

Increasing Provision Rate of Asthma Action Plans in Primary Care: A Quality Improvement Project

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ABSTRACT

Asthma is a major health concern in the United States affecting 25 million people. Improved outcomes for patients with asthma have been demonstrated through the use of written asthma action plans (AAP). Health People 2020 has a goal for 37% of all persons with asthma to receive a written plan of care. Data gathered before initiation of this project indicated only 19% of patients with asthma had a written asthma action plan at this large outpatient group practice. The survey indicated that lack of time was a major barrier to initiating AAPs.

Goal statement: *Would an education program provided to healthcare providers of various disciplines on a team-based care workflow process change, versus current practice, increase the number of asthma action plans developed for patients?*

Utilizing the Chronic Care Model and recommendations from the National Asthma Education and Prevention Program as guides for this project, an education module was developed and presented to all members of healthcare teams in 7 primary care practices. One month after the education program was conducted and the process change implemented, retrospective chart audits (n=704) were performed on patients seen during that time frame with a diagnosis of asthma. All 7 teams showed an increase in the percentage rate of AAPs generated. Three teams showed statistically significant increases in provision rates of AAPs. The provision rate of AAPs for the organization at large showed a statistically significant increase (30%, $p=.0005$) compared to preintervention rates (19.9%). Benefits to patients were receipt of a written AAP.

Keywords

Asthma, Asthma action plan, Team-based care.

Introduction

Currently in the United States (U.S.) more than 25 million people have asthma. Prevalence has increased from 7.3% in 2001 to 8.4% in 2010. In the U.S., the mortality rate from asthma is 1.1 per 100,000 populations. Asthma is the sixth ranking chronic health problem in the U.S [1]. The burden of asthma affects individuals and their families, schools, and workplaces. Society is affected in the form of higher insurance rates, lost worker productivity, and tax dollars expense. Annual health care expenditures for asthma in 2008 were estimated at 20.7 billion dollars with 14.2 million outpatient office visits, 1.3 million emergency department visits,

10.5 million missed days of school and 14.2 million missed days of work, leading to a combined estimated value of 2.27 billion dollars in lost productivity per year [2].

Recommendations from the National Asthma Education and Prevention Program [3] and Healthy People 2020 [4] are that persons with asthma receive a written asthma action plan (AAP). The provision rate of these plans by healthcare providers remains below the goal of 37%. Optimal treatment and self-care management of asthma can reduce morbidity, mortality, and health care costs while enhancing quality of life. A written AAP can reduce hospitalizations, urgent care visits, emergency department visits, work absences, and nocturnal asthma in adults [5,6]. Written AAPs can also increase caregivers' understanding of the

disease and use of medications [7], improve physicians prescribing of controller medications, and improve patients' self-management and adherence to a plan of care [8].

Evidence Review

A review of the literature was conducted utilizing the following databases: PubMed, Cochrane Database of Systematic Reviews, Agency for Healthcare Research and Quality (AHRQ), National Guidelines Clearinghouse and CINAHL, with the keywords of asthma, asthma action plans, asthma guidelines, evidence based guidelines, and team-based care, to identify full text, English language, research articles. Exclusion criteria included: research protocols and articles that included co-morbidities other than asthma. Five significant studies were identified.

A randomized control trial was conducted in a pediatric emergency room to evaluate adherence to prescribed medications, comparing children with and without a written AAP. All participants received fluticasone and albuterol inhalers fitted with dose counters. Findings included increased adherence to prescribed medication, increased physician prescription of maintenance medication, and improved asthma control in those subjects who received a written AAP [8].

Barriers to physician adherence to the national asthma guidelines were associated with specific barriers for each of the following guideline components: not recommending peak flow meter use due to lack of self-efficacy, not prescribing inhaled corticosteroids (ICS) which was defined as lack of agreement with recommendation, and screening and counseling of patients and parents for smoking which was defined as lack of self-efficacy of providing recommendation. Adherence was defined as following a guideline component more than 90% of the time. Recommendations from this study were the need for tailored interventions which address the barriers characteristic of a given guideline component [9].

A team-based approach for the delivery of care to patients with asthma in a primary care setting was evaluated utilizing the engagement of registered nurses, physicians, and an electronic clinical reminder system to aide in the provision of AAPs. Over the three years of the study, the cumulative percentage rate of AAPs provided to patients increased significantly ($p = .008$) The conclusion from this study was that practices with low AAP completion rates may find a team-based approach helpful in increasing the number of written AAPs provided to patients [10]

The effect of a team-based approach to care, using continuous quality improvement and community health workers, on asthma-related health outcomes in school-aged children was evaluated. Major improvements in asthma-related care processes and clinical outcomes were demonstrated when a team-based approach to provision of care to patients with asthma was utilized ($R2 > 0.06$) [11].

Finally, a study was conducted where children with asthma were assigned to either an intervention clinic which provided care based

on the Chronic Care Model principles using team-based care, or, to a control clinic which did not practice team-based care. Findings included that the overall process of asthma care improved significantly in the intervention group ($p < .0001$) with patients more likely to have written AAPs, better general health-related quality of life, and better asthma-specific quality of life than those in the control group [12].

Theoretical framework

The Chronic Care Model was selected as the guide for this evidenced-based practice project. This model focuses on six essential elements of a quality health care system: the community, the health care system, self-management support for patients, delivery system design, decision support, and clinical information processes. This model can be applied to numerous chronic disease states, health care setting, and target populations including patients with asthma. Using the Chronic Care Model as a guide, patient care can be pro-active focusing on keeping patients healthy versus reactive, responding to patients only when they are ill. This model of care has demonstrated improved outcomes for persons with asthma [13].

Method

This project was conducted using a quantitative, one group pretest/posttest design. The pretest was the current percentage rate of AAPs written for patients by healthcare providers in the family practice sites of a large multi-specialty group practice in central Illinois. The posttest measure was the percentage of AAPs written for patients in the same setting in the four weeks following an education program and introduction of a system procedure change. Research participants were recruited from seven large primary care practices. The participants were current members of healthcare teams. The team members could include nursing personnel, nurse practitioners, physician assistants, physicians, and clerical staff. Participation was voluntary with participants recruited through presentations at staff meetings as well as individual email invitation. Informed consent was obtained. The project was implemented in August, 2015.

The education program was a one hour power point presentation on the principles of team-based care. Small team building activities were included in the presentation. Introduction of a new AAP form, which consisted of a 2 page carbon copy paper document, was reviewed during the session. This new form allowed for immediate provision of the AAP to the patient, while retaining a copy to be included in the patient health record. The education sessions were held three times daily (before shift, at lunch, and after shift) on various days of the week. If a team member was unable to attend the meeting in person, a recorded version was available for review. All team members received a copy of the slide presentation.

The initiation of AAPs by nursing staff was the proposed procedure change. Prior to the project, AAPs were only initiated by physicians, nurse practitioners, or physician assistants. After the education program, registered nurses were empowered to initiate the AAP with information obtained within the nursing scope of practice. The

AAP was then given to the physician/nurse practitioner/physician assistant to complete the remainder of the plan of care. Weekly email reminders were sent to all study participants. In addition, there were visual reminders of the workflow process change in the form of information posters at the nurses' station, in the dictation room, and in the break rooms. There were also reminder stickers placed on each computer tablet utilized by the direct patient care staff.

The clerical staff developed a systematic method of collecting the completed AAPs to ensure timely scanning into the electronic medical record. Thrice daily rounding of all providers outgoing paperwork boxes was initiated. In addition, the nursing staff performed end of shift review of the daily schedules to determine if a patient with asthma had received a written plan of care and if it was documented in the record. A checklist of this review was recorded and kept by the charge nurse.

One month after the initiation of the practice change and education programs, retrospective chart audits were conducted on all patients seen with a diagnosis of asthma (n = 704) to determine if an AAP was generated for the patient. The quality improvement department was able to generate electronic reports of patients seen based on diagnosis, as well as identification if these same patients had a completed AAP recorded in the electronic health record. The Health Information Department assisted in standardization of the nomenclature for recording of the AAPs in the electronic health record to assist in ease of data collection.

Results

The provision rate of AAPs was calculated for patients (n=704) seen in seven family practice sites, who had a diagnosis of asthma, one month following the staff participation in an education program on team-based principles of care and a workflow process change. Pretest scores were the presence of current AAPs at time of appointment (n=140/704, 19.9%). Posttest scores were the presence of current AAPs at completion of appointment (n=211/704, 30%). The combined results for all seven teams demonstrated a significant improvement in the provision rate of AAPs after the intervention (30%, p =.0005) compared to pretest provision rate of AAPs (19.9%). All 7 teams showed an increase in the percentage rate of AAPs generated (Figure 1), which is clinically important. Three of the seven teams showed statistically significant increases in provision rates of AAPs; teams one, four and seven (p = .0005; p = .0005; and p = .0005 respectively). The changes in provision rate of AAPs was not statistically significant for teams two, three, five and six (p = .500; p = .125; p = .125; and p = .125 respectively). Table 1 presents the individual team and combined practice results.

Discussion This project generated outcomes which support the value of educating healthcare providers on the principles of team-based care and a workflow process change to improve provision rates of AAPs. A post-intervention increase in the provision rate of AAPs was demonstrated in all seven teams providing care in a PCMH. Three of the seven teams showed statistically significant

increases in the provision rate of AAPs. Clinically, the new workflow process showed improvement in the provision rate of AAPs throughout all teams. Despite all teams demonstrating an increase in the percentage of AAPs provided to patients, and three teams showing statistically significant increases in AAP provision rates, only two teams met the national goal established in Healthy People 2020 of a 37% provision rate of AAPs to persons with asthma (Figure 2). This finding highlights the need for continued testing of the workflow change in the most successful teams. A continuation of this study could determine if unique team characteristics or processes exist which impact the provision rate of AAPs. If identified, these successful processes and team structures could be disseminated to other teams.

Team	Number of Valid Cases	Exact Significance (2-sided)
1	228	.0005 ^a
2	63	.500
3	108	.125
4	84	.0005
5	46	.125
6	95	.125
7	80	.0005 ^a
Total all Teams	704	.0005 ^a

Table 1: McNemar Test Results for Significance of Asthma Action Plan Provision Rate.

a: Binomial distribution used.

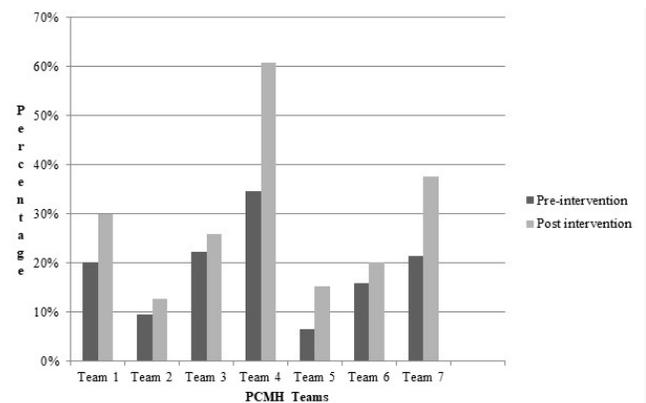


Figure 1: Team comparison of AAP provision rate.

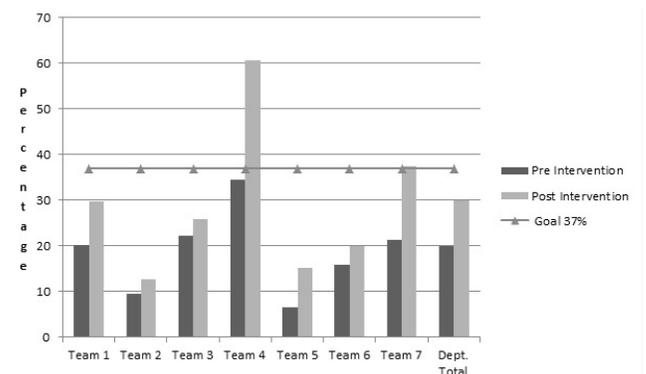


Figure 2: Teams AAP provision rates compared to national goal.

Limitations

While this study showed promising results, broader application is limited. The exact composition of each team was not studied, thus the findings cannot be applied to all teams. The effect of changes in the composition of the teams during the study period was not examined and is a limiting factor. The timeframe of this study was limited to one month post intervention and different results may have been found if the study timeframe had been extended. The effect of factors such as absence from work of team members and the use of temporary staffing were not studied. Finally, the patient population excluded those who had a comorbidity of COPD, which could be a limiting factor in generalizing the results to other populations.

Conclusions

Implementing the use of evidenced-based guidelines, such as the recommendation for providing written AAPs, remains a challenge in today's complex healthcare environment. The utilization of a team-based approach to care presents an opportunity to improve the health of patient populations, including those with asthma. This project studied the effects of education on the principles of team-based care to healthcare team members. The results showed a statistically significant improvement in the provision rate of AAPs. Further research is needed to control for variables which could have skewed these results.

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