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Taking Control of Asthma: One Follow-Up Call to Improve Asthma Control in Pediatrics

Tracy L. Young

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Taking Control of Asthma

One Follow-Up Call to Improve Asthma Control in Pediatrics

Tracy L. Young, DNP Student

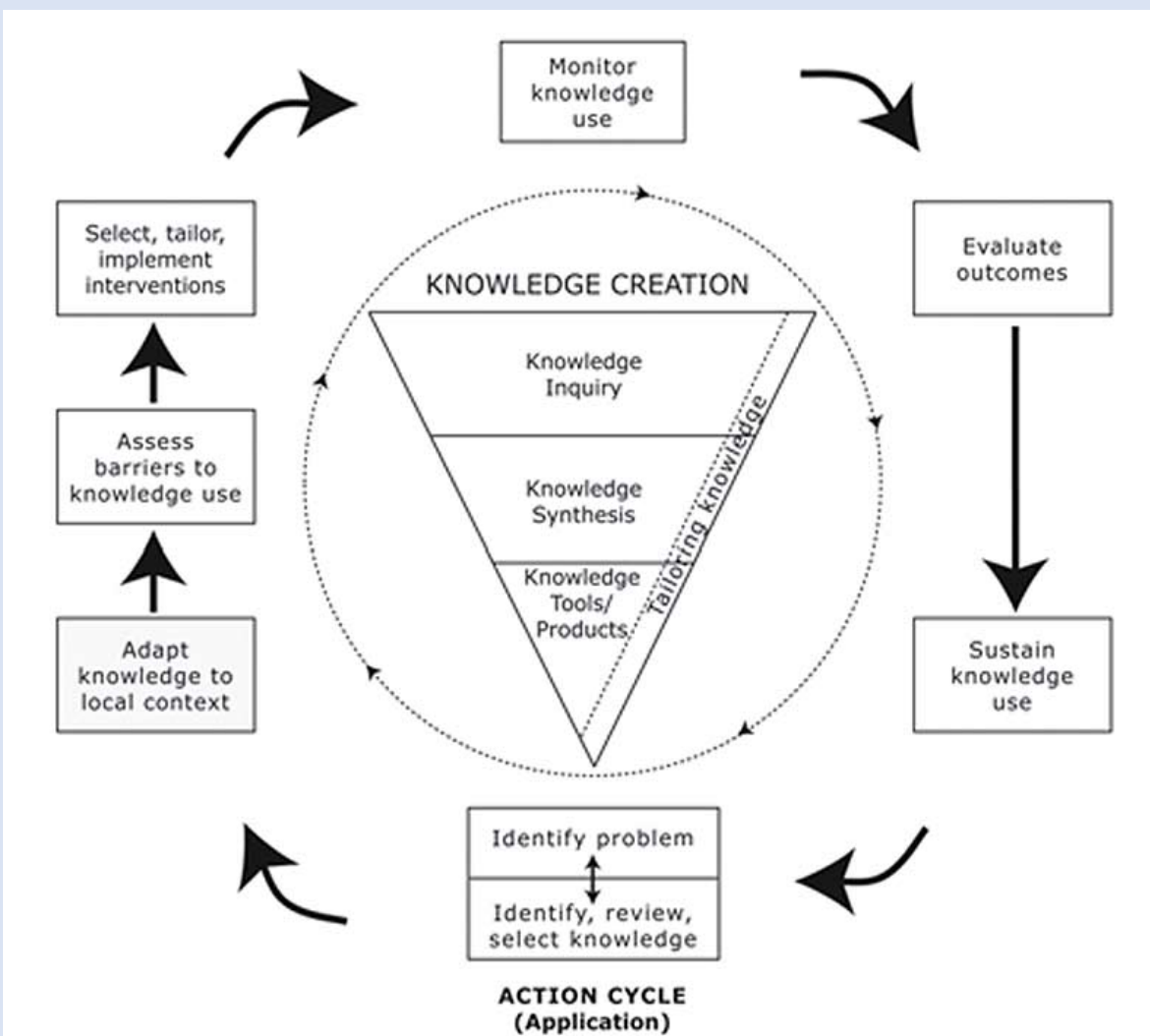
Background

- Asthma is a chronic disease that affects 8.4% of children in the US, leading to \$81.9 billion in costs^{1,2}
- Pennsylvania has a higher burden of childhood asthma, at 10.2%, and is rated the 27th worst city in the US for asthma³
- Poor asthma control leads to increases in healthcare utilization, missed school days, and can lead to hospitalization or death^{4,5}
- A pilot project using a one-week follow-up phone call to new patients of the practice indicated a need for re-education in medication plans and inhaler techniques

Problem Statement

- Poor asthma control persists in Pediatric Pulmonology patients despite treatment plans following national guidelines, at a rate of 25%.
- The purpose of this project is to improve asthma outcomes in patients through education and case management via telephone follow-up by a nurse practitioner after initial visit with a pulmonary specialist provider
- Outcomes expected to improve include symptom control, knowledge, medication adherence, and follow-up visits

Translational Model



- The Knowledge to Action Framework was chosen to guide and focus the project⁶
- Translating knowledge to practice requires an evolving process and collaboration between researcher and end user, exemplified in this model.
- The model illustrates how the vast knowledge in asthma care across disciplines can be integrated into specific interventions.

- Process takes into consideration the specific area of implementation, addresses barriers, and considers sustainability, all necessary for successful implementation.



⁷ Ohio State University, n.d.

Methods

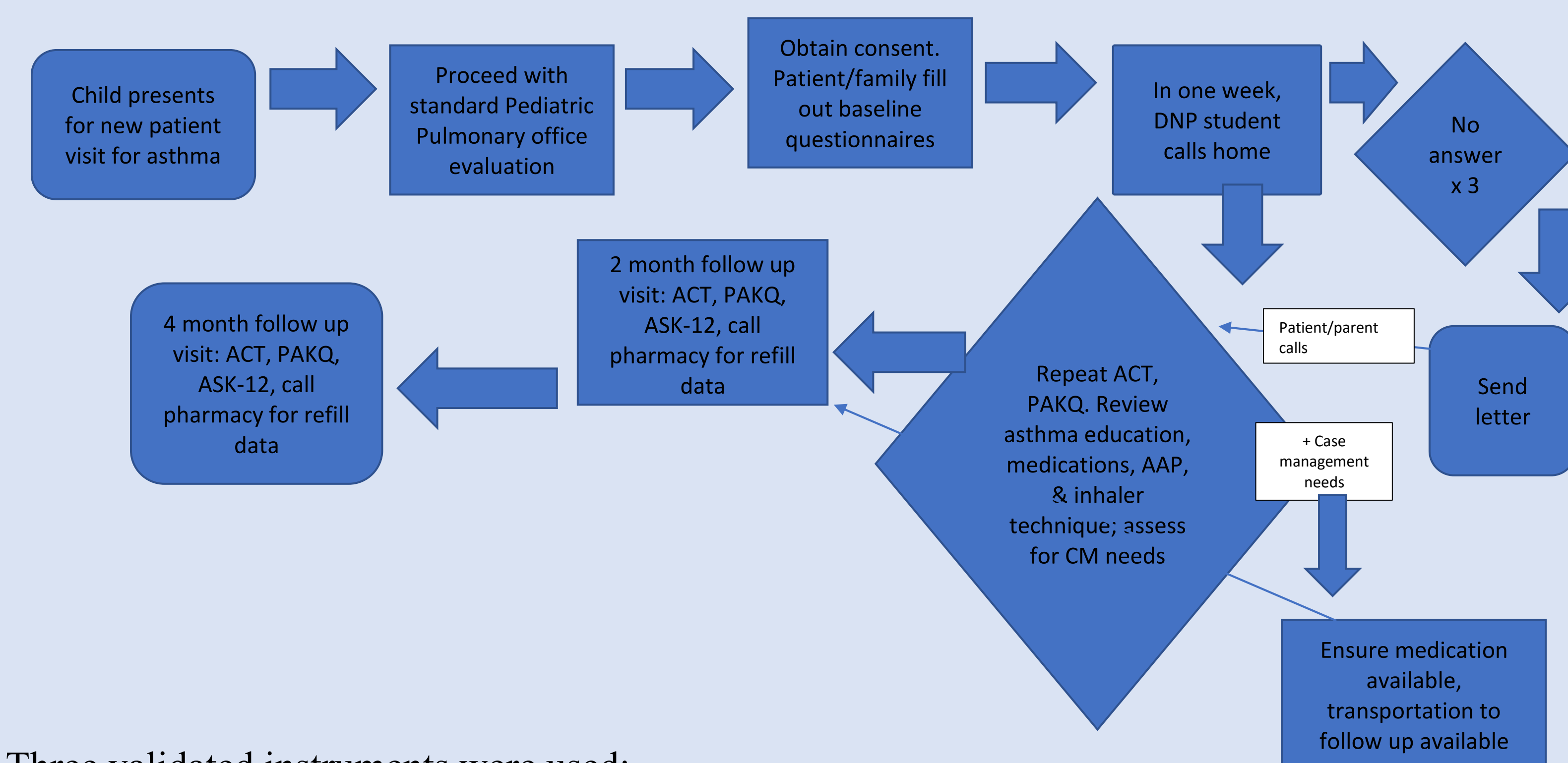
- A quality improvement project was developed to provide a one-week follow-up phone call to all new pediatric asthma patients after initial visit to the pulmonary specialist.
- PICO question: Do pediatric patients ages 2-18 years, upon initial presentation to the pulmonary specialist, who receive a follow-up phone call by a nurse practitioner to review education, disease management, and provide case management, compared to baseline, have improved asthma outcomes as evidenced by improvement in a) asthma control scores, b) inhaler technique, c) medication adherence, d) attendance of follow-up visits, and e) asthma knowledge, with a resulting decrease in flares?

- The Johns Hopkins Nursing Evidence-Based Practice Model was used to guide and appraise the review of literature⁸
- Databases searched include Pub-Med, CINAHL, PsycINFO, and Google Scholar.
- Search terms included: pediatric asthma, asthma education, asthma follow-up, asthma control, medication adherence, telemedicine, and case management
- Search included peer-reviewed studies in English dated 2010-2020. Studies were excluded if full text was not available, only adults were included, or study was conducted on emergency room or hospitalized patients.
- 348 studies examined, 29 met inclusion/exclusion criteria, most were levels I-III, with quality ratings A or B

- Three root causes for barriers to asthma control were noted:
 - Medication adherence: Various methods have been studied to increase adherence including repeated education in inhaler technique⁹⁻¹⁴, case management to ensure medication availability¹⁵, and automated reminder systems¹⁶
 - Knowledge deficits: Researchers have found that provision of an Asthma Action Plan improved asthma control^{15,17}
 - Poor self-management: Patients who recognized triggers, modified their environment, stepped up therapy when needed, adhered to their medication plan, and followed up with their provider reported better asthma control¹⁸⁻²⁵
- Combination efforts of education and case management were most effective^{21, 23, 26, 27}
- Telephone interventions showed effectiveness in improving some aspect of asthma control^{15, 20, 21, 28-32}

- All new patients ages 2-18 with diagnosis of asthma, parental English language, and access to phone were invited to participate. Exclusion criteria included non-English speaking parents, upper airway pathology without lower airway involvement, and diagnosis of hypotonia.
- A convenience sample was obtained from 93 possible participants, 12 agreed to participate

Intervention



- Three validated instruments were used:
 - The Asthma Control Test (ACT) to objectively measure asthma control based on symptoms
 - The Patient Asthma Knowledge Questionnaire to measure general asthma knowledge
 - The Adherence Starts with Knowledge (12) to measure adherence to medication plans

Results

- 12 patient/parent dyads agreed to participate, only 8 completed the intervention phone call.
- Demographic data was analyzed for differences in groups; comparing participants who completed the phone call with those that did not, there was no statistically significant differences in age, pets, smoking, and ethnicity.

| | Total sample N = 12 | Included N = 8 | Not Included N = 4 | p-value Included/ Not Included |
|-------------------|------------------------|-------------------|-----------------------|--------------------------------------|
| Age in years: | | | | |
| • Range | 2-13 | 2-10 | 3-13 | |
| • Mean (SD) | 6.5 (3.48) | 5.63 (2.93) | 8.25 (4.28) | 0.23 |
| Pets in home | | | | |
| • Yes: % (n) | 58.3% (7) | 50% (4) | 75% (3) | 0.57 |
| • No: % (n) | 41.7% (5) | 50% (4) | 25% (1) | |
| Smoking in home | | | | |
| • Yes: % (n) | 8.3% (1) | 12.5% (1) | 0% (0) | 1.0 |
| • No: % (n) | 91.7% (11) | 87.5% (7) | 100% (4) | |
| Ethnicity: | | | | |
| • White % (n) | 58.3% (7) | 62.5% (5) | 50% (2) | 1.0 |
| • Non-white % (n) | 41.7% (5) | 37.5% (3) | 50% (2) | |

- ACT difference scores = (ACT score at one-week follow-up) – (ACT score at baseline)
- Statistically significant improvement in ACT scores after pulmonologist visit (p = 0.031)

| | | ACT 2 Controlled | | Total |
|------------------|-----|------------------|-----------|-----------|
| | | Yes | No | |
| ACT 1 Controlled | Yes | 12.5% (1) | 0% (0) | 12.5% (1) |
| | No | 75% (6) | 12.5% (1) | 87.5% (7) |
| Total | | 87.5% (7) | 12.5% (1) | 100% (8) |
| *McNemar's test | | | | |

- Phone call data indicates need for:
 - Re-education on medication management/asthma action plan as 75% of parents did not accurately state instructions
 - Re-education of inhaler technique as 63% did not correctly identify all steps

Conclusions

Limitations:

- Early termination due to pandemic COVID-19
- Small sample; power analysis indicated need for 86 participants with 3 months of follow up data to answer project question
- Requirement for consent may have decreased participation due to time necessary to complete and opportunity for parent to decline
- Provided only to English speaking parents due to delay in translation of documents
- Intervention call was made from private number; calls made from the practice would have indicated the health network on caller ID and may have increased participation

Recommendations:

- Consider continuation of project to collect follow up data
- Ensure receipt of resource book which includes inhaler steps with photos to each new patient
- Encourage parents to reference Asthma Action Plan/medication instructions and inhaler steps daily
- Consider project across primary care for all new pediatric asthma diagnoses
- Consider replacing phone call with video visit to enhance inhaler technique assessment and instruction