EVIDENCE-BASED EDUCATION TO ENHANCE TRIAGE NURSES' FEVER MANAGEMENT GUIDANCE

by

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As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Kylie Jeniel Reck, titled Evidence-Based Education to Enhance Triage Nurses' Fever Management Guidance, and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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LAND ACKNOWLEDGEMENT

We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.

DEDICATION

For LR who sacrificed many hours of sleep so I could get a few more hours of studying or a few more clinic hours, endless encouragement, and innumerable meals made.

For M&M who were willing to watch one more episode of Bluey so I could get a bit more done.

For CS who got this train rolling, answered several panicked late-night calls, and told me I could keep going.

For the many other family members who kept me sane during the long hours.

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ABSTRACT

Purpose: The purpose of this Doctor of Nursing Practice (DNP) quality improvement project is to present a 15-minute presentation with pre- and post-surveys to review and add to the knowledge and confidence of triage nurses in advising caregivers of a fevering child.

Background: Many parents worry excessively about fevers in children, leading to unnecessary visits to healthcare providers and overtreatment with medication. These concerns can be reduced through education provided by triage nurses. By providing parents with accurate information about fever management and when to seek medical attention, triage nurses can help reduce unnecessary healthcare utilization and improve patient outcomes.

Methods: This quality improvement project used a quantitative quasi-experimental method with a convenience sample of a group of triage nurses at a midsized suburban city in central Utah. Pre and post-surveys with an educational presentation were utilized. With descriptive statistics applied the change in knowledge and confidence level were examined.

Results: After the intervention, triage nurses demonstrated more consistent and accurate understanding of fever management principles, and significant increase in confidence in providing advice to caregivers of fevering children.

Conclusions: This DNP project aimed to improve triage nurses' knowledge and confidence in advising parents of children with fevers. After watching an educational video, the nurses demonstrated significant improvement in both knowledge and confidence. This suggests that targeted educational interventions can empower triage nurses to provide better guidance to parents, potentially reducing unnecessary healthcare visits.

INTRODUCTION

In 1973 the first turkey pop-up timer patent was filed (Edwards, 2017). This innovative idea allowed cooks to know when the internal temp of the turkey reached high enough, and it was time to remove it from the oven. How convenient would it be if children came with their own pop-up timer to alert their caretaker when it was time to go see a health care provider? Unfortunately, children can't articulate when they are sick enough to go see a health care provider and this leaves the responsibility of knowing when to be seen by a doctor, to the caregiver. Triage nurses can work with the caregivers of a fevering child to assist them in knowing what a fever is, when to seek further help, and how to properly treat it at home.

Background Knowledge and Significance

As many as one-third of children are seen at primary care doctor's offices due to a fever (Elkon-Tamir, 2017). Parents' erroneous beliefs about childhood fevers can frequently lead to overtreatment, anxiety, and unnecessary consults with healthcare providers. The unrealistic fear of a fever was coined by Barton D. Schmitt in 1980 as fever phobia and is still prevalent today. Triage nurses are often the first contact of a parent who is concerned about a fevering child and are thus able to provide education in fever management. Healthcare providers can often unintentionally be feeding caretakers fever phobia by recommending inappropriate treatment of mild fever with antipyretics (El-Radhi, 2018). Educating parents about fever management and the reasoning behind fevers can greatly reduce fever phobia and improve patient outcomes (Peetoom et al., 2017).

Providing parents with basic fever management education has shown a statistically significant decrease in unnecessary healthcare consults (Peetoom et al., 2017). Once parents

knew how to manage the fever, and when to seek further help they were able to confidently care for their child at home instead of contacting the office. Shrank et al. (2019) identified overtreatment as one of several categories of wasteful spending in the current U.S. healthcare system. Seeking excessive healthcare consultations or using antipyretics inappropriately falls into this category. The money that is used for these visits and treatments can be spent elsewhere for needed interventions. Triage nurses can directly affect the number of office visits and antipyretic treatments with proper education of a parent with a fevering child.

Local Problem

In January 2024 triage nurses at a pediatrician's office in a midsized suburban city in central Utah received 3,514 incoming calls from caregivers (A. Simpson, personal communication, July 15, 2024). This leads to a substantial portion of each day addressing fever education to combat fever phobia. With dependable evidenced-based education given by the triage nurses, parents can be empowered to correctly manage their fevering child at home. Receiving this education can help reduce fever phobia and unnecessary sick visits for fever management. By reducing unnecessary healthcare consults, the practice can focus on patients of higher acuity and thus bring more profit into the practice as well.

Intended Improvement

Project Purpose

This evidence-based quality improvement project aims to improve the knowledge base and confidence of triage nurses concerning fever management at home. The goal is to create an educational presentation that will allow triage nurses to empower parents on how to treat a fevering child at home and when to seek further help.

Project Question

Does an educational presentation on fever management to triage nurses compared to current practice, increase the knowledge and confidence of nurses in educating parents on fever management?

Project Objectives

The Proposed project objectives for this project include:

1. Administer a training session for triage nurses to increase their knowledge of fever management.
2. Conduct a survey to assess triage nurses' confidence in fever management.
3. Increase the knowledge and confidence of the triage nurses in advising a caregiver of a fevering child.

Theoretical Framework

The theory that helped drive this project was Lewin's Theory of Change (Bamberg, 2018). It is made up of three different subsections addressing the need for change, taking action, and continuing to make the change part of the daily workflow. The quality improvement project of providing triage nurses with an education class on fever management at home is not going to have any effect if the nurses do not first realize the need for change. Once the reason for the change has been established, an action can be taken and put into daily effect.

Lewin's first subsection was identified as "unfreeze" (Bamberg & Schulte, 2018). This opening phase involves identifying and communicating the problems or limitations of the status quo to encourage openness to change. Statistics showing the cost of unnecessary healthcare consults due to fevers can be utilized (Peetoom et al., 2017). The risks of medication errors by

the caregiver of antipyretics can also be outlined to show the limitations of the status quo of low-grade fever treatment. The nurses are more likely to create change when they understand the rationale and potential benefits.

The next subsection is “change” (Bamberg & Schulte, 2018). This is where the intervention is presented to enact change. This includes an outline of the new project or tool, and the education to be able to use said tools or projects. Individuals become open to learning new approaches and ultimately adopting the intended change. Additionally, feedback should be encouraged at this time to help drive improvement in the new process. This would include the education classes and specific information that the triage nurses would be given to educate the parents of a fevering child.

Lastly is the “refreezing” stage. This segment details how to then solidify the changes into everyday practice and create a new norm (Bamberg & Schulte, 2018). From incentives or rewards to statistics showing improvement, celebrating the change will help set improvement. For this project, this concept will be accomplished by administering a survey to the triage nurses after the educational class to reinforce the change or new norm of fever management.

Lewin’s theory is valuable as it gives healthcare providers a framework through which they can view the entirety of the organization, thus including any areas in need of improvement. This theory is a great fit for this project as it allows for an overall view of what the problem is, a solution, and an implementation while still allowing for feedback on the process.

Literature Synthesis

Evidence Search

A thorough search of the literature was conducted in PubMed and CINAHL to establish the existing evidence surrounding providers' knowledge base of childhood fever management at home and the caregivers' resulting plan of care. Keywords such as "childhood fever management", "pediatric fever management" and "primary care" were used and resulted in 588 resulting articles PubMed (541), CINHAL (47). With the use of MESH and keywords including "caregivers," "parents," "nursing," "childhood/pediatric," "home care," and the dates of 2017-2024 the results were narrowed down to 47 articles PubMed (36), CINHAL (11). Upon further examination of the titles and abstracts 11 articles were included that pertained to this DNP project.

Comprehensive Appraisal of Evidence

Several different types of literature were assessed for this project. There was one systemic review of the effect of education at well-child checks on fever management (Peetoom et al., 2017), one scoping review of the educational interventions for fevers (Arias et al., 2019), one randomized control trial to improve the current education materials available (Kelly et al., 2019), one cluster-randomized controlled trial focusing on an informative booklet (de Bont et al., 2018), one quasi-experimental study to look at a simulation-based education program (Tavan et al., 2022), one quantitative experimental study for a specific educational handout, one quality improvement project on improving current education materials (Edwards et al., 2020) an observational, adaptive, prospective cohort study looking at the effectiveness of a fever educational mobile application (Szőke et al., 2023), one cross-sectional study reviewing if the

primary care provider made a difference in ER visits (Elkon-Tamir et al., 2017), two clinical manuals that detailed the recommendations and guidelines for providers (Rosen, 2009) and one descriptive study reviewing the need for triage nurses in the absence of the availability of a primary care provider (Johnson &Mitchell, 2020).

The overall theme of the literature was that there is a need for further caregiver education to improve knowledge and confidence in fever management at home to reduce unnecessary healthcare consultations (Kelly et al., 2019; Peetoom et al., 2017). Triage nurses are in the position to educate caregivers to avoid unnecessary aggressive, and non-evidence-based approaches to fever management (Elkon-Tamir et al., 2017). Being able to correctly treat and identify when a higher level of care is needed will greatly improve the child's health outcomes.

Strengths of Evidence

There is a consensus in the research that providing further education on fever management to caregivers leads to better outcomes for the child (Edwards et al., 2020). Tavan and his colleagues (2022) used simulation-based education to increase caregivers' knowledge of fever management. Other studies looked at the effectiveness of a physical handout or application on their phone for parents to be able to refer back to (de Bont et al., 2018; Kelly et al., 2019), (Szőke et al., 2023). Additional studies focused on where the education for fever management was given such as urgent care or primary care (Elkon-Tamir et al., 2017; Peetoom et al., 2017; de Bont et al., 2018). This wide range of teaching styles helps to assist caregivers learn the material in a format that works best for them. Whether the patient is presenting at the ER, urgent care, or pediatrician's office, each caregiver's situation should be assessed to determine what education material is best for them.

Triage nurses play a critical role in rapidly assessing patients and determining the most suitable care setting. They assist caregivers in assessing their needs, determining the needed level of care, and providing prompt evidence-based therapeutic interventions as needed. Each patient is going to have a different starting point of education and a different level of need. Johnson and Mitchell (2020) confirm that one of the main roles of a triage nurse is to foster collaboration for the best patient and caregiver outcomes based on their individual needs.

Another strength of the evidence is the consensus that the first step of fever management is a proper definition of a fever and the reason why the body fevers (Arias et al., 2019; de Bont et al., 2018; Elkon-Tamir et al., 2017; Kelly et al., 2019; Peetoom et al., 2017; Sun, 2017). Once this baseline knowledge foundation is laid, further education on when and how to treat the fever can be given. Rosen (2009) explained that one of the most common misconceptions found among parents is that a fever of any degree needs to be treated. Elkon-Tamir (2017) expanded that this misconception can lead to inappropriate management of the fever preventing the body from fighting off the infection.

Simple consistent reassurance is needed that a fever only needs to be treated depending on the comfort level of the child not the degree of the temperature (Peetoom et al., 2017). As many as 20 million children in the United States present to the emergency room for non-urgent matters such as fever management (Edwards et al., 2020). The non-urgent presentation of these illnesses can be treated at home with proper education. Caregivers are labeling fevers as a disease rather than a symptom of the illness (Arias et al., 2019). The goal of fever management is aimed at the comfort of the child until the underlying cause of the fever can be diagnosed.

Weaknesses of Evidence

Although several different suggestions for education can be found in the literature, there is rarely any follow-up on the longevity of knowledge retention. Sun (2017) addressed the need for future retrospective reviews to look at the return rates of patients who were originally seen for fever management. Kelly et al. (2019) included a 2-week follow-up after education was given showing that there was a decrease in incorrect fever management techniques. However, the reoccurrence of a caregiver seeking fever management assistance with further illnesses was not assessed. Further weaknesses in the studies were small sample sizes, single site evaluation, and low compliance with using the recommended educational materials.

Gaps and Limitations

One gap in the current evidence is the role of nurses in fever management. Edwards et al. (2020) made a bold empowering statement that nurses can facilitate and drive change. Triage nurses are often the first point of contact for parents who are concerned about their children. They can provide clear, simple, evidence-based fever management education. Additional quality improvement and trials should be completed to determine the most effective way that nurses can improve caregivers' knowledge and skills of fever management.

METHODS

Project Design

A quantitative quasi-experimental method with a convenience sample of a group of triage nurses at the designated location. The design lacks the randomization that a true experimental method would hold, however, their results are more likely to apply to similar real-world situations such as this project (Ewing & Park, 2020). A short 15-minute evidence-based

presentation on fever management, proper home care, and effective strategies to convey information to parents was recorded. A link to the video and to Qualtrics will be emailed to all participants meeting the inclusion criteria, which includes a short survey for the triage nurses to assess their current knowledge and confidence levels of fever management. The Qualtrics link will also include a post-survey for the same group of triage nurses. This post survey will include qualitative questions examining the nurse's motivation, and additional techniques they have learned to help educate parents of febrile children. Thus the qualitative design section will look at the why behind each nurse's education techniques (Renjith et al., 2021).

Model for Implementation

The Institute for Healthcare Improvement (IHI) has developed a model to follow for quality improvement (2022). The model functions through the interaction of two key sections. An initial section evaluates three questions to guide the framework of improvement. These three questions look at the aim, measures, and changes (IHI, 2022). Once the framework is set, the next section focuses on the implementation of the project with the plan, do, study, act (PDSA) cycle. Using this model ensures that this project has the direction and the means to enact change.

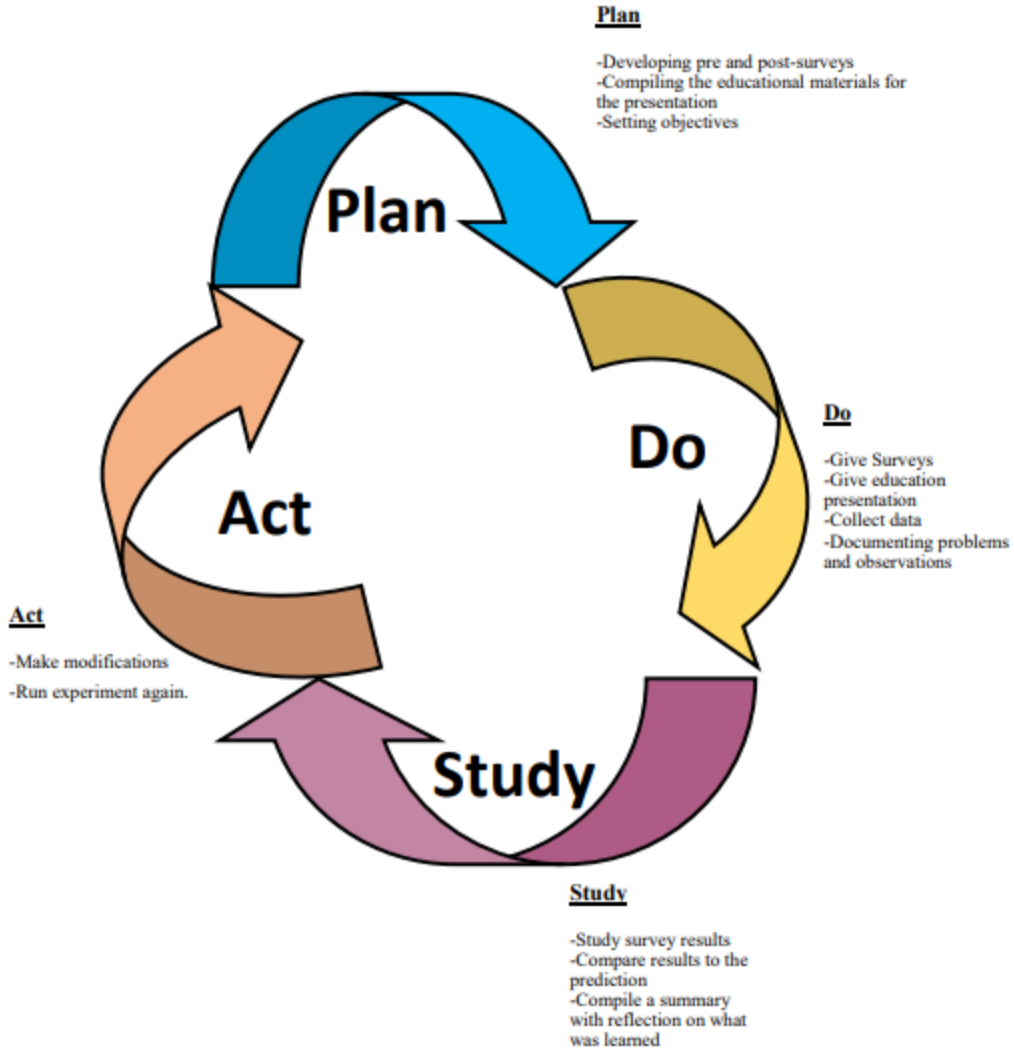
In developing this project, the aim is to answer the question of what we're trying to accomplish. Thus, we're aiming to improve the knowledge base and confidence of triage nurses concerning fever management at home, to better educate caregivers of a fevering child. Secondly, the measure answers how to know if there is an improvement with the change made. This is done by surveying before and after the educational presentation. Lastly, we answer what change can be made to result in an improvement. With an educational presentation and handouts,

we'll ensure the nurses are giving the same evidence-based information to each caregiver with a fevering child.

When incorporating the PDSA cycle, the first step is making the plan to test an intervention (IHI, 2017). This project included developing pre and post-surveys, compiling the educational materials for the presentation, setting objectives, and making predictions. The next step is to do the intervention or give the surveys and the educational presentation. Collecting the data as well as documenting problems and observations are included in this step (IHI 2017). The subsequent step is to study the results of the surveys and compare them to our predictions. A sentient summary was made with a short reflection on what we've learned. Lastly is to act or make modifications and run the experiment again (IHI, 2017). The full cycle is shown in Figure 1. From incorporating suggestions from the other triage nurses to taking the education to other primary care practices, action must be taken to plan for the next PDSA cycle.

Figure 1

PDSA Cycle



Note. The full cycle of plan, do, study, and act is shown detailing how this project fits into each section (IHI, 2017).

Setting and Stakeholders

The research and education were completed in a privately owned primary care pediatric practice in Utah County, Utah. This practice has 43 providers (Doctors, physician assistants, & and nurse practitioners) as well as 25 triage nurses across 5 locations (Alpine Pediatrics, 2023).

They have a wide range of patients from diverse backgrounds with various healthcare needs, and a wide range of health literacy (United States Census Bureau, 2023).

The main stakeholders involved are the triage nurses. These nurses oversee answering phone calls from concerned parents of the patients seen in the clinic, determining what level of care is needed, and providing home care as appropriate. These employees have a wide range of pediatric experience ranging from their first job out of nursing school to 14+ years at the clinic. Additional stakeholders include the nurse manager who arranges access to the triage nurses during a staff meeting and will assist in the collection of the data in the form of surveys.

Planning the Intervention

Current evidence-based literature was reviewed and utilized in planning this short educational presentation. Once the Internal Review Board approved the project, a link to an education video and to Qualtrics with the pre- and post-surveys was emailed to all participants. They were given a 5-day window to watch the education and submit responses. The pre-survey with Qualtrics included a short survey (Appendix E) to assess the confidence level of giving caregivers advice, and basic knowledge level of fever management. Then a 15-minute prerecorded video presentation was viewed detailing the benefits of fevers, current home care recommendations from the American Academy of Pediatrics (AAP), and when to seek further care. It also gave information and tips on how best to educate parents of an ill child. At the conclusion of the video, participants were asked to take the post-survey (Appendix E) addressing the knowledge and confidence level of the nurses to assess for any change. There were also sections in the post-survey for the participants to share their personal experiences with fever management education and any further tips.

Participants and Recruitment

A convenience sample was used from the staff of triage nurses at a pediatrician's office in a midsized suburban city in central Utah. A recruitment email (Appendix C) was sent out to the eligible triage nurses. This email detailed the time commitment, expected participation, and what will be done with the results, as well as the informed consent (Appendix B). The inclusion criteria for participating in this DNP project is a triage nurse who works at the designated pediatrician's office, speaks English, is willing to view the educational video, and fills out the survey before and after the presentation. There were 9-10 participants. The exclusion criteria were any triage nurse who isn't giving direct homecare advice to caregivers of patients. No incentives or compensations were given

Consent and Ethical Considerations

The U.S. The Department of Health and Human Services (2022) defines consent as ensuring participants clearly understand the study's goals, procedures, and potential risks and benefits before they agree to participate. This ongoing process includes constant feedback from participants to the DNP student.

The DNP student included a consent form as seen in Appendix B in the recruitment email that was reviewed before any surveys were taken. The nurse manager was made aware of the presentation contents ahead of the presentation to help inform her staff. The participating registered nurses were all informed of the voluntary status of the project and that they could opt out of the project at any point thus addressing autonomy. The DNP student also disclosed that the information collected would be kept confidential and secure for research purposes only. The

sole burden of the participants was the time and energy taken to complete the surveys and listen to the presentation.

Participants were included based solely on registered nurses with the involvement of offering education to parents of ill children. All relevant stakeholders were allowed to participate, thus ensuring proper inclusion and a just system. Beneficence will be addressed by ensuring that the results of the surveys of the triage nurses are kept confidential. The surveys didn't include any identifiers, and the results published are the analytic statistics, not the individual results.

Data Collection

A pre- and post-survey was created by the DNP student using evidenced-based research (Arias et al., 2019; Elkon-Tamir et al., 2017; El-Radhi et al., 2019; Tavan et al., 2022). Both surveys were reviewed by an expert in the pediatric field for accuracy (Appendix D). Approval from the University of Arizona Internal Review Board was gained before the collection of data. An email was sent that included a link to an educational video as well as a link to Qualtrics which is an electronic platform for surveys. The pre-survey was carried out at the start of the presentation, followed by a 15-minute recorded video presentation. At the conclusion of the video, triage nurses completed a post-survey. At the conclusion of 5 days, the data of the surveys was compiled from Qualtrics.

Data Analysis

Once the data was collected, the results were reviewed via the Qualtrics reports. Descriptive statistics as used to look at the mean, median, and mode to assess the variability of the results, in addition to the standard deviation and the range (De Brito et al., 2023). These were

all be reviewed to see if the intervention shows any significant differences in the outcome (Rees, 2016).

RESULTS

Demographics of Participants

In total, 10 triage nurses participated in the project. They had a wide range of years of experience. 20% (n=2) of them had only two years of experience, whereas an additional 20% (n=2) had 35 years of experience. The rest of the responses were evenly split at 10% (n=1) with 4, 5, 10, 16, 20, and 30 years of experience. The average times a day that a triage nurse would advise parents on fever management ranged from 1 to 15 times a shift as seen in Table 1. This left an average of 6.4 times a shift, and a median of 5 times a shift

Table 1

Participant Demographics

Component	Sample N=10
Years of Experience	
2	20% (n=2)
4	10% (n=1)
5	10% (n=1)
10	10% (n=1)
16	10% (n=1)
20	10% (n=1)
30	10% (n=1)
35	20% (n=2)
Times a Shift Advising Fever Management	
1	10% (n=1)
3	20% (n=2)
4	10% (n=1)
5	20% (n=2)
8	10% (n=1)
10	20% (n=2)
15	10% (n=1)

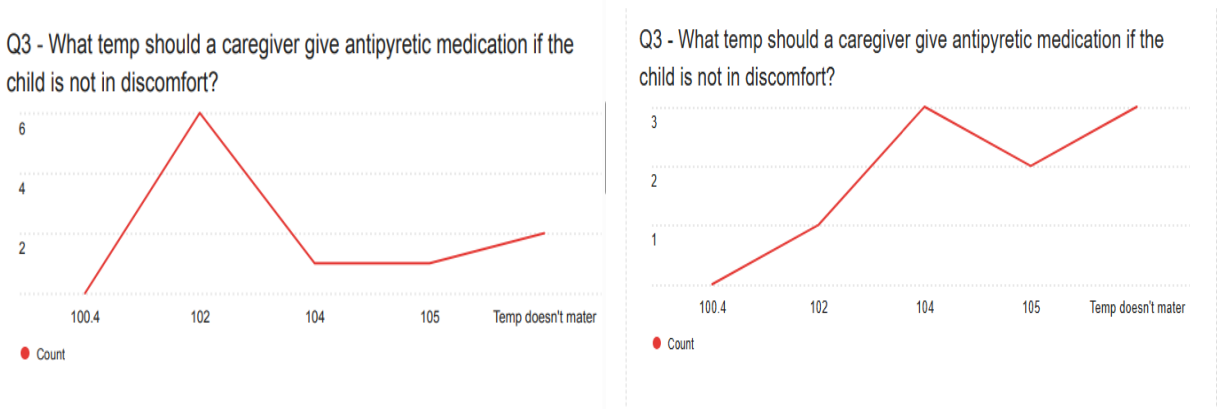
Outcomes

A link to the surveys and educational video was active from October 25, 2024, through October 31, 2024. All responses were recorded and analyzed via Qualtrics, an electronic survey program. 10 participants responded to the pre-survey, and nine participants responded to the post-survey. Analysis of each question was compiled via Qualtrics for review.

There were a few questions that looked at the knowledge level of the triage nurse before and after the short education presentation. In Figure 2 the responses to the pre-and-post survey are specified. The was a greater shift in responses to treating a fever with medication to a higher temperature in a comfortable child. Interestingly the correct answer was to treat at 104, but the same number of participants selected that the temp doesn't matter.

Figure 2

When to Administer Medication

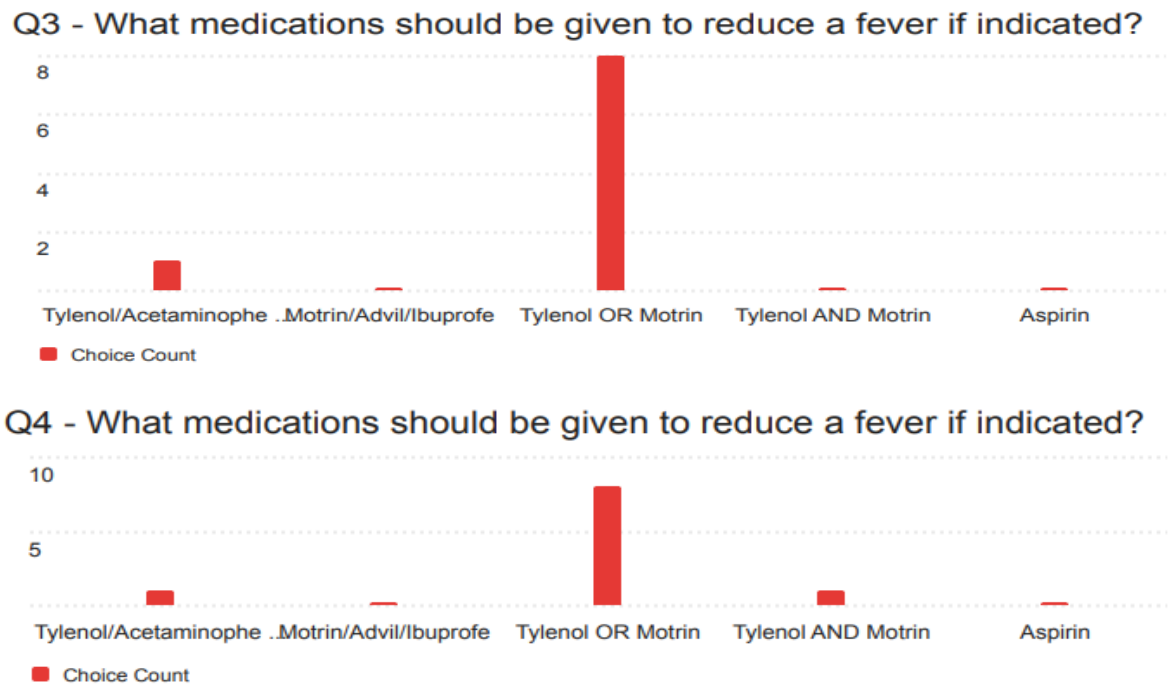


Note: Pre survey and post survey respectively

Another one of the knowledge-based questions addressing what medication to give, showed little to no change as shown in Figure 3. Since there is one less participant responding, no distinction can be made if there was a change in response, or lack in response. Most of the participants answered correctly with Tylenol OR Motrin.

Figure 3

What Medication to Administer



Note: Pre survey is listed first, followed by the post survey

The same number of participants responded that they should give Tylenol or Motrin to both the pre survey and the post survey. This is true for the number of participants who responded that Tylenol/Acetaminophen should be given. Lastly a question was asked seeking when the fevering child should go to the ER in Figure 4.

Figure 4

When to Go to the ER

Q6 - What are the reasons that a caregiver should have their child seen in the ER? (Select all that apply)

Field	Choice Count
Fever of 100.4 or higher for any child	0
Fever lasting longer than 48 hours but no other symptoms and under 105	2
Temperature of 105 or higher	9
The child last urinated 5 hrs ago	0
The temperature is under 105 but didn't change with medication.	4

Q4 - What are the reasons that a caregiver should have their child seen in the ER? (Select all that apply)

Field	Choice Count
Fever of 100.4 or higher for any child	0
Fever lasting longer than 48 hours but no other symptoms and under 105	0
Temperature of 105 or higher	8
The child last urinated 5 hrs ago	0
The temperature is under 105 but didn't change with medication.	1

Note: Pre and post survey results respectively

There was a narrowing in the answers with less deviation in the post-survey results. Even though the question was a select all that apply, there was only one correct answer being a temperature of 105 or higher.

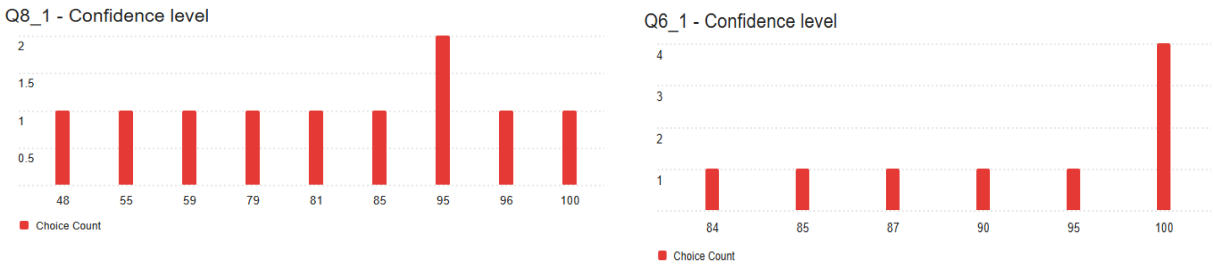
The next set of questions were open text to assess the triage nurses' level of understanding of the overall goal of fever management, and non-pharmacological ways to treat a fever. The overall topic of both the pre and post surveys for non-pharmacological ways to treat a

fever were light layers and fluids. Variation in answers was minimal and not significant. For the overall goal of fever management, the pre survey mainly received responses based around providing comfort, but there were a few outlying responses addressing the actual temperature, and dehydration. The post survey results were unanimous for focusing on comfort of the fevering child. Thus, there was a slight improvement in this knowledge base level.

Finally, the last question reviewed the confidence level of the triage nurse in advising a caregiver of a fevering child. Figure 5 shows the significant increase in confidence levels after the educational presentation. The mean increased from 79.30 % in the pre survey to 93.44% in the post survey.

Figure 5

Confidence Levels



Note: Pre survey and post survey

At the end of the post survey a question was left asking for any feedback. Six of the participants responded, with five of them stating that everything was great. One suggested providing additional information on how to educate about seizure management and precautions in the event one does happen.

DISCUSSION

Summary

The best way to combat fever phobia in caregivers and thus reduce unnecessary office visits is education (Kelly et al., 2019; Peetoom et al., 2017). The main objective of this DNP project was to increase the knowledge and confidence of triage nurses in advising a caregiver of a fevering child. A small group of 10 triage nurses completed pre-surveys assessing where their knowledge and confidence levels stood at baseline. They all then viewed a 15-minute educational presentation addressing the definition of a fever, when to seek further help, and recommended homecare. Lastly 9 triage nurses then completed a post-survey looking for any deviation from the afore-mentioned baseline. At the conclusion of this project, triage nurses increased their scores for both knowledge and confidence in providing medical care about fever management to caregivers.

Interpretation

The project's most significant outcomes included an increase in the mean of 14.14% of self-reported confidence levels of nurses giving fever management advice. This increase in confidence can be directly related to the increase in knowledge as shown by the improved results of the post survey. As previously mentioned, in the post survey many participants were inclined to treat a fever with medication at higher temperatures, if the child was comfortable. Surprisingly, just as many participants thought the temperature itself didn't matter, as did those who correctly identified 104°F as the treatment threshold. Comparatively nurses in the pre survey incorrectly concluded that a comfortable child with a temp of 102 should be treated.

By means of this, it can be determined that a short educational presentation can increase triage nurses' ability to assist caregivers to care for a fevering child. These findings are greatly supported by the several other studies done on fever management education (deBont et al., 2018; Elkon-Tamir, 2017; Kelly et al., 2019; Peetoom et al., 2017; Szoke et al., 2023).

Implications

Practice

One of the overall themes of the literature is the need for further caregiver education (Kelly et al., 2019; Peetoom et al., 2017). This starts with the triage nurses when they receive a call from a caregiver with a fevering child. This quality improvment project strengthens the knowledge and confidence level of a triage nurse to inturn empower caregivers to care for their own children.

Education

This entire quality improvement project is based on education. Even though all the triage nurses received their registered nurse license, they all had different answers to the knowledge base questions, and different confidence levels. This project shows how a short educational instructional video can impact the medical advice given. Reviewing the basic protocols yearly can ensure that caregivers are getting the same information regardless of what triage nurses address their concerns.

Research

Although this project focuses on quality improvement, it offers a foundation for further research into the impact of fever education on triage nurses decision-making and the correlation of caregiver's healthcare utilization. First, additional information is needed on the effectiveness

of the quality improvement project on decreasing the unnecessary office visits of a well fevering child. Furthermore, research should be done on any change of medical advice that a triage nurse is providing to the caregiver in need and how it is received. While the knowledge base and confidence level of a triage nurse is assessed and attempted to improve upon, there was not any information collected on the exact change in information a triage nurse might give to the caregiver. This project doesn't address the caregivers directly, and more research is necessary to determine if there is any improvement in their ability to care for their fevering child.

Policy

The American Academy of Pediatrics have published a symptom checker for caregivers that outlines homecare for different aliments and when to seek additional help (Schmitt, 2024). There is a fever protocol included in this list that triage nurses' reference when providing medical advice for caregivers with a fevering child. A suggested policy change is to have this protocol better incorporated in nursing school education regarding when to medicate and what medications are recommended to treat a fever. This quality improvement project and current research suggests that fever phobia in caregivers can't be combated until further education is given to triage nurses who can then pass it to caregivers.

Limitations

This project had several limitations. The biggest obstacle was the size of the sample population. There were only 10 triage nurses that participated in the pre survey, with only 9 of them responding to the post survey. The lopsided results left it difficult to see what improvement, there truly was after the intervention. As a convenient sampling was done, this

lacked true randomization resulting in potentially biased results. A larger sampling would also incorporate a more diverse triage nurse population and geographic area.

Both pre survey and post survey developed by the DNP student which may have introduced bias or error into the project, potentially affecting the reliability or validity of the results. An attempt was made to address the reliability of the results by incorporating an expert review of the materials used.

DNP Essentials Addressed

The American Association of Colleges of Nursing (AACN) published a framework outlining the core competencies and knowledge needed for nurses throughout their education and career. It empowers nurses to develop the skills and abilities required to deliver high-quality patient care and contribute to the advancement of the nursing profession (AACN, 2021). This project was built upon a few different DNP essentials.

One of the DNP essentials that my project addressed was domain 3 population health (AACN, 2021). Population health focuses on improving the health of entire populations by addressing the social, economic, and environmental factors and implementing strategies that prevent disease, manage chronic conditions, and promote healthy lifestyles. By focusing on the triage nurse's ability and confidence assisting a caregiver of a fevering child, the overall health and well-being of the general population is being improved.

Domain 4, which focuses on scholarship for the nursing discipline was also discussed (AACN, 2021). This domain focuses on fostering the development and application of nursing knowledge to improve health outcomes. My project helps to review and build upon the

knowledge a triage nurse possesses. Thus in turn leading to improving healthout comes for a fevering child by educating their cargivers.

Conclusions

This DNP project focused on reviewing and adding to the knowledge and confidence of triage nurses in advising caregivers of a fevering child. 10 triage nurses completed the pre survey and watched the educational video, with 9 responding to the post survey. A considerable improvement was observed in both knowledge scores and reported confidence levels. A targeted educational video can significantly increase triage nurses' knowledge fever education and boost their self-assurance in making accurate clinical decisions to support caregivers of a fevering child.

Plan for Sustainability

As sick season rolls around every November, the number of calls from caregivers with a fevering child increase (A. Simpson, personal communication, July 15, 2024). The staff meeting in October of every year should include a short presentation on fever management to help the triage nurses build on their knowledge and confidence of advising parents on fever homecare. With these yearly reminders it will ensure that every nurse is giving the same information and improve patient outcomes as the same level of care is being advised.

Plan for Dissemination

This quality improvement project was only completed at one clinic site. While the site will receive an executive summary of the results, the entirety of the project should be run again at a few different clinical sites with triage nurses. The original site can start by adjusting current triage nurses’ education and management of fevers. The other sites could start with the other

local clinics thus making it easy to look at the different sites without changing the demographic variable. Eventually the project can be taken further to other clinics around the nation to reach a larger audience and expand the effect it had on a caregiver of a fevering child.

APPENDIX A

SITE APPROVAL/AUTHORIZATION LETTER

5/1/24

University of Arizona Institutional Review Board
c/o Office of Human Subjects
1618 E Helen St
Tucson, AZ 85721

Please note that Mrs. Kylie Reck, UA Doctor of Nursing Practice student, has permission from the Alpine Pediatrics Clinic to conduct a quality improvement project at our facility for her project, "Education Improving Triage Nurses' Confidence and Knowledge of Fever Management".

Mrs. Reck will conduct a 15-minute educational presentation and a pre/post survey of Triage Nurses at Alpine Pediatric Clinic. She will present at the staff meeting of the nursing staff. An email will be sent before the meeting to describe the project, what they will be asked to do, and the time involved. Ms. Reck's activities will be completed by *11/01/24*.

Mrs. Reck has agreed to provide my office with a copy of the University of Arizona Determination before she presents it to the nursing staff. She will also present aggregate results to the providers at their monthly staff meeting if indicated.

If there are any questions, please contact my office.

Sincerely,

Jason Jaussi
Administrator, Alpine Pediatrics

APPENDIX B

CONSENT DOCUMENT (DISCLOSURE AND CONSENT FORM

Evidence-Based Education to Enhance Triage Nurses' Fever Management Guidance
By Kylie Reck

The purpose of this project is to provide continued education on fever management guidelines to triage nurses, thus reducing unnecessary office visits.

If you choose to take part in this project, you will be asked to complete a pre and post survey and participate in a 15 min presentation. It will take approximately 20 minutes to complete. There are no foreseeable risks associated with participating in this project. You will receive no immediate benefit from your participation. Your responses are anonymous. Your name will not be collected or linked to your answers.

If you choose to participate in the project, participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may withdraw at any time from the project. In addition, you may skip any question that you choose not to answer. By participating, you do not give up any personal legal rights you may have as a participant in this project.

For questions, concerns, or complaints about the project, you may call Kylie Reck PNP, DNP student at 801-787-1638 or kyliereck@arizona.edu

By completing the following surveys and presentation participation, you agree to have your responses used for this project.

APPENDIX C

RECRUITMENT MATERIAL (RECRUITMENT EMAIL)

10/10/24

Alpine Pediatrics Triage Nurses
1912 W 930 N
Pleasant Grove, UT 84062

Re: Evidence-Based Education to Enhance Triage Nurses' Fever Management Guidance; Kylie Reck

Dear Triage Nurses,

I am writing to let you know that I am looking for your expertise and opinions for a quality improvement project about fever management guidance for triage nurses. This project is being conducted by Kylie Reck at the University of Arizona. This project will include 2 short surveys (less than 10 questions) and a 15 min recorded presentation. All links to the material will be included in the email from your manager. This is a one-time commitment as no follow up requirements are needed.

Thank you in advance for any help you might be willing to give. It's greatly appreciated.
If you have any questions or concerns, please feel free to follow up with me directly.

Kylie Reck
kyliereck@arizona.edu

APPENDIX D

EVALUATION INSTRUMENTS (PRE- AND POST-SURVEY)

Fever Management Education for Triage Nurses
Pre Survey

1. How many years have you been a Registered Nurse? _____

2. How many times a shift do you advise parents on fever management? _____

3. What temp should a caregiver give antipyretic medication if the child is acting normal?
   a. 100.4
   b. 102
   c. 104
   d. 105
   e. The temperature doesn't matter.

4. What medications should be given to reduce a fever if indicated?
   a. Tylenol/Acetaminophen
   b. Motrin/Advil/Ibuprofen
   c. Tylenol OR Motrin
   d. Tylenol AND Motrin
   e. Aspirin

5. List 2 non-pharmacological ways to reduce a fever.

   _____
_____

6. What are the reasons that a caregiver should have their child seen in the ER? (Select all that apply)
   a. Fever of 100.4 or higher for any child
   b. Fever lasting longer than 72 hours but no other symptoms and under 105.
   c. Temperature of 105 or higher
   d. The child last urinated 5 hrs. ago
   e. The temperature is under 105 but didn't change with medication.

7. What is the main goal of fever management?

   _____

8. What is your confidence level in advising parents on fever homecare?

Not comfortable Very comfortable
1 2 3 4 5 6 7 8 9 10

Fever Management Education for Triage Nurses
Post Survey

1. What temp should a caregiver give antipyretic medication if the child is acting normal?
   f. 100.4
   g. 102
   h. 104
   i. 105
   j. The temperature doesn't matter.

2. What medications should be given to reduce a fever if indicated?
   f. Tylenol/Acetaminophen
   g. Motrin/Advil/Ibuprofen
   h. Tylenol OR Motrin
   i. Tylenol AND Motrin
   j. Aspirin

3. List 2 non-pharmacological ways to reduce a fever.

   _____

_____

4. What are the reasons that a caregiver should have their child seen in the ER? (Select all that apply)
   f. Fever of 100.4 or higher for any child
   g. Fever lasting longer than 72 hours but no other symptoms and under 105.
   h. Temperature of 105 or higher
   i. The child last urinated 5 hrs. ago
   j. The temperature is under 105 but didn't change with medication.

5. What is the main goal of fever management?

_____

6. What is your confidence level in advising parents on fever homecare?

Not comfortable Very comfortable
1 2 3 4 5 6 7 8 9 10

7. Anything you would change about the presentation?

   _____

Expert Evaluation Form
Reviewer: Weston Spencer

1. The Information in the questionnaires are factual evidenced based information.
a. Strongly agree
b. Agree
c. Disagree
d. Strongly Disagree

2. The information is useful for the triage nurses
a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree

3. How long have you been in practice?

20 yrs

4. How often do you see children with fever in your practice?

daily

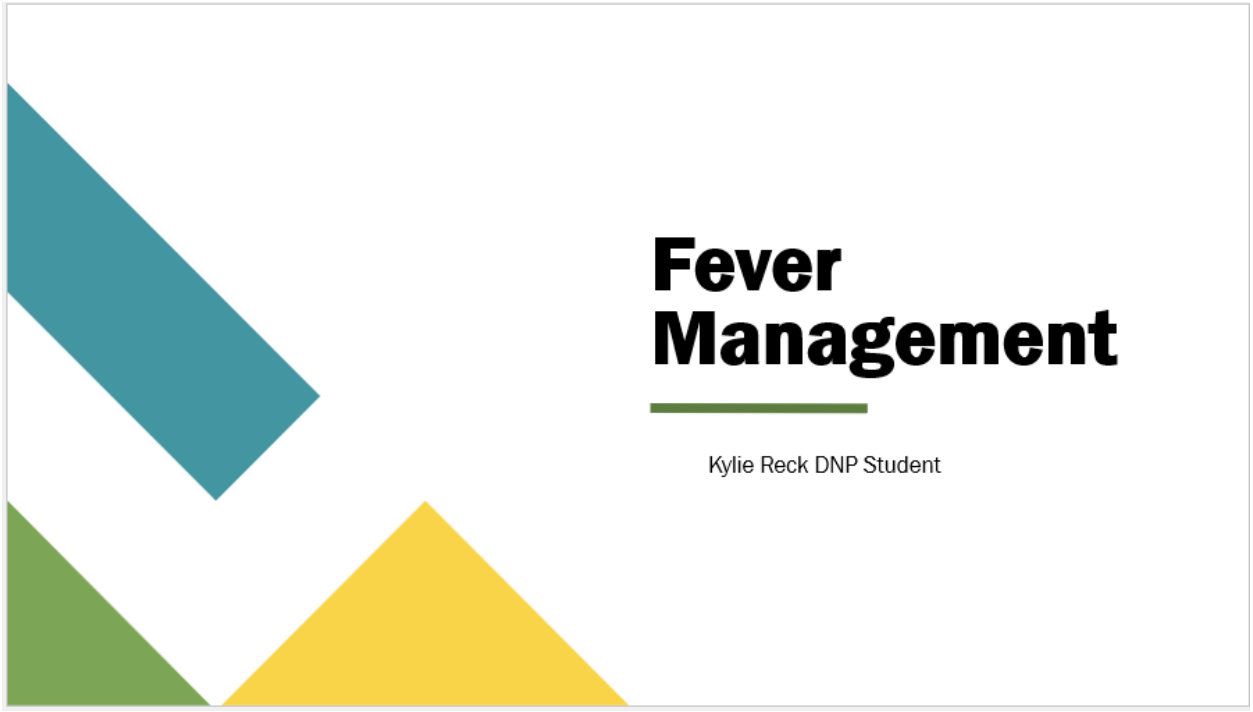
5. Any additional comments or recommendations in regarding any changes that should be made?

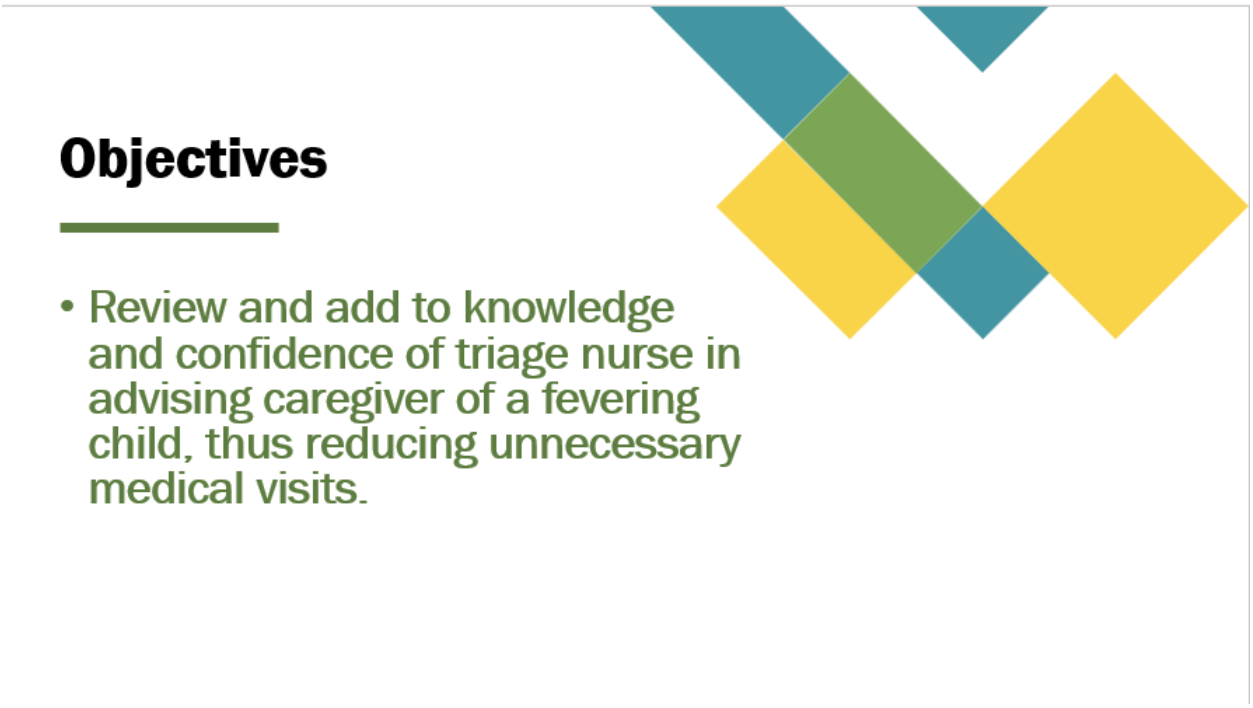
N

Signed [signature] Date 7/17/24

APPENDIX E

PARTICIPANT MATERIAL (POWERPOINT PRESENTATION SLIDES)

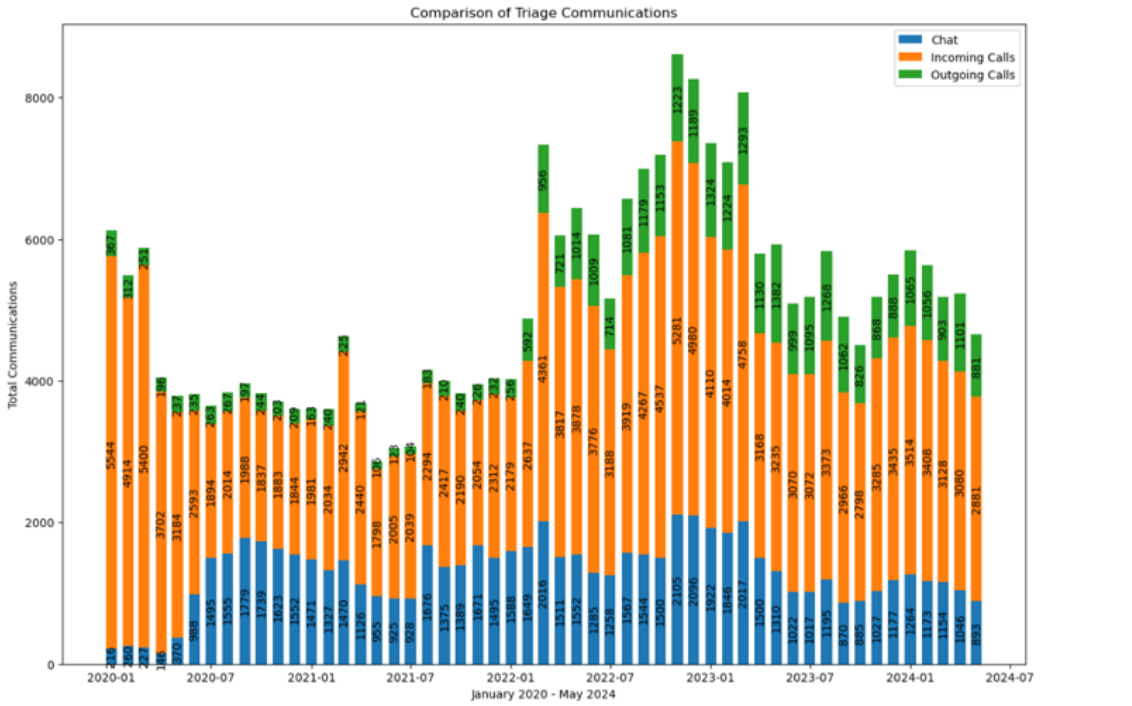

Fever
Management
Kylie Reck DNP Student


Objectives
• Review and add to knowledge and confidence of triage nurse in advising caregiver of a fevering child, thus reducing unnecessary medical visits.

Local Problem

In Jan 2024 alone Triage received 3,514 incoming calls from caregivers. (A. Simpson, personal communication, July 15, 2024).

1/3rd of PCP visits are d/t Fevers (Elkon-Tamir, 2017).



What is the Solution?

1

- **EDUCATION**
  - Overall theme of the literature = need for further caregiver education

(Kelly et al., 2019; Peetoom et al., 2017)

Triage Nurses Role

Answer 3 critical questions:

- What is a fever
- When to seek further help
- What to do at home

This Photo by Unknown Author is licensed under CC BY-NC

What is a fever:

Rectal (Bottom), Ear or Forehead temperature: **100.4° F (38.0° C)** or higher

(Schmitt, 2024)

Knowledge Review

Knowledge Review Cont.

When to seek further help

Call 911 if

-Not moving, too weak to stand, Can't wake up

-Severe difficulty breathing

Go to ER now if:

-Stiff neck

-Hard to wake up/Not alert when awake/Acts or talks confused

-Had a seizure with the fever

-Pt 12 weeks old or young with rectal temp of 100.4 or higher.

Call Doctor or seek care now if:

-Mild difficulty breathing

-Fever higher than 105

-Nonstop crying or cries when touched or moved

-Dehydration

-Child looks or acts very sick

Contact Doctor within 24 hours if:

-Fever lasts more than 48 hours with no other symptoms

-Fever lasts more than 3 days

-Fever returns after being gone more than 24 hours

(Schmitt, 2024)

Knowledge Review Cont.

What to do at home:

- 100° - 102° (37.8° - 39° C) Low grade fever: helpful, good range. Don't treat.
- 102° - 104° F (39 - 40° C) Average fever: helpful. Treat if causes discomfort.
- Higher than 104° F (40° C) High fever: causes discomfort, but harmless. Always treat.
- Higher than 106° F (41.1° C) Very high fever: important to bring it down. Rare to go this high.
- Higher than 108° F (42.3° C) Dangerous fever: fever itself can be harmful.

Treatment:

-Fluids, fluids, fluids

-light layers, and add on when shivering

-Sponging with lukewarm water if temp is higher than 104 and didn't come down after 1hr after meds.

Meds:

-Tylenol or Motrin but don't recommend both (reason: Not needed and misdose risk high)

-Give after 102 if pt is uncomfortable

- Can drop temp 2-3 ° F but can take up to 2 hours to see full effect.

(Schmitt, 2024)

FAQ: True or False

All fevers are bad for children [1] False [2] Fevers help the body fight infection. Normal fever between 100.4F-104F can be good for sick children.

FAQ: True or False

Fevers above 104F cause brain damage [1]

False [2]

Temp above 108F can cause brain damage. Very rare to get this high.

FAQ: True or False

Every fever should be treated with Tylenol and Motrin. [1]

False [2]

Only need to be treated if they cause pt to feel bad. Most recent evidence DOESN'T recommend both Tylenol and Motrin.

FAQ: True or False

Febrile seizures rarely ever cause any permanent harm.

1 TRUE 2

Febrile seizures are rare and even rarely cause permanent harm.

Main Goal

Comfort > Temperature

The goal of fever management is managing the patients' comfort and symptoms rather than getting the temp back down under 100.4F (Kelly et al., 2019).

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Thank you

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kyliereck@arizona.edu

APPENDIX F

PROJECT TIMELINE

Phase of Project	Dates	Tasks
Planning	January 2024-May 2024	▪ Evaluate the need for fever management education in triage nurses. ▪ Conduct a literature search for evidence-based research on ever management and caregiver education.
Pre-Implementation	June 2024-September 2024	▪ Acquire site approval letter to implement DNP project. ▪ Create presentation and Pre and post questionaries for the triage nurses. ▪ Defend project proposal. ▪ Obtain IRB approval
Implementation	October 2024	▪ Send link to a 15min educational presentation video to triage nurses. ▪ Send link to Qualtrics pre and post survey to triage nurses. ▪ Collect data. ▪ Analyze and summarize data.
Evaluation	November 2024	▪ Defend final DNP project. ▪ Distribute results to the site for further implementation.

APPENDIX G

LITERATURE REVIEW GRID

Project Question: Does an educational presentation on fever management to triage nurses compared to current practice, increase the knowledge and confidence of nurses in educating parents on fever management?

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
2019; Arias & Moles	Educational interventions on fever management in children	Scoping review	Detailed interventions of fever management and the positive impact on caregivers.	Thorough education for caregivers listed for easy review for triage nurses.
2018; deBont, Dinant, Elshout, vanWell, Francis, Winkens, Cals	Booklet for Childhood Fever in Out-of-Hours Primary Care	Cluster-Randomized Controlled Trial	Providers' use of an informative fever education booklet didn't lead to a decreased number of antibiotics prescribed. However, it did lead to a decrease in unnecessary consultations and caregiver anxiety.	Reviewed the role of the provider and fever education to reduce unneeded consultations.
2020; Edwards, Bolling-Walker, Deupree	Actionability and Usability of a Fever Management Tool for Pediatric Caregivers.	Quality improvement project	Acknowledging the caregivers health literacy level greatly increases health outcomes.	The education that is being passed to caregivers needs to reflect the health literacy level of the caregivers.
2017; Elkon-Tamir, Rimon, Scolnik, Glatstein	Fever Phobia as a Reason for Pediatric Emergency Department Visits: Does the Primary Care Physician Make a Difference?	Cross-sectional study	A lack of knowledge of how to treat fevers at home was found in caregivers that presented in the ER with their fevering child.	When caregivers are properly educated, they will have the tools to treat their children at home.
2019; El-Radhi, Carroll, Klein	Clinical Manual of Fever in Children	Clinical Manual	Explains the pathophysiology of fevers, as well as the most recent evidenced practice Fever treatment recommendations.	Most recent treatment vs no treatment recommendations of fever management at home.
2020; Johnson, Mitchell	A Nurse Led Triage System in the Ambulatory Cellular Immunotherapy Setting	Descriptive study	The need for a telephone triage was proven to better assist patients in their need for further education when the MD wasn't immediately available.	Triage nurses are needed in managing patients and their caregivers concerns about fever when their primary care giver isn't readily available.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
2019; Kelly, McCarthy, O'Sullivan, McGillicuddy, Shiely	Randomized controlled trial of an intervention to improve parental knowledge and management practices of fever	Randomized controlled trial	Providing caregivers with a handout on fever management significantly improved the likelihood of correct fever management at home.	Significance of the impact of education that triage nurses can give, and the correct fever management techniques that follow.
2017; Peetoom, Smits, Ploum, Verbakel, Dinant, Cals	Does well-child care education improve consultations and medication management for childhood fever and common infections?	Systematic Review	Fever education to caregivers at well- child checks reduce the physician visits, and telephone follow calls.	Direct correlation of education and reduced unnecessary medical consultations.
2009; Rosen	Clinical Manual of Fever in Children	Clinical Manual	Details the pathophysiology, importance of history, and the recommended treatment of fevers.	Nurses can use the pathophysiology detailed to help parents understand the why behind fevers, as well as the treatment recommendations to be given to parents.
2023; Szoke, Fekete, Kocsis, Szijjarto, Nyul, Kiss, Betlehem,Verzar, Hajdu, Rafis, Balogh	Modern views of fever management - about the FeverFriend TM program	Observational, adaptive, prospective cohort study	A fever education app can reduce the overuse of medication.	Medication education and when to treat fevers can decrease misuse and overuse.
2022; Tavan, Monemi, Keshavarz, Kazemi, Nematollahi	The effect of simulation-based education on parental management of fever in children	Quasi-experimental study	Having caregivers use a simulation-based education leads to significantly improved knowledge retention.	Shows different ways for triage nurses to educate caregivers.

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