

Purpose

To evaluate the implementation and patient outcomes associated with an asthma self-management program based at a critical access hospital in the southeast region of New Mexico, where asthma-related hospitalizations and emergency department visits are higher than the New Mexico (NM) state average.

Background

In 2011, the New Mexico Asthma Control Program (NMACP) partnered with Nor-Lea General Hospital (NLGH) in Lovington, NM to develop a program of patient self-management education. A pilot program (March-April 2011) was followed by a year (September 2011-August 2012) of sustained program implementation. The University of New Mexico's (UNM) Project ECHO (Extension for Community Healthcare Outcomes) provided training and technical assistance to the pilot program staff. Budget and staffing issues caused the program to be discontinued in 2012. However, strong stakeholder support and evidence of efficacy led to its renewal in the fall of 2013, with NMACP funding. Results from 2013-14 can be found in the 2013-14 NLGH Asthma Self-Management Education Program Evaluation Brief Report.

In evaluating the NLGH Asthma Self-Management Education (ASME) Program, the NMACP seeks to answer both process and outcome questions including:

- How many patients were scheduled and seen for asthma self-management?
- What are the sources of patient referrals?
- What are the demographics and insurance status of patients being seen?
- After receiving ASME, can patients and/or their caregivers demonstrate how to use their medications correctly, name their asthma triggers, and use an Asthma Action Plan (AAP) to manage their asthma?
- Have patients' Asthma Control Test (ACT) scores and their quality of Life (QoL) improved from their initial session?
- Has there been a reduction in the number of emergency department (ED) visits and hospitalizations at NLGH due to asthma?

This report addresses the evaluation findings from the 2014-15 program and briefly compares them with 2013-14 data. A future evaluation report will present results of data analysis for the entire program span to date, from March 2011 through August 2015.

New Mexico Asthma Control Program

2014-15 Nor-Lea GH Asthma Self- Management Education Program Evaluation

Brief Report

Kathryn Lowerre
March 17, 2016

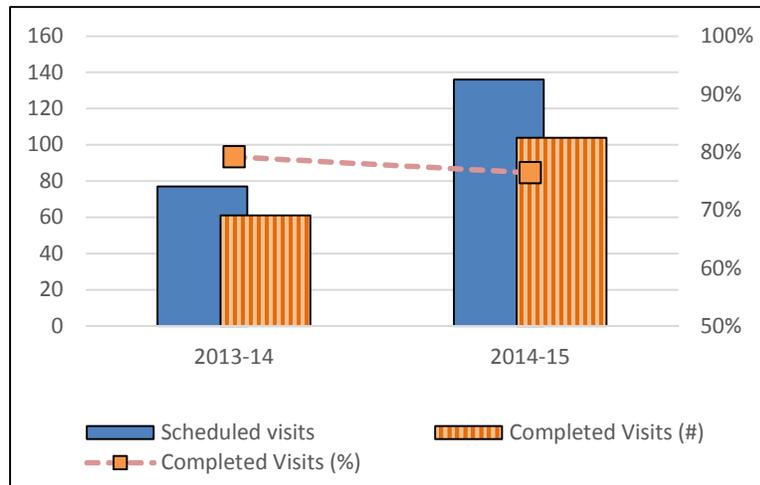
Implementation

Three NLGH staff members (two respiratory therapists and a nurse) in the Cardio-Pulmonary Rehabilitation Unit provide asthma self-management education (ASME) in English and Spanish for patients and caregivers. The nurse and one of the respiratory therapists are certified asthma educators (AE-C) and the other has studied to take the certification exam. Most asthma patients are identified and referred for self-management education by NLGH staff (clinics and hospital), however the program regularly reaches out to other potential referral sources, including physicians who see patients through Children’s Medical Services (CMS) and the Lovington School-Based Health Center. In 2014-15, information about ASME at NLGH was also shared with attendees at the NLGH Men’s Health Expo, the Women’s Health Fair, the Lea County Job Fair, and a local Headstart Wellness Program.

The asthma education staff contact and schedule visits with patients. The initial session with the asthma educator lasts 90 minutes. Second visits are usually scheduled two to four weeks after the initial visit, with a third follow-up visit three months afterwards.¹ However, scheduling of visits is flexible to accommodate patients’ (and their parents’ and caregivers’) varied ASME needs and availability.² Some patients do not return for another session of ASME until they have experienced an exacerbation of their asthma symptoms.

Patient and Provider Participation

The majority of scheduled appointments (104 out of 132, or 79%) took place, and 64 patients met with an asthma educator between September 2014 and August 2015. The NLGH program increased the total number of scheduled visits from 2013-14 by 77% while maintaining a fairly high percentage of



completed visits. Roughly 3 out of 4 scheduled sessions with patients took place in 2014-15, as seen in Figure 1. Although this was a slight decline from the completion percentage in 2013-14, overall numbers are up in every category.

Figure 1. Scheduled and Completed Visits in 2013-14 and 2014-15

Only three out of the 71 patients scheduled in 2014-15 (4% of those

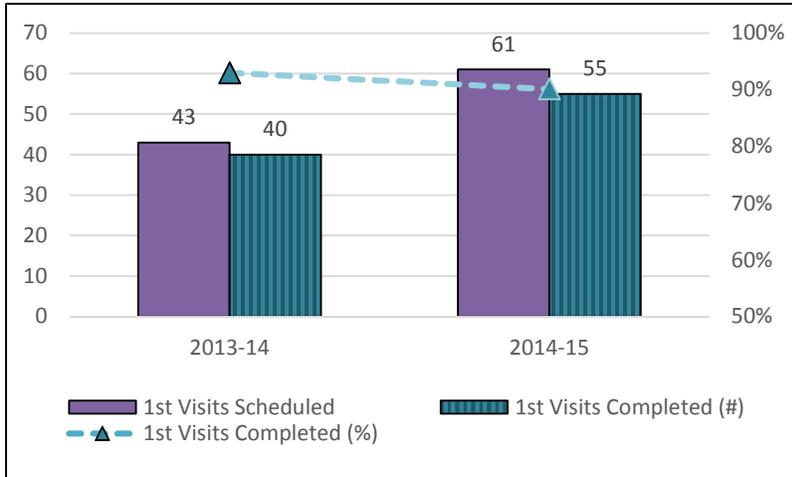
referred for ASME) failed to attend a single session. Four patients who missed scheduled visits in 2014-15 had been seen in 2013-14. In 2014-15, 55 patients completed a first visit; 30 completed a second visit, 14 completed a third visit, and 5 patients completed a fourth visit.

¹ Data is reported to NMACP using an online survey tool. This tool has been slightly modified from the tool used in 2013-14, in consultation with program staff, in order to make data entry easier for the staff at NLGH.

² Issues affecting scheduling include (but are not limited to) parental work schedules, balancing the needs of multiple children or family members, and the availability of transportation for (non-urgent) clinic visits.

Although overall visit completion rates were good, the percentage of scheduled patients initiating ASME declined from 2013-14 to 2014-15 (see Figure 2), even though the actual number of patients seen for a 1st ASME visit increased slightly.³

Figure 2. Patients Who Initiated⁴ ASME in 2013-14 versus 2014-15



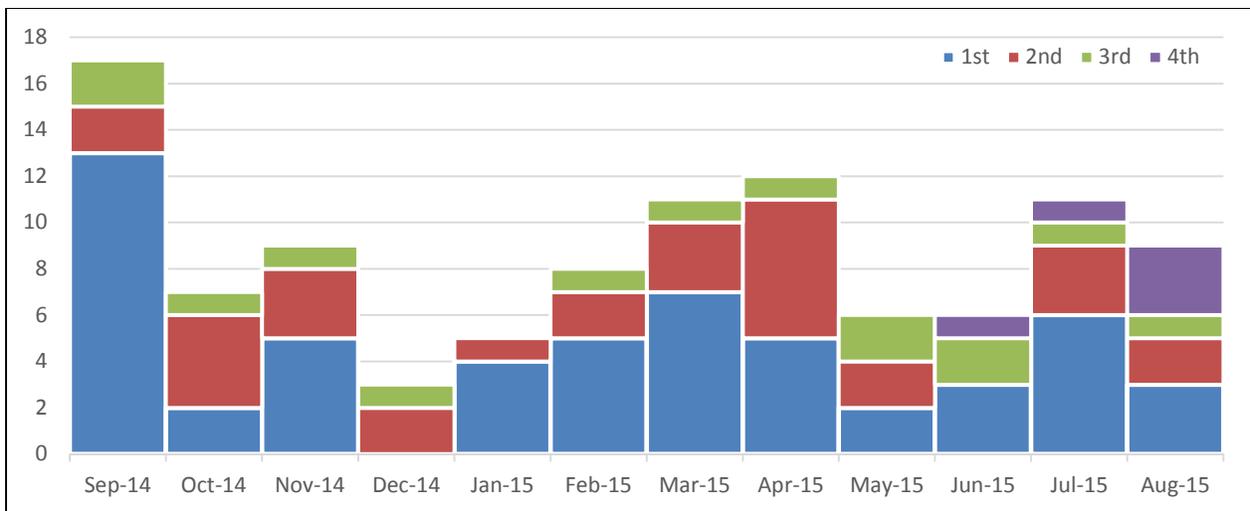
Spanish language translation was provided for 45 of the 104 completed ASME sessions (43%) in 2014-15. This is roughly comparable to 2013-14, when 48% of sessions were in Spanish.

In 2014-15, the majority of referrals (96%) came from NLGH clinics, and three patients (4%) were referred from NLGH Hospital. The majority of patients scheduled (92% of total) were referred by

pediatrician Dr. Sonia Murillo, who has been key to the program since 2011.⁵ Six patients (8%) were referred by other providers.

Many patients seen in the first few weeks of the 2014-15 grant cycle were continuing ASME begun during 2013-14. Note: This is the first evaluation report which includes two consecutive years of data.

Figure 3. Chronology: Number of Patients Seen for Each Visit Type by Month from September 2014 through August 2015



³ Of the three patients who never completed an ASME session, two were scheduled for a first visit more than once.

⁴ "Initiation" is defined as having completed at least one visit.

⁵ These percentages increased from 2013-14, when Dr. Murillo referred 82% of patients seen.

As in 2013-14, changes in visit numbers from month to month may reflect seasonal changes in healthcare utilization related to asthma. There is often an increase in visits in spring, after a low-visit period around the December and January holidays. In late July, August, and September families preparing for the new school year often bring children in for visits to their healthcare providers (HCPs), and may need their HCPs to sign off on an Asthma Action Plan (AAP) or sports physicals for school.

Patient Demographics

Demographic information was collected for all patients. As in previous years, male patients outnumbered female ones, and the majority of patients seen were Hispanic.

Figures 4a-b. Sex and Race/Ethnicity among Patients Seen in 2014-15

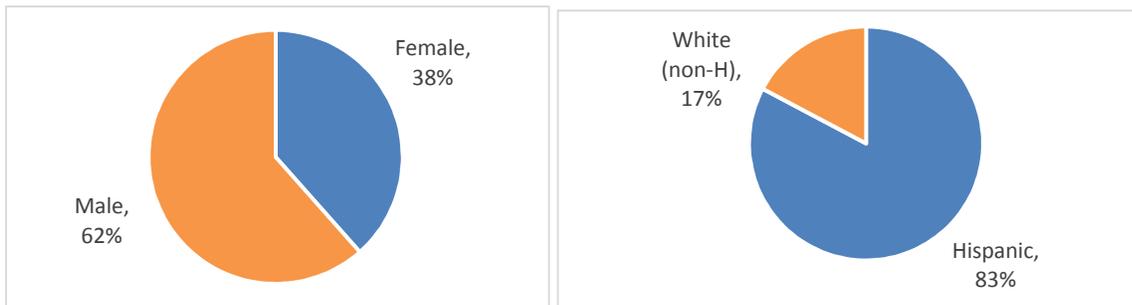
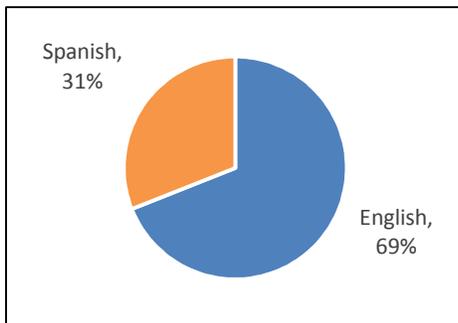


Figure 4c. Language Preference among Patients Seen in 2014-15



Language preference was also consistent with findings from 2013-14, with 20 (31%) of patients seen preferring to have their ASME sessions in Spanish.

Among the 64 patients who participated in at least one session with an asthma educator in 2014-15, the majority were between the ages of 4 and 11 (see Table 1). This was consistent with previous years.

Table 1. Patient Age Groups

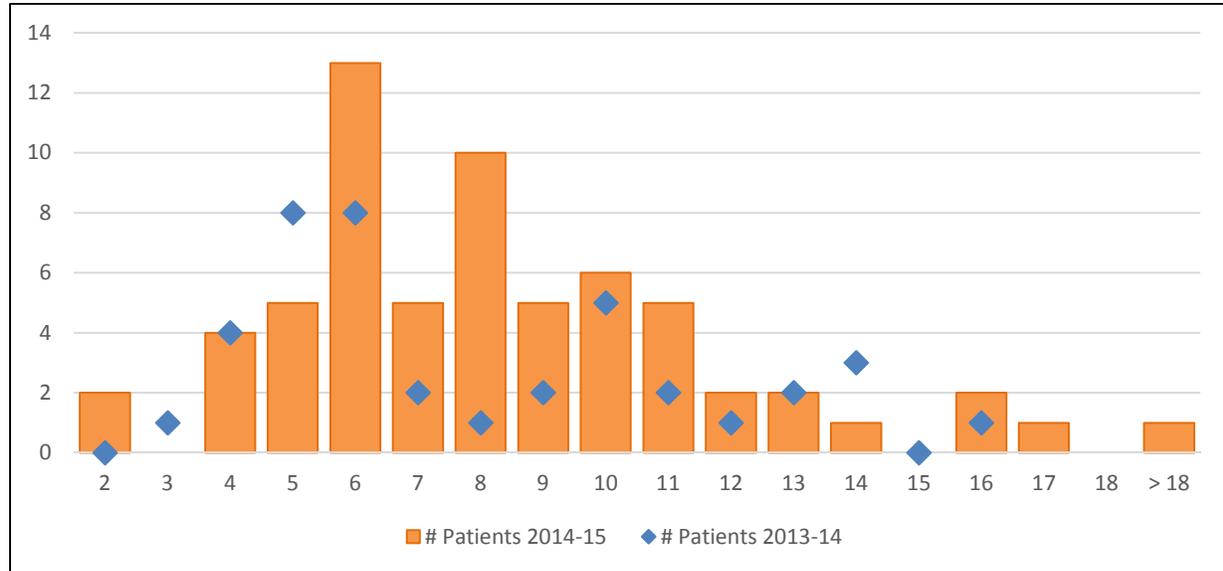
	<i>Number</i>	<i>Percent</i>
Age Group (< 4 years)	2	3.1%
Age Group (4-11 years)	53	82.8%
Age Group (12-18 years)	8	12.5%
Age Group (> 18 years)	1	1.6%

Patient age in years (Table 1, Figure 5) was calculated using their date of birth and the date of referral to ASME.⁶ Date of referral was used instead of visit date since visit dates often ranged over multiple

⁶ Unless the date of referral was one week or less from the patient’s birth date, in which case they were considered to have reached that birthday.

months. The mean age (using fractional years) was 9.5 years, and the median age was 8.4 years, with a range from 2.3 to 64.5 years.

Figure 5. Number of Patients of Each Age Seen in 2013-14 and 2014-15



The population included both older and younger patients than those seen in 2013-14, while the mean and median age were both higher, the median by two years.

The majority of patients seen (n=51, 80%) had insurance through Medicaid. Eleven patients (17%) had private insurance. One patient was reported as having both Medicaid and private insurance. Three patients on Medicaid were also listed as being seen by NMDOH Children’s Medical Services. One patient had no insurance.

The three patients who never completed an ASME session showed little demographic variation from those who did. They ranged in age from 3 to 14 years old. All were male and Hispanic. Two had English and one had Spanish as their preferred language. All were on Medicaid.

Components of Patient Education

As in previous program years, the asthma educator documented the topics discussed and reviewed with the patient and/or caregiver at each session. The content and delivery of the ASME sessions conform to the 2007 National Asthma Education and Prevention Program (NAEPP) Guidelines by having ASME taught by health professionals trained in asthma self-management, being clinic-based, using an Asthma Action Plan (AAP), developing partnerships with patients and families, and by introducing key messages and essential skills at the first session (since not all patients will complete more than one session).⁷ Educational material and reminders are adjusted to the needs of patients who return for additional sessions.

⁷ See http://www.nhlbi.nih.gov/files/docs/guidelines/05_sec3_comp2.pdf

Table 2. Asthma Self-Management Education Topic by Visit Number

Topic	1st Visit (n=55)		2nd Visit (n=30)		3rd Visit (n=14)	
	#	%	#	%	#	%
<i>Asthma Action Plan</i>	54	98	30	100	14	100
<i>Medication Use</i>	55	100	30	100	14	100
<i>Triggers</i>	55	100	30	100	14	100
<i>Disease Management</i>	54	98	30	100	14	100
<i>Other: Use of Aerochamber</i>	50	91	27	90	11	79
<i>Other: Use of Peak Flow Meter</i>	12	22	15	50	3	21

Among the topics discussed during ASME sessions, under “other topics” the asthma educators repeatedly noted two specific topics (the use of an Aerochamber and the use of a peak flow meter). Although these topics could be grouped under the general categories “medication use” and “disease management” they have been listed separately in Table 2 due to their emphasis in the program reporting documents and discussion with the asthma educators.

Sustainability

As the majority of patients were on Medicaid and the NMACP was providing payments to NLGH for ASME sessions, no reimbursement claims for ASME were submitted by NLGH for this year.⁸ The New Mexico Council on Asthma (NMCOA) is working to extend the number of payers in NM who reimburse adequately and consistently for ASME services, and this has been a NMCOA focus during 2014-15. The NMCOA chair and NMACP representatives met with the NM Pediatric Council in April 2015 to engage their members on this issue.

Patient Outcomes

The evaluation plan for this program sought to demonstrate the impact of ASME program participation on patients’ knowledge and understanding of asthma management, their quality of life, and their physical health.

Patient and Caregiver Knowledge and Understanding

Among the 64 patients who completed at least one visit with an asthma educator in 2014-15, most demonstrated an increase in their knowledge about key ASME topics.⁹ Patients and caregivers answered specific questions about asthma triggers, the proper use of medications prescribed for them, and their Asthma Action Plans (AAPs). At the beginning of their first session, only a minority of patients and caregivers were confident and competent in demonstrating essential asthma self-management knowledge and skills.

⁸ According to the August 2012 report of evaluation findings, only 20% of claims filed during the program’s first year were paid.

⁹ This information is reported by the asthma educator who worked with the patient and family members.

Table 3. Patients and/or Caregivers Who Demonstrated Understanding of Key ASME Topics before ASME Sessions

Topic	Before Session			
	Patient (#)	Patient (%)	Caregiver (#)	Caregiver (%) ¹⁰
<i>Demonstrated Proper Technique Using Spacers/Inhalers</i>				
<i>1st Visit (n= 55)</i>	4	7	11	20
<i>2nd Visit (n=30)</i>	19	35	24	80
<i>3rd Visit (n=14)</i>	10	71	12	86
<i>Demonstrated Understanding of When to Use Prescribed Medications</i>				
<i>1st Visit (n= 55)</i>	3	5	11	20
<i>2nd Visit (n=30)</i>	10	33	23	77
<i>3rd Visit (n=14)</i>	7	50	11	79
<i>Could Explain How to Use Their Asthma Action Plan</i>				
<i>1st Visit (n= 55)</i>	1	2	6	11
<i>2nd Visit (n=30)</i>	0	0	24	80
<i>3rd Visit (n=14)</i>	2	14	13	93
<i>Could Explain Their Asthma Triggers and How to Avoid Them</i>				
<i>1st Visit (n= 55)</i>	3	5	15	28
<i>2nd Visit (n=30)</i>	4	13	29	97
<i>3rd Visit (n=14)</i>	5	36	14	100

As seen in Table 3, when patients and their caregivers continued participating in ASME over multiple sessions, they often retained important information from previous visits about their medications, AAPs, and asthma triggers. However, some topics clearly required additional review during second and third sessions, such as patients’ understanding of their AAPs and triggers.

Following this preliminary assessment, work with the asthma educator allowed patients and caregivers to get up to speed on topics they were not sure about when the session began, and at the end of the same session (see Table 4) many more participants were able to demonstrate their understanding: for example, the number of caregivers able to explain asthma triggers at the first visit went from 15 before ASME to 50 after ASME.

Table 4. Patients and/or Caregivers Who Demonstrated Understanding of Key ASME Topics after ASME Sessions

Topic	After Session			
	Patient (#)	Patient (%)	Caregiver (#)	Caregiver (%) ¹⁰
<i>Demonstrated Proper Technique Using Spacers/Inhalers</i>				
<i>1st Visit (n= 55)</i>	16	29	53	98
<i>2nd Visit (n=30)</i>	29	97	30	100
<i>3rd Visit (n=14)</i>	13	93	13	93
<i>Demonstrated Understanding of When to Use Prescribed Medications</i>				
<i>1st Visit (n= 55)</i>	19	35	54	100
<i>2nd Visit (n=30)</i>	26	87	30	100

¹⁰ Caregiver percentages are calculated for all visits except those involving adult patients (18 or older), so n=54 for the 1st visit.

Topic	After Session			
	Patient (#)	Patient (%)	Caregiver (#)	Caregiver (%) ¹⁰
<i>3rd Visit (n=14)</i>	12	86	14	100
<i>Could Explain How to Use Their Asthma Action Plan</i>				
<i>1st Visit (n= 55)</i>	11	20	52	
<i>2nd Visit (n=30)</i>	8	27	30	100
<i>3rd Visit (n=14)</i>	8	57	13	93
<i>Could Name Their Triggers and How to Avoid Them</i>				
<i>1st Visit (n= 55)</i>	15	27	50	93
<i>2nd Visit (n=30)</i>	14	47	30	100
<i>3rd Visit (n=14)</i>	10	71	14	100

When considering the results in Table 4, remember patient demographics. A majority of the patients seen during a first visit (n=55) and half of those seen for a second visit (n=30) were less than nine years old when they were referred for ASME. Young children are unlikely to be able to explain their AAPs in detail (although they should know they have one).

However, the gains in patient and caregiver ability to demonstrate proper technique using spacers/inhalers from pre-visit to post-visit, and from the first through third visits are strongly positive, with a clear linear trend line, as seen in Figure 6.

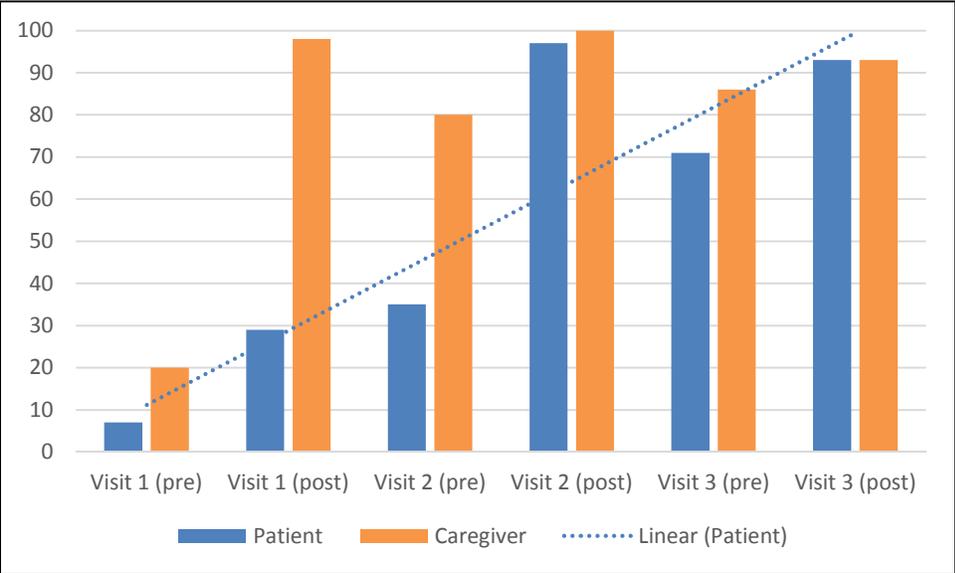


Figure 6. Percent of Patients & Caregivers Demonstrating Proper Technique Using Spacers/ Inhalers before and after ASME Sessions

Similarly, caregivers’ demonstration of their understanding of key elements *after* each session (ranging from 93 to 100

percent) is encouraging.

Patient and Caregiver Confidence

Patients and caregivers were also asked about their confidence in their ability to identify their triggers and avoid them, to use a valved chamber device correctly, to decide when to use controller versus rescue inhalers, and to put their Asthma Action Plan to use. After the first visit, less than half of participants reported feeling “very confident” (range 25-40%) about each topic. Following a second visit,

a majority of participants felt “very confident” (range 57-63%) about all topics except identifying and avoiding triggers (substantially lower at 30%) suggesting that this topic may need additional review.

Quality of Life

Patients and caregivers were also asked about their perception of any changes to their quality of life (QoL) “since learning more about my asthma and how to control it.” At their second visit, 28 participants reported feeling that ASME had improved their QoL, either “somewhat” (n=10, 33%) or “a lot” (n=18, 60%).¹¹

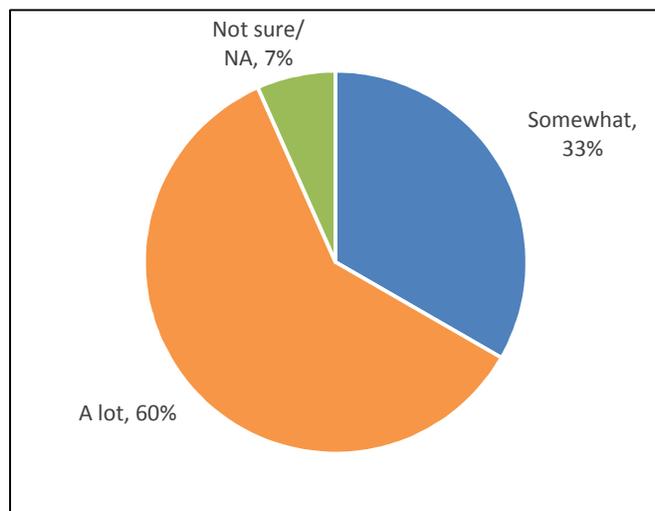


Figure 7. Patient Perceptions: Has ASME Improved Quality of Life?

Similarly, seventeen participants (57%) felt that their knowledge about asthma, medications, and how to control the disease had improved “a lot.”

Patient Physical Health

Asthma educators in the NLGH program use the Asthma Control Test (ACT), a brief questionnaire which has been found to be valid and reliable, to measure patients’ current level of asthma management.¹² For patients ages 12 and older, scores on the ACT range from 5 to 25, with scores below 16 considered “very poorly controlled” asthma, scores ranging from 16 to 19 considered “not well controlled,” and scores at or above 20 considered “well controlled.” For patients 11 years old or younger, the asthma educators use the Childhood Asthma Control Test (C-ACT) which combines questions for the patient with questions for their adult caregiver and has a range of 0 to 27. While the score cutoff for “well controlled” asthma remains the same as for the adult ACT (20 or above), the recommended cut point for “very poorly controlled” asthma is lower, at 12, with an expansion of the “not well controlled” range from 13 to 19.¹³

Among the 30 patients who completed a second ASME session in 2014-15, only 13 had ACT scores indicating their asthma was well-controlled at the first visit.¹⁴ Seventeen patients (57%) were not considered well-controlled (ACT < 20) at the initial visit. At the second visit, the number of participants with well-controlled asthma only increased to 14 out of 30 patients; however, 5 patients whose asthma was well-controlled at the first visit were not well-controlled at the second, and this may have motivated them to return for a second session of ASME coaching. Among the patients completing a third visit, only

¹¹ One patient was “not sure” and one had no response to the question.

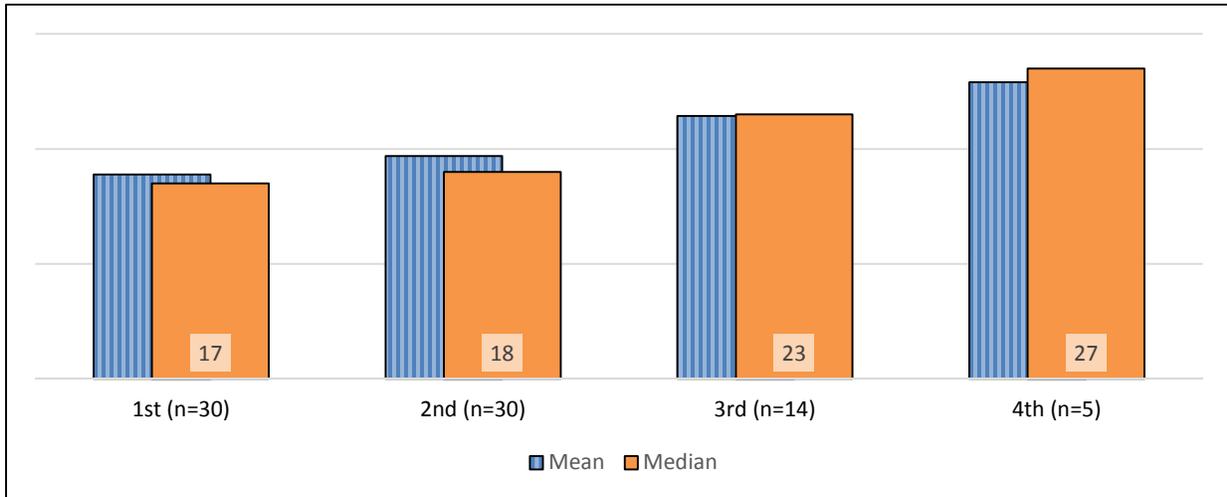
¹² See Schatz M et al. (2006) Asthma Control Test: reliability, validity, and responsiveness in patients not previously followed by asthma specialists. *J Allergy Clin Immunol* 117 (3): 549-56.

¹³ Liu AH et al. (2010) The Childhood Asthma Control Test: retrospective determination and clinical validation of a cut point to identify children with very poorly controlled asthma. *J Allergy Clin Immunol* 126 (2): 267-73.

¹⁴ The term “ACT score” will be used for both ACT and C-ACT scores in the following section.

1 (7%) was not well-controlled, although 10 of the 14 (71%) were not well-controlled when first seen for ASME.

Figure 8. Change in Mean and Median ACT Scores by Visit Number for Patients Completing at Least Two ASME Sessions¹⁵



Between visit 1 and visit 4, the median ACT score increased from 17 to 27, with all returning patients' scores included. Among the five patients completing a fourth visit, all were considered well-controlled (100%). Two (40%) were well-controlled initially.

To assess changes over time for three visits we used the Friedman Test, which indicated a significant difference in ACT scores ($p=0.039$) over the course of the ASME sessions.¹⁶ Differences in ACT scores between paired visits were analyzed using the Wilcoxon Signed Ranks Test for related samples.

Visits Compared	Significance (2-tailed p)	Significance (1-tailed p)
Change from Visit 1 to Visit 2	0.150	0.075
Change from Visit 1 to Visit 3	0.011	0.0055

The difference in scores between Visit 1 and Visit 2 failed to reach significance at 0.05 using a two-tailed p, however since the hypothesis that ACT scores would improve with ASME is a directional hypothesis, p values for a one-tailed test were also calculated. Differences in ACT scores between Visit 1 and Visit 3 were significant for both one and two-tailed tests.

Healthcare utilization

Patients and caregivers self-report better understanding of and compliance with medications (below) together with reduced use of non-routine medical services (clinic, urgent care, and ED visits) following

¹⁵ This analysis includes 1st visit scores from 2013-14 for patients who had additional visits in 2014-15.

¹⁶ All statistical analyses described here were executed using IBM SPSS 22. Friedman's Test returned a $p < 0.01$ for all 4 visits, however the number of patients completing a fourth visit was very small ($n=5$).

asthma self-management education. As can be seen in Table 4, returning patients had a higher average reported use of urgent care (highlighted in orange), while overall there is a dramatic decrease in the reported use of emergency or urgent services and of hospitalizations following ASME.

Table 4. Patients’ Self-Reported Health Care Utilization before and after 1st ASME Session

Type of Visit	Prior to 1st visit (previous year, all patients, n=55)		Prior to 1st visit among returning patients¹⁷ (n=30)		Reported since 1 visit¹⁸ (n=49)	
	Sum	Mean	Sum	Mean	Sum	Mean
Emergency Department Visits	46	0.8	19	0.6	4	< 0.1
Hospitalizations	17	0.3	10	0.3	4	< 0.1
Urgent Visits to HCP	71	1.3	59	2.0	10	< 0.2
Routine Visits to HCP	215	3.9	115	3.8	37	0.75

Caution should be used in interpreting these data: all are self-reported and time frames are not equivalent. The second column covers the period up to a year prior to the first visit. The time between later visits also varies widely. However, when combined with qualitative data gathered during ASME sessions (see *Narratives and Comments* section, below) the evidence suggests that some participants feel their ASME sessions have helped to decrease their need to visit the ED or urgent care, while increasing their understanding of asthma and their ability to control signs and symptoms.

Narratives and Comments from Asthma Educators and Program Participants

The online reporting tool used to collect evaluation data provides space for the asthma educators to note additional details about each session. These brief accounts help to illustrate the value of the program to participants, particularly parents and other family members of children with asthma. They also help illustrate some of the challenges in providing ASME, such as family members who do not accept a child’s asthma diagnosis. The following excerpts have been taken from the patient encounter forms.¹⁹

Narrative 1 (8 year old male patient)

March 2015	Mother states she only gives patient medication for allergies when patient is symptomatic. Post education session, mother states she understands the importance of giving medications as prescribed to control allergies. She understands if allergies are controlled his asthma is in better control.
March 2015	Mother states she feels her and her son have both benefited from the asthma education session. She states she has a better understanding of all of it and wants to make sure that I thank the [NM] DOH for the education provided.

¹⁷ The prior counts and means for patients who completed more than one visit are listed separately in order to demonstrate that they are similar to those for all patients and to enable comparison with the healthcare use reported by these patients after having completed an ASME session.

¹⁸ This includes all utilization since last ASME visit reported at visits 2, 3, or 4.

¹⁹ Excerpts have been lightly edited. Spelling and capitalization have been silently corrected, grammar has not. Words inserted by the evaluator are in brackets [like this].

May 2015	Husband attended last session with mother and patient. He commented that he has seen a big difference in how they are managing patient's asthma. Mother states she is very appreciative of this program and would highly recommend it to others.
July 2015	Follow up requested by mother. She wants a review on [his] AAP for the schools with patient. Patient will be carrying his inhaler. Patient verbalized understanding.

Narrative 2 (9 year old female patient)

March 2015	Mother didn't bring medications. Went over medications with none present. Instructed her to bring medications to follow up visit in two weeks. She was reluctant at first having her [child] use inhaler because [mother] herself has asthma. She withholds using medication on herself for fear of becoming dependent on medication. Instructed her this would not be an issue. Medication will help prevent further medical complications. She is scheduled with follow up ... and will bring asthma journal given to her at this time as well as School AAP. Patient given AAP for home. Mother feels confident at end of session about using medication on her daughter as well as when to use for herself.
March 2015	Mother states patient has stopped taking her Singulair. Patient is going to have allergy testing done but has to wait a month... Discussed with mother that Singulair is not an antihistamine. She stated that she did not know what the lady [PCP] meant so just stopped all medication other than her [child's] long term maintenance medication.
May 2015	Mother states they have been [able] to manage patient's asthma well because of the knowledge they have obtained from the 2 prior education sessions. She comments that she is very happy she attended the sessions and would recommend this program to everyone and anyone that has a loved one with a dx of asthma.

Narrative 3 (9 year old male patient)

March 2015	Patient recently diagnosed with asthma. He has not been using an Aerochamber with his inhaler because he was never given [one] nor showed how to use his inhaler. He states he can taste the medication. Parents are very eager to learn. This is the first time [they] see this PCP. Patient was able to demonstrate proficiency using Aerochamber with inhaler.
April 2015	Mother states she is very pleased with what they learned in the 1st Education Session. She states her son has been unable to actively participate in playing sports. Her son went to basketball practice and the coach approached her afterwards asking what had changed. He told her he had not coughed nor had he been short of breath. She explained to him that the Asthma Education Class that they went to educated her and her son on Exercise Induced Asthma.
June 2015	Mother states patient is not using Aerochamber for the last 2 months. She was told by a nurse that the use of the Aerochamber was making oxygen level drop. Encouraged mother to use Aerochamber unless told by a physician not to use it. Post education, mother states she will consult with PCP before making changes.
August 2015	Mother states she wanted help with patient understanding [his] AAP for the schools should nurse not be available. Discussed AAP for the schools with mom and patient. They both verbalized understanding.

Narrative 4 (12 year old female patient)

November 2014	The mother is not sure about triggers other than exercise. Patient is wheezing today; discussed with mother and patient other factors that could trigger symptoms. They both state they would be aware of any additional triggers.
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November 2014	Patient's medication was not called in ... Mother called pharmacy but did not call PCP so that they could call it in. I called PCP and they faxed it electronically on that date but for some reason it did not go thru. Nurse went ahead and sent it thru today and verified it went thru. Discussed with mother to always follow up with PCP for future incidents. Mother verbalized understanding.
December 2014	None at this time. Patient is taking all medication as prescribed. No problems with AAP. Albuterol taken prior to P.E. at school for prevention. Peak Flow Journal turned in given new one to keep track for self. She has a little cough. Instructed on infection control and staying away from people who are ill. Provided patient with mask. Any problems she will contact us or her PPC.
August 2015	Patient has been off of control medications >4 months w/ PCP's consent. Mother wanted a refresher on asthma topics especially on AAP for schools since nurse is not always available. Mother states patient is also on immunotherapy which has helped keeping asthma in control.

Narrative 5 (14 year old male patient)

January 2015	Patient and mother are confused on which medication to take. Patient has Flovent, Qvar, Advair and Atrovent prescribed at different times. Per PCP progress notes of current med list patient is on Qvar. Post education session discussed with patient and mother and they verbalized understanding. Patient has never used an Aerochamber with inhalers. Patient was given an Aerochamber to use with inhalers and a peak flow today.
February 2015	Patient states he has been using his Aerochamber with his inhaler and he has been able to feel a difference. Mother states he is doing better with medication compliance.
March 2015	Mother states patient is still taking his medication even though he still struggles to remember. She has provided him with a pill box. Patient states he has signed up for Track this semester and he feels it is thanks to this program, in which they learned about Exercise Induced Asthma, that his mother approved.

Challenges

September 2014	Mother brought in 7 children to appointment [patient is age 6]. It was very busy but education was accomplished. Mother has no Aerochamber or rescue [inhaler] for school. An Aerochamber was provided and rescue inhaler was called in to pharmacy by PCP.
January 2015	Mother states that when patient [age 11] stays with her father (parents are divorced) every other weekend she does not take her medication.
February 2015	Patient is not taking medication as prescribed. Discussed with patient the importance of taking medication every day. Patient states she will make an effort as prescribed including the weekends she is with her dad. Mother stated she will help remind the patient.
March 2015	Patient [age 7] was discharged from hospital today. This is a new dx for the parents. Parents were very eager to learn. Patient has no insurance at this time. Post education, parents were very grateful for the education session and even took notes.
March 2015	Patient [age 11] discharged from hospital today. Patient's mother states she just switched providers in January. His old provider dx him with asthma but told her he did not need an Aerochamber. Post education mother states she has learned so much. She states she knows why he keeps getting sick. She verbalizes understanding and states he will start using the Aerochamber.

April 2015	Patient came with sister to visit, mother was working. Patient answered all of the questions with the help of sister. Patient is not taking control medication as prescribed. He is taking all of his other medication; he has a pill box his mother gives to him for the week. Post education, patient states he will make an effort to take his control medication as prescribed.
June 2015	Patient [17 years old] just started trx for asthma a couple of months ago. This the first time she has ever been insured. She states she is not taking medication as prescribed at this time. Post education session she states she will make an effort to follow her AAP. Mother verbalized understanding as well.

Successes

January 2015	Mother not convinced that her son [age 12] has asthma. Post education, she [is] still not convinced of asthma diagnosis. Mother agreed to come on 2nd visit to see if she notices any asthma symptoms until then.
March 2015	Patient demonstrates proficiency when using Aerochamber/inhaler. Patient verbalizes compliance in taking his medications as prescribed ... His mother states the asthma education has helped them both in understanding everything involved in keeping his asthma under control.
March 2015	Grandfather not convinced of asthma dx. Patient [10 years old] not compliant with asthma medication. Post education, patient's grandfather stated he was very appreciative and is more at ease with the asthma dx. He states they will make every effort to follow the AAP provided today.
July 2015	Mother states that patient is almost always short of breath post exertion. Mother states patient lives with grandparents. She states she learned a lot and feels everyone that is involved in his care should attend at least 1 asthma education session. Grandfather attended 1st session and she will encourage grandmother to bring patient to 3rd session. She states it was very interesting learning about EIA.
April 2015	Mother uncertain about asthma dx. She states her daughter [age 8] seems to always have a cough up until ... [going] to this PCP, who prescribed the asthma medication. She also reports not being compliant w/med in the past. Post education, mother stated she was very impressed of how much she has learned and was very thankful.
April 2015	Mother brought in 2 long term control inhalers to visit. She states she picked them both up ... [earlier] and has been giving as prescribed. Patient's insurance not covering Flovent on last visit. Called pharmacy and they state they did not give her both. Confirmed with PCP's office and they ... called in the Qvar because patient's insurance no longer covers Flovent. Discussed/showed mother which medications are in the same category and only [to] use one in that category, [mother] verbalized understanding. She states she is glad she came because she would have continued using them both.

Community Outcomes

Among all potential community outcomes resulting from the ASME program, reduction in ED use and hospitalizations with a primary diagnosis of asthma is of particular interest. Last year, in the 2013-14 evaluation brief, we reported that:

Comparison of NLGH data on ED visits and hospitalizations from 2012 to 2014 suggests that asthma hospitalization rates are stable or declining slightly while the crude rate of asthma ED visits decreased from 2012 to 2013 among younger age groups (< 45 years old). The magnitude of the decrease was greatest in children (< 15 years old).

Comparison of the 2012 and 2013 ED visits with a primary diagnosis of asthma in Lea County (including all facilities, not NLGH alone) shows a statistically significant decrease in ED visits for the pediatric population who most often participated in the ASME intervention at NLGH. In 2012, the crude rate among children ages 0-14 was 128.8 per 10,000 population and the 95% confidence interval (CI) was 111.6 to 146.0. In 2013, the asthma ED visits in the same age category decreased to 94.0 per 10,000 population (95%CI=79.6 to 108.4). This is further evidence that this intervention had a positive impact.²⁰

With an additional year of ED surveillance data available, it is possible to compare Lea County with the southeast region as a whole, for paired years (making estimates more stable) since program initiation and then for 2014.²¹ Although ED visits for asthma in Lea County show a slight upward trend when 2014 data is included, the upward trend is far more pronounced regionally, in counties where no similar programs are currently sponsored.²²

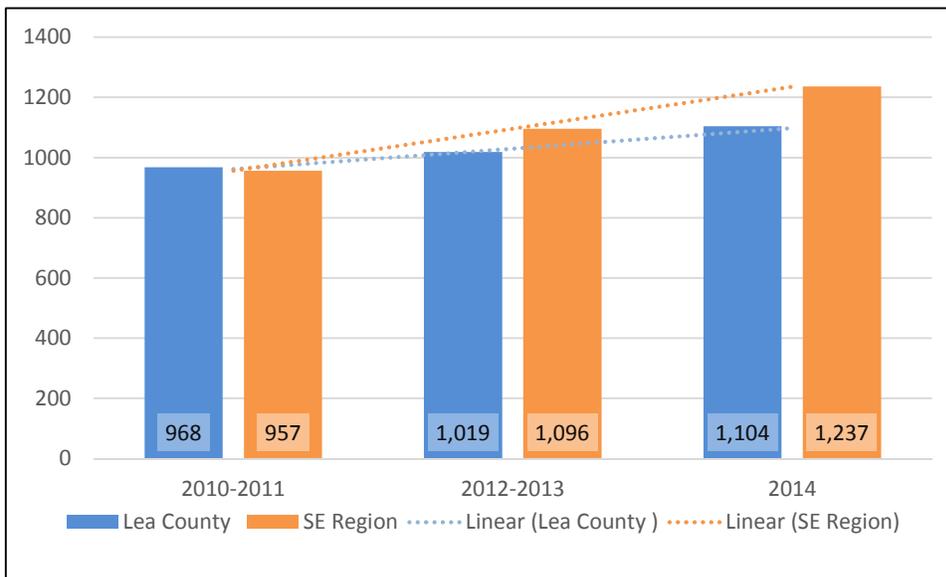


Figure 9a. Crude ED Visit Rate per 100,000 for Ages 0-17 from 2010 through 2014

²⁰ [from 2013-14 evaluation brief] *Additional years of data will need to be analyzed to detect whether this is a confirmed trend. Changes in reporting of asthma as a primary vs. secondary diagnosis, and many other factors (including environmental ones) may be affecting these calculations.*

²¹ Source: NM-IBIS (New Mexico’s Indicator Based Information System for Public Health), Years 2010-2015, NCHS 21 Leading Reasons for Hospitalization=Asthma. Accessed March 17, 2016.

²² The southeast region of NM includes Quay, Curry, Roosevelt, DeBaca, Chaves, Lincoln and Eddy counties as well as Lea County. It is bordered by Texas.

The divergence of trend lines between Lea County and the entire Southeast Region is even more apparent when age-adjusted rates are used.

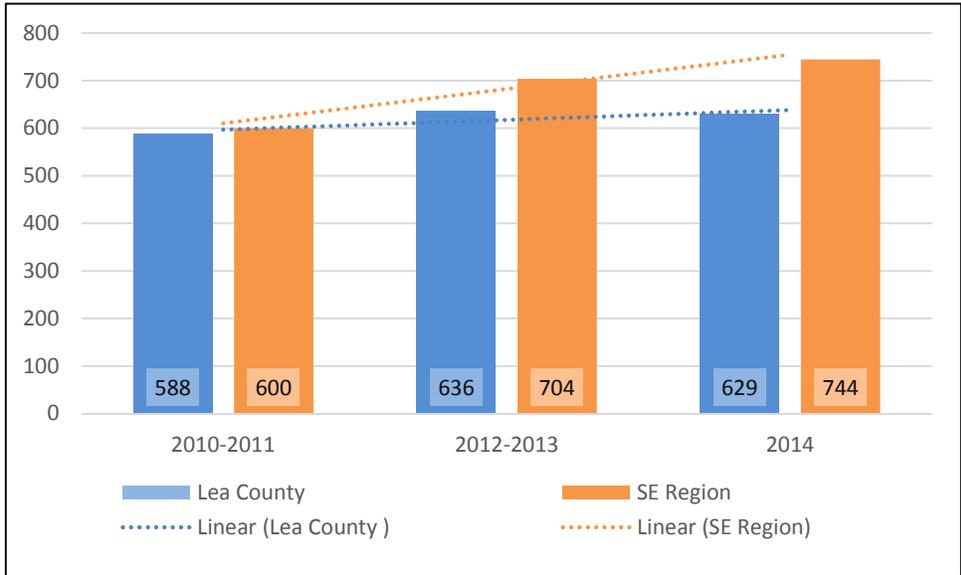


Figure 9b. Age-Adjusted ED Visit Rate per 100,000 for Ages 0-17 from 2010 through 2014

Using available data, it is also possible to look more broadly at the period NLGH’s ASME program has been operating. Although Lea County has a lower overall crude rate, the confidence intervals for combined crude rates (2010-14) in Lea County (1017.0) and the southeast region (1069.8) overlap. However when age-adjusted rates are used, which take into account the youthful demographic profile of Lea County, the rate of ED visits for asthma are perceptibly different.

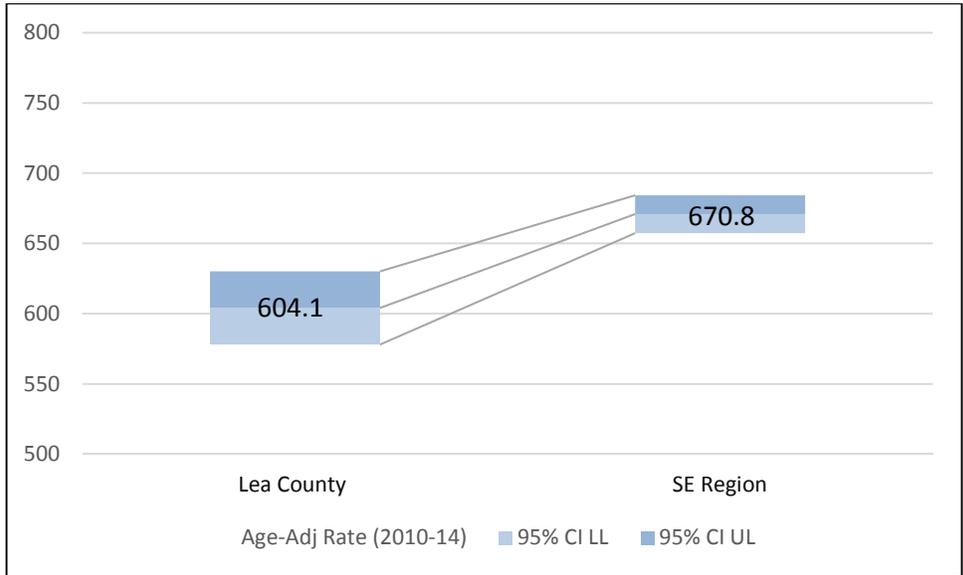


Figure 10. Age-Adjusted Rates for Asthma ED Visits per 100,000 Population for Lea County versus the Southeast Region from 2010-14 Combined, Showing Confidence Interval (CI) Upper Limits (UL) and Lower Limits (LL)

It is also worth noting that during this period (2010-14), the pediatric population of Lea County has not been stable. It is estimated to have grown by over 1,850 from 2010 to 2014 (an increase of nearly 10% from the 2010 population), and the adult population by around 2,200 (about 5%).

When 2015 hospitalization and ED visit data are available, we will be able to determine if these differences have been maintained or perhaps even increased during the 2014-15 activity period covered by this ASME program report.²³

Discussion and Recommendations

Although the number of patients seen during 2014-15 was a substantial increase from 2013-14, the program at NLGH remains small and sustainability continues to be a challenge.²⁴ The available program data, quantitative and qualitative, collected by the asthma educators in 2014-15, continues to provide convincing evidence of the value of this program to participants. Surveillance data suggests that since this program's inception, ED visits for asthma in Lea County compare positively to its neighbors in the region.

Having trained asthma educators on staff at NLGH (a goal of the original 2011 pilot program) makes the provision of ASME easier than having a traveling AE-C available only at limited dates and times. However, the confusion over reimbursement of claims for asthma education activities and patient self-management under ACA and Centennial Care (NM Medicaid) makes expansion and replication of the program less likely to take place without clear guidance regarding system-wide changes. Since November 2014 the NMCOA has been working to collect up-to-date information about which insurers are reimbursing and where other insurers currently stand. In addition, the NMACP has begun discussions with representatives of insurance providers, managed care organizations, and other medical groups to address this issue.

The recommendations which follow are drawn from the evaluation findings.

- The ACP should continue supporting NLGH in providing ASME to patients
- The ACP should continue to evaluate the program and strengthen the evidence of success by including additional surveillance data and review of patient medical records, when feasible
- The ACP should continue to present findings from the NLGH program to partner groups, including NMCOA, and to key decision makers (hospital systems, insurance providers)
- The ACP should create and disseminate factsheets on the NLGH and other self-management programs in NM, on an annual basis
- The ACP should continue to support asthma management training for HCPs of all types, especially pediatric HCPs
- The ACP should partner with NLGH communications and outreach staff to make additional use of media options for communicating the success of NLGH's ASME program

²³ Note: NM-IBIS data on hospitalizations includes NM residents who are hospitalized in Texas. Currently, ED visit data does not include NM residents who visit an ED in Texas, although data sharing with Texas EDs is being pursued.

²⁴ This challenge exists at the national, as well as the local, level. See, for example, Gardner A, et al. (2015) National Standards for Asthma Self-Management Education. *Ann Allergy Asthma Immunol* 114 (1): 178-86.

Conclusion

The NMACP continues to support Nor-Lea General Hospital's commitment to improving asthma care and empowering patients and caregivers to manage their chronic disease, reducing their need to access emergency care and improving their quality of life. Findings from 2013 through 2015 continue to support the value of this program to the participants, and suggest that it is helping reduce the number of asthma ED visits and hospitalizations in the region.