EFFECTIVENESS OF ASTHMA ACTION PLANS FOR ADULTS SEEN IN EMERGENCY DEPARTMENTS FOR ACUTE ASTHMA: A SYSTEMATIC REVIEW.

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Disclosure

The research team does not have any affiliation with a commercial organization that may have a direct or indirect connection to the content of this presentation.

Dr. Rowe was the principal investigator of one included trial; however, he was excluded from the selection of potentially eligible manuscripts and final inclusion/exclusion decisions.
Acute asthma

- Acute asthma is a common presentation to emergency departments.

- Emergency departments are important settings to prompt strategies to avoid undesired outcomes.

90%

- Improve with treatment
- Safely discharged

Rowe et al. Chest 2009; 135:57-65
Many have never received any asthma education

Patients presenting to the ED with acute asthma

Misunderstandings
- Chronic nature
- Triggers
- Role of medication
- Proper inhaler techniques

Under-recognition
- Under-treatment
  - Delay to therapy
  - Excess morbidity

Lack of appropriate outpatient care
- No access
- Not necessary
- Focus on the pharmacological treatment

Gaps in Knowledge  Gaps in care

Boulet et al. Can Respir J. 2013;20:265-69
Evidence on asthma education (adults)

- Self-management education and regular practitioner review for adults with asthma (Review)
  - Gibson PG, Powell H, Abrams M, Haywood H, Hensley M, Walters EH, Roberts JJL

- Limited information only) patient education programs for adults with asthma (Review)

- Education interventions for adults who attend the emergency room for acute asthma
  - Tapp S, Lasserson T, Rowe BH

Symptoms
- Hospitalizations
- ED visits for asthma
- Unscheduled doctors’ visits
- Work absenteeism
- Episodes of nocturnal asthma
- Indirect costs

Quality of life
- Hospitalizations
- Outpatient Follow-up
- Relapses
Current guideline recommendations

Written asthma action plans

Post-ED follow-up, review and education

GINA guidelines. [http://www.ginasthma.org](http://www.ginasthma.org)
Our data

Report having AAP
n=47 (27%)

Have potentially appropriate AAP
n=42 (24%)

Home Remedies only
n=5 (3%)

Report having no AAP
n=129 (73%)

No AAP
n=134 (76%)

Written AAP
n=6
(14% of AAPs)

Verbal AAP
n=36
(86% of AAPs)

Home remedies varied from using a humidifier to "Get to fresh air", "Breathe slowly, drink coffee, lay flat, arms up to open lungs, pound on back".

Cross et al. Can Respir J. 2014;21:351-56
Results

- Most patients with an AAP took action prior to the ED visit: no valid anti-inflammatory strategies.
- The first step was to increase asthma medication: no patients appropriately increased inhaled corticosteroids.

Multivariable analyses

- Use of ICS or ICS/LABA combination agents: aOR = 3.0; 95% CI: 1.14 to 8.07.
- Ever received asthma education: aOR = 3.2; 95% CI: 1.13 to 9.19.
Rationale for our systematic review

- Low uptake of written AAPs (~3%).
- Clinically ineffective strategies to prevent an ED visit.
- Initiatives to improve the uptake, understanding and early self-activation of valid AAPs during a loss of asthma control are needed.

Is the provision of written AAPs to adults seen in EDs for acute asthma an effective strategy to reduce relapses?
Systematic review

1. Comprehensive literature search
2. Unbiased study selection
3. Independent quality/fidelity assessment
4. Double data abstraction
5. Summary of evidence/Meta-analysis
## Characteristics of included studies

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Country</th>
<th>Sample size</th>
<th>Age (years)</th>
<th>Provision of the intervention</th>
<th>Outcomes</th>
<th>Follow-up period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cowie et al.</td>
<td>1997</td>
<td>Canada</td>
<td>139</td>
<td>Adults and adolescents</td>
<td>Within the first 12 months of the ED visit</td>
<td>Relapses, Admissions, Asthma control</td>
<td>6 months</td>
</tr>
<tr>
<td>Cote et al.</td>
<td>2001</td>
<td>Canada</td>
<td>98</td>
<td>&gt; 18 years old</td>
<td>At the time of the ED visit</td>
<td>ED visits, Lung function tests, Knowledge, Quality of life, Compliance with inhaler corticosteroids</td>
<td>2 weeks, 6 &amp; 12 months</td>
</tr>
<tr>
<td>Rowe et al.</td>
<td>2013</td>
<td>Canada</td>
<td>80</td>
<td>18-94</td>
<td>At the time of the ED visit</td>
<td>PCP follow-up visit after ED discharge, Relapses</td>
<td>30 and 90 days</td>
</tr>
</tbody>
</table>

**Note:** ED denotes emergency department; PCP = primary care provider.
## Fidelity of the interventions

<table>
<thead>
<tr>
<th>Study</th>
<th>Theoretical framework</th>
<th>Provider Training</th>
<th>Implementation</th>
<th>Receipt</th>
<th>Enactment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cowie et al.</td>
<td>✓</td>
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</tbody>
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# Meta-analysis - relapses

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Asthma action plans</th>
<th>Usual care</th>
<th>Risk Ratio M–H, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Events</td>
<td>Total</td>
<td>Events</td>
</tr>
<tr>
<td>Rowe 2006</td>
<td>2</td>
<td>31</td>
<td>6</td>
</tr>
<tr>
<td>Cowie 1997</td>
<td>19</td>
<td>91</td>
<td>19</td>
</tr>
<tr>
<td>Cote 2001</td>
<td>10</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>152</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>116</strong></td>
</tr>
</tbody>
</table>

Total events: 31

Heterogeneity: Tau² = 0.04; Chi² = 2.54, df = 2 (P = 0.28); I² = 21%

Test for overall effect: Z = 1.81 (P = 0.07)

Reduction 60%  Increase 4%
Sensitivity and Subgroup Analyses

Sensitivity:

Low RoB only: RR = 0.4 (95% CI: 0.19, 0.77)

Fixed Effects: RR = 0.5 (95% CI: 0.29, 0.91)

Odds ratio: OR = 0.5 (95% CI: 0.28, 0.95)

Risk Difference: RD = -0.12 (95% CI: -0.23, -0.02)

Subgroups:

Data unavailable on sex, age, severity.
Conclusion

No significant reduction in the proportion of relapses was associated with the provision of written AAPs to adults seen in the ED for acute asthma.

There is “teachable moment” for acute asthma in the ED; however, more research is needed determine the most effective educational intervention in this setting.

Reporting of non-pharmacological interventions needs to be standardized among scientific journals.
Acknowledgements

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Thanks!

Questions?