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Outcomes of Asthma Quality Improvement in Pediatric Patients

Kathryn M. Murray MD, FAAP
University of Utah Department of Pediatrics, katie.murray@hsc.utah.edu

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Abstract

Introduction. The Utah Pediatric Partnership to Improve Healthcare Quality (UPIQ) and Utah Department of Health (UDOH) Asthma Program Learning Collaborative is a quality improvement initiative designed to standardize asthma care in pediatric patients and improve the overall assessment and patient education process for both healthcare providers and patients. The aim of the Asthma QI Project was to improve the diagnosis and management of asthma for patients in the state of Utah by implementing a standardized approach to the identification and treatment of patients with asthma.

Methods. Patients scheduled to see a healthcare provider at our pediatric clinic were screened for a history of asthma during chart review and assessed for whether the patient completed a standardized asthma control tool and whether they were provided with an asthma action plan. The initiative applied a quality improvement approach using Plan, Do, Study, Act (PDSA) cycles to implement a change plan and achieve desired project outcomes. Monthly asthma education webinars and QI coaching were provided to clinicians and support staff. Monthly reports showing rates of standardized asthma control tool administration and provision of asthma action plan were generated and utilized to discuss goal progress.

Results. A total of 236 patient visits from the years 2020-2022 were included in the analysis. Standardized asthma control test was administered and completed in 79% of patients in 2022, 70% in 2021, and 55% in 2020. Rates of asthma action plan being provided were 40% in 2022, 36% in 2021, and 32% in 2020.

Conclusion. The implementation of a standard process to follow for pediatric patients being treated for asthma allowed us to meet the desired goal of providing better comprehensive care, thus improving the quality of care.

Keywords

pediatric asthma, asthma control test, asthma action plan, quality improvement

Introduction

Asthma affects nearly 23 million people in the United States, with more than 25% under 18 years of age. Approximately 7% of children in Utah have asthma. The National Asthma Education and Prevention Program published comprehensive guidelines based on both evidence and expert consensus regarding diagnosing and managing asthma (NAEPP, 2007). Adherence to the NAEPP varies depending on provider awareness and practice capability to coordinate and communicate with families regarding multifactorial influences of asthma care, such as triggers. Furthermore, the Centers for Disease Control and Prevention recommends that everyone treated for asthma have an individual asthma action plan (CDC, 2022). For this reason, a short-term learning system was established to address variation in knowledge and care delivery for patients with asthma.

This paper describes a quality improvement (QI) initiative by the Utah Pediatric Partnership to Improve Healthcare Quality (UPIQ) and Utah Department of Health (UDOH) Asthma Program Learning Collaborative designed to improve quality process by increasing asthma control documentation, using a standardized tool, in medicated asthma patients and increasing current asthma action plans on file in all patients seen for a diagnosis of asthma.

Problem

There is a wide variation in care for pediatric patients with asthma in the state of Utah. Clinics and providers do not use a standardized approach or a standardized assessment tool to assess asthma control documentation during a patient visit. Furthermore, individual clinics and providers within a single clinic may use different asthma control tools, and patient education in the form of an asthma action plan is not always provided.

Purpose and Aim of Initiative

The purpose of the UPIQ and the UDOH Asthma Program initiative (API) is to improve diagnosis and management of asthma for patients in the state of Utah. The implementation of the API will standardize asthma assessment, asthma control documentation, and patient education material in the form of an asthma action plan to improve care management for pediatric asthma patients.

Methods

Context

The setting of the API is a pediatric clinic in a university-based health center.

Project Support

The effort was designed in partnership with core faculty advisors from the Pediatric Pulmonary and Allergy/Immunology Divisions of the Department of Pediatrics at the University of Utah. Other partners include the Emergency Medicine Department, Pediatric Specialty Services (for data related to asthma care delivery), Pharmacy (from Primary Children's Medical Center), and Utah Family Voices. The annual Learning Collaborative began in the fall and concluded in the spring of each year, spanning the months of December through May for 2020-2022.

QI Implementation Team

The QI implementation team for the API was comprised of QI specialists who met with the pediatric practice initially to form an asthma QI team. The team included nurses, medical assistants, and healthcare providers who were committed to the effort.

Baseline Analysis

Baseline data was obtained from chart reviews of 30 random charts of patients having a diagnosis of asthma or having asthma listed as an active problem and scheduled to see a pediatric provider for any clinical reason over a 6-month period at the pediatric clinic. The chart was assessed to identify if there was an asthma action plan (AAP) in the plan portion of the note, in the patient education materials, or scanned into the chart, as well as documentation of an asthma action plan given to patient during a clinical visit.

Methodology

The API used Quality Improvement Science (Kaplan et al., 2012), including Plan, Do, Study, Act (PDSA) cycles to implement a change plan and achieve desired project outcomes.

Implementation Plan

Asthma Control Tools

The standardized asthma control tools used were the Childhood Asthma Control Test (C-ACT) for children 4-11 years old and the Asthma Control Test (ACT) for children 12 years and older.

System Evaluation

QI specialists developed a process map of the practice site to identify workflow challenges pertaining to asthma care in determining severity, control status, medication management, and education, and the pre-implementation use of standardized control tools and asthma action plans.

Staff Education

The first step of the API implementation plan was to educate clinic staff and providers on the improved asthma education protocol and the clinic expectations for asthma assessment. Staff education was completed during lunchtime webinars. QI coaches reinforced the use of the new asthma education protocol. Coaching was provided onsite, by email, and by phone. Asthma Education highlights included:

- Update on asthma guidelines
- Medications & devices, what's new and how to use them
- Identifying triggers, especially in the home
- Environmental mitigation services
- Assessing and improving medication adherence
- Collaborating with specialists for children with hard-to-control asthma
- Leveraging public health resources for patients and families with asthma
- Role of pulmonary function testing, where/how to get it done
- How to educate families and patients to improve self-care
- Measuring & reporting quality of care

Integration of Asthma Tools into EMR

To support the improved process, we updated the electronic medical record (EMR) templates to document severity and reflect assessment for control of asthma.

Patient Assessment Protocol/Procedure

The pediatric clinic implemented a number of changes to improve the process of assessing asthma control, providing education, and documenting that both of these were completed.

To administer and document the asthma control test, each medical assistant (MA) reviewed the provider's schedule 1-2 days in advance. If a patient was identified as having asthma, the MA assigned the standardized asthma control test (C-ACT or ACT depending on age), sending the screening question flowsheet to the family via the online patient portal, MyChart, for the family to complete prior to the appointment. If the family did not complete the flowsheet prior to the visit, the form was pulled up on the computer for the family to complete during rooming. If a history of asthma was present, or diagnosis of asthma was made during the visit, then the provider would open the flowsheet and have the family complete. There were also paper forms of the C-ACT and ACT placed in each patient room. A dot-phrase was created in the EMR that allowed the flowsheet to easily be entered into the provider's note.

To improve patient education in the form of an AAP, dot-phrases were created in the EMR to enter the AAP into the After Visit Summary, which is available in the patient's MyChart and can be printed. Paper copies of AAP were scanned into the chart.

The improvement team used monthly team lead calls to present and discuss the previous month's chart review data to track progress towards meeting the desired project outcomes. The QI specialists continued to coach members of the team, including facilitating improvement processes by brainstorming and testing ideas of change each month. Changes to asthma processes/workflows were evaluated on a monthly basis.

Project Goal

The desired outcomes of the initiative were two-fold: 1) increased use of the Childhood Asthma Control Test (C-ACT) for children 4- to 11-years-old and the Asthma Control Test (ACT) for children 12 years and older as well as increased documentation of this use in the EMR, and 2) increased provision of an individual asthma action plan (AAP) that includes patient education materials as well as increased presence of the AAP in the EMR.

Ethical Considerations

All patient data was de-identified. The project did not receive any financial support or sponsorship, and there were no identified conflicts of interest.

Results

Patients younger than three years old and those who have seen a pulmonologist were removed from the analysis, leaving 236 visits in the years 2020-2022. The rate of ACT or C-ACT administration and the percentage of patients who received an AAP during these years are shown below.

2020 Data

In 2020, the baseline rate of ACT or C-ACT administration was 44%. January, February, and March were 56%, April was 60%, and May was 75% (**Figure 1**). The percentage of patients receiving AAP

in 2020 was 67% at baseline, 44% in January, 0% in February, 44% in March, 20% in April, and 63% in May (**Figure 2**).

Figure 1

Percentage of Asthma Control Assessed with ACT in 2020

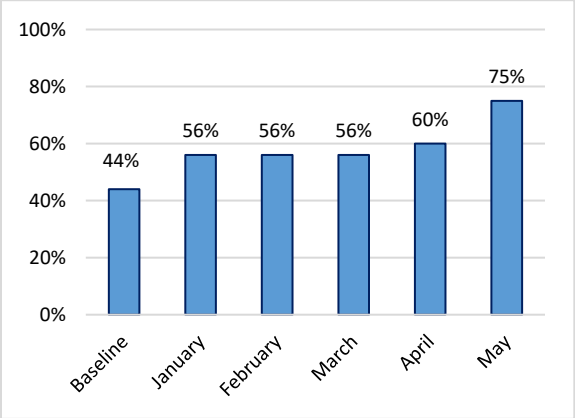
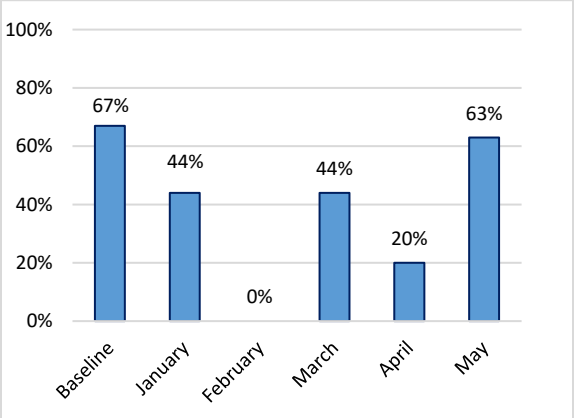


Figure 2

Percentage of Patients who Received an Asthma Action Plan in 2020



2021 Data

In 2021 the baseline rate of ACT administration was 70%. December was 75%, January was 57%, February and March were 75%, April was 67%, and May was 55% (**Figure 3**). The percentage receiving AAP in 2021 was 40% at baseline, 50% in December, 43% in January, 50% in February, 0% in March, 33% in April, and 45% in May (**Figure 4**).

Figure 3

Percentage of Asthma Control Assessed with ACT in 2021

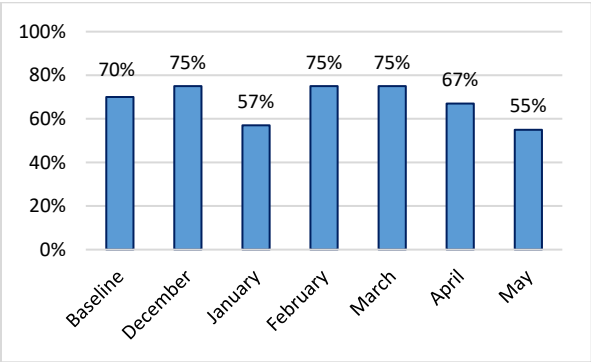
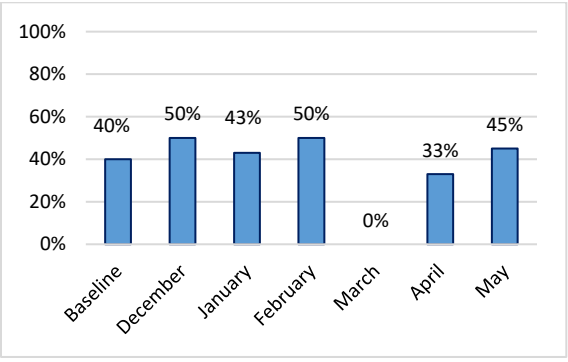


Figure 4

Percentage of Patients who Received an Asthma Action Plan in 2021



2022 Data

In 2022 the baseline rate of ACT administration was 88%. December was 89%, January was 86%, February was 50%, March was 100%, April was 80%, and May was 77% (**Figure 5**). The percentage receiving AAP in 2022 was 100% at baseline, 44% in December, 43% in January, 25% in February, 83% in March, 30% in April, and 38% in May (**Figure 6**).

Figure 5

Percentage of Asthma Control Assessed with ACT in 2022

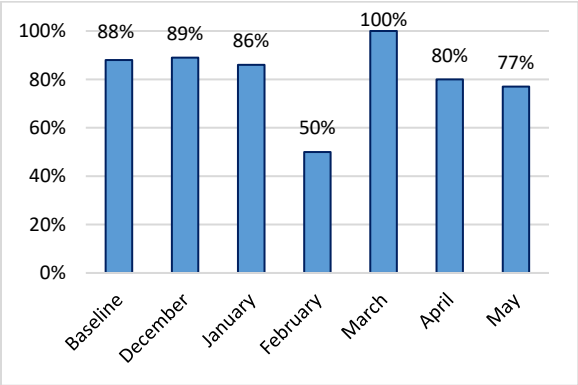
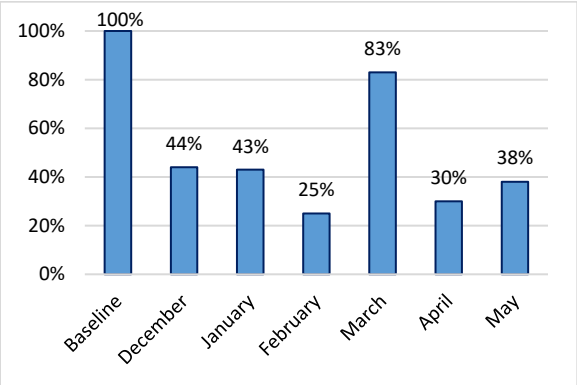


Figure 6

Percentage of Patients who Received an Asthma Action Plan in 2022



Comparison of Annual Data

The total yearly rates of ACT administration and provision of updated AAP are shown in **Figure 7** and **Figure 8**, respectively. In 2022, 79% of patients had their asthma control assessed with the ACT, compared to 70% in 2021 and 55% in 2020. In 2022, 40% of patients with asthma received an updated AAP, compared to 36% in 2021 and 32% in 2020.

Figure 7

Annual Percentage of Asthma Control Assessed with ACT

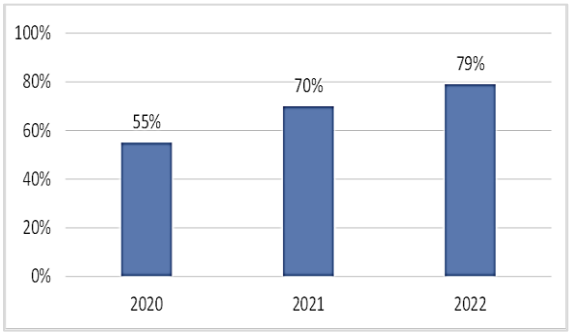
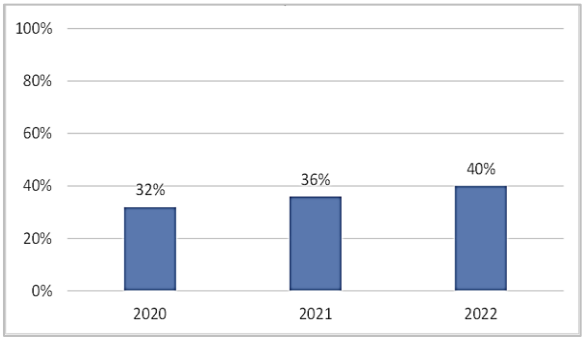


Figure 8

Annual Percentage of Patients who Received an Asthma Action Plan



Discussion

Asthma Control

The project overall achieved higher rates of standardized asthma control assessment, as well as increased rates of providing patients with asthma action plans. With the regular monthly meetings and educational webinars, the goal was to see higher rates each month than the prior month and likewise, for each year to have higher rates than the previous year. The overall trend by year followed this for both ACT and AAP. There was some variation month to month, with lower numbers of AAP education in some months. This was likely because it was not documented by the provider in the EMR, rather than it not being discussed during the visit.

Another common factor for the month-to-month variance was cases where a new patient had a history of asthma in their records and their active problem list, but the patient was not currently having active asthma and/or using asthma medications, so the medical staff did not perform the ACT nor provide the AAP. Ideally the medical record would be updated to differentiate between patients having a history of medical issues compared to those with active medical issues.

Monthly Meetings

Each monthly meeting provided a great opportunity to reinforce the regular use of the ACT and AAP to the medical team. We were able to brainstorm ways to help the clinic workflow incorporate project elements to achieve desired outcomes. Together, the QI team identified a feasible, effective workflow that entailed MA review of the provider's upcoming schedule in order to identify patients with active asthma and having those patients complete the ACT prior to meeting with the provider, as well as creating dot-phrases in the EMR so that the ACT and the AAP could easily be entered into the patient's record. For the majority of asthma visits during the project, the ACT and AAP were completed, and current ongoing clinic protocol for patients with asthma has been more consistent in including the ACT and AAP.

Sustainability

Continued efforts to improve standardized care for asthma patients are ongoing. New staff are trained in the new clinic workflow steps, and occasionally existing staff and providers need reminders to continue implementing the workflow. Despite low clinic numbers and low asthma exacerbations during the COVID-19 pandemic and despite staff and provider changeover, the goal of improved ACT and AAP rates was achieved over the three year time period that the clinic has been involved in the API.

Next Steps

Further clinic organization and preparation during huddles at the beginning of shifts to remind staff to provide ACT questionnaires for any child with asthma will increase rates further. Additionally, rates will increase by reinforcing with providers the need to document provision of the AAP to the patient. Continued clinic participation in the yearly UPIQ Asthma Learning Collaborative will continue to educate staff and providers in improving quality of care for patients with asthma.

Our clinic workflow steps were shared with the other clinics involved in the API and certain aspects were implemented to improve their workflow.

Conclusions

The learning collaborative helped streamline visits for patients with asthma and improve quality of care by standardizing screening for asthma control and providing patient education resources. Each year, the clinic improved rates of both asthma control assessment with the ACT and provision of asthma action plan education.

Acknowledgements

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