

ASTHMA QUALITY IMPROVEMENT

FEBRUARY 2020



Ohio

Department
of Health



**ASTHMA
PROGRAM**

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INTRODUCTION



ASTHMA OVERVIEW



Asthma is a common chronic condition that impairs normal breathing in approximately 854,000 adults and 297,000 children in Ohio each year (BRFSS, 2018). Although asthma can be controlled with proper treatment and self-management, nearly 46.5 percent of children with asthma in Ohio have uncontrolled asthma (Asthma Call Back Survey, 2014).

While the CDC reported that asthma prevalence is decreasing, disparities continue to rise. Children under five years of age and African Americans continue to have high hospital utilization (CDC, 2016).

OHIO HOSPITAL ASSOCIATION DATA FROM 2016 SHOW:

- Children under five years of age had the highest rate of asthma emergency department visits with 6,250 discharges, at a rate of 89.6 per 10,000 residents.
- While approximately 15 percent of Ohio's children are black, black children account for nearly half of asthma ED visits for children under the age of four, and over half of asthma ED visits for children ages five to 14 (54 percent).

ASTHMA OVERVIEW

Despite the availability of evidence-based guidelines for asthma management, health care utilization remains high, particularly for children with asthma. Most Emergency Department (ED) visits could be prevented by ensuring all asthma patients receive education in asthma symptoms, triggers, medication adherence, and inhaler technique at regular office visits. The type and quality of asthma management can vary widely across communities and population groups. Gaps in care can lead to increased asthma burden related to asthma control and hospital utilization and can significantly increase costs.



GOALS

ODHAP's goals include improving asthma care and closing gaps between current and best medical practice, improving access to care, and eliminating disparities. Over the past several years, Ohio children's hospitals and providers have made strides to reduce asthma morbidity, reduce disparities, and lower the cost of care through use of quality improvement projects.

The average charge for an emergency department visit for a primary diagnoses of asthma was \$2,164.



QUALITY IMPROVEMENT

Quality improvement (QI) consists of systemic, formal, and continuous actions that analyze measurable improvement in health care services, performance, and the health status of targeted patient groups.

Many factors suggest that efforts to improve asthma care quality are warranted:

- Increased asthma prevalence, especially among children and adolescents.
- High health care cost of uncontrolled asthma.
- Disparities among socioeconomic, racial, and ethnic groups in how they are diagnosed and treated.
- Variation in interventions and treatment that can successfully manage the disease and prevent asthma attacks.

EXHALE STRATEGIES

The Ohio Department of Health Asthma Program (ODHAP) was recently awarded a competitive grant through the Centers for Disease Control's (CDC) National Asthma Control Program. Through this award, ODHAP seeks to reduce childhood ED visits and hospitalizations using EXHALE strategies, including:

- E**ducation on asthma self-management
- X**-tinguish smoking and secondhand smoke
- H**ome visits for trigger reduction & asthma self-management education
- A**chievement of guidelines-based medical management
- L**inkages and coordination of care across settings
- E**nvironmental policies or best practices to reduce asthma triggers from indoor, outdoor, and occupational sources

The ODH Asthma Program chose to highlight children's hospitals throughout Ohio with asthma-related quality improvement initiatives who utilize EXHALE strategies and approaches. These models and resources are available for widespread use.

SUCCESSFUL MODELS



Akron: Easy Breathing Program

Cincinnati: Asthma Center

Columbus: Asthma Express

Columbus: School-Based Asthma Therapy Program

Columbus: Partners For Kids

AKRON CHILDREN'S HOSPITAL AKRON, OHIO



EASY BREATHING PROGRAM

Team: Cooper White, MD; David Karas, MD; Elizabeth Bryson, PNP; Lisa Jones, RN; Tracy Rife, RN

SMALL PROGRAM, BIG IMPACT

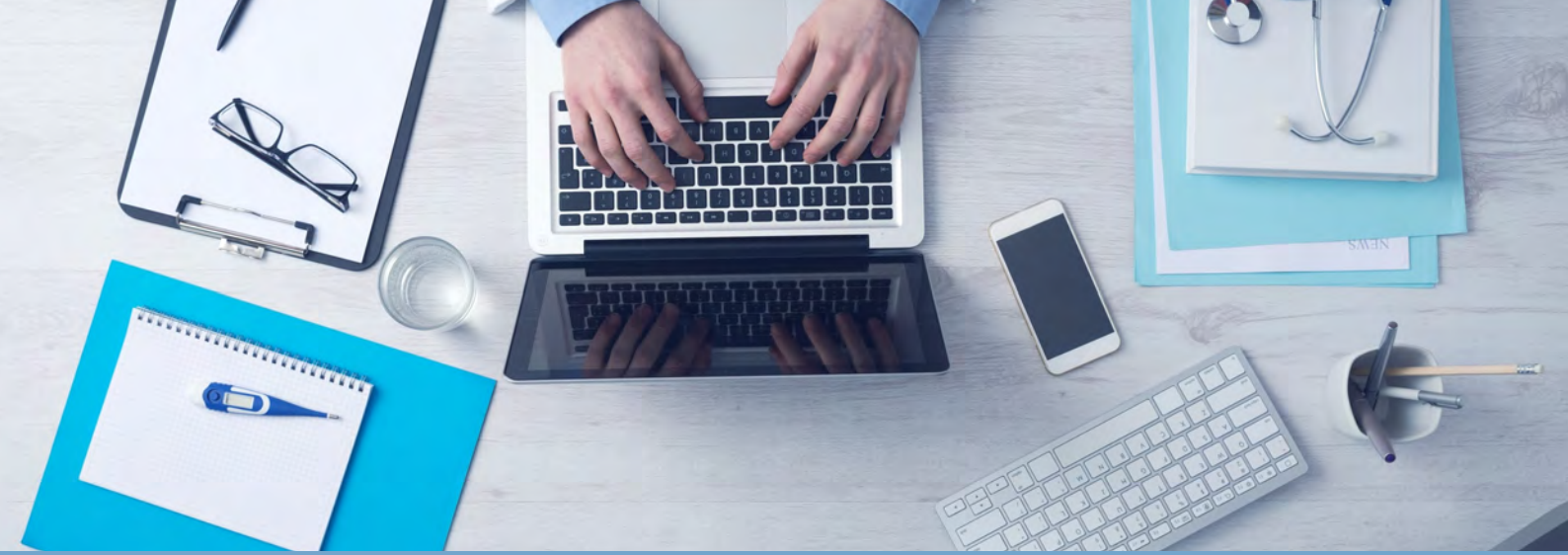
Akron Children's Hospital is Easy Breathing, an evidence-based asthma management program that standardizes asthma diagnosis and treatment in Akron Children's 27 primary care offices. Since the Easy Breathing program was implemented in 2013, primary care physicians have identified 1,500 undiagnosed cases of asthma.

Akron Children's Hospital (ACH) has two hospitals located in Northeast Ohio and over 60 urgent, primary, and specialty care locations. Since their beginnings in 1890, ACH has grown drastically and now sees more than one million patients per year. In 2018, over 100,000 children visited ACH's ER, and nearly 30,000 children visited their urgent care facilities.

Dr. Cooper White is a general pediatrician whose desire to assist underserved populations led him to Akron Children's Hospital in 2006 as the Medical Director of the Locust Pediatric Care Group. Dr. White has been the leader of the Clinical Transformation Initiative for asthma within Akron Children's Hospital, with the program goal of responding to Community Health Needs. This effort has been associated with significant drops in admission and asthma-related ED visits.



According to Dr. White, the most useful part of Easy Breathing is its excellence in identifying children with asthma who have not been previously diagnosed, leading to optimal patient care. Additionally, it helps healthcare professionals consider guideline-based therapy that corresponds to severity and degree of symptomology.



EZB BEGINNINGS

Easy Breathing (EZB) was established in the 1990s by Dr. Michelle Cloutier in Connecticut. Designed as an educational program for primary care providers, the program's goal was to support the use of the NAEPP's Asthma Guidelines. A substantial evidence base was developed to support its effectiveness both in terms of improving quality of care and in outcomes for children with asthma. The program's success in Connecticut and Dr. Cloutier's readiness to share her achievements with other institutions demonstrated EZB as an appropriate asthma-focused QI project for Akron Children's Hospital's primary care network.

The motivation to implement EZB at Akron Children's Hospital came when asthma was established as a Community Health priority and focus of a hospital-wide effort to improve asthma care. The EZB program consists of practice-level education involving all providers and staff who are given EZB tools and guideline-based education. Nursing and administrative staff in the Pulmonary Division assisted central support of the medical champion team that included Dr. Karas and Ms. Bryson. Between the program's start in 2013 and 2017, all 28 primary care practices and adolescent medicine were trained in EZB methodology.

BARRIERS AND IMPROVEMENTS

While Easy Breathing certainly enables patients to receive proper care, the program is not without its adversities. Dr. White cites administrative barriers, lack of appropriate educational staff, and patient difficulties as barriers that he soon hopes the program can overcome.

Dr. White wants to focus on the results of the program while collecting more data on EZB and the patients it serves. Primarily, he wants to continue improving health outcomes of EZB patients. While patients in EZB receive optimal care, Dr. White wonders “why not better outcomes?”

“During the time of this project, there was a drop in our asthma utilization rates (hospitalizations and ED visits), however, this was one of many efforts in our system to improve asthma care,” says Dr. White. And while he is thrilled by the progress made, Dr. White wants to continue the QI process by revising steps and expanding EZB.

**"I'M A BELIEVER."
-DR. WHITE**

ESSENTIAL PROGRAM ELEMENTS:

1. Practice-based education
2. Use of EZB survey for all children beyond infancy to identify asthmatic patients
3. Coherence between asthma severity and EZB-monitored treatment plan
4. Yearly updated treatment recommendations depending on symptom severity

RESULTS AS OF SEPTEMBER 2018:

1. 73,569 patients were surveyed in ACH offices. Of those, 55,630 (75%) did not have asthma, 15,330 (21%) did have asthma and 2,607 were undetermined (4%). 2,409 children were newly diagnosed with asthma at the time of screening.
2. For Summit County, 10,442 children are in the ACH asthma registry. These patients are the most likely to have events identified in the registry due to capture within the system. In the two years prior to June 2018, these children had 2,267 ED visits (10.8/100 asthma years, 100AY) and 644 hospitalizations (3.1/100AY) for asthma. Of those patients, 8,595 have an ACH PCP, 1,847 have a non-ACH PCP. The ACH PCP patients had 1,794 ED visits (10.4/100AY) and 492 Hospitalizations (2.8/100AY). Of those with non-ACH PCP's, there were 473 ED Visits (12.8/100AY) and 152 hospitalizations (4.1/100AY).
3. 4,846 patients with ACH PCPs were enrolled in EZB, and 3,749 had not been enrolled. The enrolled patients had 281 hospitalizations (2.9/100AY) and 1,167 ED visits (12.0/100AY). The non-enrolled patients had 211 hospitalizations (2.8/100AY) and 627 ED visits (8.4/100AY).
4. For EZB enrolled patients, 2,198 (45%) received the flu vaccine, 2,822 (58%) had an updated treatment plan (ATP), and 2,783 of 4,556 (61%) eligible children had an updated asthma control test (ACT). For those not enrolled, 1,164 (31%) received a flu vaccine, 1,317 (35%) had an updated ATP, and 1,157 of 3,504 eligible (33%) had an updated ACT.

RESULTS AS OF SEPTEMBER 2018:

5. 1,688 of 8,060 eligible patients (21%) had received all three elements of care noted above, deemed Optimal Care. Those patients had 147 hospitalizations (4.3/100AY), and 523 ED visits (15.5/100AY).

6. At the practice level, similar results were achieved. Practice A is an early adopter of EZB with a high risk, urban population. There were 1,488 asthma patients: 1,206 enrolled in EZB and 282 not enrolled in EZB. These patients accounted for 138 admissions (4.6/100AY) and 506 ED visits (17.0/100AY). Of the enrolled patients, 699 had flu vaccine (58%), 859 had an updated ATP (71%), and 837 had an updated ACT (65%). Of those not enrolled, 101 had flu vaccine (36%), 233 had an updated ATP (57%), and 131 had an updated ACT (47%). Practice B was a late adopter with a similar population. There were 1,812 asthma patients: 852 enrolled and 960 not enrolled in EZB. These patients accounted for 161 admissions (4.4/100AY), and 592 ED visits (16.3/100AY). Of those enrolled, 303 (36%) received flu vaccine, 472 had an updated ATP (55%), and 475 had an updated ACT (56%). Of those not enrolled, 190 (20%) received a flu vaccine, 233 had an updated ATP (24%), and 204 had an updated ACT (21%). Practice C is a suburban practice with 886 asthma patients accounting for 36 admissions (2.0/100AY) and 99 ED visits (5.6/100AY). 445 patients were enrolled. 441 were not. Of those enrolled, 87 (42%) received a flu vaccine, 271 had an updated ATP (61%), and 278 had an updated ACT (63%). Of those not enrolled, 147 (33%) received a flu vaccine, 170 had an updated ATP (38%) and 148 had an updated ACT (33%).



FINAL THOUGHTS

According to Dr. White, the value of QI lies in that “it’s available to all of us, provides value to our patients, and contributes incrementally to better health.” Dr. White’s goals for the program include increasing levels of interest by demonstrating the value of Easy Breathing and its importance to patients.

CINCINNATI CHILDREN'S HOSPITAL CINCINNATI, OHIO



ASTHMA CENTER

Team: Karen McDowell, MD; Carolyn Kercksmar, MD; Theresa Guilbert, MD; Lisa Mullen, MHSA; Gregg Sabla, M.Ed; Valeria Sackenheim, RN II, CPA, AE-C; Melissa Merritt, RN, BSN, CPN; Julie Simpson, RN II, BSN, CPN; Yuping Guo

DECREASING ASTHMA E.D. VISITS ONE PATIENT AT A TIME

The Asthma Center at Cincinnati Children's Hospital and Medical Center (CCHMC) provides a comprehensive, multi-disciplinary approach to caring for children with severe, complex, uncontrolled, and/or difficult to treat (DTT) asthma. The multi-disciplinary team includes inpatient, outpatient, emergency, pharmacy, home health, and subspecialty care units in partnership with community-based organizations, such as health departments and schools.

With specific expertise in treating asthma in children with co-morbidities and underlying conditions that make asthma difficult to control, the program is ranked number four in the nation according to U.S. News & World Report.

Dr. Karen M. McDowell, MD is a Professor of Clinical Pediatrics in the Department of Pediatrics for UC College of Medicine and a board-certified pediatric pulmonologist in the Division of Pulmonary Medicine at Cincinnati Children's Hospital Medical Center.



Dr. McDowell serves as Director of the Pulmonary Function Laboratory and Leader of Quality Improvement for the Asthma Center within the Division of Pulmonary Medicine. Dr. McDowell's clinical and research interests include asthma, quality improvement methodologies, and pulmonary function testing, especially in infants.

Roughly 1,600 patients see doctors in the clinics per year. Of these 1,600 patients, approximately 200 meet the criteria of Difficult to Treat (DTT) Asthma. DTT asthma patients not only have severe asthma in the biological sense but have social stressors compounding their condition, and are often the highest utilizers of the ED and hospital admissions.



ASTHMA CENTER IMPACT

The program aimed to have all patients return for a follow-up visit within 15 days of an ED visit. “However, we found that for many patients, we were able to alter medications or discuss their plan over the phone,” said Dr. McDowell. This, in some cases, eliminated the need for clinic visits.

McDowell found that “many of the ED visits were not required.” The follow-up phone calls offered the opportunity for educational discussions with families, where staff shared that families could call the Asthma Center first, before going to the ED. This helps families avoid costly visits to the ED when they are not medically necessary.

According to Dr. McDowell, nursing staff enjoyed the daily report showing why their patients were in the ED, because it gave them the ability to “proactively call the patient to follow-up and make appointments when necessary.” Barriers for the project include difficulty contacting those patients via phone for the follow-up. It was decided that staff would make three attempts to call the patient.

“Consistently reviewing and understanding our data will help us achieve our goals of improving patient outcomes and patient and family experience.”

- McDowell

JUSTIFICATION AND GOALS



The Asthma Center implemented this QI project to redesign care processes and address key issues underlying poor asthma control and associated preventable hospital use. The goal is to achieve optimal health and asthma control of their DTT asthma population. They hope to achieve this Global Aim by identifying and assessing DTT patients when they present to the ED to evaluate the need for rapid interventional follow-up.

The team also monitored the following performance measures:

- Increasing the percentage of DTT asthma patients from 21.4% to 25% (16.7% inc.) who receive adequate assessment (clinic visit or phone call assessment) within 15 days of an ED visit by June 30, 2019.
- Implementation of an alert within EPIC for DTT asthma patients to notify ED staff (i.e. “*contact pulmonary fellow on call!*”).
- Reduce ED utilization and improve asthma control.

METHODS

The American Thoracic Society (ATS) and European Respiratory Society (ERS) provide the following criteria for patients who are deemed DTT:

Patients meet DTT criteria by having one major and two minor characteristics:

MAJOR CHARACTERISTIC

- A child/adolescent with asthma treated with high dose or long-term oral steroids (>30 days) and has been followed by a pulmonary or allergy specialist for at least three months.

MINOR CHARACTERISTICS

The child has required two or more of the following in the past 12 months:

- Daily treatment with a second asthma controllers (LTRA, LABA, theophylline, or LAMA)
- Asthma symptoms requiring albuterol on a daily or near daily basis
- Persistent airway obstruction (FEV1 <80% predicted or diurnal PEF variability >20%)
- More than one urgent care visit for asthma (Urgent Care, ED, or admissions)
- More than three systemic steroid bursts for asthma
- Near fatal asthma event in the past (intubation or bipap treatment)

METHODS

To address the issue of DTT asthma and reach program goals, CCHMC created a report to track and identify the following key drivers:

- Are ED admissions asthma-related?
- If so, did the nurse call the patient within 72 hours?
- Did the RN recommend returning to pulmonary medicine?
- Did the MD recommend returning to pulmonary medicine?
- If the patient was asked to return for follow-up, were they seen within 15 days of ED presentation?

The following questions were posed to patients or patient parents during the follow-up phone call or visit:

SmartPhrase Questions for Patient/Parent after ED visit

1. Date of ED visit: MM/DD/YY
2. Is patient better, same, worse since ED? (If same or worse needs to be seen in office)
3. What are patient's current symptoms?
4. How often is patient receiving albuterol?
5. Did patient receive oral steroids in the ED? If so, which one?
6. What other medicines is patient taking now?
7. Do you know what triggered this exacerbation?
8. Have you run out of meds since last seen?
9. Follow-up appt with primary care physician scheduled?



FINAL THOUGHTS

The Asthma Center is committed to improving the health of asthma patients. Program goals include continuing use of the nursing follow-up report and monitoring patients after the ED visit to ensure good asthma health. McDowell feels that with continued use, the program will continue to help asthma patients and lower asthma-related ED visits.

NATIONWIDE CHILDREN'S HOSPITAL COLUMBUS, OHIO



ASTHMA EXPRESS

Team: Kelly Kersey, CPHQ; Paul Seese, RN, MSN; Stephanie Brown, RN, BSN; Brandi Ballinger-Blair, RN, BSN, CPN; Jill Smrdel; David Swanseger, BSN; Elizabeth Bryant, RN, ADN; Sandy Birchfield, RN, ADN; Cathy Kern, LPN; Aimee Olvera; Angie Morris, RN, BSN; Wanda Stackpole, RN, MHA; Chris Timan, MD; Beth Allen, MD

ONE SIZE DOES NOT FIT ALL

Nationwide Children's Hospital (NCH) serves a largely urban, Medicaid-insured, pediatric population who have frequent emergency department visits and inpatient hospitalizations due to asthma exacerbations. NCH recognized there was a need and made reducing asthma morbidity a quality strategic focus area in 2010. To support this initiative, NCH's Homecare Services created the home visit program, Asthma Express, in August 2012 that was modeled after a successful program in Boston.

The program identifies children ages 2-18 with a recent inpatient admission or ED visit for asthma and refers them to a care coordinator. The purpose of Asthma Express is to prevent ED visits and hospitalizations for asthma by educating caregivers with a newly diagnosed child or for those that have a sub-optimal understanding of asthma and its treatment despite previous asthma education.

During an admission or ED visit, nursing staff explains the program using motivational interviewing techniques that help identify barriers to optimal asthma care for individual patients and families. Patients who are enrolled in the program while still in the hospital schedule their home visits before discharge.

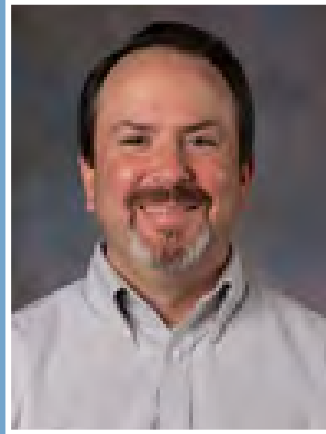
An Asthma Express home visit consists of the following:

- **Conducting a physical and environmental assessment**
- **Assisting with trigger identification**
- **Reviewing medication and the asthma action plan**
- **Providing individualized education**

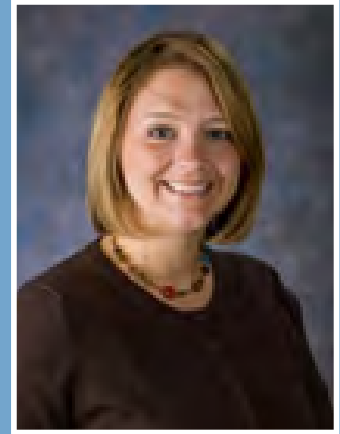
PROGRAM GOALS



Christopher Timan
MD FAAP



Paul Seese
RN, MSN

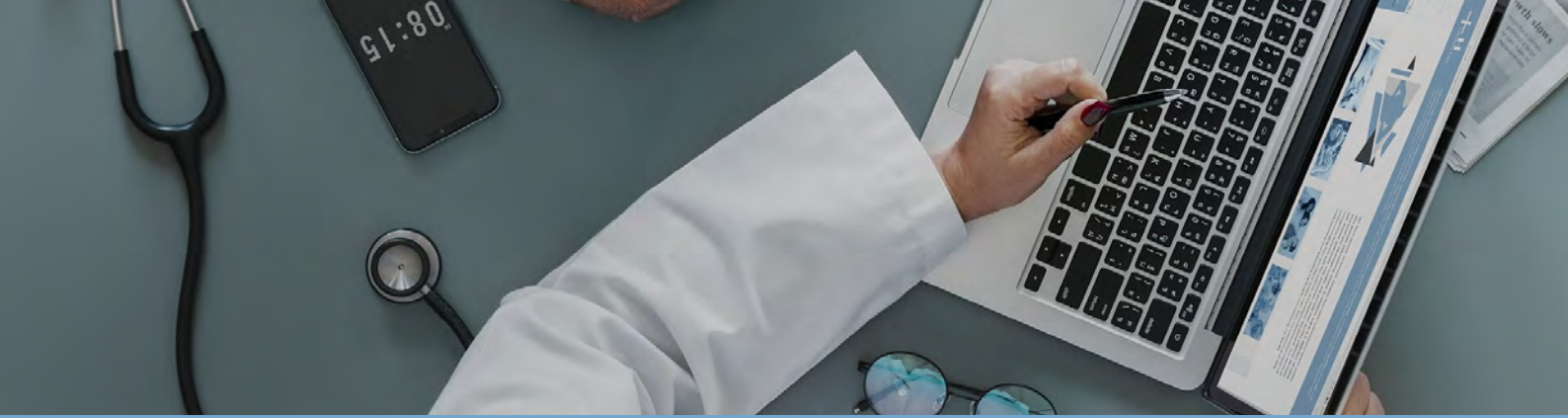


Kelly Kersey
CPHQ

With the help of an experienced multidisciplinary team, Christopher Timan, MD FAAP, medical director; Paul Seese RN, MSN, manager; and Kelly Kersey, CPHQ, quality improvement coordinator of NCH Homecare work to coordinate care within the Nationwide Children's Hospital network to achieve the following strategic goals of the program:

- Reduce the 90 Day ED Utilization Rate for patients 2 to 18 years of age enrolled in and completing Nationwide Children's Hospital Homecare's Asthma Express Program from .22 to .16. The AIM in 2016 was to reduce the rate from 0.18 to 0.14 for 2016 and from 0.12 to 0.08 for 2017.
- Increase the percentage of Asthma Express patients reporting a 30-day follow-up Asthma Control Test score of 20 or higher (indicating good asthma management) from 68% to more than 80%.

Kersey notes that Quality Improvement is part of the culture at Nationwide Children's because "we are constantly thinking of ways that we can be better." Christopher Timan also stresses the importance of an empowered team "who is ready to improve from 98% to 99%" to provide optimal care for patients.



ASTHMA EXPRESS BARRIERS

Seese reports that the toughest barrier in implementing the program has been creating Asthma Express as an expected part of discharge for patients admitted for asthma. He believes that the NCH Homecare Team's persistence in conducting community outreach to identify and engage referral sources and scheduling regular meetings to collaborate have been key to the program's success.

During this program's initial implementation, the team quickly found that what worked in Boston did not always translate well to the NCH Homecare Team. They decided to focus on educational tools provided by nurses who use motivational interviewing techniques. Instead of vacuum cleaners used in Boston's model, the team provides bed and pillow covers to minimize exposure to dust mite antigens.

In addition, they provide allergen abatement information at discharge and a clear portfolio that holds the patient's asthma action plan and medication. Timan explained that the true success of Asthma Express is using motivational interviewing to individualize care for all 1,287 enrolled patients and empowering patients and caregivers to take ownership in their self-management.

“We just had to do things a bit differently. One size does not fit all.”

- Timan

METHODS

To achieve these goals the team uses the following methods:

- Training of all NCH Homecare staff in contact with patients to utilize motivational interviewing techniques. The training includes a follow-up skills review and practice two weeks after the initial training session.
- Recruitment of a multidisciplinary team from various departments within and outside of NCH Homecare. The team identified the best methods for enrolling patients with asthma to educate them and their caregiver, in order to succeed in the management of asthma and prevent ED visits and/or hospitalizations. Quality improvement methodology following the IHI Model for Improvement was used to improve and refine the program between August 2012 and December 2016.
- Interventions trialed and implemented during this project first included using the validated EPA Asthma Home Assessment Checklist to evaluate the patient's home for potential triggers. Second, the Asthma Control Test tool evaluated the patient's and/or parent's perception of asthma management at program enrollment, program discharge, and 30 days post-program discharge.
- Environmental interventions initially implemented were retracted after evaluation indicated that they were not impacting ED utilization. These interventions included providing families with tools to assist with the management of triggers in the home: a cleaning kit, a HEPA vacuum, and bedding covers.
- The 90-Day ED Utilization Rate is tracked by the month the patient was referred to the Asthma Express Program.

RESULTS AS OF DECEMBER 2018:

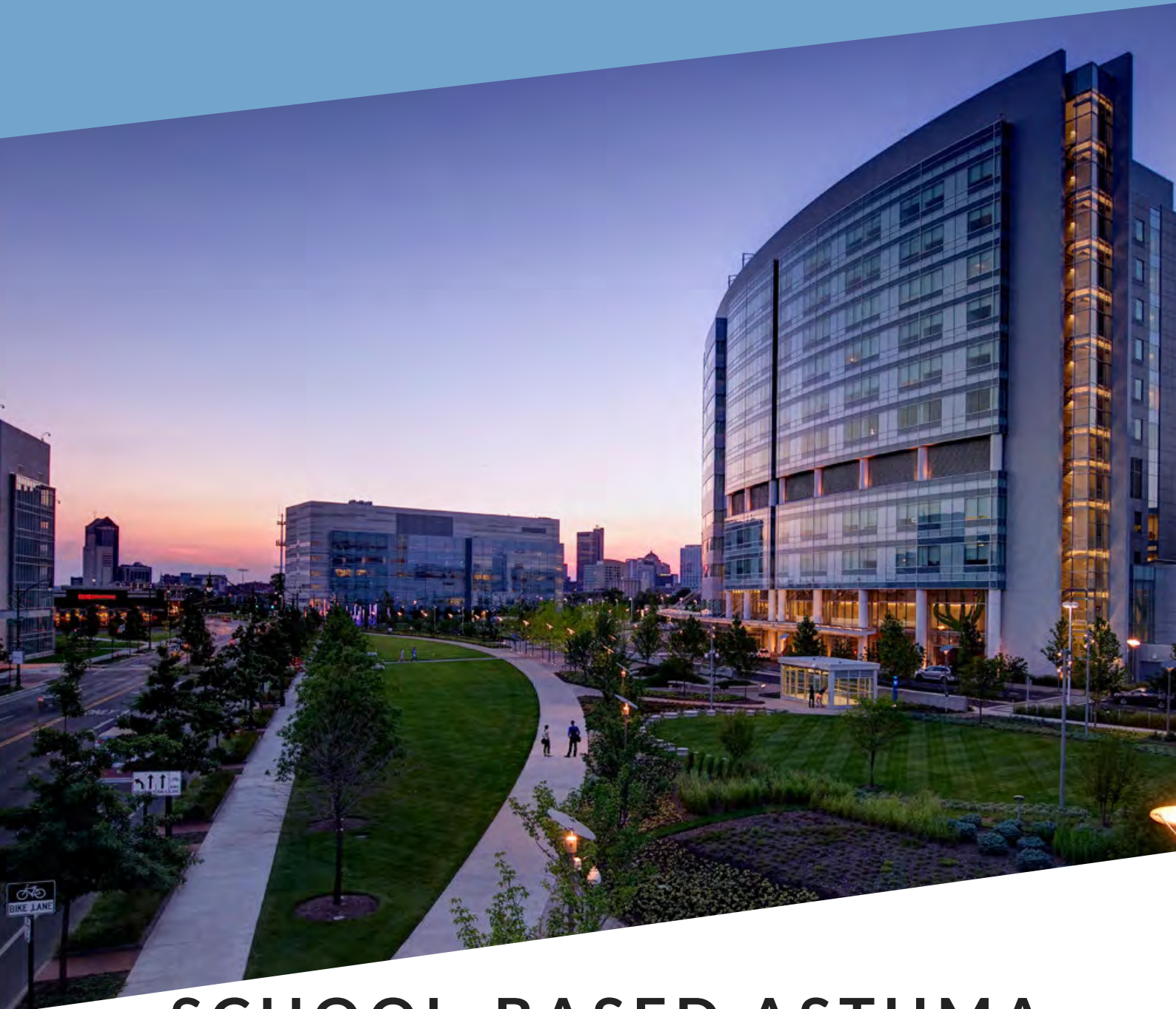
- The Asthma Express Program reduced the 90-day post-program completion asthma ED utilization from 0.22 to 0.11 visits/participant/90 days ($p < 0.001$). The 90-day post-program completion ED return utilization rate change was confirmed using a 2-Sample Poisson rate test.
- Additionally, the 90 -day ED utilization rate for patients who were referred to the program but did not enroll were compared to the patients that enrolled. Return rates for non-enrollees versus enrollees did not differ until modifications made in 2016 (educational focus with motivational interviewing techniques) when 212 enrollees had 0.11 90-day ED utilization rate versus a 0.24 utilization rate for 293 non-enrollees ($p < 0.001$).
- Asthma Control Test Scores were collected starting in May 2016 when patients enrolled in the program, when they were discharged, and during a 30-day post-discharge follow-up call for patients four years old and older. A score between 5-19 indicates that a patient's asthma symptoms may not be well controlled, while a score between ≥ 20 indicates that asthma symptoms may be well controlled. Data was only used for patients that were reached for the 30-day post-discharge follow-up call ($n=57$). Upon admission the mean ACT score was 16.2, at discharge it was 20.2, and at the 30-day post-discharge follow-up call it was 22.9 ($p < 0.001$). The differences between these three time points were confirmed using a 2-sample t-Test. Further, at enrollment only 19% of the patients reported a score at 20 or higher. That jumped to 60% at discharge from the program which increased to 84% as reported during the 30-day post-program discharge follow-up call.



FINAL THOUGHTS

The next steps for this program include continuing to seeking optimal care for patients by keeping the ED utilization rate down and focusing on sustainability. NCH Homecare will also continue to work on methods to increase the 2014-2016 enrollment rate of 43% of referred patients into the Asthma Express Homecare Program and the response rate for the 30-day follow-up for ACT score.

NATIONWIDE CHILDREN'S HOSPITAL COLUMBUS, OHIO



SCHOOL-BASED ASTHMA THERAPY PROGRAM

Team: Elizabeth D. Allen, Mary Kay Irwin, William Long, Suzanne Scott, Jessica Vehr, Myra Weiler, Megan Hurd, Adrean Jones, Nicholas Bullen, Tonia Dawkins, Jana Christenson, and Natasha Geno

A GREAT START

Nationwide Children's Hospital (NCH) serves a largely urban, Medicaid-insured, pediatric population with frequent emergency department visits and inpatient hospitalizations for asthma exacerbations. In addition to its negative impact on health, asthma can interfere with school attendance and may reduce academic performance. Improved asthma management can improve health outcomes, but can be challenging to achieve for some children, particularly those with socioeconomic barriers which interfere with routine asthma assessments and medication administration.

To address this concern, NCH implemented the School-Based Asthma Therapy Program (SBAT) in 2014 as part of a county-wide asthma QI project. SBAT provides school-based pediatric health care access by working as a liaison between schools and the child's asthma care provider to provide high-risk students with asthma controller medication dosing at school.

SBAT is modeled after a program in Rochester, NY that showed positive results for asthma control for school-aged children. SBAT enrolls students with general poor control (e.g. ED utilization, low ACT scores, missed school days, regular oral steroid use, EMS calls to the school) and provides them with two controller medication inhalers. One is kept with the school nurse for a dose during the school day under direct observation and the other is for the second dose in the evening at home.

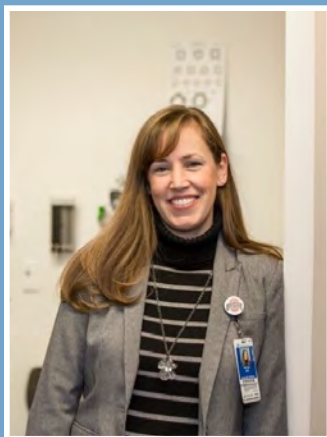
"It's hard to get your medicine if Mom is at work when you get up for school in the morning."

- Dr. Allen

THE TEAM



Elizabeth D. Allen
MD



Mary Kay Irwin
EdD



William Long
MD

Elizabeth D. Allen, MD, is the Physician Lead for SBAT and the NCH Keep Me Well Asthma Quality Improvement Initiative. She was recently named Nationwide Children's Medical Director for Quality, and is member of the Section of Pulmonary Medicine at Nationwide Children's Hospital. She served as the Pediatric Pulmonary Fellowship Director for over 10 years and continues to teach medical professionals about pulmonary diseases, with an emphasis on asthma.

Mary Kay Irwin, EdD, is the Director of School Health Services at Nationwide Children's Hospital. Dr. Irwin is responsible for leading and assuring the development, implementation, and evaluation of school health services delivered by the hospital. Dr. Irwin's research and expertise focuses on the intersection between health and education to eliminate health status as a barrier to learning for children and adolescents.

William Long, MD is an Associate Administrative Medical Director at NCH, and a primary care pediatrician in community practice. He has served as Chief Medical Officer and Chief Medical Informatics Officer of his practice and oversaw the development of a comprehensive primary care asthma program. He participated in the first asthma QI pilot study and led two subsequent asthma quality improvement projects for the Ohio Chapter of the American Academy of Pediatrics.



GOALS

It is not lost on Dr. Allen that medication adherence is a difficult problem that involves complex social determinants of health. “It’s hard to get your medicine if Mom is at work when you get up for school in the morning.” In the best-case scenario, children are getting both doses every single day. Given the obstacles students and parents may face after the school day ends, Dr. Allen is happy to know that students receive controller medication at least once a day, helping them understand the importance of establishing a routine to take their medication daily and increase engagement in their own care.

SBAT Goals

- Identify school-aged children with poorly controlled asthma enrolled in school districts participating in School Based Asthma Therapy Program.
- Coordinate communication between caregivers, school nurses, and providers and assist with implementation of controller administration at school to support compliance.
- Monitor impact on asthma control tests and asthma-related emergency department visit and hospitalization rates.
- Support routine clinical follow up and adjustment of medication if needed to improve outcomes.

METHODS

The following methods focus on recruitment, infrastructure, care coordination, and training and support of school staff.

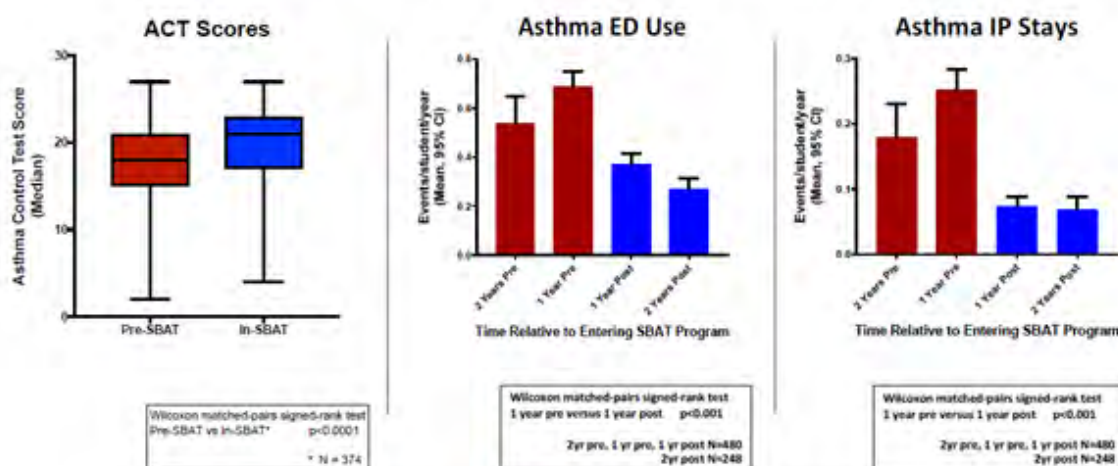
- Recruited Columbus City and Southwestern City school district nurses to participate in initial pilot project. Word-of-mouth and presentations to nursing and provider groups helped expand the program.
- Established enrollment criteria, methods for student referral, and printed program information. Phone, fax, and electronic communication systems, as well as a dedicated EPIC (electronic health record) program documentation were also implemented.
- Provided families with assistance in scheduling appointments with their asthma care providers (for some children, long gaps between appointments contribute to their poor control.)
- Coordinated provision of controller inhalers for school and home.
- Process improvement included obtaining state pharmacy approval for school deliveries and coordinating with insurers to approve two inhalers simultaneously.
- Provided school staff education, support for optimizing school processes, and adjustment of medications based on ACT scores occurred on an ongoing fashion.

RESULTS

The program has grown significantly and is considered a win in the fight to improve the quality of life for children with asthma:

- School nurse and provider acceptance of the program and willingness to participate spread rapidly -- over 25 school districts and 250 schools have participated.
- Individual student enrollment rose from 38 at the end of the 2014-15 school year to 737 at the end of the 2018-19 school year.
- Mid-program analysis of 374 students with paired pre-enrollment and post-enrollment Asthma Control Test scores showed significant improvement.
- Post-enrollment asthma-related emergency department stays and inpatient stays dropped significantly for students enrolled for at least 12 months; improvement was sustained during the following year.
- Ongoing efforts to enhance the program include improving communication efficiency and standardizing provider alerts when students are not doing well (low ACT, ED visits).

Impact of School Based Asthma Therapy Program on Clinical Outcomes





CHALLENGES AND NEXT STEPS

The greatest challenge for SBAT has been keeping up with program growth. Dr. Allen explains that parents rarely turn down the program and over half re-enroll their children from one school year to the next. Additionally, school nurses and providers continue to refer new students to the program. Growth has been possible through the support of Nationwide Children's Hospital and its associated Accountable Care Organization, Partners for Kids.

The lessons learned for this project include understanding the importance of developing a communication system between families, providers, schools, insurers, NCH pharmacy, and SBAT personnel and recognizing that a program that respects the time of the school nurse on the "front line" will be well-received.

Dr. Allen firmly believes that asthma QI raises the bar for all children with asthma. Her advice to any practices looking to get involved in quality improvement is to understand that:

"QI is not about identifying new solutions, but finding solutions already proven to work and using them as starting points."

-Dr. Allen



FINAL THOUGHTS

SBAT's next steps include expanding the program to include more schools in Franklin and contiguous counties, with long term goals of developing a model that can be used in communities of all sizes. To this end, with the leadership of Kimberly Arcoleo, PhD, SBAT has recently been awarded a four year NIH Dissemination and Implementation Research in Health Grant.

NATIONWIDE CHILDREN'S HOSPITAL COLUMBUS, OHIO



PARTNERS FOR KIDS

Team: Ronna Porterfield, BSRT; Cathy Kuhn, PharmD, BCACP, FAPhA; Charitha Gowda, MD; Elizabeth Allen, MD; Dominic Holliman-Wade

A SMALL TEST OF CHANGE

Partners For Kids (PFK) is an accountable care organization partnered with Nationwide Children's Hospital (NCH) to provide high-value health care to low-income patients residing in 34 counties in central and southeastern Ohio. PFK uses value-based payment and healthcare delivery models to serve as a connection between the state's five Medicaid Managed Care Plans and approximately 330,000 children that receive care under those plans. PFK has a beneficial advantage regarding the implementation of quality improvement projects due to PFK being a payer and part of a hospital network. They are specially situated to utilize electronic health records to identify trends and claims to help track and monitor inpatient, emergency room, and pharmacy utilization.

The PFK community asthma team is actively involved with the Asthma Core Team at Nationwide Children's Hospital, working closely with physicians, pharmacy, and the hospital Information Services department to determine best practices for all asthma patients. The primary focus of PFK's asthma QI program is to work with community providers to optimize asthma management in the primary care setting and disseminate best practices and other resources from asthma specialists to these providers. Their QI journey began in March 2017 when they encouraged providers in their vast network of over 70 practices to implement comprehensive asthma management plans.

**"Find all the little opportunities for improvement... and take them."
- Cathy Kuhn**

THE ASTHMA MANAGEMENT PLAN CONSISTS OF THREE PARTS, ENSURING THAT CHILDREN:

- Are given the Asthma Control Test (ACT) at all visits, and use the ACT score to direct care
- Update Asthma Action Plans at least once a year
- Have a follow-up visit every six months

THE TEAM



Ronna Porterfield
BSRT



Cathy Kuhn
PharmD, BCACP,
FAPhA

Ronna Porterfield, BSRT is a Quality Improvement Coordinator for PFK. Prior to her new position, she worked in Radiology at Nationwide Children's for 18 years. Ronna provides IHI (Institute for Healthcare Improvement) training to the practice providers, nurses, and office staff, helps them set up Key Driver Diagrams, provides control charts using either the practices' EMR data or PFK claims data, develops PSDA cycles, and sets up monthly meetings to review ongoing projects. She is the QI subject lead for PFK's community asthma QI program.

Cathy Kuhn, PharmD, BCACP, FAPhA, a former Pharmacy Coordinator for Population Health at Partners For Kids (PFK), was instrumental in helping develop the PFK community asthma program. She helped develop processes aimed at improving the quality and cost-effectiveness of medication-related care at both individual and population health levels. While she was at PFK, Dr. Kuhn was the operational leader for PFK's asthma QI program.

SUCSESSES AND BARRIERS

Porterfield and Kuhn credit their success in engaging community practices to their use of process measures such as AMR, ACT, and AAP rates. These measures help practices feel that they have more control over outcomes, but Porterfield and Kuhn learned that not all practices are ready to provide an ACT, AAP, and a follow-up visit for every patient with asthma. Porterfield explained that “Some practices don’t know about asthma control tests, which means some are trying to find a place to document this new questionnaire so it becomes part of the clinic process for patients with asthma. We had to accept that practices are at different points in their journey with asthma management, and that’s okay.”

Kuhn stressed the importance of regularly monitoring processes during the QI project. When asked for advice to other providers or networks regarding QI, she shared: “find all the little opportunities for improvement...and take them.” For example, they realized some practices needed medication management training, so PFK pharmacists provided that education.

Getting providers to buy in to implementing the asthma QI project in their practice has been the most challenging barrier. They currently have eight practices enrolled in their network of 70. They offer shared savings as a financial incentive, but Kuhn feels that it can be easier to convince providers by showing them data using a population health perspective. She explains:

"Comparing yourself to other similar practices and seeing where you fit in can be humbling. Using a population health perspective to say, 'this is what an [asthma medication ratio] is. This is where your practice is, and this is where it should be' paints a useful picture for providers."



PROGRAM GOALS

While the global aim for the QI program is to ensure that children receive optimal asthma care, the specific goals are to:

- Increase ACTs given at all visits and use the ACT score to direct asthma care.
- Decrease the number of emergency department (ED) and inpatient visits for asthma-related complaints.
- Increase the percentage of patients with more severe asthma (i.e. persistent asthma) who have an Asthma Medication Ratio (AMR) of ≥ 0.5 . (AMR = units of controller medications/units of total asthma medications). Some patients need to take controller medications daily to keep their asthma under control. Total asthma medications are the sum of all controllers and rescue medications (e.g. albuterol inhaler) the patient would use.

METHODS

Methods were as follows:

- PFK QI specialists provided on-site training to staff at participating practices using the IHI model of improvement and helped each practice's QI team develop a Key Driver Diagram (KDD). Other QI tools used in the development and implementation of projects were process flow maps, cause and effect diagrams, and control charts.
- PFK claims data is used to track the outcome measures of asthma-related ED and inpatient visits and the primary process measure of network-level AMR among patients with persistent asthma. The practice's EMR data is used to track ACTs and/or AAPs given at outpatient visits and the rates of follow-up asthma visits.
- Patients with poor disease control, defined as having an individual AMR <0.5 , were identified using PFK claims data, so practice staff could reach out to these patients and provide more individualized care.
- PFK pharmacists visited practices to provide education for medication dispensing and control based on asthma severity.
- The PFK team also engaged NCH specialists to provide educational meetings and trainings at individual practices and in group/collaborative settings.



AMR DETAILS

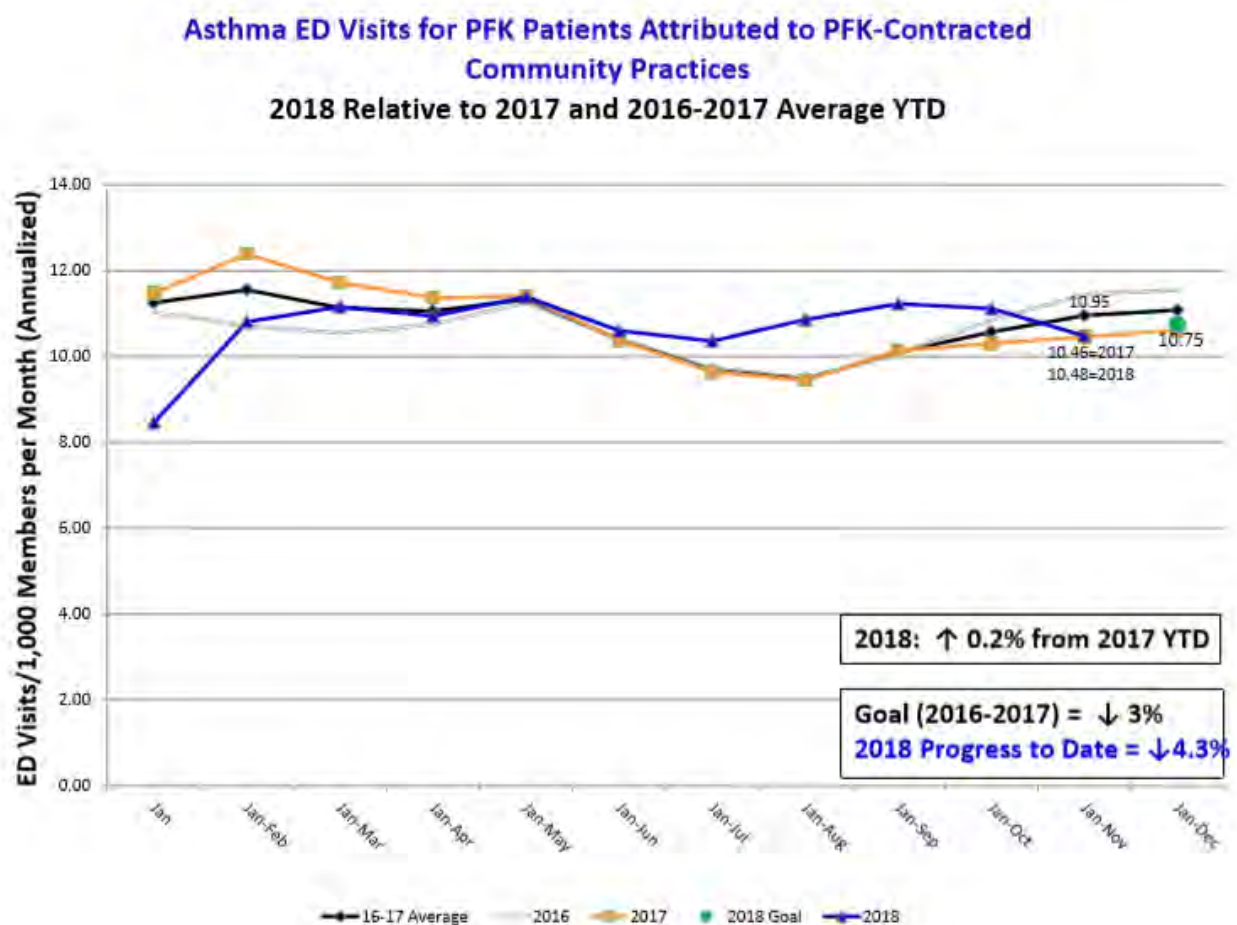
In this project, practices are prioritized for enrollment based on their interest and/or percentage of patients with a poor AMR. In the pediatric population, particularly in those with persistent asthma, several studies have shown the AMR to be a useful metric that correlates with asthma outcomes.

By adhering to this guideline, providers can ensure appropriate medication management for patients with asthma that could inevitably reduce the need for rescue medications as well as the costs associated with Emergency Department visits and inpatient admissions.

AMR is also an effective way to ensure the project is well-aligned with quality metrics used by payers as well. AMR is a HEDIS measure included in the comprehensive set of standardized performance measures designed to provide payers and consumers with the information they need for reliable comparison of health plan performance.

RESULTS

Through the QI program's efforts, ED and inpatient visits for asthma-related complaints among PFK patients decreased since 2017. However, the PFK patient network has not yet seen significant improvement in the percentage of patients with persistent asthma who have an AMR ≥ 0.5 . Despite not yet meeting this goal, educating providers and implementing a comprehensive asthma management plan has led to other positive outcomes, with increases in the number of ACTs and AAPs administered at each participating practice.



This graph shows ED visits for patients of PFK-contracted community practices.



FINAL THOUGHTS

Porterfield and Kuhn both stress the importance of meeting providers where they are with staffing, record-keeping procedures, and patient flow, while recognizing all programs will not look the same, as pivotal to their success.



A THANK YOU FROM ODHAP

On behalf of the Ohio Department of Health Asthma Program, we thank each program participant for their dedication to the health of Ohio's asthmatic children. It is our hope that hospitals looking to create asthma-related quality improvement initiatives may use these provided models as examples.

QUALITY IMPROVEMENT RESOURCES



- [Agency for Healthcare Research and Quality \(AHRQ\). Improving Asthma Care Quality](#)
- [American Academy of Family Physicians \(AAFP\)](#)
- [ASQ](#)
- [Health Resources & Services Administration \(HRSA\)](#)
- [Institute for Healthcare Improvement \(IHI\)](#)
- [Public Health Forum \(PHF\)](#)