F8- Does scheduling a primary care follow-up appointment as a component of a pediatric emergency department visit improve asthma outcomes? A systematic review and quantitative synthesis

Introduction: Pediatric asthma exacerbation continues to be a major public health issue associated with many negative health outcomes. Despite national programs to improve primary care asthma management, this condition is commonly treated in emergency departments (EDs) or urgent care centers, resulting in more than two million visits annually in the United States.

Objective: The purpose of this systematic review was to determine the impact of facilitated follow-up appointment scheduling in the ED on subsequent ED readmission rates and overall asthma care within the pediatric population.

Methods: The databases PubMed, Embase, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Cochrane Library were searched for relevant studies. Prospective studies that compared outcomes of facilitated follow-up primary care appointments with standard ED discharge instructions after an acute asthma exacerbation were selected. Inclusion criteria were pediatric population, ED setting, asthma exacerbation, and an intervention involving facilitated follow-up appointment at discharge. Exclusion criteria included patients with status asthmaticus, hospital admission, or urgent care settings. Of 1,790 studies retrieved, seven randomized controlled trials (RCTs) met inclusion criteria. Study quality and bias were assessed using the Cochrane Collaboration tool. Data regarding sample size, patient population, study design, and outcomes were extracted and evaluated to determine similarities across studies. Outcomes of interest included ED readmission rate at 30 days, ED visits within one year, primary care provider (PCP) follow up at 30 days, and controller medication use. Outcomes of interest were synthesized by group, and data were analyzed using descriptive and chi square statistics. Data analyses were conducted using SAS 9.3 statistical software.

Results: The seven RCTs included data from 2,283 patients aged one year to eighteen years of age who presented to the ED for acute asthma exacerbations. Study follow-up ranged from two weeks to one year post ED discharge. Facilitated follow-up appointments in the ED improved adherence with subsequent visits to the PCP (p=0.0028), and pooled data showed that controller medication use was higher in the intervention group compared to controls (67.6% versus 50%; p<0.0001); however, this did not impact 30-day ED readmission rates (p=0.26) or overall ED visits within a one-year period.

Conclusion: Scheduling follow-up appointments as a component of an ED visit improved PCP follow-up and controller medication use at 30 days. These encouraging results support the implementation of this intervention in the ED setting. More research is needed on PCP follow-up appointments after an asthma exacerbation to determine the post-exacerbation treatment and education necessary to continue to improve overall asthma care and reduce ED readmission.

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Background

- Emergency department (ED) visits for pediatric asthma exacerbation are common
- More than two million annual visits in the United States (US)
- Primary care provider (PCP) follow-up is recommended after an ED or acute care visit for asthma
- Best practices to improve patient follow-up with PCPs have not been established

Objective

The purpose of this systematic review is to determine if scheduling a primary care follow-up appointment as a component of a pediatric ED visit improves asthma outcomes.

Methods

- A priori protocol
- 4 databases searched: PubMed, Embase, CINAHL, Cochrane Library
- Inclusion criteria
  - Randomized controlled trials
  - Pediatric patients
  - ED setting
- PCP appointment facilitated by ED
- Outcomes of interest: ED readmission, PCP follow up, controller medication adherence
- Study quality appraised using Cochrane risk of bias assessment
- Data extracted and outcomes synthesized by group
- Data analyzed using descriptive and chi square statistics

Results

- Seven RCTs met inclusion criteria
- Six RCTs conducted in the US
- Represent data from 2,283 subjects
- All participants were English-speaking

Characteristics of Included Studies

<table>
<thead>
<tr>
<th>Author, Year</th>
<th>Study Sample</th>
<th>Intervention Description</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baren et al., 2006</td>
<td>N=384 Multicenter United States Ages 2-54 years</td>
<td>Usual care + free medication &amp; travel + reminder to schedule appointment</td>
<td>Repeat ED asthma visits; PCP follow-up; Controller medication use</td>
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<tr>
<td>Brown et al., 2006</td>
<td>N=129 Single site Michigan Age &lt;18 years</td>
<td>Usual care + education + scheduled appointment</td>
<td>Repeat ED asthma visits</td>
</tr>
<tr>
<td>Gorelick et al., 2006</td>
<td>N=352 Single site Wisconsin Ages 2-18 years</td>
<td>Usual care + scheduled appointment</td>
<td>Repeat ED asthma visits; PCP follow-up; Controller medication use</td>
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<tr>
<td>Sin et al., 2004</td>
<td>N=125 (42% &lt;18y) Single site Canada Ages 5-50 years</td>
<td>Usual care + scheduled appointment + reminder phone call</td>
<td>Repeat ED asthma visits; PCP follow-up; Controller medication use</td>
</tr>
<tr>
<td>Smith et al., 2004</td>
<td>N=527 Single site Missouri Ages 2-12 years</td>
<td>Usual care + scheduled appointment + monetary incentive</td>
<td>Repeat ED asthma visits; PCP follow-up</td>
</tr>
<tr>
<td>Teach et al., 2006</td>
<td>N=485 Single site Washington, D.C. Ages 1-17 years</td>
<td>Usual care + scheduled appointment with asthma clinic</td>
<td>Repeat ED asthma visits; PCP follow-up; Controller medication use</td>
</tr>
<tr>
<td>Zorc et al., 2003</td>
<td>N=279 Single site Pennsylvania Ages 2-18 years</td>
<td>Usual care + scheduled appointment</td>
<td>Repeat ED asthma visits; PCP follow-up; Controller medication use</td>
</tr>
</tbody>
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Note: ED = Emergency department; PCP = Primary care provider; Outcomes in bold were included in quantitative synthesis

Findings suggest that assisting patients with scheduling follow-up appointments during ED visits for asthma:

- Increases the rate of PCP follow-up
- Improves adherence with controller medication use within 30 days
- Has no significant effect on repeat ED use within 30 days or one year

Limitations of this systematic review include:

- No gray literature search
- Not all studies included in outcome data synthesis due to reporting differences
- Findings may not be generalizable to non-English-speaking youth with asthma

Conclusion

- Facilitated appointments improve short-term outcomes but effects on long-term outcomes remain unclear
- The use of EDs for asthma care persists despite connection with PCP
- Further research in these areas is needed

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