

## Background

- Insufficient caregiver knowledge regarding the physiology and correct management of fever in children contributes to the overutilization of healthcare resources, increased cost, and adverse health outcomes in children. <sup>5, 8, 14, 18</sup>
- Presentation of discharge instructions must accommodate the vast learning needs of caregivers and aim to improve caregiver comprehension and confidence. <sup>18</sup>

## Problem Statement

- Lack of a multimodal education and resources for caregivers on the management of febrile children can lead to medication dosing errors, overutilization of medical resources, and caregiver ambiguity when caring for their child. <sup>8,18</sup>
- The purpose of this quality improvement project was to implement a multimodal education approach (MEA) on care for a febrile child to improve caregiver knowledge and preparedness.



Image 1

## Methods

- A quality improvement (QI) project design with a convenience sample of caregivers who presented with their child to a 12-bed children's emergency room
- Total of 10 caregivers participated
- The caregivers received discharge instructions using a multimodal educational approach (MEA) on care for a febrile child during their visit
- Knowledge was assessed using a pre and posteducation knowledge score
- Preparedness was measured by a posteducation preparedness score using the Brief Prepared (B-PREPARED) scale which has documented reliability. <sup>10</sup>
- Translation Model
  - The knowledge to action (KTA) framework is a continuous, non-linear theoretical model that depicts the high-level processes necessary to move from discover discovery into action <sup>9</sup>
  - The two distinct components of the KTA including knowledge creation and discovery guided the implementation of the MEA for this QI
- Literature Review
  - Completed from December 2019 to January 2021
  - Databases: Medline Complete, CINAHL Complete, Google Scholar, Cochrane Library, and Science.Gov were used
  - Search terms: caregiver, fever, education, pediatrics, emergency medicine, febrile, discharge
  - Inclusion Criteria: English-language publications from 2013–2021
  - Articles included: non-experimental studies, systematic reviews, randomized control trials, experimental studies, and qualitative studies
  - Johns Hopkins Evidence-Based Practice appraisal tool was used

Level of Evidential Strength	Number of Studies	Summary of Findings	Overall Quality
LEVEL I	6	Caregivers lack crucial knowledge to care for their febrile children at home that can be addressed with multimodal educational tools <sup>13</sup> Direct visual aids including pamphlets that emphasize critical points improve parental comprehension <sup>4,13,16</sup> Video instructions improve caregiver comprehension and retention of discharge instructions <sup>12,21</sup> Web-based education is feasible way to educate caregivers consistently and comprehensively in high volume emergency rooms, can be updated frequently <sup>11</sup>	B
LEVEL III	13	Evidence supports caregivers had increased knowledge with the addition of a video supplement with written discharge instructions <sup>22</sup> Symptom checkers included in web-based resources improve confidence in home management <sup>19, 20</sup> Health care providers are the main source of information for caregivers for caring for their children <sup>19</sup> Caregivers lack knowledge about a febrile temperature and temperature taking methods <sup>17</sup> Teach-back demonstration is effective in reducing medication errors <sup>3, 23</sup> Caregivers who receive both verbal instruction and demonstration with an instrument, such as a syringe, make fewer errors than those who received neither <sup>23</sup> Caregivers lack knowledge about level of care their child needs when febrile <sup>7</sup> Poor comprehension of discharge instructions leads to increased number of return visits <sup>1</sup> Caregivers have heightened anxiety when presenting with children with fever that can be done with educational tools that meet learner needs <sup>14</sup>	A & B
LEVEL V	1	Components of discharge instructions on care for a febrile child should include knowledge about recognizing symptoms of fever, medication management, non-pharmacological management, and return precautions <sup>6</sup>	A

## PICO Question

Does the implementation of an MEA on care of a febrile child (3 months to 18 years of age) directed toward caregivers increases caregiver knowledge and feelings of preparedness at time of discharge?



Image 2

## Intervention

- The MEA included a video, verbal instruction, a mobile application demonstration, teach-back demonstration, and written instructions
- The video titled *The Healthy Children Show: Fever* was created by the American Academy of Pediatrics (2016) was viewed<sup>2</sup>
- Caregivers were shown how to navigate the Peds Partner Mobile Application on an IPAD device which includes features such as symptom checker, information on level of care the child may need (primary care, urgent care, emergent care), and medication dosage instructions
- Caregivers then participated in a teach – back demonstration which reviewed their medication dosing, thermometer choice, and reasons to return to the emergency room for their child
- Age-specific handouts were provided to caregivers at the conclusion of their visit
- Written and verbal instruction were created by the Nemours Children's Health System (2020) <sup>15</sup> which reviewed key components of discharge education for a febrile child
- One lead nurses implemented the intervention following a standardized scripted approach for each patient



Image 3

## Results

- The sample consisted of 10 caregivers. Caregivers were female (90%,  $n = 9$ ), white (60%,  $n = 6$ ), between 24 and 34 years of age (80%,  $n = 8$ ), with high school as their highest level of education (70%,  $n = 7$ ). Caregivers had between 1 and 3 children in their household.
- Knowledge scores were not significantly greater after the MEA ( $Mdn = 7$ ) than before the MEA ( $Mdn = 6$ ),  $z = 25$ ,  $p = .054$ ; however, the differences were clinically significant with a large effect size ( $r = .61$ )
- There was a nonstatistically significant relationship between posteducation knowledge scores vs. posteducation preparedness scores,  $r = -.307$ ,  $p > .05$ , indicating that as knowledge scores increased, the perception of preparedness decreased

## Conclusion

- Median knowledge score differences were not statistically significant
- Limitations
  - Sample size was small due to the impact of COVID-19 on patient volume, with increased use of virtual video and urgent care appointments
  - Instrument reliability (Cronbach's alpha = 0.65) may have influenced the correlation between knowledge and preparedness
- Caregivers may have relied on past experiences, or knowledge beyond what was measured in the questionnaires that influenced their perceived preparedness
- With clinical significance of the MEA intervention demonstrated, future quality improvement projects and research are recommended

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Image 1. The Orange Tree Day Nursery [Online Image]. (n.d.). <http://theorangetreedaynursery.co.uk/sites/default/files/attachments/Child%20Fever.jpg>

Image 2. Child Trends [Online Image]. (n.d.). <https://www.childtrends.org/wp-content/uploads/2018/07/ParentingBriefJuly2018.jpg>

Image 3. Lehigh Valley Health Network [Online Image]. (n.d.). <https://www.lvhn.org/pedspartner@DL>. Reprinted with permission as per document.