Using an Online Clinical Process Support System for Asthma Care: Fewer Exacerbations and Visits

Barbara J. Howard1,2, Raymond A. Sturner1, Genevieve C. Vullo2, Paul Bergmann3, Sande Okelo4

BACKGROUND

- Asthma affects 8% of US children and is a leading cause of child morbidity and health care cost. However, National Heart, Lung, and Blood Institute (NHLBI) Guideline compliance among pediatricians has been low even with use of Electronic Health Record (EHR) template reminders.
- NHLBI guidelines are based on asthma severity but Primary Care Providers (PCPs) are inaccurate at estimating severity without screens.
- Other evidence-based care components for which there may not be time include: Use of problem solving counseling for adherence, addressing allergens, and patient education.
- We created an online template for asthma care decision support (Asthma Intervention Module or AIM) based on patient entered pre-visit data including: Asthma severity (PACCI), allergen triggers, barriers to adherence, individualized medication suggestions, a “teleprompter” for problem solving counseling, patient-specific education, pre-filled online asthma action plans, and between-visit online monitoring. The AIM reduces the burden of documenting guideline completion. PCP use of AIM also creates data for a QI activity yielding MOC-4 credits.

OBJECTIVE

To explore impact of an online Asthma Intervention Module (AIM) on asthma control and healthcare utilization via a cluster randomized control study.

DESIGN/METHODS

- 24 community pediatric practices across the US over 27 months (2015-7) used the CHADIS web system for collecting data. Parents of 4860 children 0-18 years old with asthma completed the Pediatric Asthma Control and Communication Instrument (PACCI)™ online before visits.
- Practices were randomized to control or use of AIM in CHADIS.
- AIM group patients were asked to complete PACCI monthly from home.
- PACCI assesses asthma severity/control, controller use and adherence, ER visits, hospitalizations, exacerbations, trajectory and burden.
- AIM clinicians had access to decision support: NHLBI guideline tips, a teleprompter for problem solving counseling specific to individual adherence barriers to adherence, guideline based medication suggestions, alert reports between visits regarding patients with uncontrolled asthma, and MOC-4 credit.
- AIM families had access to individualized patient education and Asthma Treatment Plans in an online portal.
- Data was analyzed for children who had >=1 PACCI showing persistent asthma and a PACCI 30+ days after the intervention began.
- For the AIM group, “Post” was defined as the last of the PACCI 30+ days after starting use of AIM and “Pre” as the first PACCI showing persistent asthma 14+ days prior to Post (n=444).
- For controls, Post was the last completed PACCI and Pre was first PACCI with persistent asthma 14+ days prior to Post (n=313).

RESULTS & DISCUSSION

- There was no difference between groups in PACCI problem index at Pre.
- The AIM group had more days of no quick relief medication use (p = 0.022) and fewer steroid bursts (p = .05) implying fewer asthma exacerbations.
- Those “poorly controlled” at Pre were more likely to be appropriately on controller at Post in the AIM group (100% vs. 81%, p = .01).
- Mean number of acute asthma visits in the past 3 months was lower in the AIM group (p = .009).
- At the end of the study the AIM group was more likely to be rated as on a steady trajectory and already controlled (p = .042). The control group was more likely to be rated as getting better at the end, but those getting better were more likely to be not controlled than those in the AIM group (p = .004).
- Patients in the AIM condition tended to have fewer hospitalizations, fewer ED or urgent care visits, and tended to have larger Pre-Post drops in utilization.

RESULTS

- Use of this asthma online clinical process support system by pediatricians showed some benefits with less rescue medicine and steroid burst use suggesting less need for care for exacerbations and also fewer acute asthma visits.
- Children in the AIM group with initially “poorly controlled” asthma were more often appropriately treated with controller medication.
- Patients with controlled asthma at Post were more often from the AIM group whether they were rated as (getting) Better or the Same at Post.
- PACCI completed online before and between visits was useful in informing pediatric care of asthma.
- Patient specific decision supports based on patient generated data may represent an advance in clinical process support over generic EMR templates.

LIMITATIONS

- More Control practices had co-located asthma experts but more AIM practices had case management available. Use of these is unknown.

KEY REFERENCE