce emotional triggers of asthma (3.25, 4.47, p≤0.01). 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.
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 care\(^4\) and parental reports of limited self-efficacy in managing their child’s asthma\(^5\) 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 impact 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 emergency department 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 over 2,600 patients with asthma. The patient population is ethnically and socioeconomically 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 study was approved through the Boston Children’s Hospital Department of Medicine Pediatric Excellence Group as a quality improvement project.

Intervention

Program Design

Our team conducted semi-structured 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 inter-visit phone follow-ups. 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 two years. Patients are classified as “high risk” if they have had at least one asthma-related emergency department (ED) visit or inpatient hospitalization (IPH) for asthma in the preceding two years (7/1/2014-6/30/2016) or if a provider has identified them as at risk for poor asthma outcomes due to psychosocial factors. Children ages 6-12 years old 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 I. 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 one of two pediatricians or a nurse practitioner who conducted a history and brief physical exam, adjusted medications, and updated the child’s AAP. The providers also refilled prescriptions and reviewed and completed the 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 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 and donated backpacks and school supplies were distributed.

**Group Visit Evaluation**

Parents completed pre- and post- intervention surveys on the day of the group visit. The pre-intervention survey assessed parent confidence in nine aspects of asthma management. The questions used a 5-point Likert scale (with 1 meaning poor and 5 meaning excellent) for each of the nine 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 nine aspects of asthma management and also included four questions regarding their satisfaction with the group visit, as well as two 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 post-scores.
Results

A total of 20 patients from 15 families participated in the group visit. Table I 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. 75% (15) of the patients identified as Black or African American, and 40% (8) identified as Hispanic/Latino. 85% (17) of participants had public insurance. Participants had varying levels of asthma severity with 15% (3) having severe persistent asthma and more than 50% on 2 or more controller medications. 60% (12) of participants had one or more ED visits or IPH in the two years preceding the intervention (7/1/2014-6/30/2016).

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 to before the intervention (Table II). 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: “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 parent’s 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. Our results support other groups’ findings regarding satisfaction with pediatric group visits for Type I diabetes and post-heart transplant care. 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. Our findings suggest that asthma group visits are also well-received by diverse families with 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, but one of these found no significant impact on patient self-confidence in disease self-management. Differences in group visit structure and 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, we included 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. Secondly, we included minority
children with mostly public insurance, a population that faces a disproportionate burden of asthma. Third, the group visit format offered these vulnerable families more time with the care team and opportunities for peer support. Finally, we 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 to individual appointments, despite their longer duration. The authors hypothesized that this finding could be due in part to child reluctance to participate with parents present. Others found that patients participated less if parents were present at group visits, and parents of children who participate in group visits favor separation of children from parents. 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.

Despite its strengths, our study also had several limitations. First, our sample size was small. Additionally, while we noted significant improvement in parent confidence 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.
References


13. Noordman J, van Dulmen S. Shared medical appointments marginally enhance interaction


Figure 1: Group Visit Structure

- Check-in at Clinic Reception
  - Families receive welcome packets

- Conference Room
  - Parents fill out forms, survey
  - Children prepare for icebreaker

- Individual Medical Assessment
  - Focused history and physical
  - Med adjustments, AAP, school forms

- Group welcome
  - Intro and review of confidentiality
  - Icebreaker

- Patient session
  - Discussion of fall asthma triggers
  - Deep breathing exercise
  - Jeopardy game

- Parent session
  - Discussion of asthma management
  - Discussion of school communication
  - Experience-sharing and peer support

- Conclusion
  - Certificates of participation
  - Lunches, backpacks, school supplies
  - Surveys completed
### Table I: Patient Demographics

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

ICS: Inhaled corticosteroid; LTRA: Leukotriene receptor antagonist; LABA: Long-acting beta agonist; ED: Emergency department; IPH: inpatient hospitalization
Table II: Mean Pre- and post-group visit confidence scores. Parent confidence was rated on a five-point Likert scale, with 1 indicating the least confidence and 5 indicating the greatest confidence.

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-visit mean (SD)</th>
<th>Post-Visit mean (SD)</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td>What is your confidence in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Managing your child’s asthma symptoms</td>
<td>3.60 (1.05)</td>
<td>4.40 (0.75)</td>
<td>0.005</td>
</tr>
<tr>
<td>2. Managing your child’s asthma medications</td>
<td>3.85 (0.75)</td>
<td>4.30 (0.73)</td>
<td>0.005</td>
</tr>
<tr>
<td>3. Using your child’s Asthma Action Plan (AAP)</td>
<td>3.79 (1.40)</td>
<td>4.45 (0.60)</td>
<td>0.02</td>
</tr>
<tr>
<td>4. Managing your child’s asthma during the fall season</td>
<td>3.76 (1.20)</td>
<td>4.26 (0.87)</td>
<td>0.13</td>
</tr>
<tr>
<td>5. Identifying asthma triggers during the fall</td>
<td>3.53 (1.17)</td>
<td>4.35 (0.86)</td>
<td>0.13</td>
</tr>
<tr>
<td>6. Working with the school to manage your child’s asthma</td>
<td>3.95 (0.89)</td>
<td>4.50 (0.69)</td>
<td>0.055</td>
</tr>
<tr>
<td>7. Communicating with the school about your child’s food allergies</td>
<td>4.32 (0.75)</td>
<td>4.72 (0.57)</td>
<td>0.03</td>
</tr>
<tr>
<td>8. Preparing your child to exercise at gym and recess</td>
<td>3.47 (1.07)</td>
<td>4.47 (0.70)</td>
<td>0.06</td>
</tr>
<tr>
<td>9. Helping your child relax to reduce emotional triggers of asthma</td>
<td>3.25 (1.02)</td>
<td>4.47 (0.70)</td>
<td>0.01</td>
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