

Using Virtual Reality During Intravenous Line Placement to Improve the Patient Experience

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Background/Introduction: Distraction techniques have been used successfully to alleviate pediatric patient anxiety¹. Recent technologies have elevated distraction whereby minor invasive procedures can be implemented with reported decreased pain and anxiety^{2,3}. Virtual reality (VR) technology is a novel distraction technique that can provide full immersion during invasive procedures⁴. We propose that using immersive VR technology during peripheral intravenous line (PIV) insertions can improve the perioperative experience for our pediatric patients and families.

Methods: Patients were evaluated to see if a preoperative PIV placement indicated. If the patient met criteria for both PIV and VR application, the VR system was offered to the patient. If the patient and family consented to using the system, the VR coach oriented the patient to the headset device and its games.

For this quality improvement project, a proceduralist and VR coach worked in collaboration. The proceduralist placed the patient's PIV while the VR Coach provided VR game enhancements and supplementary distraction coaching. Baseline perception question about previous IV pain with and without VR in use was surveyed. We queried families about the VR application's benefit to their child's IV placement and the overall perioperative experience. The proceduralist and VR coach were then surveyed to see if VR was useful for the patient.

Results: The survey methods used were adopted from VAS, Amsterdam Preoperative Anxiety and Information Scales (APAIS), and Likert scales. A total of 22 surveys were completed. Ages ranged from 6 to 18 years old, with 59% of patients being either 11 or 12 years old. Anecdotal reported pain scores (4.3/10) of previous IV placements were decreased to (1.9/10) with the assistance of VR technology. Our patients also reported minimal stress levels during placement (2.5/10). The majority (80%) rated their preoperative experience as "8 out of 10" or greater. 95% of our patient's families were satisfied with the application of VR technology to facilitate PIV placement and would request this process again for their child. 90% of VR coaches and

proceduralists surveyed that this immersive distraction technique was beneficial to the patient. Overall, families were “extremely satisfied” with the perioperative experience.

Conclusion: VR technology is a valuable immersive distraction technique for awake PIV insertions in the preoperative setting for our pediatric patient population. When applied during invasive procedures, our patients have reported decreased pain and anxiety, with an “extremely satisfied” perioperative experience.

References:

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