# Promoting Asthma Action Plans in a Pediatric Primary Care Clinic: A Quality Improvement Project

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# Introduction

- Quality improvement project
- Project aims
  - Implement evidence-based-practice
    - Implement an asthma action plan
      - Provider education
      - Facilitate ease of use
- Achievements
  - Increase provision of asthma action plans
- Practice pearls
  - Start early
  - Meet often

# Background & Significance

- Asthma is characterized by episodes of reversible bronchi spasm, airway constriction, and inflammation (Patel & Teach, 2019)
- Asthma is the most common chronic respiratory disease in children (NHIS, 2018)
- If diagnosed and managed appropriately, symptoms can be well-controlled (Murphy, 2009).
- One in 12 children are diagnosed with asthma (NHIS, 2018)

# Background & Significance

- Over two million asthma office visits annually (CDC, 2018)
- U.S. economic burden over $80 billion each year (Nurmagambetov et al., 2018)
- 50.3% of children currently diagnosed with asthma are classified as having uncontrolled asthma (Centers for Disease Control and Prevention, 2019)

# Project Problem

- Global practice guidelines recommend providing asthma patients, or their caregivers, with a written asthma action plan at asthma visits as part of routine patient education (GINA, 2020; NHLB, 2007; NICE, 2018)
- Only 50.7% of children aged 2-17 diagnosed with asthma had ever received a written asthma action plan (Simon & Akimbi, 2016)
- Project site patients were not routinely receiving written asthma action plans at their asthma visits

# Significance to Nursing

- Nurses need to implement the most up-to-date evidence-based practice guidelines
  - Systems level change
  - Interprofessional collaboration
  - Educate others
  - Lead others
  - Decrease identified practice gap
  - Improve patient and population outcomes



(AACN, 2006)

# Project Question

- Will a QI project consisting of provider education combined with a standardized AAP increase the percentage of patients receiving a written AAP at their asthma visits.

# Purpose Statement

- The purpose of this quality improvement project was to educate providers on evidence-based pediatric asthma guidelines and implement the use of written asthma action plans at all pediatric asthma visits.

# Project Objectives

1. Implement an evidence-based pediatric asthma guideline to provide pediatric asthma patients with a written AAP at all of their asthma visits.

2. Educate providers on pediatric asthma guidelines and how to use a written AAP through a training seminar with a pre/post knowledge test, with providers scoring at least an 80% on the post-test.

3. Develop a standardized site-specific written AAP to facilitate ease of use by providers.

4. Implement a pediatric asthma smart phrase in the EHR to facilitate ease of use by providers.

5. Improve provider compliance with national standards for pediatric asthma care by increasing the rate of pediatric asthma patients receiving a written AAP at their asthma visits to at least 80% within a four-week implementation time-frame.

# Review of Literature

- **Significance and Impact**
  - 8.5 million diagnosed before age 8 (NHIS, 2018)
  - High economic burden
  - Primary diagnosis for over 2 million visits annually (CDC, 2018).

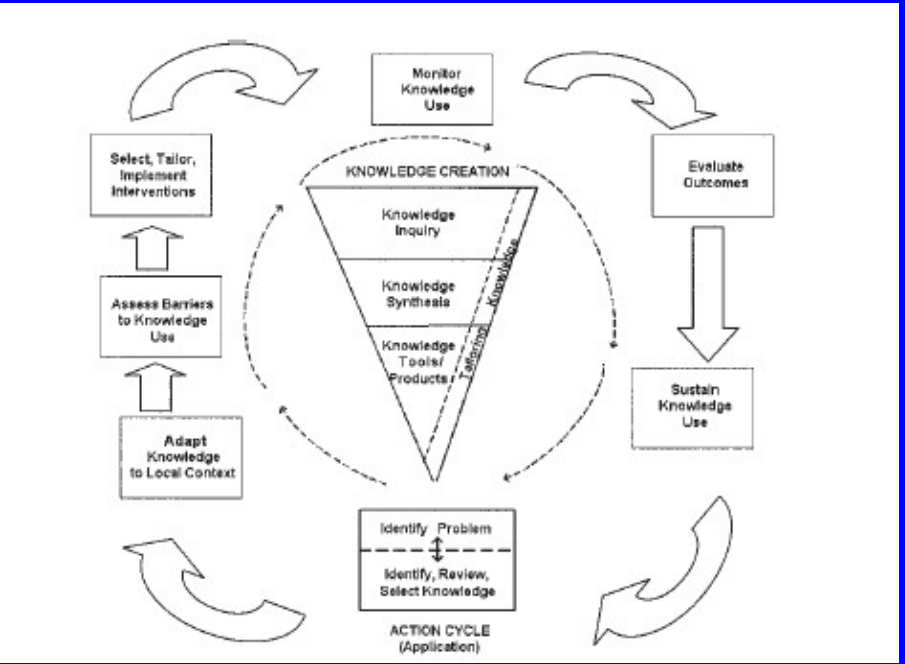
- **Current Evidence-Based Pediatric Asthma Guidelines and Recommendations**
  - Ten national, international, and even global asthma recommendations were reviewed. All of which recommended all asthmatic patients receive a written asthma action plan at their asthma visits (BTS & SIGN, 2019; Ducharme et al., 2019; Gardner et al., 2015; GINA, 2020; Lougheed, 2012; NAC, 2020; NHLBI, 2007; NICE, 2018; NICE, 2020; NSWMH, 2012)

# Review of Literature

- **Written Asthma Action Plan Efficacy**
  - Associated with decreased ED visits, unscheduled clinic visits, number of days hospitalized and school days missed (Lakupoch et al., 2018)
  - Increased adherence to medications and follow-up appointments (Ducharme et al., 2010)
- **Facilitators to Using a Written Asthma Action Plan**
  - Having a blank template (Djandi et al., 2017)
- **Asthma Education for Healthcare Providers**
  - Asthma education including national guidelines has been shown to increase the use of written asthma action plans (Lee et al., 2014)
  - Increases provider confidence in teaching families about the written asthma action plan (Borgmeyer, et al., 2017)
  - Decrease in ED usage by their patients (Cabana et al., 2014)

# Theoretical Model

- Knowledge to Action (KTA) Framework
  - Knowledge Creation
  - Action Cycle
    - Identify problem
    - Review literature
    - Select knowledge
    - Adapt knowledge to local context
    - Assess barriers to knowledge use
    - Select, tailor, and implement interventions
    - Monitor knowledge use
    - Evaluate outcomes
    - Sustain knowledge use




(Graham et al., 2006)

# Project Design

- Quality Improvement Project
- Population
  - Direct
    - 4 Pediatric providers
  - Indirect
    - Pediatric patients birth to 17 years of age
- Setting
  - Pediatric outpatient clinic in Southern Nevada
- Time Frame
  - Four-week implementation period

# Methods

- Implement asthma education presentation with pre/post test
- Implement standardized site-specific written asthma action plan
- Implement asthma smart phrase
- Pre/post chart review design

# Asthma Action Plan Template

## Asthma Action Plan

Name: _____ Date _____

Controllers (box 1) are taken to prevent symptoms. Relievers (box 2, 3) are used when symptoms occur.

**1. GO - GOOD CONTROL**

Child can do these activities:
- Breathing is good
- No cough or wheezing
- Can work/play
- Sleeps all night

**Daily Medication**

| Medicine: | How much to take: | When to take it: |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**20 minutes before sports use this medicine:**

**2. CAUTION- BE CAREFUL**

Child has any of these:
- Cough
- Wheeze
- Tight chest
- Wakes up at night

**Take Daily Medicines and Add these Medicines**

| Medicine: | How much to take: | When to take it: |
|---|---|---|
| | | |
| | | |
| | | |

**Call doctor if quick relief medicine is needed to treat symptoms 3 or more times a week**

**3. STOP- DANGER CALL YOUR DOCTOR NOW**

Child has any of these:
- Medicine not helping
- Breathing hard and fast
- Nose open wide
- Can't Walk or talk well
- Ribs are showing when breathing

**Take Daily Medicines and Add these Medicines**

| Medicine: | How much to take: | When to take it: |
|---|---|---|
| | | |
| | | |
| | | |

**911** • Can't talk or cry because of it's hard to breath • Lips are bluish • Has passed out • Struggling to breath

**Asthma Triggers:** ☐ Exercise ☐ Animals ☐ Mites ☐ Smoke ☐ Weather ☐ Colds ☐ None/Unknown ☐ Tobacco ☐ Medications ☐ Food ☐ Pollen ☐ Roaches ☐ Molds ☐ Other _____

**Primary Physician:** _____ **Action Plan Prepared By:** _____ (Please sign here after printing) **Date:** _____

**Follow up in:** _____ Weeks **Appt Date/Time:** _____ at

I have been provided a copy of instruction on how to use this Asthma Action Plan and ways to avoid asthma triggers.

**Caregiver signature:** _____ (Please sign here after printing) **Date:** _____

## Common Triggers and Ways to Avoid Them

Asthma attack can be cause by just one trigger, but other times it may be two or more triggers. Triggers are things in the environment or life circumstances that could lead to an asthma attack. Below are possible triggers and ways to minimize their effects.

### Allergens

**Animal Dander: (flakes of skin or dried saliva from cats, dogs, birds, rodents):**
- Keep pets out of the bedroom at all times.
- Wash pets weekly including cats to decrease dandruff
- Try to limit contact to friends or relatives with pets
- Avoid bedding (pillows/quilts) made with feathers or kapok (silky fibers from silk-cotton trees

**Dust Mites (fecal material):**
- Wash bed sheets and blankets weekly in hot water (>130°F) or warm/cold water with detergent and bleach
- Encase pillows and mattress in dust-proof covers.
- If stuffed toys, keep them out of the bed and wash weekly.
- Do not let child sleep on fabric furniture.
- Use throw rugs instead of carpet if possible.
- Keep indoor humidity 30-50% by using dehumidifier if needed
- Damp mop hard floors weekly. Vacuum carpets more frequently. Do not use a vacuum when child is in the room or use dust mask
- Use a vacuum cleaner with a double layered or micro-filter bag or HEPA (High-Efficiency Particulate Air) filter

**Cockroaches (dried droppings and remains):**
- Keep food and garbage in closed containers. Never leave food out.
- Keep kitchen floor, counter and table clean.
- Try to eat only in the kitchen, never in the bedroom.
- Use poison baits, powders, paste (boric acid) or roach traps. Avoid using spray. If used, stay out of the room until the odor goes away.

**Indoor Molds (anywhere there is moisture):**
- Keep bathrooms and kitchens well ventilated with exhaust fans and clean regularly.
- Use central air conditioner if possible. Change filter every 2-4 weeks.
- Use dehumidifier for damp basements. Keep humidity level between 30-50%. Empty and clean unit regularly.

**Pollen and Outdoor Molds (trees, grass, weeds):**
- Stay indoors when pollen count is high.
- Keep windows closed and use air conditioning if possible.
- Avoid sources of molds such as fresh grass, wet leaves and garden debris.

### Irritants

**Tobacco Smoke (Second and Third Hand Smoke):**
- No smoking in your home and car.
- Avoid tobacco smoke in all private or public places.
- If anyone in the family smokes, ask your health care provider for ways to help quit

**Smoke, Strong Odors and Sprays:**
- If possible, do not use a wood-burning stove, kerosene based heating elements
- Do not use perfumes, strong smelling cosmetics such as talcum powder, hair spray or nail polish.
- Do not use room deodorizes or burn candles.
- Use non-scented household products for laundry and cleaning.
- If painting or varnishing, avoid area when using products and until oder is gone.

**Weather:**
- Wear scarf over mouth/nose when cold or windy.
- Limit outdoor activities if extremely hot/high humidity

**Colds and Infections:**
- Avoid people with colds or the flu.
- Teach good hand washing technique
- Do not give your child over-the-counter cold remedies, unless you speak with his/her doctor first
- Make sure your child rests, eats a balanced diet and exercises regularly.
- Get a flu shot every year.

**Exercise:**
- Encourage warm up and cool down exercises
- Ask doctor what medication to take before exercising and develop an asthma control plan that allows your child to exercise, actively play or lay sports without symptoms.

**Food- common allergies are:**
- Food and beverages with sulfites, shellfish or fish, dairy (milk or eggs), peanuts and tree nuts (walnuts, cashews), soy and wheat.
- Your child may be tested to know what to avoid

**Medications**
- Such as Aspirin and beta blockers
- Look closely at labels to see if medication is contained in bottle prior to given.

# Asthma Smart Phrase

- Designed to facilitate provision & documentation of written asthma action plan
- Embedded into electronic health record
- Contains brief summary of asthma pathology
- Reviews signs & symptoms of exacerbation
- Includes review of spacer teaching

# Results

- Asthma knowledge questionnaire scores increased an average of 27.5 points

*Asthma Education Questionnaire Scores Pre/Post-Asthma Education*

| Pre-Implementation | Post-Implementation |
|---|---|
| 50 | 80 |
| 80 | 100 |
| 70 | 100 |
| 60 | 90 |

*Pre/Post-Asthma Education Descriptive Statistics*

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Pre Asthma Education | 4 | 50 | 80 | 65.00 | 12.910 |
| Post Asthma Education | 4 | 80 | 100 | 92.50 | 9.574 |

# Results

- Statistically significant increase in asthma knowledge questionnaire scores

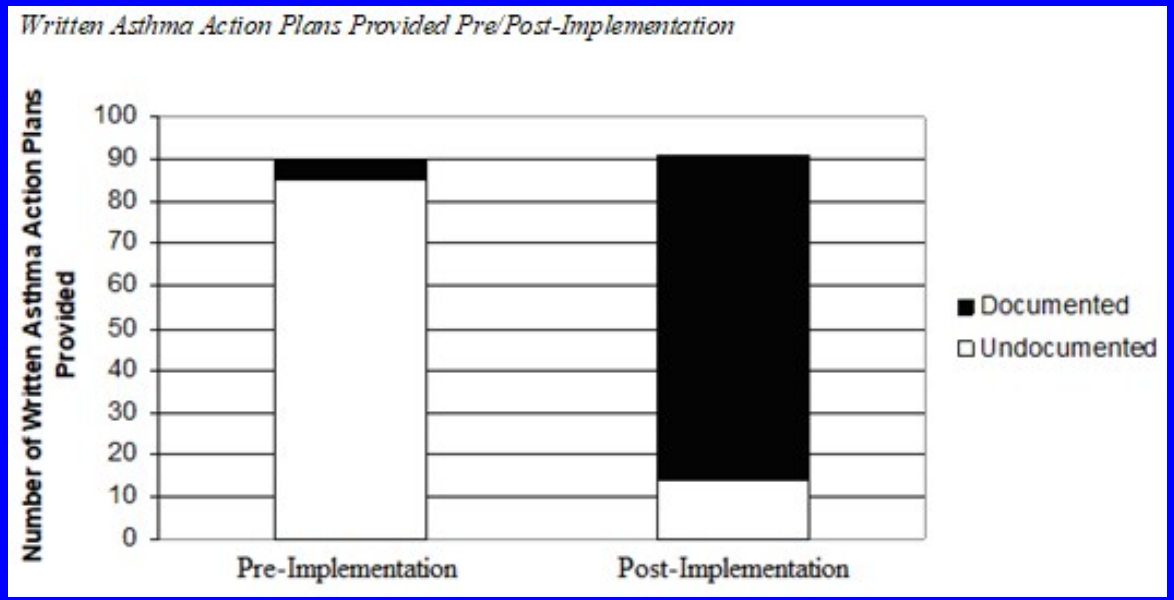
Statistical Comparison of Asthma Knowledge Questionnaire Scores Pre/Post-Asthma Education

**Paired Samples Test**

| | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pre-Asthma Education vs Post-Asthma Education | 27.500 | 5.000 | 2.500 | 19.544 | 35.456 | -11.0 | 3 | .002 |

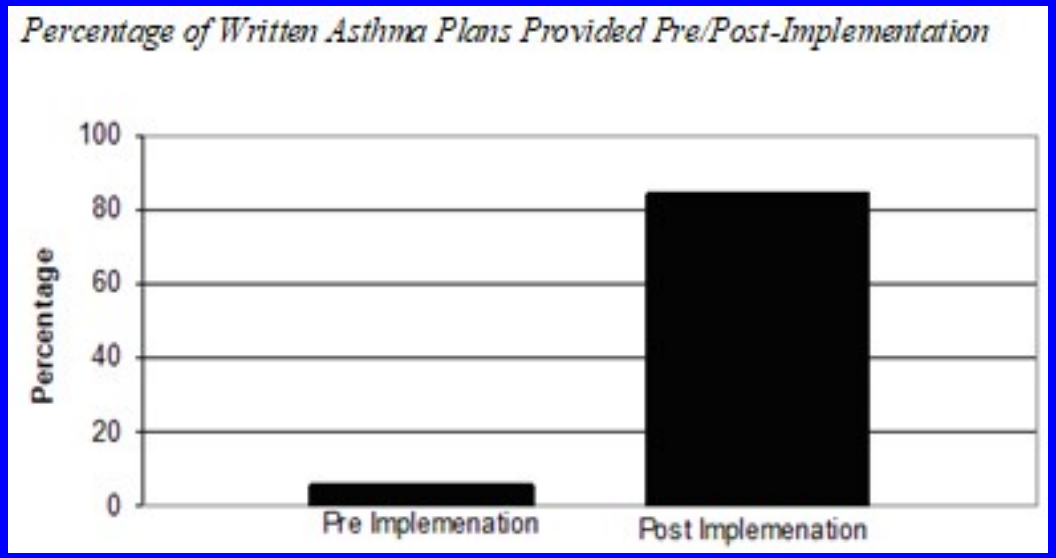
# Results

- Statistically significant increase in the number of children documented as receiving a written asthma action plan during the implementation period



# Results

- More than 80% of children were documented as receiving a written asthma action plan during implementation



# Discussion

- Providers' scores on the asthma knowledge questionnaire increased significantly after the asthma education presentation with a mean score of 92.5%, which exceeded this project's objective of at least 80%.
- Patients documented as receiving a written AAP increased from 5.5% to 84.6% during the implementation period, which was in line with the project objective of at least 80%
- These findings suggest educating providers while providing a standardized asthma action plan to facilitate ease-of-use may increase the provision of written asthma action plans to pediatric asthma patients in the primary care setting which may result in improved patient outcomes

# Ideas for Future Dissemination

- Present findings to stakeholders at project site
- Submission to DNP repository
- Poster at a National Conference
- Submit to peer-reviewed journal for publication

# Conclusion

- Education and a standardized template increased the provision of written AAPs
- Project objectives met
- Limitations
  - Time Frame
  - Data Recruitment
  - Sample Size
- Future Recommendations
  - Further studies on patient outcomes

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