Individual QI projects from single institutions

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Implementation of the Asthma Control Test in a Large Primary Care Network

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Abstract

Introduction: Achieving control in asthma is a primary goal of pediatric care, and assessing the degree of control is a principal step in management. The purpose of this quality improvement project was to implement the Asthma Control Test (ACT) and the Childhood Asthma Control Test (C-ACT) in a large primary care network as a means to reliably and consistently assess asthma control at all visit types. **Methods:** A prospective design was used to measure provider documentation of the ACT or C-ACT. Patients (or caregivers) 4 years of age or older with a known diagnosis of asthma were administered the ACT (ages 12 and older) or the C-ACT (ages, 4–11). The quality improvement project, which involved multiple interventions, took place at 11 centers of the Primary Care Network of Nationwide Children's Hospital from November 2013 to December 2014. A goal was set for a 70% completion rate of the ACT/C-ACT at any visit type for patients 4 years of age or older with asthma. **Results:** Six months after the introduction of the questionnaires, the 70% completion rate was reached. Rates of ACT/C-ACT completion have consistently exceeded 70% through December 2016. **Conclusions:** We demonstrated that the ACT/C-ACT can be integrated into a busy primary care network. It is imperative to work toward better asthma care; consistent assessment of asthma control can be the critical first step. *(Pediatr Qual Saf 2017;2:e038; doi: 10.1097/pq9.0000000000000038; Published online August 21, 2017.)*

INTRODUCTION

Asthma affects approximately 8.6% of children in the United States, according to the Centers for Disease Control. During the years 2006–2010, 38.4% of children with the disease were poorly controlled; moreover, lack of asthma control has been associated with increased use of the health care system and decreased quality of life.[1,2] Asthma control is the extent to which the manifestations of the condition are observed or have been improved by treatment.[3] Good control reflects the minimization of the intensity and frequency of symptoms, as well as the overall reduction of functional limitations.[2] Achieving control is a primary goal of asthma care, as it reflects the overall management of underlying airway inflammation, a key driver in the disease process. A principal and critical step in management, therefore, is the assessment of control.[4]

As a first step in improving asthma care for our patients, we focused on asthma control by assessing asthma at any visit type. Previously, asthma was not routinely addressed unless it was the reason for the visit or if the patient had acute symptoms such as wheeze or severe cough. There are several tools to evaluate asthma control in the clinical setting. The Asthma Control Test (ACT) and the Childhood Asthma Control Test (C-ACT) are validated tools to identify patients with poorly controlled asthma, and the ACT has been shown to reliably reflect asthma control over time.[5,6] The ACT is designed for patients 12 years or older, whereas the C-ACT is appropriate for children aged 4–11 years. A score less than 20 on either tool indicates poorly controlled asthma with a sensitivity of 71% and specificity of 71% (ACT) or a sensitivity of 68% and specificity of 74% (C-ACT), as compared with forced expiratory volume in 1 second (FEV1) on spirometry, "the gold standard."[5] These tools were chosen over other asthma screening tools for use in our hospital-wide asthma quality improvement (QI) work because they are reliable, valid, easy to administer, and do not require FEV1 values.[6]

Before this project, there was no routine use of standardized and validated tools to assess asthma control

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across our network. Earlier Nationwide Children's Hospital (NCH) efforts focused on the use of asthma action plans and primary care network (PCN)–specific efforts concentrated on the use of a standardized asthma note. With an emphasis on prevention in primary care, the PCN chose to further asthma quality efforts by concentrating on assessment of asthma control. The objective of this QI project was to improve the frequency and consistency of asthma control assessment during patient visits (regardless of visit reason) by increasing completion and documentation of the ACT/C-ACT forms in a large PCN. Specifically, we sought to increase asthma assessment during well child visits, asthma-related visits, sick visits, and follow-up visits for other reasons.

METHODS

This project was exempt by the Institutional Review Board of NCH because it was not deemed human subjects research. We obtained written permission to use the copyrighted instruments from GlaskoSmithKline before incorporating them into our clinical care routine.

The project took place at 11 centers of the NCH PCN from November 2013 to December 2014. There was no baseline data collected before this time period. The PCN has pediatric clinics throughout the greater Columbus, Ohio area, all of which serve a largely urban population, approximately 86% of which are Medicaid-insured. Patients who met the NCH definition of asthma were between the ages of 2–18 years, seen in the PCN within the last 13 months and had an encounter diagnosis of asthma anywhere in the NCH system within the last 24 months. The NCH definition was the same as the PCN network definition. PCN asthma patients are seen both in "regular" clinics and, for those with more challenging disease, in primary care–based asthma specialty sessions. These weekly half-day specialty sessions are run by primary care providers at 9 of our centers and involve extended-length appointments for comprehensive asthma care and education. Both our regular clinic sessions and primary care–based asthma specialty sessions were included and analyzed separately in our ACT/C-ACT intervention. All the PCN providers (90 physicians and 8 nurse practitioners) were involved in this project. The criteria we set for patients who should receive the ACT/C-ACT form were aged 4–18 years and meeting one of the following: a diagnosis of asthma on the electronic medical record (EMR) problem list or a current asthma medication on the patient's record. To assist with identifying which children should have the form completed, an EMR alert was activated at each visit if the patient met the above criteria. We deliberately used a broadened definition of "asthma," distinct from our operational definition described above. This more inclusive patient target (which pulled in children without a formal asthma diagnosis, but who were using albuterol or other asthma medications such as inhaled corticosteroids, long-acting beta agonists, or montelukast) was developed to avoid omitting children who had not been formally diagnosed with asthma, but who needed to have this issue addressed during their clinic visits. Patients less than 4 years were excluded from the alert due to the specified validated age range for the assessment tool. We aimed to assess control at all visit types (well child visits, sick visits for reasons other than asthma, and asthma visits) to maximize our efforts to identify patients with poorly controlled asthma. Age-appropriate ACT/C-ACT paper forms were provided to our patients in English or Spanish by nursing staff (nurses or medical assistants) when rooming the patient. Families speaking other languages completed them with the help of an in-clinic interpreter.

Documentation

Nursing staff were required to document in the EMR one of the following with respect to the ACT/C-ACT: "given," "not given," or "postponed." If "postponed" was chosen, the alert would again activate every time a nursing staff member opened the patient's chart during that visit. Scores were documented in the EMR by the provider either by (1) using a standardized asthma note that included a smartphrase in which the ACT/C-ACT score was entered or (2) by an EMR smartphrase for just the ACT/C-ACT score alone without further documentation of asthma status of the patient. The EMR used at our institution is Epic, which allowed us to query charts for the presence of ACT/C-ACT documentation and scores, based on the use of a smartphrase.

QI Processes

A goal was set for a 70% provider documentation rate of the ACT/C-ACT at any visit type for patients 4 years of age or older meeting criteria for the nursing staff alert by December 2014. The goal of the ACT/C-ACT documentation was set at 70%, rather than a higher percentage, to acknowledge that other pressing issues may take precedence during a clinic visit, or families may experience form fatigue from other forms or multiple asthma visits leading to an inability to complete the survey. Also, the patients targeted by our alert system did not all have a diagnosis of asthma (e.g., a patient with albuterol in their medication list may have used it for a single episode of bronchiolitis). We encouraged providers to update these charts (for this example, discontinue albuterol) as part of the visit and then these charts were no longer counted in our denominator.

Our clinic processes were revised using a series of QI Plan-Do-Study-Act interventions using the Institute for Healthcare Improvement Model for Improvement.[7] Multiple steps were taken to improve clinic compliance with ACT/C-ACT documentation. Because multiple centers conducted these interventions at various times during the project, they cannot be evaluated separately during a specific time frame. The interventions included:

Communication

- A network-wide kick off meeting for all staff occurred at the beginning of the project to emphasize the importance of asthma care.
- Review of hospital-wide and department-specific asthma initiatives, including the ACT/C-ACT, were formally presented to physicians at 3 ambulatory department meetings in 2014.
- Small group interactive meetings, led by the asthma champions, included providers and nursing and registration staff and occurred quarterly at each primary care center.
  - Specific ACT/C-ACT information reviewed included the following:
    - Identifying patients and families who should be given the forms
    - Responding to alerts in the EMR
    - Incorporating administration of the ACT/C-ACT into the clinic workflow
    - Standardized documentation of the ACT/C-ACT in the EMR.
  - Issues and barriers to asthma care and our processes were reviewed and potential solutions were discussed by each team.
  - Physician and nursing staff education and clinic-specific updates were given at these meetings.

Leadership Development in the PCN

- Three asthma champions were designated and provided full-time equivalent (FTE) support (S.H., J.G., D.S. with a total 0.6 FTE).
- The asthma champions met weekly to review data.

Feedback to Clinics and Providers

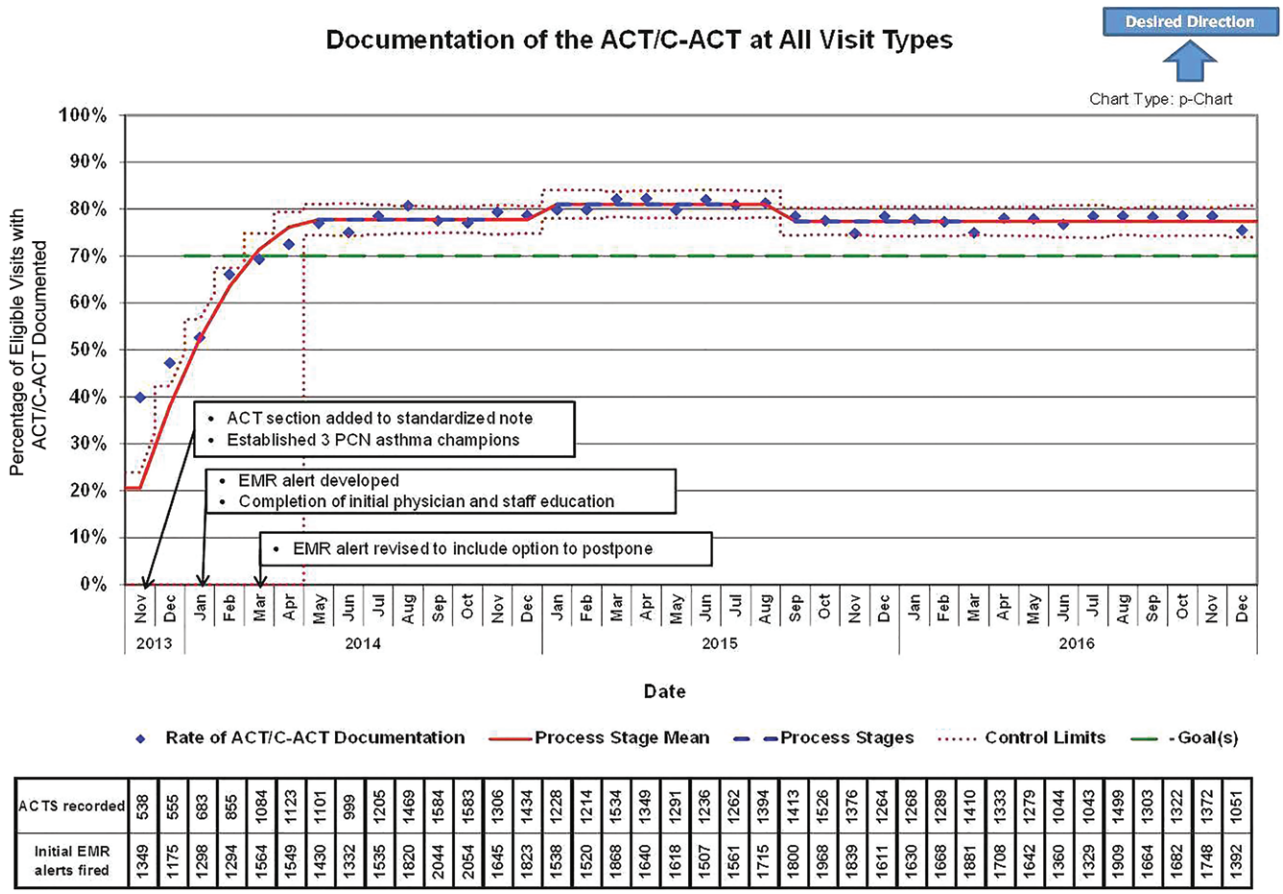
- Performance data were given to individual providers.
- Feedback on clinic performance was given quarterly to team members during meetings and via e-mail.

EMR Support

- EMR alerts were developed to aid in reminding nursing staff to distribute ACT/C-ACT forms.
  - Alert 1: For eligible patients, reminded staff to give them an ACT/C-ACT form when initially reviewing the chart.
  - Alert 2: Allowed staff to defer the first alert so it may later alert them again when they are with the patient.

Incentives

- Quarterly performance monetary incentives ($50) were given to the nonphysician staff if their clinic reached project goals.



ACTS recorded	538	555	683	855	1084	1123	1101	999	1205	1469	1584	1583	1306	1434	1228	1214	1534	1349	1291	1236	1262	1394	1413	1526	1376	1264	1268	1289	1410	1333	1279	1044	1043	1499	1303	1322	1372	1051
Initial EMR alerts fired	1349	1175	1298	1294	1564	1549	1430	1332	1535	1820	2044	2054	1645	1823	1538	1520	1868	1640	1618	1507	1561	1715	1800	1968	1839	1611	1630	1668	1881	1708	1642	1360	1329	1909	1664	1682	1748	1392

Fig. 1. Documentation of the ACT/C-ACT at all visit types. Number of ACTs/C-ACTs documented at any visit type represented as a percentage of eligible visits over time. Percentages during project duration and goal lines are represented along with control limits.

QI Data Methodology

Statistical process control methodologies were used to analyze the collected data. For this analysis, p-charts, which assume binomial data distribution, were developed to track the documentation of ACT/C-ACT at Asthma Specialty Visits, Well Child Visits, and PCN visits overall. A shift was defined as 6 consecutive data points above or below the baseline while a trend was defined as 6 consecutive points in a row, all increasing or all decreasing without a change in direction.

RESULTS

The PCN managed 74,224 unique patients in 2014 with 172,457 total visits. Of those, 8,533 patients met our network's operational definition of a current asthma patient in 2014. Data collection on completion of the ACT/C-ACT began in November 2013. Six months after introduction of the aim and subsequent interventions, our goal of 70% ACT/C-ACT documentation rate was reached for all visit types. This rate has consistently exceeded 70% through 2016 (Fig. 1). This is also the case for ACT/C-ACTs documented at asthma specialty visits (Fig. 2) and well child visits (Fig. 3). Key interventions that occurred during this time period are delineated on the chart and include establishment of 3 PCN asthma champions, incorporation of the ACT/C-ACT into the asthma note, completion of initial staff and physician education, and alerts in the EMR. There were improvements in ACT/C-ACT documentation rates with each major intervention. During the project time period, there were 15,519 ACT/C-ACT scores documented with a mean score of 20 and a median score of 21. All interventions were sustained through 2016.

DISCUSSION

We were able to successfully integrate administration and results documentation of the ACT and C-ACT in a large PCN. We demonstrated that assessment of asthma control can be a regular process in a busy practice with multiple practitioners, even when asthma may not be the primary reason for the visit. It is important to note that this practice change was implemented by over 90 providers and sustained for 2 years after project completion. Our major barrier was the large size of our network and disseminating information to all physicians and staff, as well as staff turnover at the various primary care centers. Other challenges included the integration of a paper screening tool into the flow of an EMR clinic. We overcame these barriers with several interventions and cooperation across disciplines, including utilization of

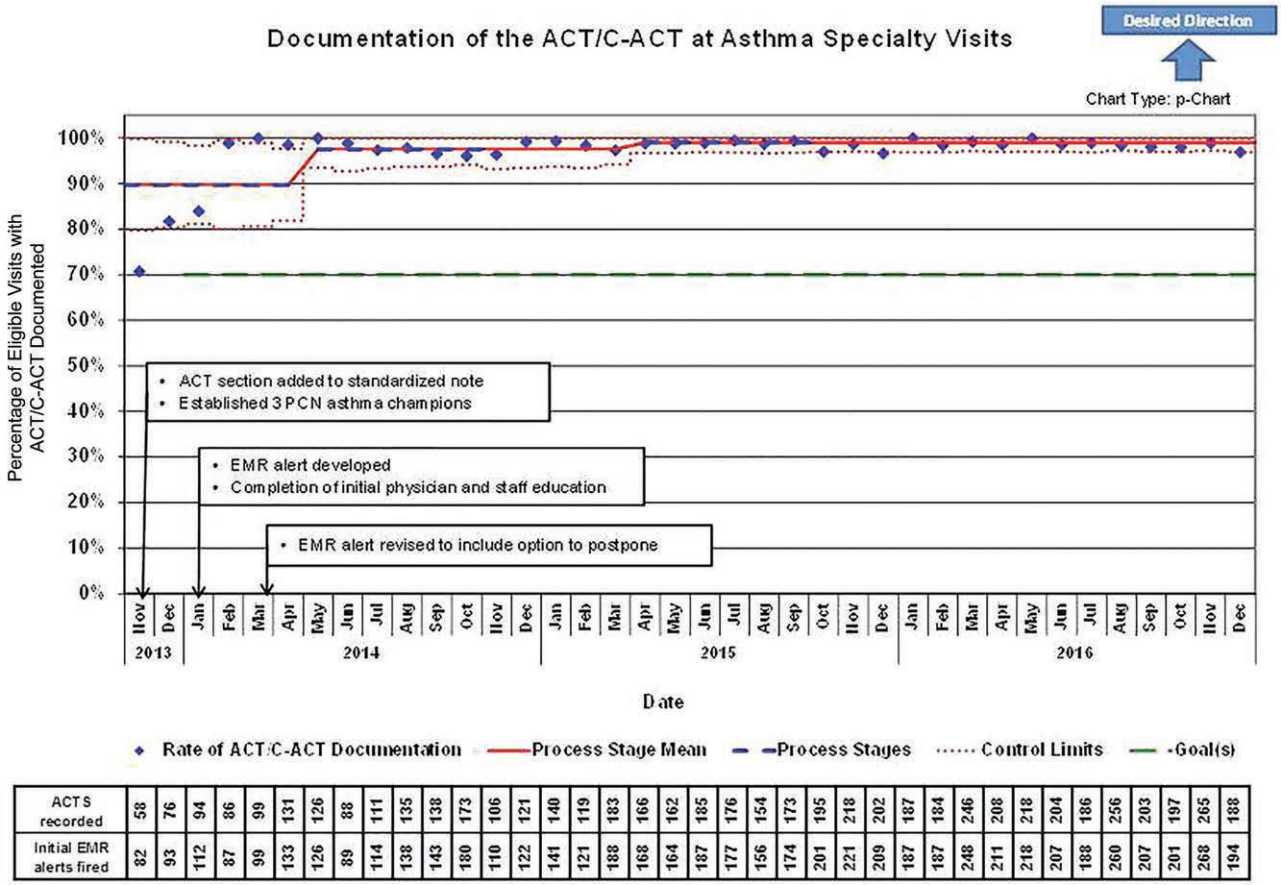
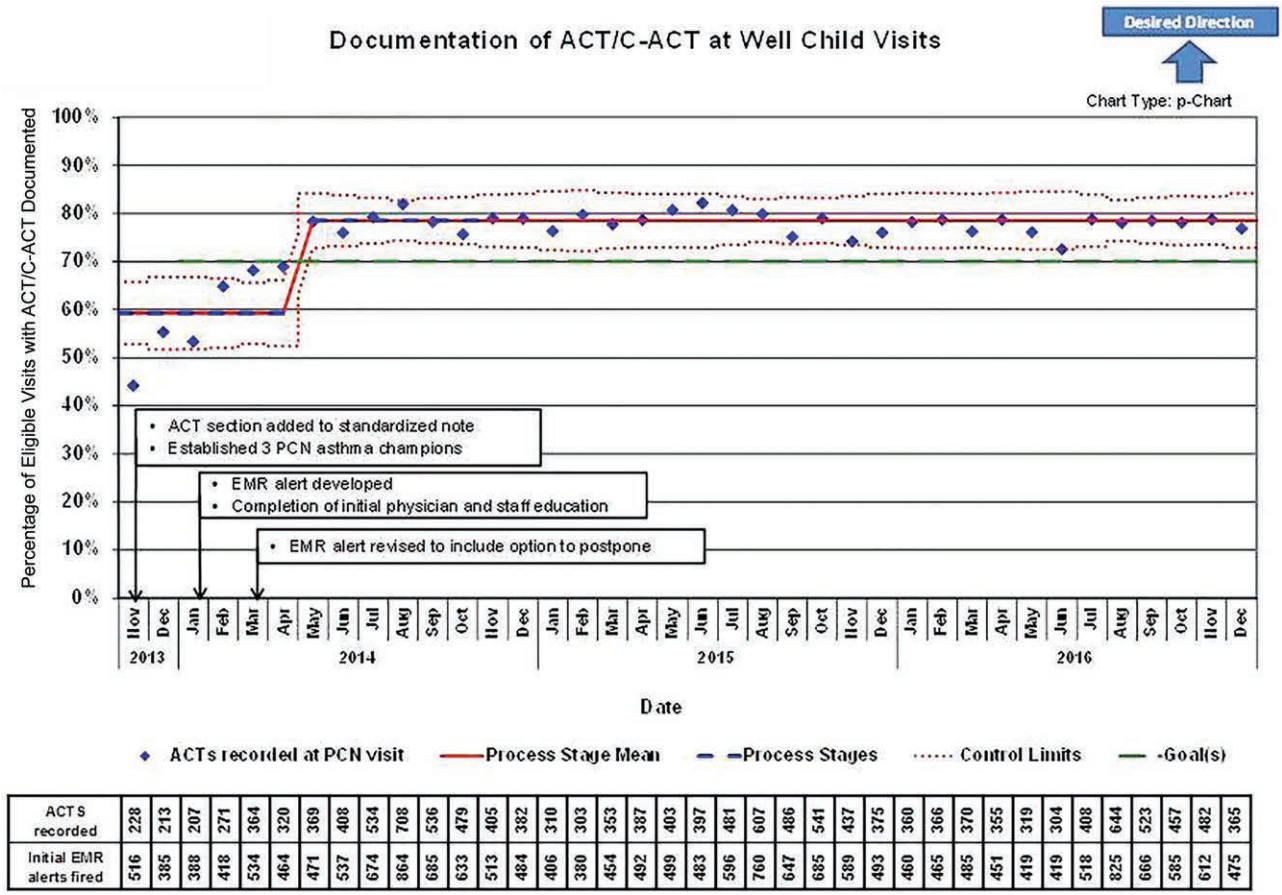


Fig. 2. Documentation of the ACT/C-ACT at asthma specialty visits. Number of ACTs/C-ACTs documented at asthma specialty visits represented as a percentage of eligible visits over time. Percentages during project duration and goal lines are represented along with control limits.



ACTS recorded	228	213	207	271	364	320	369	408	534	708	536	479	405	382	310	303	353	387	403	397	481	607	486	541	437	375	360	366	370	355	319	304	408	644	523	457	482	365
Initial EMR alerts fired	516	385	388	418	534	464	471	537	674	864	685	633	513	484	406	380	454	492	499	483	596	760	647	685	589	493	460	465	485	451	419	419	518	825	666	585	612	475

Fig. 3. Documentation of the ACT/C-ACT at well child visits. Number of ACTs/C-ACTs documented at well child visits represented as a percentage of eligible visits over time. Percentages during project duration and goal lines are represented along with control limits.

EMR alerts, standardized documentation of an asthma-related encounter, physician and staff education, regular clinical team meetings to review processes, and staff incentives. Future plans to sustain current interventions will include all the processes described here, except the clinic staff incentive. Next steps include tracking the management of those patients found poorly controlled and more specifically, monitoring the step up in medical therapy for these patients.

LIMITATIONS

A limitation of our work is that it had multiple overlapping interventions at a given point in time across the network and was not designed to look at the impact of an individual intervention. Our institutional support (FTE for asthma champions and incentives) and EMR capabilities (ability to use alerts and smartphrases) may not be applicable to other practices. This project did not include balancing measures. This work focused on a process measure, but did not measure outcomes.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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