

Addressing Procedural Pain in Pediatric Patients

Hospitalized children are exposed to many potentially painful procedures. These painful events can lead to increased distress and long-lasting fear months after the event.¹ Painful experiences in early childhood can “prime” kids to be more sensitive to painful stimuli later in their admission or even be at risk for chronic pain syndromes later in life as adults.² In the preoperative setting, a child may already have had multiple painful procedures prior to arriving to the operating room and have immense anxiety, fear, and distress, leading to a greater pain response postoperatively.³ Thus, it is prudent to develop a system to improve coping and address pain early in a child’s hospital course for any procedure they may have.



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Procedural pain management in pediatric patients can be a difficult task but one that is highly valued by patients and families. Unlike the perioperative setting where analgesia is addressed by anesthesiologists, procedures without sedation are done by a variety of medical specialties and providers within the hospital. These individual groups may also perform procedures in different manners and there may even be intradepartmental variability. At Hassenfeld Children’s Hospital of New York at NYU Langone, in partnership with the Sala Institute for Child and Family Care, we have made it a priority to address issues related to pediatric procedural pain. After a review of practices at major children’s hospitals, we found a similar situation at Children’s Minnesota and their subsequent development of the Children’s Comfort Promise.⁴ We hope to develop as robust of a program for pediatric procedural pain management at our institution. We have adopted the four practices used by Minnesota and added a fifth: partnership with patients and family, positioning for comfort, distraction, numbing, and sucrose/breastfeeding.

PARTNERSHIP WITH PATIENTS AND FAMILY

A key component of pediatric pain management is the involvement of both the patient and family. Appropriate goals, expectations, and coping strategies should be developed prior to the procedure. By creating a partnership, a sense of control is returned to the family and satisfaction improves.^{5,6} Defining a specific task for family members allows everyone to harmoniously work towards the same goal. There are times, however, that family presence may not be beneficial and its effectiveness likely depends on how anxious the family member is, the interactions between the

child and family member, and the family member’s use of coping strategies.⁷ Therefore, prior to the procedure, family members must be evaluated and given the proper support for participation.^{8,9} It is important to note that with the improved patient and family satisfaction associated with their involvement, there is no detriment to procedural performance.^{10–12}

POSITIONING FOR COMFORT

A safe and simple technique to enhance patient and family comfort and satisfaction is holding and positioning. Common practice in starting IVs or blood draws in children is with a patient supine in their bed possibly with parental presence. Practitioners often believe that this is the safest position for the child, one they are most comfortable with, and more likely to get good results with minimal attempts. A major concern for staff who regularly start IVs or draw blood on patients is the fear that if a child is held upright by a family member they may not be secure and the limbs may not be stable for IV access. This has, however, been shown not to be the case.¹³ Although nurses in the study done by Stephens et al did report concern and dissatisfaction over positioning, there was no significant difference in the number of IV attempts needed. Overall, upright patient positioning for IV access has been shown to decrease IV distress in children and improve satisfaction in family/caregivers without negatively affecting success rate.¹⁴ A properly executed position of comfort encourages a familiar and supportive embrace with caregiver and child, safely and comfortably immobilizing the extremities not involved in the procedure, and isolating out that extremity that is needed.

DISTRACTION

Distraction during potentially painful or distressing procedures is a low-cost, easily implemented intervention proven to have benefits in children’s perceived distress.¹⁵ Distractions should be age appropriate and engaging to the child. When possible, children should be allowed and encouraged to self-select their distraction method. This may increase the likelihood of effective distraction and also create a sense of “mastery,” where the child then feels empowered in their coping.¹⁶

NUMBING

Adequate analgesia can reduce the pain associated with the procedure and the anxiety surrounding future procedures. Numbing can take many forms, with the most common intervention being topical lidocaine solution; however, injected local anesthetic, local anesthetic administered through a needleless system, cold packs, and vibrating devices can also be used. Barriers to the use of numbing strategies include provider beliefs that procedures are just as painful as administration of injectable lidocaine, the use of topical analgesia decreases procedure success rate, and the time required to obtain effective analgesia is too long.¹⁷ Although subjectively providers may feel procedural success is hindered by topical analgesics, there is data to show otherwise. Taddio et

al demonstrated improved success for IV cannulation with topical liposomal bupivacaine. Multiple other studies have shown at least no difference in IV cannulation success rates with the use of topical anesthetic.^{18–20} Baxter et al also showed overall improved success with lumbar punctures when using topical anesthetics, likely due to less patient movement.²¹ New delivery systems feature needleless administration of lidocaine with a drastically shorter time of onset. In addition to the benefit of onset time, these new delivery systems also have been shown to have better analgesic effectiveness than a commonly used topical solution.²²

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SUCROSE/BREASTFEEDING

Another simple yet effective strategy for pain management in neonates and infants is administration of sucrose or breastfeeding. The administration of sucrose in concentrations of 24% or 25% have been found to decrease pain responses in neonates.^{23–25} There is debate as to whether this attenuation of pain response is from nociceptive pathways^{26,27} or other mechanisms,²⁸ but observational assessments of pain response overall have been positive for both sucrose and breastfeeding.²⁸ Breastfeeding or dipping a pacifier in expressed breast milk and swaddling and holding the infant can sustain caregiver engagement and create a familiar, supportive approach for infant and caregiver. These interventions, however, are limited as most positive data is in children under 1 year of age.

This bundle of five best practice components prior to, during, and immediately after procedures is being rolled out sequentially at our institution. Accountability, multidisciplinary core leadership, house-wide training with an evidence-based framework, and use of data and champions to promote nurse and physician engagement are key factors for this effort.^{29,30} An often-overlooked component to the success of paradigm change is the input of the patients we care for. To address this, we have developed a family advisory council composed of current and former families who are intimately involved in program development. Input from our family advisory council has helped us shape best practices to tailor them to our specific families. At the Sala Institute for Child and Family Care, our goal is to develop a resource and provide guidance across all hospital services regarding effective procedural pain management. We hope to develop a systematic and comprehensive approach that will be integrated into all procedures and ultimately lead to better, reliable, and consistent care for our youngest patients.

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