



The development of an educational video to motivate teens with asthma to be more involved during medical visits and to improve medication adherence

Betsy Sleath PhD, Delesha M. Carpenter PhD, Charles Lee MD, Ceila E. Loughlin MD, Dana Etheridge RN, BSN, Laura Rivera-Duchesne PharmD, RPh, Daniel S. Reuland MD, MPH, Karolyne Batey, Cristina I. Duchesne, Nacire Garcia MS & Gail Tudor PhD

To cite this article: Betsy Sleath PhD, Delesha M. Carpenter PhD, Charles Lee MD, Ceila E. Loughlin MD, Dana Etheridge RN, BSN, Laura Rivera-Duchesne PharmD, RPh, Daniel S. Reuland MD, MPH, Karolyne Batey, Cristina I. Duchesne, Nacire Garcia MS & Gail Tudor PhD (2016): The development of an educational video to motivate teens with asthma to be more involved during medical visits and to improve medication adherence, *Journal of Asthma*, DOI: 10.3109/02770903.2015.1135945

To link to this article: <http://dx.doi.org/10.3109/02770903.2015.1135945>



Published online: 04 May 2016.



Submit your article to this journal [↗](#)



Article views: 22



View related articles [↗](#)



View Crossmark data [↗](#)

ORIGINAL ARTICLE

The development of an educational video to motivate teens with asthma to be more involved during medical visits and to improve medication adherence

Betsy Sleath, PhD¹, Delesha M. Carpenter, PhD², Charles Lee, MD³, Ceila E. Loughlin, MD⁴, Dana Etheridge, RN, BSN², Laura Rivera-Duchesne, PharmD, RPh², Daniel S. Reuland, MD, MPH⁵, Karolyne Batey², Cristina I. Duchesne², Nacire Garcia, MS¹, and Gail Tudor, PhD⁷

¹Eshelman School of Pharmacy & Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA,

²Eshelman School of Pharmacy, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, ³Polyglot Systems Inc., Morrisville, NC, USA, ⁴University of North Carolina at Chapel Hill, School of Medicine, Chapel Hill, NC, USA, ⁵School of Medicine, Division of General Internal Medicine and Clinical Epidemiology, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, ⁶, and ⁷Husson University, Bangor, ME, USA

Abstract

Objectives: Our objective was to develop a series of short educational videos for teens and parents to watch before pediatric visits to motivate teens to be more actively involved during their visits. **Methods:** The development of the short educational videos was theoretically guided by Social Cognitive Theory. First we conducted four focus groups with teens (ages 11 to 17) with asthma, four focus groups with the teens' parents, and seven focus groups with pediatric providers from four clinics. The research team, which included two teens with asthma and their parents, analyzed the focus group transcripts for themes and then developed the initial video script. Next, a visual storyboard was reviewed by focus groups with parents and four with teens to identify areas of the script for improvement. The English videos were then produced. Focus groups with Hispanic parents and teens were then conducted for advice on how to modify the videos to make a more culturally appropriate Spanish version. **Results:** Based on focus group results, teen newscasters narrate six one- to two-minute videos with different themes: (a) how to get mom off your back, (b) asthma triggers, (c) staying active with asthma, (d) tracking asthma symptoms, (e) how to talk to your doctor and (f) having confidence with asthma. Each video clip has three key messages and emphasizes how teens should discuss these messages with their providers. **Conclusions:** Teens, parents, and providers gave us excellent insight into developing videos to increase teen involvement during medical visits.

Keywords

Asthma self-management, adolescents, children, outcomes, communication, involvement, parent, provider, pediatric, English, Spanish, Hispanic

History

Received 24 September 2015

Revised 8 December 2015

Accepted 21 December 2015

Published online xx Month xxxx

Introduction

Asthma is the most common chronic condition among U.S. children [1,2]. In the United States, asthma affects 7.1 million children under 18 years of age, of which 4.1 million suffered from an asthma exacerbation or episode in 2011 [2]. Asthma accounts for an annual loss of more than 10.5 million school days per year and it is the third ranking cause of hospitalizations in children [3]. Asthma exacerbations can be prevented with appropriate care [2].

Prior research has found that children and adolescents with asthma are not actively involved during their medical visits [4–6]. Active involvement is important, especially for adolescents who have chronic diseases such as asthma, because interactive discussions with providers can help adolescents learn how to self-manage their treatment regimens [7]. The Centers for Disease Control emphasizes that adolescents with asthma

should be empowered to manage their asthma [2]. The clinical practice guidelines of the National Asthma Education and Prevention Program encourage providers to determine treatment goals jointly with the patient and family [7,8] and the Institute of Medicine has emphasized that shared decision-making should occur during visits [9].

Research has shown that children and adolescents are not actively involved during their medical visits [10,11]. Traditionally, the adolescent's contribution during medical visits has been limited to approximately 10% of the visit and the communication is dominated by the physician and parent [12,13]. Parents often restrict the adolescent's participation and want to dominate the medical visit [12], even though 97% of adolescents want to discuss their asthma with their provider [14]. However, actively involving adolescents can improve their medication knowledge and their overall physical functioning [15,16]. For example, prior research has found that 78% of teens expressed one or more problems with their asthma medications yet only 11% asked a question about their medications during their medical visits [17–21]. These represent key

Correspondence: Betsy Sleath, Eshelman School of Pharmacy & Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA. E-mail: betsy_sleath@unc.edu

missed opportunities for communication between patients and their providers.

Social Cognitive Theory (SCT) is a theoretical framework that can be used to develop an intervention to improve adolescent involvement and engagement during medical visits [22,23]. One of the key components of SCT is self-efficacy (e.g. the adolescent's self-confidence in their ability to be actively involved in the medical visit). Application of SCT in pediatric asthma populations has shown that technical advice from providers is one external factor that can improve adolescents' self-management self-efficacy [24]. Prior work has found that adolescent self-efficacy in asthma management correlates strongly with health status, adherence, asthma medication device technique, asthma symptoms, and impact of illness on the family [19,25,26].

Videos are a promising medium for motivating adolescents to think more deeply about their asthma. For example, prior work trained adolescents to use camcorders to record visual narratives of their asthma illness experiences, which was called Video Intervention/Prevention Assessment (VIA) [27–31]. The researchers found that the VIA detected more issues that adolescents had in managing their asthma than standard health quality-of-life tools. Therefore, our objective was to develop a series of short educational videos, using Social Cognitive Theory as our theoretical framework, for teens and parents to watch together before pediatric visits in order to motivate teens and improve their self-efficacy to be more actively involved during their visits and for parents to support teens' active participation. This medium was chosen because short videos (potentially accessible through social media) is the viewing method preferred by many teenagers. The developed video will be used in a randomized controlled trial to evaluate if the videos improve medication adherence and other teen outcomes.

Methods

Initial focus groups on video development

Teens, parents, and providers were recruited from four North Carolina pediatric clinics that were located in diverse parts of the state. We conducted four focus groups with teens with asthma ages 11 through 17 and four focus groups with parents of teens with asthma. The teen and parent focus groups were held on the same night to make it easier for teens and their parents to participate. If teens and parents could not attend the focus groups, we conducted one-on-one interviews with them. We conducted seven provider focus groups for providers who cared for patients with asthma. Since so many providers from one practice came to the provider focus group, we split them into four different tables and had four facilitators.

All focus group participants filled out anonymous surveys about their age, race, gender, and ethnicity. Providers were also asked what type of provider they were (doctor, physician assistant, nurse practitioner, other) and how many years they have been practicing. All focus group questions asked about: (a) what they thought about developing an educational video for teens with asthma and their parents to watch together while in a waiting area, (b) what makes it hard for teens to talk during asthma visits, (c) what we should tell other adolescents through the video to make them feel more

comfortable talking to their doctor, (d) what we could tell parents in the video to encourage adolescents to talk more during doctor visits and have parents talk less, and (e) what issues we should focus on in the educational video. Teens were paid \$25 for participating in the focus groups. Parents and providers were paid \$50 for participating in the focus groups.

Analysis of initial focus group data on video development

The research team, which included two teens with asthma and their parents, independently analyzed the child, parent, and provider focus group transcripts. We used patient-centered participatory techniques to identify important focus group themes using Social Cognitive Theory as our theoretical framework. The team met and discussed: (a) what type of format the video should be and (b) the consistent themes that emerged from the focus group transcripts. Team discussion focused on prioritizing the themes that emerged and deciding how to flesh out the themes into brief videos that address how to improve teen-provider communication about the theme or topic area. Once the team identified six themes, each team member was asked to independently come up with three key take home messages for each theme. Each team member submitted their three key messages for each theme to the project manager who tabulated the results. The team then met, consolidated, and arrived at what the three key messages to be included for each theme.

Follow-up focus groups for feedback on the English version of the video script

Next, after the video script was developed, teens and parents were recruited from the clinics. A visual storyboard was presented to four focus groups with parents and four focus groups with teens to determine how best to improve the script. All focus group participants filled out anonymous surveys about their age, race, gender, and ethnicity. In these focus groups, the teens and parents were asked for feedback on how they might edit the video scripts. Teens read the storyboard and acted out the video script during the focus group and gave feedback. In some groups parents read the script silently and gave feedback, whereas in other groups parents read the script out loud and then gave feedback. This feedback was then used to improve the English video script before production. The English version of the video was then produced with teen actors.

Focus groups for feedback on how to make the Spanish version of the video

The team then conducted one focus group with Hispanic teens and one focus group with Hispanic parents for feedback on how to modify the English version of the video to make it culturally appropriate for Hispanic families. These individuals were recruited from one of the clinics. All focus group participants filled out anonymous surveys about their age, race, gender, and ethnicity. During the focus groups, the facilitator showed each of the six short videos one by one and then asked what they liked about the segment, what they did not like, and if the video were in Spanish, what they would change.

Results

Initial focus groups on video script development

Demographics

Eighteen adolescents participated in the four focus groups. Thirty-nine percent of the participants were female. Thirty-nine percent were Hispanic, 17% were Native American, 28% were African American, 33% were White, and 44% were other race/ethnicity. Patients could choose more than one race which is why race adds to more than 100%. We also conducted one-on-one interviews with 5 adolescents who could not attend the focus groups. Sixty percent were female. Twenty percent were Hispanic and 20% were African American.

Seventeen parents participated in the four parent focus groups. Seventy-six percent of the participants were female. Eighteen percent were Native American, 24% were African American, 41% were White, 6% were Hispanic and 18% selected other for race. The parents ranged in age from 25 to 54. We also conducted one-on-one interviews with 5 parents who could not attend the focus groups. One hundred percent were female. Twenty percent were Native American and 20% were African American. The parents ranged in age from 30 to 54.

Forty-two providers participated in the seven focus groups. Sixty percent were female. Twelve percent were Asian American, 5% African American, 78% White, and 2% selected other for race. Twenty-one percent were physician assistants, 12% were nurse practitioners, 62% were physicians, and 5% were other clinic staff. Twenty-six percent were in practice for less than 5 years, 10% for 5 to 10 years, 45% for 10–20 years, and 19% for more than 20 years.

Focus group video format suggestions

Teens, parents, and providers all emphasized that the video should have teens talking to teens. As one provider said “Adolescents should be talking to them on the video.” The teens emphasized having humor and action in the video. The teens also suggested having different scenes within the video. As one adolescent stated “Have different scenes. I would tune out if someone was just sitting there talking.” Teens suggested showing “Teens with teens. Teens with parents.” One parent suggested having scenes occur at places where the teens often need to use their inhalers in everyday life.

Based on focus group results, the research team decided to use a teen newscaster with a reporter in-the-field. A reporter would appear in different locations that emphasized specific themes. Each video was one to two minutes in length. The teens and parents both suggested that the best way to disseminate the videos would be on YouTube. Both parents and teens also emphasized disseminating the videos through school nurses. The social media sites Facebook and Instagram were also mentioned.

Focus group video theme suggestions

As discussed in more detail below, the research team identified six themes for video topics: (a) asthma triggers, (b) how to get mom off your back, (c) staying active with asthma, (d) tracking asthma symptoms, (e) how to talk to your doctor, and (f) having

confidence with asthma. Each theme was related to increasing the teen’s self-efficacy or confidence in being actively involved during medical visits and discussing important areas of asthma management with their provider.

Asthma triggers

Asthma triggers was one of the themes that came up in the teen, parent, and provider focus groups. As one parent said “Triggers are one key topic that should be in the video.” Teens made the following specific suggestions as to what should be focused on in the video related to asthma triggers:

“Think about what happens between visits and think about what you need to tell the doctor. Like about being at a friend’s house on vacation and having an attack.”

“Some asthma triggers might be cause of a family member doing something like smoking and the kid doesn’t want to say that.”

“Show what happens in a high allergy area.”

How to get mom off your back

Teens and providers also emphasized the theme of the parent talking too much during the visit. As one teen stated “It can be hard to talk to the doctor because mostly parents will talk. Like for me I start to talk and then my mom or dad will answer the question.” Some teens in a focus group suggested calling this section “How to get mom off your back.” As one provider stated, “The whole key is the visit is not about the parent. A lot of times the parent comes in and wants to tell on the kid. It just sets up a wall.”

One teen stated, “Like me and the doctor will just be talking and I say yes and all that and then I say one mistake. Parent is like no sir, no he didn’t. And then the doctor turns the chair and says okay tell me about it. Then I cannot finish.” Many teens expressed frustration with their parents answering questions that the doctors asked them or correcting them. As one teen stated “Tell parents not to answer for their kids.” One parent commented “Parents need to shut up and let their child speak.” Teens emphasized that many had asthma attacks when their parents were not around so they should be the ones telling the doctor about their asthma, not their parent. Many teens also emphasized that the parents should leave the room for at least part of the visit so their child can freely talk to the doctor. One teen stated “I would say the parents should not be in the room period because they are going to hear what you are saying and they are going to push you out.” A doctor stated, “They don’t feel comfortable saying whatever they want to because the parent is there.”

Staying active with asthma

A third theme that was emphasized especially in the provider focus groups was that teens and their parents often do not realize that it is possible for the teens with asthma to feel better and be active in sports and other activities. Teens also emphasized the importance of showing that teens with asthma are like other teens. As one teen said to show “How to be like everybody else ...don’t make you feel like you are not like everybody else, like you are not normal, because you are. You just don’t have

the greatest health when it comes to your lungs. But then again everybody has some health problems. Or at least they will get some.”

Providers also emphasized the importance of telling teens and their parents that they could feel good with asthma. As one provider stated “The video could say do you want to feel good every day or do you want to know you can feel good every day? Ask your doctor how to feel good.” Another doctor said “Talk with your doctor about preventing attacks and not missing out on activities.”

Tracking symptoms

Another theme that emerged was the importance of tracking asthma symptoms and attacks between doctor visits. This will allow the teen to come in and tell the doctor what has been going on with their asthma since their last office visit. As one teen stated “Ask the doctor why you are wheezing or coughing.” Another teen stated, “Before your next checkup, write it down (when asthma is bad) so when you go you can say doctor I need you to help me with all of this on the list.” Providers emphasized the importance of teens telling them about symptoms because then they can adjust their medications as needed.

How to talk to your doctor

Another major theme that was emphasized in all focus groups was how teens can talk more effectively with their doctor. Many providers emphasized the importance of the teens telling the doctor about how often they use or don’t use their medicines, so the doctor really knows what the teen is doing. As one teen stated, “Show parents that kids can talk to the doctors on their own. Have the parent leave the room for a while.” Additionally, providers also emphasized the importance of teens admitting if they don’t know how to use an asthma medication device. As one provider said “Teens think they know everything and they don’t want to let you know they don’t know something.” Some teens expressed that they felt more comfortable with some doctors than they did with others. Therefore, we decided to emphasize that you can ask for a new doctor if you need to.

Having confidence with asthma

A sixth theme was the importance of emphasizing that teens should feel confident that they can manage their asthma on their own. One parent commented, “Encourage parents to let their child take responsibility and ownership.” One provider stated, “They need to learn to be independent. Because in a few years they will be at college and mom and dad won’t be there.” One teen emphasized “Make sure you ask what you need to ask.” and another said “Don’t be embarrassed.” The teens wanted us to emphasize the importance of teens always carrying their rescue inhaler with them. As one teen stated, “It is less embarrassing to use your inhaler than it is when an ambulance shows up to take you to the hospital.” Teens also said that the video should illustrate that teens should not let other teens upset them if they feel as though others are making fun of them.

A one- to two-minute video was made for each of the six themes that the team came up with. Each video clip has three key messages at the end. Table 1 presents the key messages that were emphasized in each video for each of the six themes.

Table 1. Video themes and key messages of the English version of the video.

Video Theme	Key Messages
Asthma triggers	Asthma triggers are things that can cause asthma symptoms. Each person reacts differently so you need to talk to your doctor to figure out which ones you react to. Have your family come up with a plan to reduce triggers in your house.
How to get mom off your back	You are the expert about how your asthma affects you. Have a talk with your mom or dad about you being more in control during the doctor’s visit. Be prepared to talk to your doctor.
Staying active with asthma	Remember that one in 10 kids has asthma and many of them can do regular activities. You need to use your daily medicines recommended by your doctor to prevent asthma symptoms. Use a rescue inhaler when you do have an attack.
Tracking asthma symptoms	Your doctor can adjust your medicines if you are getting better or worse. Using a cheap notepad or calendar can be effective. There are many new apps for smart phones.
How to talk to your doctor	You need to be completely honest with your doctor—including letting them know if you forgot to take your medicine. Let the doctor know if you think that you may not be using your inhaler the right way—show your doctor how you usually use it to make sure. If you are not comfortable with your current doctor, ask if another doctor is available.
Having confidence with asthma	You should use your daily medicines every day to prevent symptoms. Have your rescue inhaler with you all the time in case you have an asthma attack. Don’t let other kids get to you.

Each video also emphasized the importance of being actively involved during medical visits and discussing key areas of asthma management with their providers (e.g. triggers, exercising with asthma). We called our network “Control Asthma Now” (CAN) and we plan to place the developed videos on a YouTube channel once the randomized controlled trial is complete. We also eventually may create a Facebook page that includes the videos.

Follow-up focus groups for feedback on the English version of the video script

Demographics

Sixteen adolescents participated. Thirty-eight percent female and none were Hispanic. Six percent were Native American, 31% African American, 56% White, and 6% selected other for

race. Ninety-four percent were between the ages 11–14 years and 6% were 15–17 years old.

Sixteen parents participated. Eighty-seven percent were female. Twelve percent were Native American, 38% were African American, and 50% were White. Parents ranged in age from 25 to 60 years.

Focus group feedback on English version of the video script

There were two main changes made to the video script based on the focus groups. The phrase “asthma journal” was removed and changed to writing down symptoms and dates in a notepad or calendar but not calling it an “asthma journal.” The second change was related to the use of the terms controller medications or maintenance medications which caused confusion for both teens and parents. Therefore, the wording was changed to talking about “daily” medications instead of controller/maintenance medications.

Follow-up focus groups results for modifying the English video version into Spanish

Three Hispanic adolescents participated in a focus group. Two were male and one was female. They ranged in age from 11 to 16. Three parents participated in a focus group. All three were female and they ranged in age from 35 to 49.

Both teens and parents suggested using more culturally appropriate names in the Spanish version of the video. Parents suggested changing the location of one scene from a running track to a soccer field. However, the teens thought it was fine to keep the running track location. The parents expressed concern about the segment titled “How to get mom off your back” and thought it would be considered disrespectful in the Hispanic culture. The teens thought the “How to get mom off your back” scene was fine. All three teens said they would choose to watch the English version of the video rather than watching a Spanish version of the video.

The most significant change was related to modifying the theme about getting mom or dad off their back. Some teens and parents felt it could be stated in a more respectful way. This theme has been changed to encourage responsibility as a growing independent teenager and therefore assuming more responsibility for communication during each doctor’s visit. For some issues, the teenagers felt that since most Spanish-speaking teens watching the videos would have some acclimation to U.S. culture (such as using track and field athletes versus soccer athletes) they were not significant enough to change.

Discussion

Through this formative research process, we solicited several themes that teens, parents, and providers believed were important to helping teens effectively engage with their provider and to become independent and effective with asthma self-management. Through this theoretically driven, patient-centered research approach we solicited several themes that teens, parents, and providers believed were important to help teens: (a) effectively engage with their provider and (b) discuss with their providers so that they can become more independent in managing their asthma and communicating this with their providers. These themes informed the development

of messages for the asthma video. One of the key messages that both teens and providers emphasized was parents talking less and correcting teens less often would allow teens to talk more. Both teens and providers discussed that the teen is the expert about how his/her asthma affects them. Teens also expressed that they wished their parents would leave the room for at least part of their visits so they could talk with the provider privately. Clinics might want to encourage parents to leave the room for at least part of asthma visits so that teens can freely communicate with their providers.

Another theme that came from the focus groups was encouraging teens to have confidence in managing their asthma. Teens, parents, and providers wanted us to tell teens in the video that they should have confidence in managing their asthma by taking their daily asthma medicines and carrying their rescue inhaler with them all the time in case they need it. The adolescents also wanted us to emphasize that lots of teens have asthma and not to let other teens upset them if they make fun of a teen having asthma.

All teens, parents, and providers believed that triggers should be discussed more during visits. All parties wanted the video to discuss the importance of teens tracking symptoms and situations where they occur in between asthma visits so they could communicate with the provider and figure out what their triggers are and how to avoid them.

To our knowledge, no previous studies have attempted to improve teen engagement during asthma visits by showing them and their parents a short educational videos before the visit. Prior work in the asthma area has found that video and print interventions can improve patient recall of health-related information [32]. Work in other areas has found that video modeling can have potential benefits such as knowledge acquisition [14,33,34]. Therefore, we hope our video intervention will cause teens with asthma to ask more questions and be more involved during their asthma visits.

Our video intervention seeks to motivate adolescents to ask questions they have about their asthma management. With the goal that they receive the information they need to better understand how to manage their asthma after leaving the doctor’s office. A study in diabetes found that patient ratings of better provider communication effectiveness were significantly related to improved self-management skills [24]. Self-management is critical to individuals with a chronic disease such as asthma.

If adolescents are more actively involved during visits, this could lead to improved self-management which then could lead to improved outcomes. We will be examining this when we test the developed video in a randomized controlled trial to determine if watching the video before the visit leads to more teen involvement during the visit and improved teen asthma outcomes.

Additional strengths of our study include the racially and ethnically diverse study sample, rigorous effort to solicit perspectives from all three stakeholders in the teen asthma care “triad” (teens, parents, and providers), teen and parent research team members involved in coding of the focus group data, and the development of a Spanish language version. Our study also has limitations in that the focus groups were conducted only in North Carolina, which could limit generalizability. Despite the

limitations, the study provides new information on the types of topics that teens, parents, and providers think should be covered in an educational video that teens and parents watch together before asthma visits.

Funding

This work was supported through a Patient-Centered Outcomes Research Institute (PCORI) Program Award (1402–09777). Drs. Sleath and Reuland are also supported by the National Center for Advancing Translational Sciences (NCATS), National Institutes of Health, through Grant Award Number 1UL1TR001111.

Declaration of interest

All statements in this report, including its findings and conclusions, are solely those of the authors and do not necessarily represent the views of the Patient-Centered Outcomes Research Institute (PCORI), its Board of Governors or Methodology Committee. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

References

1. National Academy on an Aging Society. Childhood asthma: the most common chronic disease among children. Available from: <http://www.agingociety.org/agingociety/pdf/asthma.pdf>. [last accessed 20 August 2015].
2. Centers for Disease Control and Prevention. Vital signs: asthma prevalence, disease characteristics, and self-management education: United States, 2001–2009. *MMWR Morb Mortal Wkly Rep* 2011;60:547–552.
3. Asthma and Allergy Foundation of America. Asthma facts and figures. Available from: http://www.aafa.org/display.cfm?id=9&sub=42#_ftn18 [last accessed 20, August 2015].
4. Sleath B, Carpenter DM, Slota C, Williams D, Tudor G, Yeatts K, et al. Communication during pediatric asthma visits and self-reported asthma medication adherence. *Pediatrics* 2012;130:627–633.
5. Sleath BL, Carpenter DM, Sayner R, Ayala GX, Williams D, Davis S, et al. Child and caregiver involvement and shared decision-making during asthma pediatric visits. *J Asthma* 2011;48:1022–1031.
6. Wassmer E, Minnaar G, Abdel Aal N, Atkinson M, Gupta E, Yuen S, et al. How do paediatricians communicate with children and parents? *Acta Paediatr* 2004;93:1501–1506.
7. National Heart Lung and Blood Institute. National Heart Lung and Blood Institute Publication Number 08-5846. Guidelines for the Diagnosis and Management of Asthma. Expert panel report 3. 2007. Available from: <http://www.nhlbi.nih.gov/files/docs/guidelines/asthsumm.pdf> [last accessed 20, August 2015].
8. National Heart Lung and Blood Institute. National Heart Lung and Blood Institute Publication Number 97-4051. Guidelines for the Diagnosis and Management of Asthma. Expert panel report 2. April 1997. Available from: http://www.nhlbi.nih.gov/files/docs/guidelines/asthgdln_archive.pdf [last accessed 20, August 2015].
9. Institute of Medicine. Committee on Quality of Health Care in America. Crossing the quality chasm: A new health system of the 21st century. Washington, DC: National Academy Press. Available from: <http://iom.nationalacademies.org/Reports/2001/Crossing-the-Quality-Chasm-A-New-Health-System-for-the-21st-Century.aspx> [last accessed 20, August 2015].
10. Cox ED, Smith MA, Brown RL, Fitzpatrick MA. Effect of gender and visit length on participation in pediatric visits. *Patient Educ Couns* 2007;65:320–328.
11. Butz AM, Walker JM, Pulsifer M, Winkelstein M. Shared decision making in school age children with asthma. *Pediatr Nurs* 2007;33:111–116.
12. Tates K, Meeuwesen L. Doctor-parent-child communication. A (re)view of the literature. *Soc Sci Med* 2001;52:839–851.
13. Wissow LS, Roter D, Bauman LJ, Crain E, Kercsmar C, Weiss K, et al. Patient-provider communication during the emergency department care of children with asthma. The National Cooperative Inner-City Asthma Study, National Institute of Allergy and Infectious Diseases, NIH, Bethesda, MD. *Med Care* 1998;36:1439–1450.
14. Carpenter DM, Lee C, Blalock SJ, Weaver M, Reuland D, Coyne-Beasley T, et al. Using videos to teach children inhaler technique: a pilot randomized controlled trial. *J Asthma* 2015;52:81–87.
15. Levinson W. Doctor-patient communication and medical malpractice: implications for pediatricians. *Pediatr Ann* 1997;26:186–193.
16. O'Neill KA. Kids speak: effective communication with the school-aged/adolescent patient. *Pediatr Emerg Care* 2002;18:137–140.
17. Sleath B, Carpenter DM, Beard A, Gillette C, Williams D, Tudor G, et al. Child and caregiver reported problems in using asthma medications and question-asking during paediatric asthma visits. *Int J Pharm Pract* 2014;22:69–75.
18. Sleath B, Carpenter DM, Ayala GX, Williams D, Davis S, Tudor G, et al. Communication during pediatric asthma visits and child asthma medication device technique 1 month later. *J Asthma* 2012;49:918–925.
19. Sleath B, Carpenter DM, Ayala GX, Williams D, Davis S, Tudor G, et al. Provider discussion, education, and question-asking about control medications during pediatric asthma visits. *Int J Pediatr* 2011;2011:212160.
20. Sleath B, Ayala GX, Gillette C, Williams D, Davis S, Tudor G, et al. Provider demonstration and assessment of child device technique during pediatric asthma visits. *Pediatrics* 2011;127:642–648.
21. Sleath B, Ayala GX, Davis S, Williams D, Tudor G, Yeatts K, et al. Child- and caregiver-reported problems and concerns in using asthma medications. *J Asthma* 2010;47:633–638.
22. Bandura A. Social foundations of thought and action: A social cognitive theory, 1st ed. Englewood Cliffs, NJ: Prentice-Hall; 1986.
23. Devellis BM, Devellis RF. Self-efficacy and health. In: Baum A, Revenson TA, Singer JE, eds. *Handbook of health psychology*. Mahwah, NJ: Erlbaum; 2000:235–248.
24. Heisler M, Bouknight RR, Hayward RA, Smith DM, Kerr EA. The relative importance of physician communication, participatory decision making, and patient understanding in diabetes self-management. *J Gen Intern Med* 2002;17:243–252.
25. Harrington J, Noble LM, Newman SP. Improving patients' communication with doctors: a systematic review of intervention studies. *Patient Educ Couns* 2004;52:7–16.
26. Roter D. The medical visit context of treatment decision-making and the therapeutic relationship. *Health Expect* 2000;3:17–25.
27. Rich M, Lamola S, Amory C, Schneider L. Asthma in life context: Video Intervention/Prevention Assessment (VIA). *Pediatrics* 2000;105:469–477.
28. Rich M, Lamola S, Gordon J, Chalfen R. Video intervention/prevention assessment: a patient-centered methodology for understanding the adolescent illness experience. *J Adolesc Health* 2000;27:155–165.
29. Rich M, Taylor SA, Chalfen R. Illness as a social construct: understanding what asthma means to the patient to better treat the disease. *Jt Comm J Qual Improv* 2000;26:244–253.
30. Rich M, Patashnick J, Chalfen R. Visual illness narratives of asthma: explanatory models and health-related behavior. *Am J Health Behav* 2002;26:442–453.
31. Rich M, Lamola S, Woods ER. Effects of creating visual illness narratives on quality of life with asthma: a pilot intervention study. *J Adolesc Health* 2006;38:748–752.
32. Wilson EA, Park DC, Curtis LM, Cameron KA, Clayman ML, Makoul G, et al. Media and memory: the efficacy of video and print materials for promoting patient education about asthma. *Patient Educ Couns* 2010;80:393–398.
33. Krouse HJ. Video modelling to educate patients. *J Adv Nurs* 2001;33:748–757.
34. Tuong W, Larsen ER, Armstrong AW. Videos to influence: a systematic review of effectiveness of video-based education in modifying health behaviors. *J Behav Med* 2014;37:218–233.