Published in final edited form as:

Ann Allergy Asthma Immunol. 2015 February ; 114(2): 148–149. doi:10.1016/j.anai.2014.10.023.

PEER-TRAINING TO IMPROVE PARENTING AND CHILDHOOD ASTHMA MANAGEMENT SKILLS: A PILOT STUDY

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Keywords

Pediatric asthma; medication adherence; self-management; parenting

Non-adherence with daily inhaled corticosteroids (ICS) is a significant contributing factor to the high rate of morbidity seen in young children with asthma.¹ Medication adherence is a family affair that requires persistent effort by the parent and a complex set of interactions with the child. Poor parenting is a well-established mediator of non-adherence for long-term medications, and parenting difficulties are common in asthma families.² While some intensive behavioral programs can improve parenting skills, engaging and retaining parents in these programs is problematic.³ This report describes the development and preliminary testing of a theory driven intervention that integrates training in asthma management and parenting skills with the goal to improve ICS adherence and reduce asthma morbidity.

The program was developed by an interdisciplinary team with expertise in peer-training for asthma management and psychotherapeutic interventions to improve parenting skills. Skill training in asthma management emphasized self-monitoring and effective use of controller and quick-relief medications, and was based on our prior work.⁴ Parent skill training was addressed in the context of problems in asthma management. Targeted parenting skills were chosen to address treatment resistance, and included nurturance and autonomy granting, use

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Authors Contributions:

(1) conception and design of the study; (2) data generation (when applicable);
(3) analysis and interpretation of the data and (4) preparation or critical revision of the manuscript.

Conflict of Interest: The authors have no conflicts of interest to disclose.

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of positive reinforcement strategies, predictable routines, limit setting, problem solving, taking charge when needed, and staying calm under pressure. The Transtheoretical Model of behavior change provided the theoretical underpinning to guide program implementation.⁵

The peer-trainer was a certified asthma educator, experienced in using the Transtheoretical Model in asthma management training, and the mother of a child with asthma. The program was implemented during a series of brief phone calls over 6-months. Calls occurred weekly to bi-weekly according to the parents' needs and schedules, and were audiotaped. Guided by staging questions, the peer-trainer assessed parent's treatment goals, provided tailored education, skill training and support for the targeted asthma management and parenting behaviors, and helped parents set achievable short-term goals for successful behavior change. The peer-trainer was supported by weekly discussion with members of the study team (JG, SS) during which taped calls were reviewed and the program was further refined. The median total time of intervention calls was 4.4 hours per parent (range 51 minutes to 11:46 hours), and all but one parent had 12 calls (median 12.5, range 3 to 21).

The pilot study was approved by the Washington University School of Medicine Institutional Review Board and used a pre/post design. Measurement occurred at baseline and 6-months via telephone interviews conducted by a trained research assistant. In addition, parents completed mailed questionnaires (the Asthma Parent Tasks Checklist and Asthma Behavior Checklist) to assess the extent they found asthma-related tasks and child behaviors to be problematic (1, not at all to 7, very much a problem) and their confidence to manage these tasks and behaviors (1, certain I can't do it to 10, certain I can do it).² They also completed the Child Behavior Checklist to assess overall child behavior.⁶ Asthma control was measured with the Test for Respiratory and Asthma Control in Kids (TRACK) instrument.⁷ Pre-post measures of ICS adherence and asthma control were compared using Fisher's exact test.

Between February 18, 2013 and March 5, 2013, 13 families with a child aged 3 to 6 years old with a physician diagnosis of persistent asthma and evidence of poorly controlled asthma in the past year (2 courses of oral corticosteroids or an Emergency Department or urgent care visit, hospitalization or office visits for care of an exacerbation) were referred to the study from one pediatric practice in Missouri. Of these, 8 were enrolled (2 could not be reached, 1 declined, and 2 were ineligible). All participants were the child's mother and had at least some college education; 7 were married or cohabiting and 1 was a single parent. All participating children were 6 years old; 4 were Caucasian and 4 were African American; and 2 had Medicaid insurance. At baseline, all eight children had poorly controlled asthma as indicated by a TRACK score of <80 ⁷ (median 62.5, range 15 to 70). Parents did not rate asthma-related tasks and child behaviors as very problematic (20.5% of 39 items scored 3.5 on 7-point scale), and their confidence to manage these tasks and behaviors was high (Table 1).

After the 6-month intervention, adherence with ICS increased from 72.9% to 100.0%, ($p=0.013$). The percentage of children with controlled asthma increased from 0 to 62.5% ($p=0.026$), and 6 children showed an increase in their TRACK score of 10 points (range 15 to 75) indicating a clinically meaningful change.⁷ Parents' ratings at 6-months suggested

asthma-related tasks and child behaviors were less problematic and their confidence to manage asthma increased (Table 1). Although none had a behavioral diagnosis, two of three children who displayed internalizing symptoms over the clinical threshold on the Child Behavior Checklist at baseline improved to subclinical levels at the 6-month assessment.

To date, efforts to address the problem of non-adherence in childhood asthma have had little success.⁸ Results from this pilot study suggest this novel intervention to address the intersecting behaviors of parenting and asthma management increased use of controller medications and improved asthma control. Although no parents perceived significant parenting or asthma management difficulties pertaining to ICS use, introducing parenting skill training in the context of improving their child's asthma was very acceptable, and seven of the eight parents were highly engaged in the program.

Although these findings are not definitive due to the small sample size, lack of a control group, and lack of an objective measure for adherence, they are encouraging and suggest larger studies to assess program effectiveness that include a control group are now warranted. If this approach proves successful, we believe it is scalable as the intervention is delivered exclusively by phone and program quality could be supported by a program manual and ongoing call review. This novel approach could reduce childhood asthma morbidity and may have a broader effect on other aspects of the child's emotional health and behavior, and on family functioning.

Acknowledgments

Financial Disclosures: This study was funded by grant number 072919 from NHLBI

Abbreviations

ICS	Inhaled corticosteroids
TRACK	Test for Respiratory and Asthma Control in Kids

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Table 1

Pre/Post item scores for the Asthma Behavior Checklist and the Asthma Parent Tasks Checklist

To what extent has....been a problem for you with your child?	Item*		Confidence**	
	Pre	Post	Pre	Post
Asthma Behavior Check List				
Becomes anxious when having a breathing problem	3.5	2.3	7.6	9.2
Complains about having mask applied to face	3.1	1.9	9.6	9.8
Complains about taking preventer medicine	2.8	1.5	9.8	10.0
Complains about taking reliever before exposure to trigger	3.0	1.3	8.4	9.8
Complains about asthma symptoms	2.4	1.5	8.2	9.8
Behaves disruptively when taking medication or using puffer	2.3	1.6	8.8	9.2
Whinges or whines about asthma	2.1	1.1	8.8	9.8
Refuses to go to the doctor	2.0	1.3	9.3	9.5
Complains about having asthma	1.9	1.5	8.8	9.4
Forgets to have inhaler with them	2.0	2.3	8.6	9.8
Refuses to take medication when having a breathing problem	1.8	1.1	8.6	9.6
Forgets to take their medication	1.9	1.1	7.5	9.8
Refuses to participate in activities	1.5	1.4	8.2	9.6
Refuses or resists using spacer device	1.5	1.4	9.2	10.0
Complains about the taste of preventer medication	1.4	1.3	9.2	9.7
Refuses to go to school	1.1	1.1	9.8	9.7
Yells about using medication	1.4	1.3	9.2	9.6
Throws a tantrum about having preventive medication or using a spacer	1.4	1.0	9.2	9.8
Argues about having preventive medication or using a spacer	1.4	1.0	9.4	9.8
Uses preventer incorrectly	1.3	1.9	9.6	9.8
Refuses to take medication to school	1.4	1.0	9.3	9.7
Uses asthma to avoid tasks or activities	1.1	1.4	9.0	9.6
Asthma Parent Tasks Checklist				
Helping child to avoid triggers	4.4	3.0	8.2	8.6
Managing an asthma attack	4.1	2.5	6.6	9.2
Washing child's spacer regularly	4.0	3.4	9.2	8.0
Responding to an emergency	3.9	2.1	7.2	9.7
Identifying child's trigger	3.8	2.5	8.2	9.2
Attending regular reviews with child	3.8	2.1	9.0	10.0
Talking to teachers about child's asthma	3.5	2.3	9.0	9.4
Monitoring child's asthma symptoms	3.4	2.3	8.2	9.4
Talking to other caregivers about child's asthma	3.4	2.3	9.0	9.2
Recognizing an asthma attack	3.3	2.4	7.8	9.4
Getting child to breathe correctly in puffer	3.1	2.3	8.6	9.6

To what extent has....been a problem for you with your child?	Item [*]		Confidence ^{**}	
	Pre	Post	Pre	Post
Giving your child reliever medication for symptoms	3.0	1.9	9.2	9.6
Following child's asthma management plan	3.0	2.0	9.4	9.8
Giving child regular preventive medication	2.9	1.8	9.4	9.8
Taking responsibility for following your child's asthma management plan	2.9	1.9	9.8	9.6
Giving child reliever medications before exercise	2.7	2.2	8.8	9.5
Using puffer and spacer as prescribed	2.4	1.8	9.2	9.8

* Extent of problem rated from 1=not at all to 7=very much

** Confidence: 1, Certain cannot do it to 10, Certain can do it