A Quality Improvement Project to Improve Inhaler Education in a Pediatric Emergency Department

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Disclosures

I have no actual or potential conflict of interest in relation to this presentation.

Background

- 20% of children in Baltimore City have asthma\(^1\)
- Rate of ED visits for pediatric asthma is among the highest in the nation\(^1\)
- Inhaled corticosteroids are proven to significantly decrease morbidity and mortality\(^2,3\)
- The metered dose inhaler (MDI) with spacer is the preferred inhalation device in children; efficacy is dependent upon proper technique\(^4,5\)
Background

- Rates of poor MDI/spacer technique are high among both patients and health care providers\(^6,7\).
- Practice guidelines support patient education on MDI/spacer technique\(^3,8\)
  - Physical demonstration
  - Assessment using a device specific checklist
  - Repetition until competent in all critical steps

Objectives

- **Purpose:** To improve MDI/spacer training in a pediatric emergency department (PED) by implementing a practice change of having patients with asthma demonstrate their technique prior to discharge; followed by assessment and documentation using a checklist in the EMR.
  - **Short term goal:** 100% of RNs in the PED will receive training and demonstrate competency in all critical steps of MDI/spacer technique
  - **Long term goals:** continued use of the checklist for 100% of asthmatics treated in the PED, 100% of patients treated for asthma in the PED will demonstrate competency in MDI/spacer technique demonstrations

Evaluation Form for MDI with Spacer

(NAEPP, 2007; Pradel et al., 2003)

**INHALATION TECHNIQUE**

**Code**

- **Educator:**
  - Yes = 1
  - No = 0

Please assess each of the following steps. Does the patient/caregiver:

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<th>Step</th>
<th>Patient</th>
<th>Caregiver</th>
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**Additional Information**

- **Required:** The patient demonstrated competency prior to discharge.
- **Optional:** The patient required additional education.

**Did the patient or caregiver require additional education?**

- **Yes**
- **No**

**Was the patient/caregiver able to demonstrate proper technique prior to discharge?**

- **Yes**
- **No**
**Evaluation Form for MDI with Spacer and Mask**

(NAEPP, 2007; Pradel et al., 2003)

**INHALATION TECHNIQUE**

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<th>Educator:</th>
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<td>No = 0</td>
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</tbody>
</table>

Please assess each of the following steps. Does the patient/caregiver:

1. Remove cap from inhaler and shake the inhaler vigorously.
2. Place the inhaler in the spacer.
3. Place the soft mask to the face so that mouth and nose are covered without leaks.
4. Press down on the canister once just as inhalation starts.
5. Breathe in slowly until the patient has taken a full breath.
   - If there is a whistle, the patient is breathing too fast, score as 0.
6. Keep the mask firmly in place for at least 3 to 6 breaths OR hold breath for at least 5 seconds, optimally 10 seconds (in this case the patient may remove mask).
7. Ask the patient if provider/educator instructed him/her to repeat. If yes, ask how long he/she would wait before taking the second puff. (Wait 1 minute between puffs)

**Did the patient/caregiver require additional instruction?**

Yes  No

**Was the patient/caregiver able to demonstrate correct technique at all steps prior to discharge?**

Yes  No

**Methods**

- Checklists were developed and incorporated into the EMR.
- Each RN received hands-on training on MDI/spacer technique followed by technique demonstration for assessment of competency.
- Asthmatics (and their caregivers) were asked to demonstrate their technique prior to discharge.
- RN assessment of patient technique was documented on the checklist.
- Education was provided to remedy any errors, with repeat demonstration until the patient demonstrated competency.
- Weekly chart audits were performed over 10 weeks to assess:
  - RN compliance with checklists
  - Patient competency at discharge
  - Need for additional education
  - Critical errors observed

**Results**

- Ninety-five of 138 (69%) charts that met criteria for audits had completed checklists in the EMR.

**RN compliance with checklist documentation**
Results

• One hundred percent of patients with documented checklists demonstrated competency in MDI/spacer technique prior to discharge from the PED
• Thirty-five percent of patients required additional education to correct critical errors in technique (n=33)
• Most patients with errors on initial demonstration committed one error (53%), however many committed multiple errors

Discussion

• A brief, hands-on training is an effective method of educating RNs and standardizing patient education on critical steps of MDI/spacer use
• The use of the checklists further contributed to standardization of patient teaching
• Results support the following key components of patient MDI/spacer education:
  – Patient/caregiver technique demonstrations
  – Assessment by a competent health care provider using a checklist
  – Education and return demonstration until competency is demonstrated
• Findings on the most commonly observed errors provide information on important areas of emphasis when providing patient education, particularly inhaling slowly
Conclusions

- Children with asthma in inner city settings are more likely to use the ED for care, and due to suboptimal rates of preventive asthma care these children and caregivers have a great need for asthma education.
- This project demonstrated that by having patients demonstrate their MDI/spacer technique for assessment by a trained and competent HCP, the opportunity was maximized during an ED visit to provide education on a critical component of asthma management.
- Project sustainability will be enhanced by training new RNs on MDI/spacer technique, as well as spread of the project to additional practice settings within the institution.

References


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- Holli Weaver, BSN, RN, Project Champion

Thank You!!!!!