Impact of Inhaler Technique Video-Education Tool on Pediatric Asthma

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Background

Asthma Prevalence in Baltimore City

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<th>United States</th>
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<td>Rate of Pediatric Asthma (%)</td>
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<td>[JOCR, 2016 Baltimore Co. Health Department, 2016]</td>
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- Caregivers of urban minority children:
  - Less than 4% were able to correctly complete 5 essential steps of inhaler technique (Reznik, Johnson-Silver, & Cao, 2014).
- University of Maryland Medical Center (UMMC) Emergency Department (ED):
  - 35% of patients/caregivers missed at least 1 step (Bell, 2018).
- Literature Findings:
  - Educational videos are equally effective at teaching inhaler technique when compared to clinician-led training and more-effective than MDI feedback devices (Normansell, Kew, & Mathioudakis, 2017; Trivedi, 2019).

Methods

- **Participants:** All pediatric patients (4-19 years) admitted to the UMMC in-patient pediatric floor for asthma exacerbation.
- **Intervention:** 2-minute video demonstrating correct MDI technique using MDI + Spacer + Mask
- **Access:** Participants used the video in their hospital room to start the video
- **Measurement:**
  - Pre- and post-test inhaler technique assessed on existing UMMC checklist
  - Staff’s compliance to intervention
  - 30-day follow-up telephone call inquiring if patients required repeat health care visit.

Implications for Practice

- Educational video should be used as the standard of care to teach pediatric patients/caregivers inhaler technique on the in-patient pediatric department.
- Most Commonly Missed Steps
  - Shake inhaler
  - Stand up or sit straight
  - Blow out to completely empty the lungs
  - Breathe in slowly without a whistle
- Benefits of video-education:
  - Time-efficient
  - Cost-effective
  - Unbiased
  - Easily viewed multiple times
  - Appeal to various learning-styles
  - Minimal time-input required by provider.
- Next Steps
  - Sustainability: Implementation as Unit’s Standard of Care
  - Clinical practice update
  - Video-list handout in unit’s welcome binders
  - Dissemination through project presentation

Aim 1: Inhaler Technique

**Question 2**

- MDI + Spacer + Mask: Pre-Post-Test Comparison (n=10)
- MDI + Spacer: Pre-Post-Test Comparison (n=10)

**Question 3**

- MDI with Spacer and Mask: Pre-Post-Test Comparison (n=6)
- MDI with Spacer: Pre-Post-Test Comparison (n=6)

**Question 4**

- Number of Patients (%), n=16

Aim 2: Intervention Compliance

**Question 2**

- Patients Admitted for Asthma Exacerbation: 16 (100%)
- Patients Who Completed Intervention: 16 (100%)
- Patients Who Completed Follow-up Call: 16 (100%)

Aim 3: Readmission Rate

**Question 2**

- 20-day Asthma-Related Readmission: MDI + Spacer + Mask, MDI + Spacer

References

2. Bell, L. (2018). A quality improvement project to improve training and assessment of nebulized dose inhaler and spacer technique in the pediatric emergency department. Unpublished manuscript, School of Nursing, University of Maryland, Baltimore, Maryland.

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