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Reducing Pediatric Asthma Visits in the Emergency Department

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## Reducing Pediatric Asthma Visits in the Emergency Department

### **Significance of Clinical Problem**

Overcrowding in the Emergency Department (ED) is a ubiquitous phenomenon. The reasons for this are varied and complex. Factors contributing to this phenomenon include inadequate access to primary care providers, underinsured individuals accessing emergency services as a safety net, minimally supported hospital facilities with limited beds and resources, and the influx of adequately insured persons who opt for emergency room visits to get immediate services and results. A wait of two or more days for results from a primary care provider is no longer appealing to many patients when the local emergency department is open 24- hours a day, just like a “one-stop shop,” and care can be denied to no-one. Lack of adequate options for community-based urgent after-hours care, especially for families with young children, is also linked.

Pediatric patients, specifically those requiring primary care services, often seek medical care in an emergency department unnecessarily. These types of visits are a major contributing factor to overcrowding of emergency department waiting rooms. A large percentage of nonemergent pediatric patient emergency department visits are related to inadequately controlled asthma.

Often, a pediatric asthma exacerbation is better handled at home. A patient that stays well cared for at home is one less patient sitting in a chair in the emergency department waiting room. Excellent patient and family education by a trained healthcare professional, using an appropriate evidenced-based intervention, is the first step in primary prevention of asthma

exacerbations. Access to clinically indicated pharmacologic management, including access to medications and medication refills, is the second step. An excellent working relationship with a professional and accessible primary care provider, who integrates an asthma action plan, is the third step. The care provided in an emergency department is only a temporary management plan, and can be inefficient when solely accessed for asthma management without primary care monitoring. ED care is less comprehensive and care continuity is lessened (Ohns et al, 2015). Referral to an appropriate provider with evening clinics could assist in mitigating this issue.

### **Project Purpose**

The purpose of this project was to reduce the number of unnecessary pediatric asthma management visits to an urban emergency department (ED) by performing a brief action plan for improved National Heart, Lung, and Blood Institute (NHBLI) guideline adherence. This plan was shared with parents during and NP-initiated follow-up phone call.

### **Rationale/Background**

Inadequate outpatient management of pediatric asthma can result in avoidable visits to the emergency department. Acute exacerbations comprise a large portion of pediatric patients seeking care in the ED. Reasons for persistent under-utilization of outpatient care for asthma management in primary care settings are multifactorial. Daily symptom control is best achieved in outpatient management adhering to NHLBI guidelines.

### **Evidence-Based Practice Model**

The Five A's Behavior Change Model has origins in smoking cessation counseling. The elements of the 5 A's include Ask, Advise, Assess, Assist, and Arrange (AHRQ, 2017).

Smoking cessation, like other addiction and health behavior management issues, is very

challenging for patients and clinicians alike. The 5 A's framework gives the clinician a tool in which to engage the patient in realistic planning and decision-making about future health behaviors. As is known from other behavior change interventions and theories, readiness for change is important to assess, prior to any expected real behavior change. The 5 A's allow for this assessment and ongoing back and forth between patient and provider. The Ask, Advise and Assess portions of the Model identify individual patient variables through inquiry about habits and frequency of use, advising a patient that these behaviors have negative health effects, and by assessing for readiness to quit, or at least, initiate a reduction in harmful behaviors.

After identifying behaviors and setting goals in the first steps of the Model, the Assist portion allows the clinic to provide interventions. Whether through direct care or through referral, assistance to the patient is provided. Finally, the Arrange step is imperative. It consists of setting follow-up phone call appointments or encounters. These follow up contacts allows a managing clinician to check on progress, order or begin additional interventions, and offer supportive counseling and assessment. Since behavior change is accomplished relatively slowly and incrementally when successful, these follow up contacts are essential to keep the patient "on track."

Subsequent to the Model's inception, the 5 A's have been applied to assist clinicians and patient with other changes. The 5 A's have been adapted for use in the self-management of chronic disease conditions. Asthma is a chronic pulmonary condition. Pediatric asthma is a chronic condition which, if not managed well, can have serious negative effects on the growth and development of the affected pediatric patients. Since education and behavior change is usually a lengthy process, early identification of patients and families needing behavioral interventions can have a profound effect on the quality of life of the affected child.

To assist with health-behavior change and chronic disease management in pediatric asthma, parents and caregivers must be involved. Interventions specifically targeted to parents and caregivers are essential. The 5 A's Model of Behavior Change, adapted to chronic disease and conditions management, include the elements of Assess, Advise, Agree, Assist and Arrange. This model can be used to manage chronic disease conditions that are seen often in primary care settings and may help to prevent emergency department visits, improve condition management, and reduce patient self-report of problematic daily symptoms. As described by Glasgow, Emont and Miller (2006), his use of the model begins with an assessment of current symptoms. Then, patients and families are advised of the threat to wellness that currently exists and how to reduce that risk. The patient, family, and clinician can then agree on a plan of action that all believe is achievable. The clinician can then assist and arrange this plan through direct care or through referral and case management.

### **Literature Review and Summary of the Evidence**

A thorough literature search was conducted through CINAHL, Pub Med and Cochrane Database, mostly limited to study dates of 2007 and beyond. Literature search was then further limited to studies dated 2012 and later, except for inclusion on an earlier significant landmark study or frequently cited study. Search terms used included pediatric emergency visits, pediatric asthma exacerbation, 5 A's, telephone intervention, NP phone call, telephone follow up, outpatient asthma management, asthma guidelines, pediatric asthma medications, NHLBI guidelines, unnecessary pediatric visits, primary care in emergency department, asthma ED interventions and pediatric after-hours care.

As described by Sampayo et. al in the 2017 study "Initiation of an Inhaled Corticosteroid During a Pediatric Emergency Visit for Asthma: A Randomized Clinical Trial," providing

prescriptions for the pediatric asthma patient during an ED visit is an important intervention. This study, an experimental study (Level II evidence), found that appropriate medications can prevent problematic exacerbations necessitating return ED visits. An NP provider can assist in the reduction of self-reported asthma symptoms by providing a prescription for a fast-acting bronchodilator, or, if clinically indicated, an inhaled corticosteroid. If a child is prescribed an inhaled corticosteroid, it will result in a reduction of cough and wheezing at least in the first two weeks post ED visit (Sampayo et al, 2017).

The literature on pediatric asthma indicates that social work intervention is one of the most effective ways to reduce the numbers of unnecessary pediatric visits to the ED. An extensive quasi experimental (Level III evidence) study by Jenevic et al (2016), published in the American Journal of Public Health, found that the use of social services model has a very significant benefit. The social services model can be used to connect children and families with community resources, monitor their outpatient health interventions and perform a family assessment.

In a large-scale systematic review of methods aimed at reducing emergency department visits (Level I evidence), a case management intervention was the only factor that consistently reduced return visits to the ED (Raven et al, 2016). Families need to know where to go for primary care, other than the local emergency department. Clinics and individual provider referrals can be discussed and arranged with the assistance of social work staff. Additionally, families have insurance and financial insecurities. Social work model interventions can provide patients with information on how to enroll in insurance programs, and how to seek and use their healthcare coverage. These findings can be expanded to include a licensed provider, such as an NP, providing reinforcement of outpatient management recommendations.

Most often, parents of children with asthma would prefer to visit their pediatric primary care provider. However, access problems make an urgent visit very difficult to attain. Parents report very little access after 5 pm on weekdays and no availability on the weekends. Parents often call the nurse referral line, only to hear a recommendation to visit the ED (Hummel et al, 2013). This qualitative study (Level IV evidence) reveals the reality that there are many types of patients served in the ED who would be better served at a primary care office. It is also possible that patient needs may be better served at home, if families are provided with well-prescribed medications, as per NHLBI asthma action plan guidelines, and with a consistently available provider's monitored care plan.

Pediatric patients seen in the ED are subjected to inconsistent levels of care and inadequate continuity of care. Pediatric asthma is a condition which causes significant morbidity and possible avoidable hospitalizations. The control of pediatric asthma is best accomplished by good prescriptions, good education, avoidance of triggers and one consistent provider monitoring the plan. Pediatric visits for uncontrolled asthma are on the largest groups of avoidable ED visits.

### **The Project Plan**

The DNP project titled *Reducing Pediatric Asthma Visits in the Emergency Department* used the 5 A's Behavior Change Model as part of an NP-initiated parent/caregiver follow-up phone call within 24-96 hours post ED pediatric asthma exacerbation visit.

### **Stakeholder Identification**

Two major stakeholders identified were the physician co-directors of the Advanced Practice Program at Providence Little Company of Mary Medical Center (PLCOM) in Torrance,



CA. Dr. Bao Duong and Dr. Andrew Louie were supportive of the idea to complete the EBP project. They are hugely invested in the health and well-being of the Los Angeles South Bay population that they serve. They have a sense of responsibility towards the underserved pediatric population that frequents their emergency department. Dr. Duong and Dr. Louie were very interested in the demographic data gleaned through the project. This data will assist the entire ED medical group to better serve the patients, coordinate with pediatricians in the area, and identify areas for improvement for follow up among the pediatric population which presents to P LCOM for services. Additionally, these physicians are very dedicated to the training, education and skills enhancement among their NP group members. Any educational pursuit embarked on by any of the NPs is encouraged and welcomed.

Emergency Specialist Physicians Medical Associates group are another identified stakeholder. This group is the contracted emergency medicine provider for Providence Little Company of Mary Medical Center and have been the medical center ED resident medical group for over 20 years. All data results from this project were shared with the group leadership and the entirety of the group for evaluation, comments and review. This emergency medicine group feels a great sense of responsibility to the population that they serve. Any data which will help them to provide better care is highly appreciated.

### **Project Approval**

Since Providence Little Company of Mary Medical Center is part of a large healthcare organization with multiple hospitals and missions located mostly in the Western United States, IRB approval was firstly sought through Providence IRB. After a lengthy process, IRB Approval as an EBP project, without need for formal consent, was given on February 9, 2018.

USD IRB approval was sought after that, in conjunction with my project faculty advisor, Dr. Karen “Sue” Hoyt. USD IRB approval of “exempt” as an EBP project was given on February 12, 2018. Data collection began that day, after IRB was finalized.

### **Brief Description/Method & Process Used**

This project utilized the Five A’s Behavior Change Model to improve pediatric asthma management using a process change modality. School-aged children presenting to the ED for management of acute asthma exacerbation were identified using online chart notes and billing codes for the discharge diagnosis of *acute asthma exacerbation*. The ED nurse practitioner (NP) provided follow-up phone contact 24 to 96 hours post ED visit. The Five A’s Behavior Change Model (i.e., Ask, Advise, Assess, Assist, Arrange) was incorporated into an asthma outpatient action plan for each patient. The action plan ensured provision of appropriate discharge prescriptions as per NHLBI Guidelines, reinforced patient and family education, verified ED prescriptions were filled, and confirmed follow-up appointments had been scheduled. Further outpatient asthma management referral was provided, if needed. Between February 11, 2018 and March 13, 2018, 19 identified patients were monitored for adherence to ED-recommended medications use, knowledge of ED-recommended outpatient asthma action plan, and scheduling of ED-recommended primary care follow up appointments.

### **Outcomes Achieved/Documented**

All parents filled their child’s ED provided prescriptions within 24 hours of discharge, Only 15.5% of patients were able to schedule an outpatient follow-up appointment within the ED-recommended time of 1 to 2 days. Thirty-one percent of patients were able to schedule late outpatient follow-up within 3 to 5 days. Five days post visit, 52.6% of patient were still unable to

schedule follow-up appointments with their primary care physician. An NP-implemented transition of care intervention employing the 5 A's Behavior Change Model assisted patient and families with adherence to outpatient management recommendations and identified gaps in service provision for pediatric asthma patients.

### **Dissemination Plan**

Results from the EBP project were disseminated in several ways after the project was complete. The project plan, implementation and results were presented at USD for Faculty and students, at EBP Presentation Day, March 15, 2018. Faculty and student input and critique were given, in preparation for the final stakeholder presentation which was scheduled for the following month.

The EBP Stakeholder presentation, including project plan and results, was given at Providence Little Company of Mary Medical Center at the monthly Emergency Department Provider Meeting on April 17 at 12:30. My faculty advisor, Dr. Karen "Sue" Hoyt attended remotely and provided feedback. The medical group leadership and all members were invited to provide critique and feedback. One major physician stakeholder who is a very experienced physician with many years of practice with ESPMA, Dr. Carr, expressed an interest in project sustainability. He suggested extending the project life so that patient status and patient follow up, post visit, could be further assessed and documented. He was interested in any positive case management and symptoms management effects of the NP-initiated follow-up phone call.

The project poster was again displayed at the USD Research Day on May 3, 2018. Colleagues, students and faculty were again given the opportunity to review the poster presentations, make comments, discuss results and further explore any issues related to the

projects. This is a great networking event where students and faculty with similar research interests can compare, contrast, discuss and evaluate together.

### **Sustainability**

This project has the potential to be highly sustainable. The ESPMA medical group is already invested in the population they serve. Providers in the group routinely call any patients that they are concerned about within 24-48 hours of their ED visit. Adding an additional commitment to a pediatric asthma follow up phone call would be most likely quite possible.

As mentioned, one major stakeholder has already verbalized an interest in following up with the pediatric asthma patients that seek services at Little Company of Mary Medical Center Emergency Department. This physician member of the group was interested in sustaining the project for further monitoring. One NP could continue to implement the follow-up for these at-risk pediatric patients.

The average number of pediatric asthma patients seen peaks beginning in Fall, and then during flu season. It tapers off in Spring and Summer. The maximum number of pediatric asthma exacerbation patients that were seen at PLCOM on one day during the end of the flu season 2017-2018 was eight. Eight is a manageable number of follow-up phone calls for one provider. Estimated phone call time for eight asthma management phone calls is between 60-90 minutes.

An additional intervention that was mentioned and inquired about by several of the group physicians was a phone call initiated to the child's pediatrician. Apparently, there are some pediatricians that have very successful follow-up encounters and chronic condition management with their patients. There are other pediatricians, well known to the group, that

experience more challenges with successful follow up. Ideas exchange with the child's pediatrician could encourage open lines of communication between the two types of medical services and fulfill a goal of better asthma management for these children and families.

### **Cost-Benefits Analysis**

A cost-benefits analysis for this EBP project was initiated. The analysis assumes that follow up phone calls initiated on 20 patient families, inquiring about filled prescriptions, follow up appointment scheduling, and any NHBLI-related or symptom related management questions, can reduce the number of unnecessary return pediatric ED visits by one.

### **Potential cost savings**

The cost of one unnecessary ED visit is approximately \$ 1, 108 dollars. The cost of 19 NP-initiated 10-minute calls, performed with the knowledge of NP salary at \$65/hour, will cost a total of \$205.00.

### **Return on Investment**

Return on investment is a ratio. Since potential savings is \$1,108 dollars and \$205 dollars must be spent to realize this savings, the return on investment is \$5.40 for each \$1.00 spent.  $ROI = 1,108/205 = 5.40$ .

### **Implications for Nurse Practitioners**

The implications for nurse practitioners included an increase awareness for potential problematic or delayed outpatient primary care follow up. NPs also need to consider prescribing inhaled corticosteroids from the ED, if indicated for symptom control. Family education and encouragement are essential in reducing return ED asthma visits. Finally, it is vital to remember

to discuss with parents the underlying environmental factors and trigger exposures for pediatric patients with asthma.

### **Conclusions**

NP-assisted pediatric asthma case management can identify gaps in pediatric service provision and facilitate more timely access to outpatient care. Improved adherence to the primary outpatient plan can potentially reduce the frequency of worsening symptoms and number of unnecessary pediatric ED visits for acute asthma exacerbation.

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