

Impact of Inhaler Technique Video-Education Tool on Pediatric Asthma

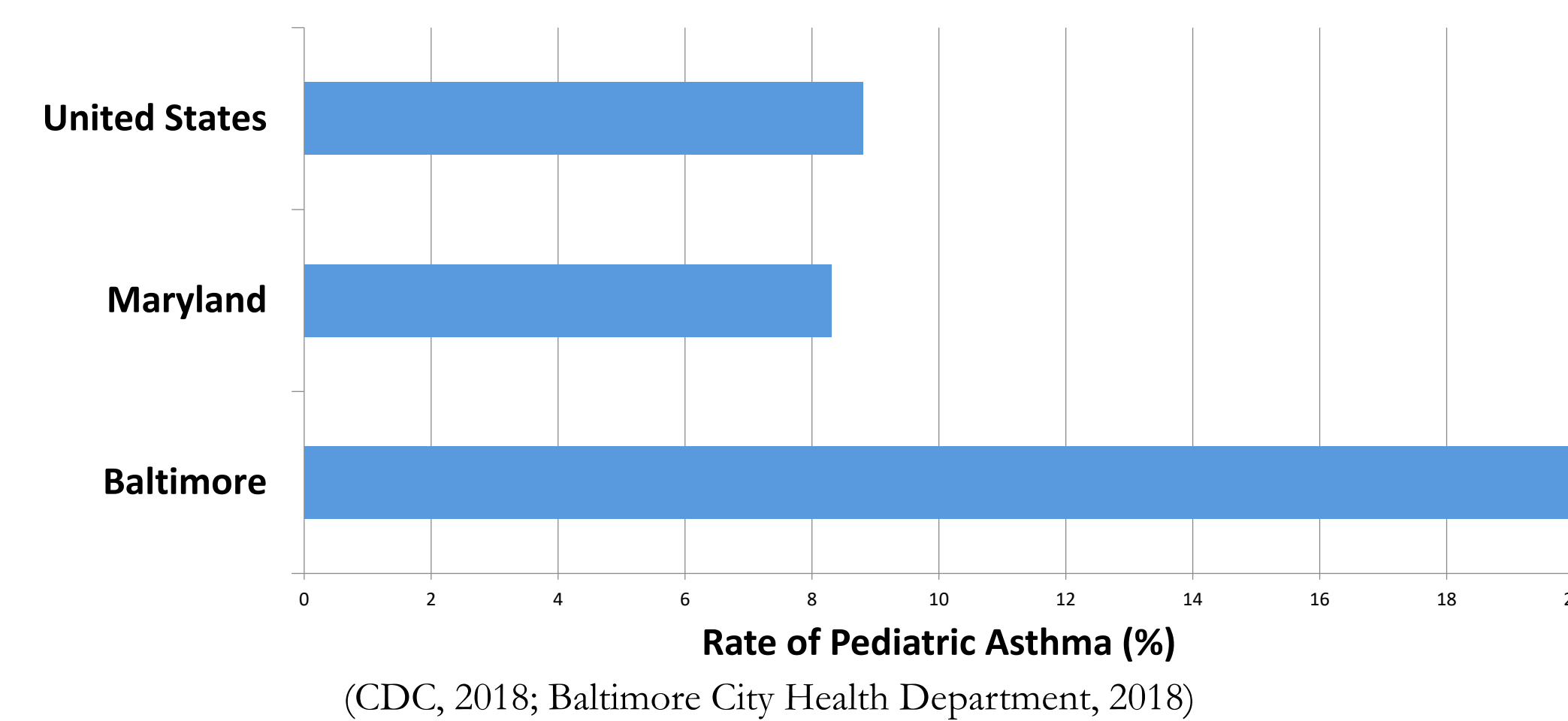
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Background

Asthma Prevalence in Baltimore City



- 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).

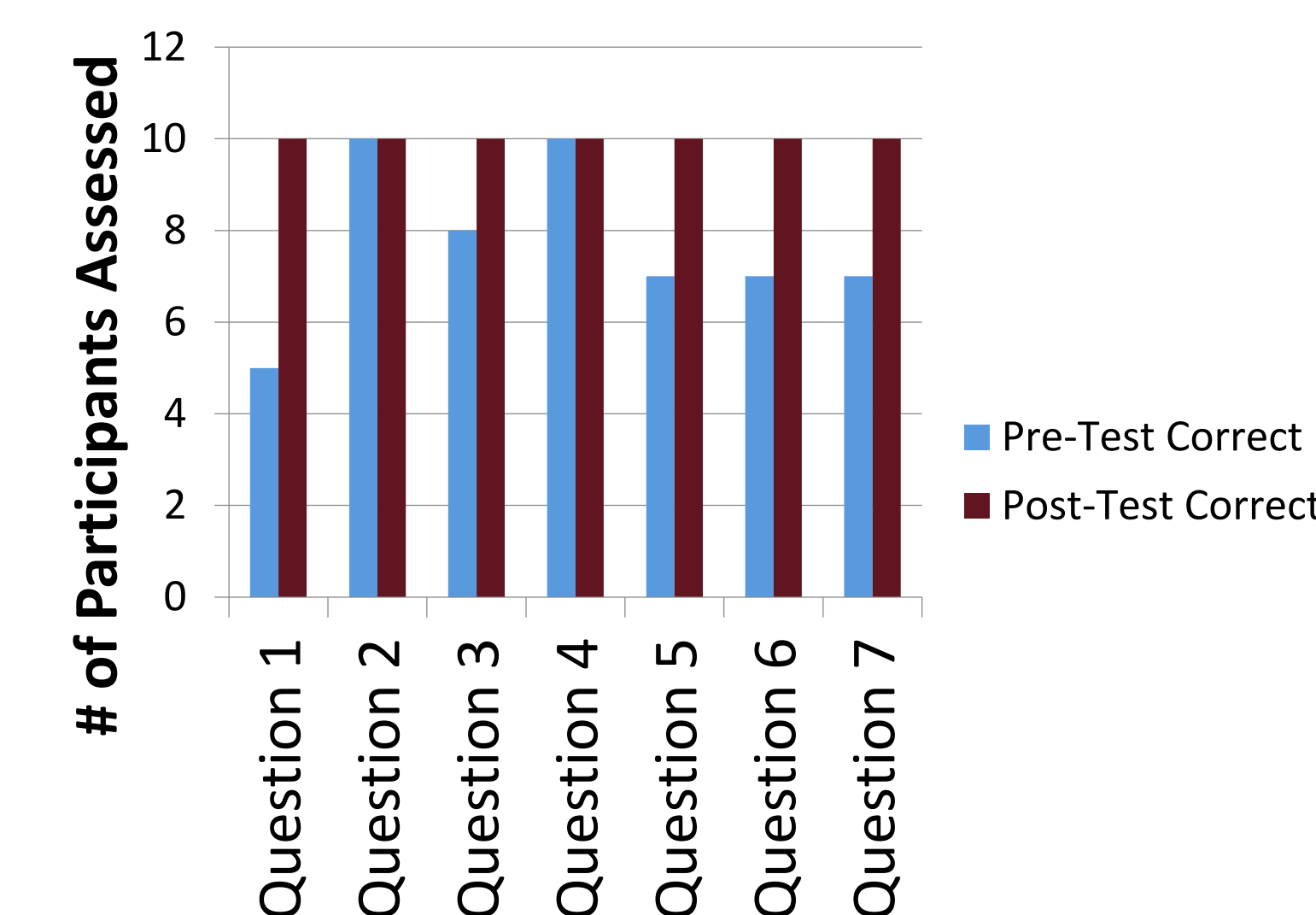
Methods

- Participants:** All pediatric patients (4-19 years) admitted to the UMMC in-patient pediatric floor for asthma exacerbation.
- Intervention:** 2-minute video demonstrating correct inhaler technique using
 - MDI + Spacer + Mask
 - MDI + Spacer
- Access:** Participants used the telephone 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.

Aim 1: Inhaler Technique

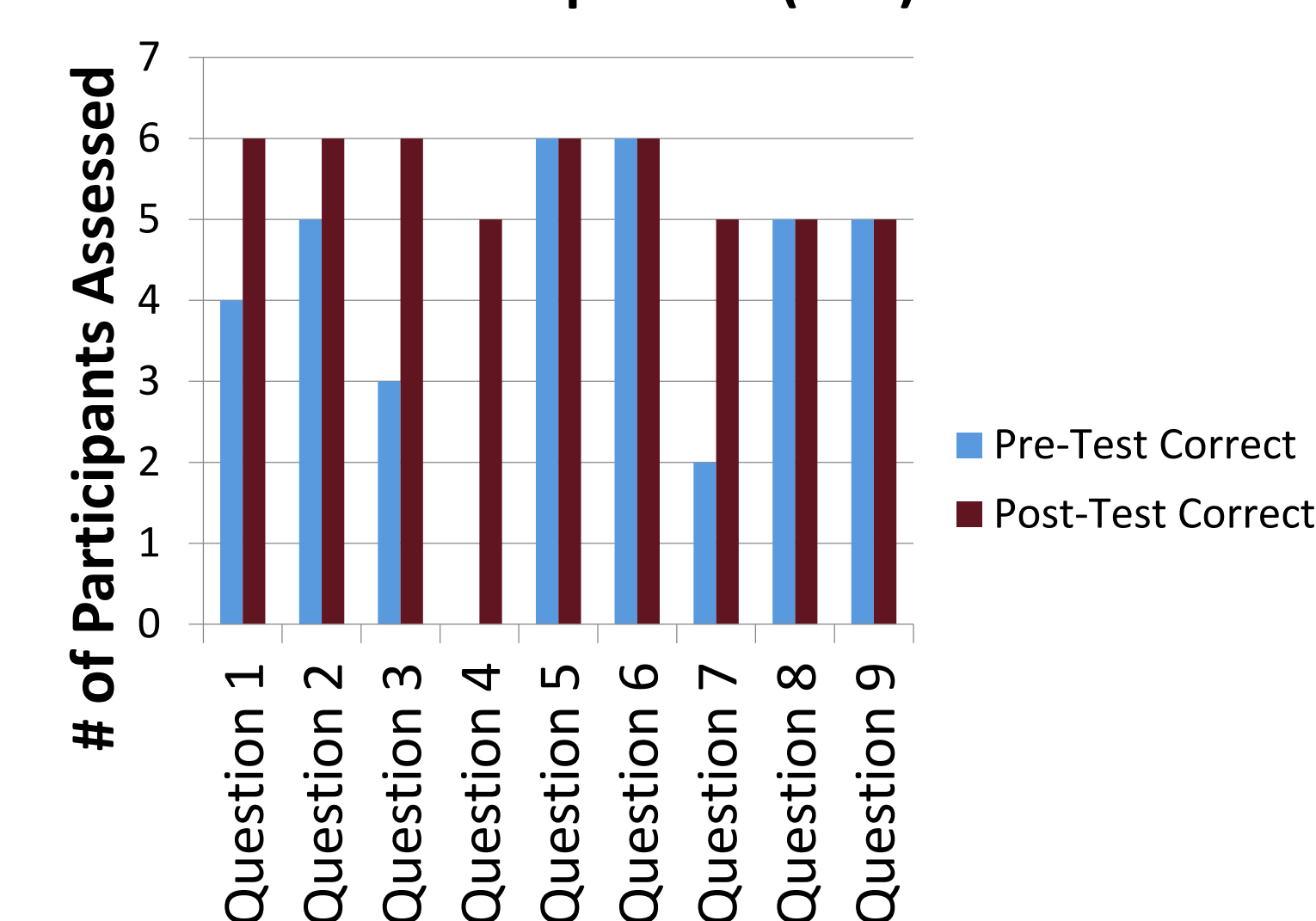
Aim 1. After receiving the intervention, participants will have improved ability to correctly perform inhaler technique from baseline assessed with an existing checklist.

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



Pre-test Median: 5.5 (IQR: 1);
Post-test Median: 7.7 (IQR: 0);
Difference Median: 1.5 (IQR: 1.25; p=0.007)

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



Pre-test Median: 6 (IQR: 1);
Post-test Median: 9 (IQR: 2);
Difference Median: 2.5 (IQR: 1.25; p=0.026)

Aim 2: Intervention Compliance

Aim 2. All patients admitted to the unit for asthma exacerbation will receive the educational-video intervention before discharge.

	Number of Patients (%), n-16
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

Aim 3. Patients who received the intervention will have reduced risk of Emergency Department (ED) visit, hospital re-admission, and urgent care visit within 30-days after discharge.

	MDI + Spacer + Mask	MDI + Spacer
30-day Asthma-Related Readmission		
ED	0	0
Hospital	0	0
Urgent Care	0	0

National Readmission Rate (Veeranki et al., 2018)
2.5%

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 up 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

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