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ONE VOICE Training to Enable Nurses and Anesthesia Providers to Mitigate Pediatric Presurgical Anxiety

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ONE VOICE Training to Enable Nurses and Anesthesia Providers to Mitigate Pediatric
Presurgical Anxiety

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Final Project submitted to the
School of Nursing at West Virginia University

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ABSTRACT

ONE VOICE Training to Enable Nurses and Anesthesia Providers to Mitigate Pediatric Presurgical Anxiety

Sarah E. Hinnant

Background: Children in the preoperative area experience presurgical anxiety at rates of up to seventy-five percent. Increased pediatric anxiety is directly linked to increased anesthetic requirements, increased risk for development of emergence delirium, and increased time spent in the post anesthesia care unit. Numerous high-quality studies show that intervention by a certified child life specialist mitigates preoperative pediatric anxiety. Often child life specialists are not available to meet with all children prior to surgery. Registered nurses (RNs) and certified registered nurse anesthetists (CRNAs) are present in the presurgical area and have the potential to reduce pediatric presurgical anxiety.

Purpose: The purpose of this quality improvement project was to increase provider adherence to the ONE VOICE intervention and to reduce pediatric presurgical anxiety.

Methods/Interventions: This prospective quality improvement project used an unpaired cohort design to evaluate the effectiveness of the ONE VOICE intervention on pediatric presurgical anxiety. A group of trained raters used the modified Yale Preoperative Anxiety Scale-short form (m-YPAS-sf) to assess baseline anxiety. Pediatric RNs and CRNAs completed a self-assessment of baseline adherence to the ONE VOICE intervention. Then the RNs and CRNAs were trained on the ONE VOICE intervention. After one month, the RNs and CRNAs took the self-assessment again. Next, post intervention pediatric anxiety was assessed using the m-YPAS-sf.

Results: Implementation of the ONE VOICE teaching mnemonic led to a statistically significant increase in RN and CRNA adherence to ‘educating the child before the procedure about what is going to happen.’ A self-assessment Likert survey distributed via Qualtrics survey software, pointed to a clinically significant increase in adherence of seven of the eight ONE VOICE components. Pediatric anxiety in the presurgical area at West Virginia University Medicine (WVUM) Children’s was reduced by 28.3%.

Conclusion: Use of the m-YPAS-sf in the preoperative area at WVUM Children’s would allow more metrics to be evaluated. Medication requirement, length of stay, incidence of emergence delirium, and development of pediatric medical traumatic stress are areas of study showing a correlation to pediatric presurgical anxiety. Continued evaluation of this project should focus on measuring the impact of the ONE VOICE intervention on medication requirement, length of stay, and the incidence of emergence delirium.

Acknowledgements

Children bring joy, laughter, and hope to our life. They are constantly teaching us patience and self-control. This quality improvement project is meant to encourage the hearts of all children and pediatric providers I am blessed to meet. Implementation of the ONE VOICE intervention did not occur in a silo; I also implemented the intervention in our home. As a mother of four children and the sole breadwinner, order and peace are critical components of my day. I encourage providers and parents alike to try the ONE VOICE intervention and let me know what happens. I'd like to thank my husband who allows me to dream big and gives me time to study hard. To all my mentors, Drs. James Cain and Billie Vance especially, thank you for believing in my ideas. To Debbie Wagers, the creator of the ONE VOICE intervention, it is my hope that all children in the West Virginia University Health System will be exposed to the anxiety reducing techniques you have developed.

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ONE VOICE Training to Enable Nurses and Anesthesia Providers to Mitigate Pediatric Presurgical Anxiety

It is estimated that over 75% of children experience anxiety in the preoperative period (Fronk & Billick, 2020). According to Yun and Caruso (2023), the greatest risk for preoperative anxiety occurs in children less than seven years old who are shy, inhibited, or introverted. Additionally, children with anxious parents or who have had prior hospital experience are at risk for higher levels of anxiety. Further, several factors may provoke presurgical anxiety, such as separation from parents, fear of the unknown, and loss of control.

Preoperative anxiety in children, presumed to be related to their limited grasp on reality and dependence on a caregiver, can lead to both short and long-term adverse effects in the postoperative period (Fronk & Billick, 2020). Increased pediatric anxiety is directly linked to increased anesthetic requirements, increased risk for development of emergence delirium, and increased time spent in the post anesthesia care unit (West et al., 2020). Long-term pediatric medical traumatic stress (PMTS) is reported to occur in 30% of children undergoing surgery (Jones et al., 2021). PMTS has been defined as a “set of psychological and physiological responses of children and their families to pain, injury, serious illness, medical procedures, and invasive or frightening treatment experiences” (National Child Traumatic Stress Network, 2003).

Patient-centered, safe, high-quality care implemented in the pediatric surgical environment leads to decreased pediatric anxiety (Hasan et al., 2020). Provision of high-quality care includes child life specialists (CLS) who serve as invaluable members of the pediatric presurgical multidisciplinary team. The American Academy of Pediatrics recommends that all children receive a visit by a CLS prior to surgery (Romito et al., 2021). CLSs deliver evidence-based interventions that help to mitigate pediatric anxiety (West et al., 2020; Brewer, et al., 2006;

Newell, et al., 2020; Jones, et al., 2021; & McGinley et al., 2020). Decreased pediatric anxiety increases satisfaction with care and reduces recovery room stay time, amount of anesthetic, and incidence of emergence delirium, and PMTS (West et al., 2020, & Jones et al., 2021).

Problem Description

At West Virginia University Medicine (WVUM), CLSs cannot see all children prior to their surgical procedure. On a given day in the preoperative area, fifty percent or fewer children undergoing surgery are provided the opportunity to experience CLS intervention prior to their surgical procedure (M. Mezzanotte, personal communication, June 28th, 2021). Child life intervention is often not possible due to surgical timing (before or after CLS hours), lack of staffing (one CLS covers all surgical sites), and insufficient time (children with behavioral needs require longer, more in-depth intervention than others). This is concerning because child surgical services, and therefore child surgeries, are projected to increase with the opening of WVUM Children's, a free-standing children's hospital.

In the absence of CLSs, registered nurses (RNs) and certified registered nurse anesthetologists (CRNAs), who are uniquely positioned in the perioperative areas, could fill the gap (McGinley et al., 2020). Thus, RN and CRNA provider training in the non-pharmacologic, anxiety-reducing therapeutic strategies used by a CLS has the potential to reduce children's preoperative anxiety (West et al., 2020 & Jones et al., 2021).

Available Knowledge

A literature search was initiated using the population, intervention, comparison, outcome (PICO) process (Melnyk & Fineout-Overhold, 2019). The PICO that guided the search was: "In pediatric surgical patients how does child life intervention versus usual care affect pediatric anxiety?"

Two separate searches in the Cumulative Index to Nursing and Allied Health Literature, PubMed, and Cochrane databases using the terms ‘child life,’ ‘perioperative,’ ‘pediatric surgery,’ ‘child life specialists,’ ‘surgery,’ and ‘anxiety’ yielded a total of 80 articles (see Appendix A). Limiters placed on the searches included publication between 2016-2021, English language, and peer review. Titles and abstracts were reviewed against inclusion criteria: studies in pediatric populations (ages 0-18 years old), Anesthesiology Society of America (ASA) class I-IV, and general, not specific, surgical procedures. After duplicates were removed and articles were assessed for the inclusion criteria, eight relevant articles remained, six of which were chosen for the evidence review. Two articles were excluded because they focused on a specific surgery (laceration repair and cochlear implants).

Articles chosen for final analysis included a randomized controlled trial (West et al., 2020), two retrospective cohort design studies (Newell et al., 2020; Marquez et al., 2020), a systematic review (McGinley et al., 2020), a quasi-experimental study (Jones et al., 2021), and one double-blind intervention study (Brewer et al., 2006). For ease of synthesis, relevant findings were compiled in an evidence table (see Appendix B).

Appraisal of the Evidence of Literature

All evidence reviewed points towards the inclusion of a child life specialist (CLS) on the pediatric presurgical multidisciplinary team. Since the CLS has been established as a key factor in reducing preoperative anxiety, specific interventions utilized by the CLS are highlighted so that providers involved in the preoperative care of the child can implement these interventions to mitigate preoperative anxiety. The review that follows presents the highest level of evidence to the lowest.

West et al. (2020) sought to determine if CLS intervention reduced anxiety before intravenous induction of anesthesia. Anxiety was measured using the modified Yale Preoperative Anxiety Scale – short form (m-YPAS-sf). This tool is reliable and valid in children ages 3-12 years old. The child life preparation intervention was conducted by a certified child life specialist (CCLS). The intervention provided by the CCLS included working with the child and the family in the hospital setting to develop coping strategies related to hospitalization, illness, injury, and disability. Results demonstrated that a brief (15-minute) targeted child life session, prior to day-surgery, had a beneficial effect on anxiety.

In a retrospective cohort study, Marquez et al. (2020) examined predictors and interventions that influenced cooperation with mask induction of anesthesia in children (n=3,327). Pediatric surgical patients aged 2-11 years and of ASA class I-IV were included for analysis. The primary aim of this study was to determine patient characteristics associated with increased cooperation upon mask induction. Patient characteristics studied included age, sex, ASA class, class of surgery, preferred language, and race. The secondary aim of this study was to discover preoperative interventions associated with increased cooperation upon mask induction. Preoperative interventions studied included premedication with Versed, exposure to distracting technology, parental presence, and presence of the CLS. Involvement of a CLS was associated with increased cooperation (OR 4.44, p=0.048) and parental presence on induction was associated with decreased cooperation (OR 0.38, p = 0.002). The effect was significant in children aged 2-5 years.

In a pre/post quasi experimental study, Jones et al. (2021) evaluated the intervention of medical play to manage medical stress. Preoperative play was encouraged in a group-like fashion prior to induction of anesthesia. Anxiety was measured using the m-YPAS at two time points,

one prior to group medical play and one when the child decided to leave the play area and move to the holding area (Jones et al., 2021). The m-YPAS is a four-point scale for all domains except vocalization which is a six-point scale. The most significant improvement was in the ‘vocalization’ and ‘use of parent’ dimensions (m-YPAS). There was no change in the child’s scored ‘state of arousal.’ Results from this level III evidence can be used to enhance the CLS’s interaction using medical play.

Newell et al. (2020) employed a retrospective cohort study design to evaluate the implementation of a child life run program entitled Surgery 101. Pediatric patients aged 0-18 years old (and their parents) who had surgery between the years 2017-2019 were included for analysis. The program included a visit with the CLS in the hospital and was designed to provide patients and families information about what to expect prior to surgery. Survey results demonstrated that patients and their families participating in the Surgery 101 program were more prepared for surgery than those who did not participate in the program. The results support patient and family education about what to expect to help them feel more prepared.

McGinley et al. (2020) completed a systematic literature review to define and refine the role of the CLS in the ambulatory surgical setting with a focus on reducing pediatric presurgical anxiety. The authors report anxiety was measured most often with quantitative measurement tools, such as the m-YPAS, and in a pre and post intervention fashion. Psychosocial care, in addition to the preparation and education of patient, was highlighted as an essential component in reducing pediatric presurgical anxiety. Within the review, attention was given to the ONE VOICE mnemonic, a therapeutic approach to anxiety reduction used by CLS.

Evidence Synthesis

Across the literature reviewed, there were various definitions of the pediatric surgical population. Newell et al. (2020) defined the pediatric surgical population as children aged 0-18 years. West et al. (2020) defined the pediatric surgical population as children aged 3-10 years. The greatest decrease in anxiety was seen in the 6 to 10 year-old age group in the study by West et al. (2020). Marquez et al. (2020) found that the age group to benefit most from a CLS intervention was children aged 2 to 5 years. Based on this evidence review, children benefiting most from intervention are those aged 2-10 years (Marquez et al., 2020 & West et al., 2020).

While preparation for and cooperation with presurgical procedures was evaluated in two of the studies (Marquez et al., 2020 & Newell et al. 2020), in most studies reviewed, anxiety was the primary outcome assessed (Brewer et al., 2006, Jones et al., 2021, McGinley et al., 2020, & West et al., 2020). The common tool used to assess child anxiety was the modified – Yale Preoperative Anxiety Scale (m-YPAS) (West et al., 2020 & Jones et al., 2021). The m-YPAS is a tool designed to assess observable behaviors and child vocalizations to determine preoperative anxiety (Kain et al., 1997).

The type of child life intervention varied among the studies reviewed. The interventions included the preoperative provision of information (Brewer et al., 2006 & Newell et al., 2020), group medical play (Jones et al., 2021), and brief targeted interventions by a designated professional (Marquez et al., 2020 & West et al., 2020). The interventions, within the studies reviewed, each reduced pediatric presurgical anxiety. The ONE VOICE mnemonic described in McGinley et al. (2020), incorporates components of each of the interventions found in the evidence review (see Appendix C). In addition, the studies reviewed highlighted the importance of a positive child-caregiver relationship, which is fundamental to the ONE VOICE intervention. The ONE VOICE intervention was established in 2013 by Debbie Wagers, a CLS with 25 years

of experience and is taught in the Child Life curriculums at multiple universities (Debbie Wagers, personal correspondence, July 12th, 2021).

Rationale

The Consolidated Framework for Implementation Research (CFIR) was used to guide project development and implementation (CFIR, 2022). The framework is divided into five domains, each containing several constructs. The five domains of the CFIR include: innovation, outer setting, inner setting, individuals, and implementation (CFIR Research Team-Center for Clinical Management Research, 2021). This framework provides a construct map that systematically allows the user to identify project barriers and facilitators (CFIR, 2022).

The first domain, innovation, relates stakeholder perceptions to project success (CFIR, 2022). This domain says that stakeholder (child life specialists, nurses, anesthesia, patient, and family) perceptions are the key to project success (CFIR, 2021). Stakeholders supported the project due to its adaptability and trialability. Further, ONE VOICE education is easily adapted to train RNs and CRNAs.

The second construct, outer setting, looks at patient needs and resources as well as barriers and facilitators (CFIR, 2022). The CLS at WVUM was only available to see approximately fifty percent of children in the presurgical area which is a barrier to reducing pediatric presurgical anxiety. However, RNs and CRNAs that interact with the child in the presurgical environment have the potential to reduce pediatric anxiety.

The third construct, inner setting, includes an in depth look at organizational culture. The mission of WVUM Children's is to "build a healthier future for and elevate the care of all children" (WVUM, 2021). The opening of a new children's hospital shows that WVUM is committed to providing specialized, safe, and quality focused care to all children. At WVUM

every unit has a comprehensive unit-based safety program, and all nurses have the potential to participate in the clinical advancement for professional excellence program (WVUM, 2021). These initiatives demonstrate that WVUM is committed to quality care.

The fourth construct, individuals, explores the ‘tangible and immediate indicators of organizational commitment’ (CFIR, 2021). Leadership engagement, available resources, and access to knowledge and information are all vital pieces of this construct. Buy-in from stakeholders, as well as from the Child Life department and Amy Bush, Chief Operations Officer, was essential for project success. Available resources included preoperative space and time, preoperative staff (trained in assessing pediatric anxiety), CLS availability, and ONE VOICE education.

The fifth construct, implementation, speaks to characteristics of nursing and anesthesia staff. Pieces of this construct included knowledge and beliefs about the intervention, self-efficacy, individual stage of change, individual identification with the organization (WVUM), and other personal attributes. Nurse empowerment (self-efficacy) was essential for intervention adherence. The relationship RNs and CRNAs had with the institution (their degree of commitment) and other personal attributes such as intellectual ability, motivation, values, competence, capacity, and learning style were considered when educating nurses on project implementation (CFIR, 2021).

Specific Aims

Child life specialists at WVUM are unable to see every child prior to surgery. Training pediatric nurses and anesthesia providers in the ONE VOICE educational mnemonic will enable more children to experience child life driven interventions shown to reduce preoperative anxiety.

The purpose of this project was to implement ONE VOICE as the standard intervention employed by perioperative providers to reduce pediatric presurgical anxiety.

The objectives of the project were to: 1.) train perioperative pediatric registered nurses (RNs) and Certified Registered Nurse Anesthesiologists (CRNAs) to use the ONE VOICE intervention, and 2.) decrease pediatric presurgical anxiety in patients undergoing surgery.

Methods

Context

This quality improvement project took place in the 2West presurgical area at WVUM Children's from January to July of 2022. This department is comprised of nursing staff, patient care technologists, anesthesia providers, and managers. Approximately 20 pediatric day-surgery cases are completed daily including endoscopy, otolaryngology, urology, and ophthalmology procedures.

The ONE VOICE quality improvement project is aligned with the mission of WVU Medicine Children's,

“To build healthier futures for and elevate the care of all children, while focusing on our most vulnerable children...and providing the best possible outcomes for those who need our care” (WVUM Children's mission statement, 2021).

Interventions

Each component of the ONE VOICE intervention contributes to reduction of pediatric presurgical anxiety (West et al., 2020; Marquez et al., 2020; Newell, et al., 2020; Jones, et al., 2021; McGinley et al., 2020). The mnemonic ONE VOICE stands for: **O**ne voice should be heard during the procedure; **N**eed for parental involvement; **E**ducate patient before the procedure about what is going to happen; **V**alidate child with words; **O**ffer the most comfortable, non-

threatening position; **I**ndividualize your game plan; **C**hoose appropriate distractions to be used; and **E**liminate unnecessary people not actively involved with the procedure (Wagers, 2021).

Education on the use of the ONE VOICE intervention was presented to pediatric RNs and CRNAs during the weekly morning meeting for perioperative staff. A total of two presentations were given, and attendance at the meetings was mandatory. The materials needed for the ONE VOICE training are available for purchase (www.onevoice4kids.com) but were donated by the creator for this project. The educational session consisted of a standardized PowerPoint presentation. In addition to the presentation, posters were displayed in prominent positions around the presurgical area. Also, badge card reminders, which served as a quick reference during patient care, were handed out to all staff members.

Ethical Considerations

Prior to implementation, the West Virginia University Institutional Review Board deemed this project as not human subject research. Patient data was collected via paper forms using the m-YPAS-sf. The m-YPAS-sf data was stored in a folder at the charge RN desk with no identifying information present on the forms.

Evaluation Plan

A prospective unpaired, cohort design was chosen to evaluate project success. The first objective of this project was to increase RN and CRNA adherence to the components of the ONE VOICE intervention. To measure this, pre- and post-education provider adherence to the components of ONE VOICE was assessed using a self-report survey. The self-assessment survey was administered at two time points; one prior to ONE VOICE training then again roughly one month after ONE VOICE training.

The second objective was to decrease pediatric anxiety in the presurgical setting. Baseline anxiety score were assessed in an initial cohort over a two-month period prior to the ONE VOICE training. Post-implementation anxiety scores were collected from a second cohort over a two-month period after the ONE VOICE training. The same inclusion and exclusion criteria were used for children in the baseline and post-implementation cohorts. The sample included healthy children (ASA 1 and 2), aged 3-10 years-old, undergoing otolaryngology surgery. Children with previously documented anxiety, behavioral issues, or documented adverse anesthesia events were excluded. For both groups, midazolam administration, if needed, took place after anxiety assessment. For both groups, the provider interacted with the pediatric patient for at least fifteen minutes prior to anxiety assessment.

Measures

Staff adherence to ONE VOICE components was assessed with a self-report developed for this quality improvement project (see Appendix D). It consisted of eight questions with a 5-option Likert response for each. Each of the eight questions represented one component of the ONE VOICE mnemonic. The survey was created in Qualtrics and distributed via employee email by department managers.

Pediatric anxiety was measured using the m-YPAS-sf tool (see Appendix E), which is the gold standard in measurement of pediatric anxiety in children aged 3-10 years (Jenkins et al., 2014). Internal reliability for the m-YPAS-sf preoperative anxiety assessment tool has been reported as excellent, or greater than 0.91 (m-YPAS-sf 0.93) (Kuhlmann et al., 2019). The tool is an observational measure and includes the assessment of activity, vocalizations, emotional expressivity, and the state of apparent arousal. Permission to use the m-YPAS-sf was obtained from the author.

Prior to data collection, a team of raters was identified. The rater team consisted of one pediatric RN, one CLS, and one graduate student. All raters were trained to use the m-YPAS-sf tool following the training method employed by Jenkins et al. (2014). Inter-rater reliability was established prior to data collection with a target Kappa value of 0.80.

Analysis

Nurse and anesthesia provider adherence scores were compared using simple percentage and presented in a graphical format. Child demographics of the pre- and post-intervention groups were evaluated using a comparative design. Univariate statistics were used to describe the samples, then bivariate statistics followed. Group differences were considered for possible confounders. Multivariate analysis was conducted for pre- and post-intervention m-YPAS-sf test scores. Scores were compared using the Statistical Package for the Social Sciences Statistics (SPSS) software.

Results

The pre-intervention sample size included 27 RNs/CRNAs and the post-intervention sample size included 12 RNs/CRNAs. The Mann-Whitney U test was used to interpret the eight components of the ONE VOICE intervention as expressed in the self-assessment. Increased adherence to seven of the eight components of the ONE VOICE intervention was observed from the pre-education to the post-education practice of RNs and CRNAs (see Figure 1). A statistically significant improvement was seen in the component, *Education of the child about their upcoming procedure or surgery* (two tailed sig 0.018, $p=0.049$; see Table 1).

Baseline anxiety data was collected on 41 children, post-implementation data was collected on 36 children. The Shapiro-Wilk test was used to determine normality of the m-YPAS-sf data. The Shapiro-Wilk test showed that the data was not normally distributed ($p<0.05$)

(see Table 2). Therefore, the Mann-Whitney U test was used to determine statistical significance. The Mann-Whitney U test showed that the null hypothesis should be rejected ($p < 0.05$; $p = 0.012$) (see Table 3). The null hypothesis was that there was no difference between the preintervention and post intervention group. Rejecting the null hypothesis proves that there is a statistically significant difference between the control group and the group exposed to the ONE VOICE intervention. The pre-intervention mean anxiety score was 44.95 and the post-intervention mean anxiety score was 32.22 (see Table 4). A 28.3% reduction in pediatric presurgical anxiety was calculated using a simple comparison of means (see Table 4). A simple comparison of means demonstrates a 28.3% reduction in pediatric presurgical anxiety following ONE VOICE training (see Figure 2).

Discussion

Summary

Within the sample assessed, the perioperative RNs and CRNAs trained in the ONE VOICE intervention reported increased adherence to seven of the eight components of the ONE VOICE intervention during the presurgical period. A statistically significant improvement in adherence to one component, *Education of the child about the surgical procedure*, was found. Following training, pediatric RNs and CRNAs used the ONE VOICE intervention in the presurgical area which led to a statistically significant reduction in pediatric presurgical anxiety (28.3%; $p = 0.012$). As a result of this project all pediatric RNs and CRNAs working in the perioperative area were trained in the use of the ONE VOICE intervention. Thus, whether a CLS is present or not, children undergoing surgery at WVUM Children's can receive evidenced-based, anxiety reducing care from RNs and CRNAs who work in the preoperative area.

Interpretation

Project strengths include low cost for implementation, high rate of RN, CRNA, and CLS by-in, alignment with cultural truths of WVUM Children's, low risk of harm to subjects, and high project reliability. The project cost less than four-hundred dollars to implement (cost of training videos for m-YPAS-sf). The project was implemented in preparation for the move to West Virginia's first free leaning children's hospital. From opening day, the ONE VOICE intervention built an environment that reduced pediatric preoperative anxiety.

While self-reported adherence to the components of ONE VOICE only demonstrated statistically significant improvement in the component *Education of the child about the surgical procedure*, adherence to six other components demonstrated clinically significant improvement in adherence. These included: *One voice being heard during a procedure*; *Need for parental involvement*; *Validation of the child's feelings with words*; *Offering the most comfortable, non-threatening position*; *Individualizing care*; and *Choosing the most appropriate distraction*. The only component that did not see an increase in adherence was *Eliminating excess providers not actively involved in patient care*.

Training providers who work in the preoperative area to utilize the ONE VOICE intervention resulted in a reduction in pediatric presurgical anxiety. The literature suggests that each individual component of the ONE VOICE intervention reduces pediatric anxiety (West et al., 2020; Marquez et al., 2020; Newell, et al., 2020; Jones, et al., 2021; McGinley et al., 2020). This project adds that when used together, the components of the ONE VOICE intervention reduce pediatric presurgical anxiety. Reducing presurgical anxiety mitigates healthcare cost due to decreased anesthetic requirements, decreased recovery room time, decreased incidence of

emergence delirium, and decreased development of PMTS (West et al., 2020, & Jones et al., 2021).

Unintended consequences existed. At a recent follow up meeting, some RNs reached out and stated their lack of understanding regarding essential CLS services. RNs, now armed with child life tools to reduce presurgical anxiety, questioned the need for certified CLS intervention prior to surgery. The RNs feel they could save time and eliminate an excess person not actively involved in the procedure if CLS were eliminated. RNs could have interpreted the CLS as an excess person in the room, thus this could be a reason why self-assessment scores were lower in adherence to *Elimination of excess people not actively involved in the procedure*. The literature shows that CLS services are essential in reducing pediatric presurgical anxiety (West et al., 2020, Newell et al., 2020, Marquez et al., 2020, McGinley et al., 2020, Jones et al., 2021, Brewer et al., 2006, Romito et al., 2021). Although adherence of RNs and CRNAs to the ONE VOICE intervention reduced pediatric presurgical anxiety, the CLS remains an invaluable member of the presurgical multidisciplinary team.

Some contextual elements need to be discussed. The 2W presurgical area was a busy fast paced environment. Some days five or more children per day were assessed by various members of the team. Some days no children fit the inclusion criteria. Some days no members of the assessment team were available to assess children. To allow for this variability in scheduling and availability of team members, preintervention data was collected over two months, January and February of 2022, and the post intervention data was collected over two months, in June and July of 2022. This timeline allowed for three months of training and adaptation of the ONE VOICE intervention amongst RNs and CRNAs. RN and CRNA training occurred in March of 2022. The

second RN/CRNA self-assessment was administered in May of 2022, before post intervention anxiety assessment was initiated.

Limitations

Project limitations include the lack of post-implementation self-assessment data. Only 12 surveys were submitted compared with 27 pre-implementation self-assessments. This may be explained by the preparation for the opening of the new children's hospital in September of 2022. Some RNs and CRNAs may have lost interest due to the demand of this preparation, and some RNs and CRNAs trained on the ONE VOICE intervention may have moved to a different area of care. However, all respondents to the post-implementation survey were trained on the ONE VOICE intervention and provided direct care to pediatric presurgical patients. An additional limitation is that this project was a small pilot project at one institution, in one department. Therefore, the findings are not generalizable and should be interpreted with caution if this project is implemented in other settings.

Conclusion

This project makes a useful contribution to the presurgical department at WVUM Children's. Training RNs and CRNAs in the components of ONE VOICE in the presurgical environment provides an additional non-pharmacologic intervention to combat pediatric presurgical anxiety when CLS personnel are not available. Future efforts focused on quarterly ONE VOICE re-training may help to support continued adherence to the ONE VOICE components.

This project is sustainable. The Child Life team at Ruby supports the ONE VOICE intervention and its continued use by RNs and CRNAs in the pediatric presurgical area at WVUM Children's. It is relatively inexpensive to continue the ONE VOICE intervention

implementation. To implement ONE VOICE, materials cost five-hundred dollars and were donated by creator Debbie Wagers. The videos required for training staff on use of the m-YPAS-sf tool cost \$399. Additional staff need to be trained on the use and administration of the m-YPAS-sf to ensure project longevity.

WVUM Children's is the state's leading pediatric care center. With the opening of the new free-standing children's hospital in September of 2022, the founding cultural truths: 1.) we care big 2.) we lift each other up 3.) we build bridges 4.) we walk in each other's work shoes 5.) we build trust and 6) we do what we love, were exemplified through this project. The ONE VOICE intervention fosters a culture of family-centered, patient-first care. Training RNs and CRNAs in the ONE VOICE intervention empowers staff towards cultural transformation and improved quality of care.

Future recommendations include adopting the m-YPAS-sf tool in clinical care and additional evaluation of the project following other outcomes measures including pain medication requirements, time spent in recovery, incidence of emergence delirium, and parental satisfaction scores. Establishing a means for baseline pediatric presurgical anxiety documentation is essential. The use of the m-YPAS-sf tool prior to surgery would provide an objective measure to direct patient care decisions and build a data base of anxiety scores for future project evaluation. Decreased anxiety reduces the need for additional medication, time spent in recovery, and PMTS incidence (West et al., 2020, & Jones et al., 2021). In the future, these outcomes need to be addressed as they relate to the ONE VOICE education intervention and pediatric presurgical anxiety.

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Table 1*Adherence to ONE VOICE Components Pre/Post Training*

	One voice heard	Need parental involvement	Educate	Validate with words	Offer positioning	Individualize care	Choose distraction	Eliminate excess people
Mann-Whitney U	154.500	157.000	97.000	148.500	158.000	121.000	145.500	142.500
Wilcoxon W	532.500	235.000	175.000	526.500	536.000	199.000	223.500	520.500
Z	-.235	-.194	-2.364	-.523	-.151	-1.643	-.622	-.618
Asymp. Sig. (2-tailed)	.814	.847	.018	.601	.880	.100	.534	.537
Exact Sig. [2*(1-tailed Sig.)]	.822 ^b	.893 ^b	.049^b	.685 ^b	.916 ^b	.221 ^b	.620 ^b	.558 ^b

Table 2*Shapiro-Wilk Test m-YPAS-sf Data*

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
VAR00001	.155	41	.015	.902	41	.002

a. Lilliefors Significance Correction

Table 3

Mann-Whitney U Test for Pre/Post Intervention m-YPAS-sf Scores.

Test Statistics^a	
	VAR00001
Mann-Whitney U	494.000
Wilcoxon W	1160.000
Z	-2.524
Asymp. Sig. (2-tailed)	.012

a. Grouping Variable:
VAR00002

Table 4*Mean Comparisons of Mann-Whitney Test***Mann-Whitney Test**

		Ranks		
	VAR00002	N	Mean Rank	Sum of Ranks
VAR00001	1.00	41	44.95	1843.00
	2.00	36	32.22	1160.00
	Total	77		

Figure 1

Pre/Post RN/CRNA Self-Assessment Scores

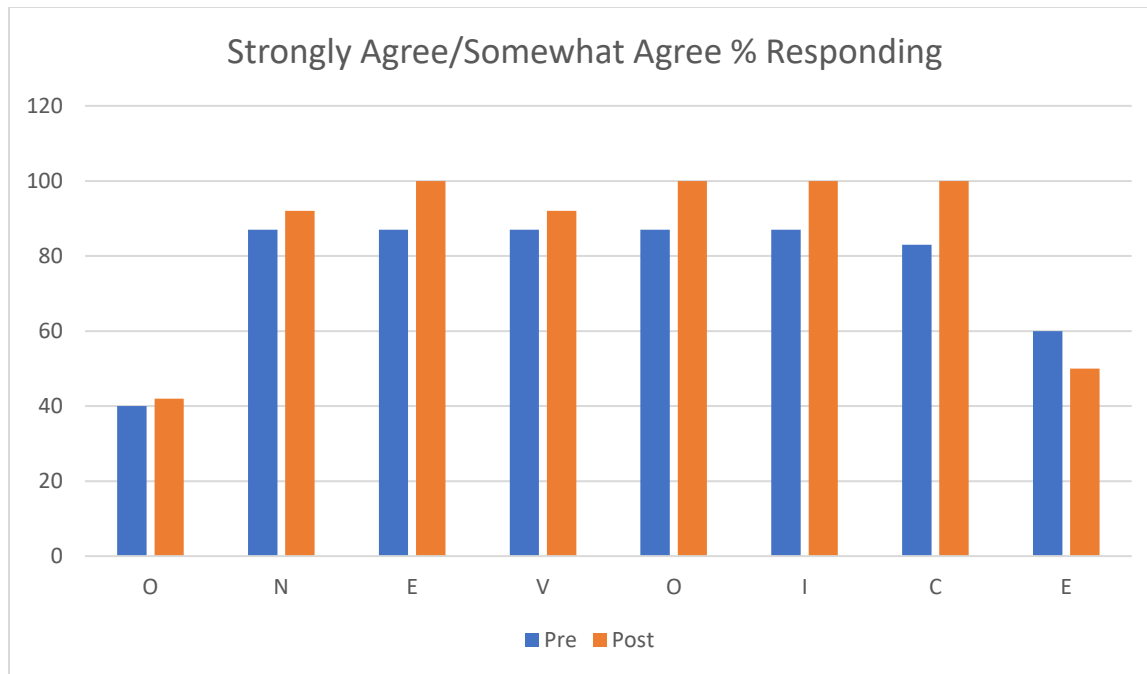
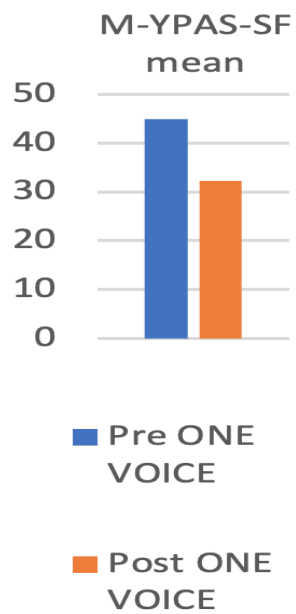


Figure 2

Mean Comparison of Pre/Post m-YPAS-sf Data.



Note: Decreased score correlates with decreased anxiety.

Appendix A: Literature Search Table

PICOT Question: In the pediatric surgical population how does child life intervention vs. usual care effect perioperative anxiety?

Date	Database	Search Terms	Number of hits	Limits applied	Number of Relevant Articles	Notes
March 2021	CINAHL	'Child life' 'Pediatric surgical' 'Peri-operative'	3	2018-current English Peer reviewed	0	
March 2021 Revised May 2021	Cochrane	'child life' 'pediatric surgical' 'peri-operative' Revision 'pediatric' 'child life specialist' 'surgery' 'anxiety'	244 3	2018-current English Peer reviewed 2002-current	1 3	Jones, K. 2021 Pediatric medical traumatic stress risk increases with increased surgeries Group medical play m-YPAS instrument Brewer, S. 2006 All children benefit from CLS intervention. Child Drawing Hospital anxiety assessment tool. Filippazii, 2002 50% of children go to the hospital once before the age of 14 years old. Play is a child's education (information giving). Justus, 2006 Children who are prepared for surgery and who have support recover quickly and have less emotional problems.
March 2021	PubMed	'child life'	28	2018-current	2	Hall, 2012

		'pediatric surgical' 'peri-operative'		English Peer reviewed		Certified child life specialists lessen emotional distress of children undergoing laceration repair in the emergency department Hanvey, K. 2018 Managing extreme anxiety during cochlear implant assessment: a team approach
March 2021	Google Scholar	'certified child life specialists' 'pediatric surgery' 'peri-operative'	104 Sorted by relevance	2018-current English Peer reviewed	4	West, N. (2020) RCT, IV induction Newell, C. (2020) Scope and future of child life Transforming the pediatric experience McGinley, T. (2020) Marquez, J. (2020)

Appendix B: Evidence Table

Citation	Purpose of Study	Conceptual Framework	Design/Method	Sample/Setting	Major Variables and their definitions	Measurement of major variables	Data analysis	Study findings	Worth to practice LOE Strengths/Weaknesses Feasibility Conclusion Recommendation
West, N., Christopher, N., Stratton, K., Gorger, M., & Brown, Z. (2020). Reducing preoperative anxiety with Child Life preparation prior to intravenous induction of anesthesia: A randomized controlled trial. <i>Pediatric Anesthesia</i> , 30, 168-180. http://doi.org/10.1111/pan.13802	To determine if Child Life interventions reduce anxiety before IV induction	Randomization using online tool for children and blinding of researcher, anesthesiologist, and OR staff, CLS specialists not blind. Did not assess	RCT parallel group 1:1 allocation ratio of study participants to one of two groups: control (standard practice with no CLP) or intervention (CLP in addition	Children ages 3-10 years, ASA I-III, elective day surgery lasting less than 2 hours, IV induction, excluded children with pre-established	CLP (child-life preparation program) CLS (child-life specialist) Work with families and children in hospital to help them cope with challenges associated with hospitalization, illness, injury, and disability	Yale Preoperative Anxiety Scale – Short Form (mYPAS-SF) Assesses anxiety in children 3-12. Four dimensions: Activity, vocalization, emotional expressiv	mYPAS-SF trained researchers scored ANCOVA Secondary results: PACBIS – perioperative adult child behavior scale – prior to OR	A brief, targeted Child life session before day case surgery has a beneficial effect on anxiety during IV placement in the OR in young children with no preexisting anxiety	LOE: II (small sample size RCT) Strengths: RCT blinding/randomization, scale used Weaknesses Limited generalizability due to exclusion criteria Feasibility: won't transfer to mask induction, what we use at WVU Risk of harm: children who

		outcome s	to standard practice)	anxiety or those having inhalati on inductio n n = 31 control n = 28 child life total n = 59		ity, and state of apparent arousal At two points: preop and OR up to the time of IV cannulati on	Also simple set of questio ns for child		needed CLS got it, exclusion criteria Conclusion: CLP reduced preoperative anxiety, prior to IV induction of anesthesia Recommendat ion: Smart phone app, Further research – how can CLS services be incorporated into surgical environment Notes: Preoperative anxiety children is associated with a higher postoperative analgesia requirement, higher incidence of emergence
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									delirium, longer term detrimental effects on sleep and behavior Strategies to decrease child anxiety include: topical anesthetic on IV, parent in OR, visual/audio distractions, friendly rooms
Brewer, S., Gleditsch, S.L., Syblik, D., Tietjens, M.E., Vacik, H.W. (2006).	To determine if children prepared for day surgery by CLS exhibited less anxiety than those	Intervention study Double blind Trial Alternative assignment	Placed in either intervention / no intervention group	142 Children ages 5-11 Undergoing elective otolaryngology surgery procedure	Preoperative anxiety (pre/post) intervention Defined by Child Drawing: Hospital scale	Child Drawing: Hospital Pre and post surgical drawing, internal consistency, interrater reliability,	Child Drawing Scores analyzed by trained researcher	Children receiving CLS intervention had less anxiety after surgery than those not as well prepared	LOE: II Strengths: Double blind Weakness: randomization not discussed, other than, alternate assignment, complex study design

	with normal care.			82 intervention 62 no intervention Educational center hospital and community hospital		consistency, construct validity all addressed		Child anxiety increased post operatively in the non-intervention group Psychosocial preparation for surgery decreases anxiety	No medical play in CLS intervention Risk of Harm: low Feasibility: lots of hidden costs (RN salary to run the project, separate rooms to house private sessions)
Newell, C., Leduc-Pessah, H., Bell-Graham, L., Rasic, N., & Carter, K. (2020). Evaluating and enhancing the preparation of patients and families before pediatric surgery. <i>Pediatric Anesthesia</i> , 7(8), 90. https://doi.org/10.3390/children7080090	To improve the surgical experience for pediatric patients and their families	Qualitative deductive thematic analysis of free text in survey Also raw data in the form of text reported anonymously	A retrospective cohort study design Mixed Methods quantitative and qualitative results	Pediatric patient age 0-18 and their parents Had surgery at ACH (2017-2019) N=96 N=32 completed program	Surgery 101 in-hospital program (Independent variable) Run by Child life specialist Answered children's (talked directly to them) and parents questions	Online survey Likert 10 point scale for ranking	GraphPad Prism for Windows version 6.0.7, Differences between groups determined by student's t tests	In-hospital surgery 101 program improves family and child preparation for surgery Theme hospital orientation and what to expect on	LOE: III Strengths: brought attention to a program already in place Weaknesses: volunteer bias, Surgery 101 not talked about in detail in article, had to go to the web to find out more

				<p>N=65 did not Setting: Preoperative services department of a children's hospital</p>	<p>Dependent :</p>		<p>P<0.05 sig level Data are expressed as mean +/- SEM</p>	<p>the day of surgery made them feel most prepared paper hand outs and websites over phone calls and emails</p>	<p>about what the CLS actually did during the program Risk of Harm: Low, retrospective, recall of events Feasibility: easy to show patients the video created, better than "walking the halls" for all Limitations: limited sample size, targeted recruitment via pre- agreement for email contact Voluntary study Recall bias > 12 months after surgery date, not equal groups</p>
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									<p>Recommendations: Video walk through summary of surgery day available online, continue to improve family preparation prior to surgery</p> <p>Note: Child elements of education prior to surgery needed due to high degree of stress and anxiety (approx. 60%) in children, Stress and anxiety causes behavioral issues in children</p>
Jones, M.T., Kirkendall, M.,	Explore the	The Integrati	Pre/post quasi	N = 50 children	Independent	m-- YPAS	mYAS – assess	Statistica lly sig	LOE: III evidence

<p>Grissim, L., Daniels, S., & Boles, J.C. (2021). Exploration of the relationship between a group medical play intervention and children's preoperative fear and anxiety. <i>Journal of Pediatric Health Care</i>, 35(1), 74-83. Retrieved February 27, 2021 from https://www-clinicalkey-com.wvu.idm.oclc.org/</p>	<p>relationship between a group medical play activity and children's preoperative fear and anxiety Decrease PMTS and moderate stress response in children and families in the perioperative setting</p>	<p>ve Trajectory Model of PMTS – adjustment across three phases: Peritrauma, acute medical care, and ongoing care of discharge Families best served by teams, integrative model to deal with stress</p>	<p>experimental study Setting: Preoperative services department of a children's hospital Waiting room play table</p>	<p>aged 5-10 participated in group medical play session facilitated by CCL specialist Inclusion criteria: Present in waiting room when intervention offered, scheduled for inpatient or outpatient elective surgery b/t ages</p>	<p>Variable: Medical play intervention Dependent variable: anxiety and fear (pre/post)</p>	<p>Preoperative anxiety scale One measure prior to group play and one when child decided to leave the play and move to holding Also Likert type measure – fear rated using pictorial fear assessments developed by the research team</p>	<p>preoperative behavioral in real time 5 categories (activity, emotional expression, state of arousal, vocalizations, and use of parents) Four-point scale for each domain except vocalizations, use a 6-</p>	<p>decreases in anxiety and self-reported fear M=6.1 pre and M=5.4 post intervention SD = 1.8 vs. 0.8 P0.003 Most significant vocalization dimension, no change in state of arousal Pictorial: higher levels prior Mdn = 2.5 before</p>	<p>obtained from well-designed controlled trials without randomization Weakness: single site data collection, results may not generalize Strength: large sample size Feasibility: high, easy to complete, except with COVID-19 no group play allowed, CLS/CCLS may not be available at all hospitals Risk of Harm: low risk, higher in the current COVID setting</p>
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				5-10 years Excluded: Declined, spoke another language, observable physical cognitive or linguistic disabilities that prevented participation,			point scale (paired sample t test) Two question pictorial scale: using faces for fear frowning lots of fear to smiling no fear 5 point Likert type scale applied 5=high fear 1= minimal fear (Wilcoxon signed-rank test)	and 1.0 after Wilcoxon $p < .001$ Post Hoc analysis also performed	Recommendations: medical play may generate coping additional benefits when offered in group format Increased cooperation with healthcare team, improved understanding of process = positive patient centered relationships Notes: Average time 20 minutes, three children at a time, Children allowed to play with medical equipment prior to surgery helps
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							nonpara metric) Cohen's d for paramet ric analysis and r for nonpara metric analysis $r=Z/N$ SPSS version 26.0	to minimize preoperative anxiety and improve patient experience for child and family Childs subjective interpretation s of events shape immediate and long-term mental and physical health outcomes Note: medical play decreases children's distress in the healthcare setting and may prevent PMTS – experienced by 30% of children
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									Individualize play to meet child's needs Mastery of experience through play
McGinley, T., Maskell, S., & Cantrell, K. (2020). A systematic literature review of child life in ambulatory settings. <i>Pediatric Annals</i> , 49(11), 491-498. http://doi.org/10.3928/19382359-20201014-03	Literature Review of the last 25 years of child-life services searching literature of CLS in ambulatory settings Psychosocial care to children/families through hospitalizations Defining and refining CLS role	Cooper Steps: Problem formulation, data evaluation, analysis and interpretation and presentation of results	Systematic Literature Review Common themes synthesized	Pediatric ambulatory care 1993-2018 observational and experimental, position papers, literature reviews, books, dissertations 60 articles, 29 original research 3 surveys,	Major Themes and definitions (no explicit variables in the SRs): Procedural support: multidisciplinary program development for assessing pain, nonpharmacological pain management, etc.. Preparation and education:(25 articles)	Variables measured using thematic analysis (not talked about in-depth) Procedural preparation and support interventions = quantitative measurements anxiety levels before and after procedure;	Data analysis : again, not discussed in depth as this is a literature review not a SR 3 Major themes developed articles divided by which themes they fit into, total count of articles	Growth some major areas: provision of child-life in outpatient settings Description of the role of CLS Three clear themes: advanced in procedural support, preparation and educated, and psychosocial and	LOE: V Weaknesses/ Limitations: Search criteria not available for field of study, yielded low number of results, thematic data analysis more a literature review NOT a systematic review Strengths: collective search Feasibility: completed at home at computer, going through literature, accessibility issues

				<p>1 meta-analysis 16 commentaries, 2 policy statements 5 book chapters 4 program evals Search terms child-life/child life specialists across. Multiple databases lacked articles, Better when intervention searched</p>	<p>Decreases anxiety Psychosocial care: less focus in this area over the last 25 years (13 documents)</p>	<p>Other interventions rarely measured – diagnostic education and normalization through play (difficult to find in research) Broad statements with little specifics e.g. “use of child life intervention group resulted in lower anxiety scores and higher satisfaction</p>	<p>applying to each thematic area</p>	<p>bereavement support Procedural support is an increasing area of the CLS role Multidisciplinary approach a must Preparation and education have been shown to decrease anxiety in children and increase coping behavior Psychosocial care: facilitation of</p>	<p>Risk of Harm: very low, although misleading findings could affect the CLS profession Recommendations: CCLS/CLP/CLS need to increase research in their field, published in journals across the pediatric continuum not in those solely for CLS Notes: Lots of CLS background information CLS now recognized internationally “Play ladies” to</p>
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						on scores”		family centered care and provision of bereavement Negative behavior increase in children not receiving CLS intervention after discharge . Qualitative positive effects stated, but little detail as to the intervention used (common theme for CLS	CLS (education/pain management/preparation) CLS enhances family satisfaction Multidisciplinary approach stressed with CLS = improved procedural success and decreased trauma responses CLS use know age appropriate cues for child’s pain Common interventions used: distraction, topical anesthesia, positions, ONE VOICE, preparation,
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								literature) Call for indexing of the ACLP quarterly – without impossible to find articles CLS education , preparation, developmental play, support = reduced anxiety, increased coping, optimal development	comforting, positive reinforcement = decreased anxiety reduced pain and distress, improved success rates of procedures, decreased sedation usage in peds ER Family centered care with parental presence “Humanizing healthcare for children” Professionalism of CLS Pet therapy improves child mood
Marquez, J.L., Wang, E., Rodriguez, S.T, O’Connel, C., Munshey, F., Darling, C., Tsui, B., Caruso, J., & Caruso, T.	Identify patient characteristics associated with	Conceptual framework: Scientific	Retrospective cohort study N = 3372	Pediatric surgical patients ages 2-11 y/o	Preop interventions: Independent: two step:	Induction compliance checklist (ICC) video	Univariate analysis , chi-square test	Age was associated with increased cooperation (OR	Worth to practice: LOE: II (retrospective cohort study with large

<p>(2020). A retrospective cohort study of predictors and interventions that influence cooperation with mask induction in children. <i>Pediatric Anesthesia</i>, 30(8), 867-873. https://doi.org/10.1111/pan.13930</p>	<p>cooperative mask induction and to determine if preop interventions (such as CLS intervention) increased cooperation</p>	<p>Method Hypothesis : patient characteristics and preoperative intervention are associated with induction cooperation.</p>	<p>(undergoing 5980 procedures)</p>	<p>ASA class I-IV Mask induction</p>	<p>primary aim: patient characteristics (age, sex, ASA class, class of surgery, preferred language, and race) Secondary aim: Premedication with versed, exposure to distraction technology, parental presence, presence of CLS Dependent : extent of cooperation</p>	<p>recording s *52 observer rated 10 item checklist plus Y/N answer anesthesiologist rated on induction considerations (age, sex, ASA class, class of surgery, preferred language, race) Multivariate mixed-effects logistic regression used to assess relationship b/t patient</p>	<p>(categorical data) and t test (continuous data) primary and secondary aims Multivariate mixed-effects logistic regression, and separate for relationship between preoperative interventions and cooperation</p>	<p>1.20, p-value 0.03) Involvement of Child Life Specialist was associated with increased cooperation (OR 4.44, p-value = 0.048) Parental/guardian presence was associated with decreased cooperation (OR 0.38, p-value = 0.002)</p>	<p>sample size N=3327 – those meeting inclusion criteria) Strengths: large sample size, multiple variable analysis (age, sex, ASA class, class of surgery, preferred language, race). Confounders spoken to Weaknesses: Single center study, may not be generalizable Retrospective - no causality from association Complex study design. Feasibility : complex study design would require</p>
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						<p>characteristics and cooperation, separate one used for relationship b/t preop interventions and cooperation</p>			<p>expert researchers. Conclusion: Excellent study Increased age associated with only (confounding) variable that correlated with increased cooperation Preoperative intervention by Child Life Specialists was the sole intervention associated with improved cooperation Recommendation : Stress importance of Child Life intervention prior to surgery especially with the very</p>
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									young (further research needed for autistic and special needs children)
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ACLP – association of child life professionals

CLS/CCLS/CLP – child life specialist, certified child life specialist, child life professional

PMTS – pediatric medical traumatic stress

LOE: level of evidence

SR: systematic review

Appendix C: ONE VOICE

O: One voice should be heard during the procedure

N: Need parental involvement

E: Educate patient before the procedure about what is going to happen

V: Validate the child with words

O: Offer the most comfortable, non-threatening position

I: Individualize your game plan

C: Choose appropriate distraction to be used

E: Eliminate unnecessary people not actively involved with the procedure

Reference: Wagers, D. (2021). ONE VOICE approach. Retrieved June 2021 from www.onevoice4kids.com

Appendix D: Sample Pre/Post Test for Educational Assessment

Strongly agree, Somewhat agree, Neither agree nor disagree, Somewhat disagree, Strongly disagree

Please be honest and answer the questions below as they pertain to your current practice as a pediatric RN or CRNA...

- 1.) One voice is heard during a procedure such as an IV stick.
- 2.) I involve parents in the care of their child.
- 3.) I educate the child about their upcoming procedure or surgery.
- 4.) I validate the child's emotions with words.
- 5.) I use the most non-threatening position when assessing a child.
- 6.) I individualize the care I provide to my pediatric patients.
- 7.) I know when to use distraction and use it when necessary.
- 8.) Unnecessary people not involved with the procedure, are eliminated.

Appendix E: m-YPAS-SF

modified-Yale Preoperative Anxiety Scale Short Form

ACTIVITY

1 = Looking around, curious, playing with toys, reading (or other age-appropriate behavior) moves around holding area/treatment room to get toys or go to parent; may move toward OR equipment

2 = Not exploring or playing, may look down, may fidget with hands or suck thumb (blanket); may sit close to parent while waiting, or play has a definite manic quality

3 = moving from toy to parent in unfocused manner, nonactivity-derived movements; frenetic/frenzied movement or play; squirming, moving on table, may push mask away or clinging to parent

4 = Actively trying to get away, pushes with feet and arms, may move whole body; in waiting room, running around unfocused, not looking at toys or will not separate from parent, desperate clinging

VOCALIZATIONS

1 = Reading (nonvocalizing appropriate to activity), asking questions, making comments, babbling, laughing, readily answers questions but may be generally quiet; child too young to talk in social situations or too engrossed in play to respond

2 = Responding to adults but whispers, "baby talk," only head nodding

3 = Quiet, no sounds or responses to adults

4 = Whimpering, moaning, groaning, silently crying

5 = Crying or may be screaming "no"

6 = Crying, screaming loudly, sustained (audible through mask)

EMOTIONAL EXPRESSIVITY

1 = Manifestly happy, smiling, or concentrating on play

2 = Neutral, no visible expression on face

3 = Worried (sad) to frightened, sad, worried, or tearful eyes

4 = Distressed, crying, extreme upset, may have wide eyes

STATE OF APPARENT AROUSAL

1 = Alert, looks around occasionally, notices/watches what anesthesiologist does with him/her (could be relaxed)

2 = Withdrawn, child sitting still and quiet, may be sucking on thumb or face turned into adult

3 = Vigilant, looking quickly all around, may startle to sounds, eyes wide, body tense

4 = Panicked whimpering, may be crying or pushing others away, turns away

Scoring: Divide each item rating by the highest possible rating, add all the produced values, divide by 4, and multiply by 100.

Reference: Jenkins, B.N., Fortier, M.A., Kaplan, S.H., Mayes, L.C., & Kain, Z.N. (2014). Development of a short version of the Modified Yale Preoperative Anxiety Scale. *Anesthesia & Analgesia*, 119(3), 643-650. <https://doi.org/10.1213ANE.000000000000000350>