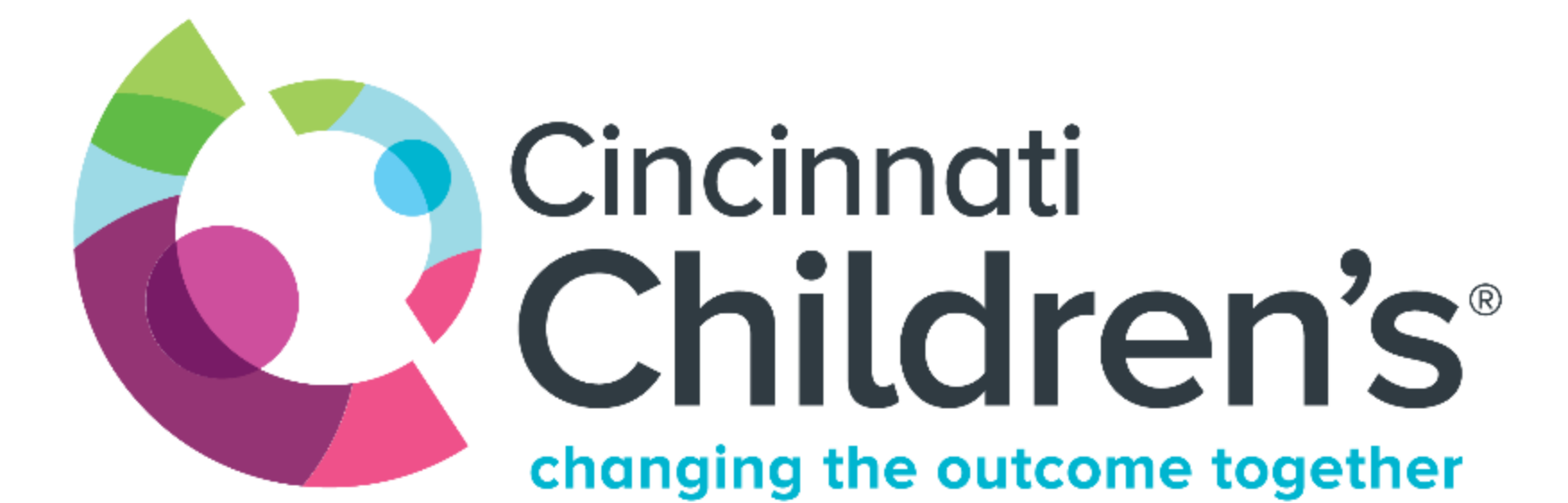


Using a Simple Intervention to Help Decrease the Vasovagal Response with IV Insertion in the Pediatric Population

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Introduction

Intravenous (IV) catheter insertion is a common medical procedure performed in a pediatric setting. In some patients, IV insertion can cause vasovagal symptoms including feelings of:

- Nausea
- Vomiting
- Dizziness
- Pallor
- Sweating/diaphoresis
- Fainting

When patients have a previous history of these symptoms during IV placement or venipuncture, they are at a higher risk of experiencing these symptoms during subsequent IV placements or venipuncture.

In adult samples, a leg crossing and muscle tensing procedure has been demonstrated to be effective in decreasing these symptoms and aborting impending syncope among patients with a history of vasovagal response to IV placement and venipuncture.

Background and Significance

Several studies have examined interventions to decrease the occurrence of vasovagal symptoms and syncope in adult patients. No evidence was found in supporting interventions to implement when placing an IV catheter on a child/young adult, with a previous history of vasovagal symptoms, to reduce a subsequent vasovagal reaction.

Low cost and simple to execute physical interventions, including either isometric arm contractions (Brignole: Ditto) or lower extremity muscle tensing (Han et al., 2006; Kim et al., 2005; Krediet et al., 2002; Krediet et al., 2008; van Dijk et al, 2006), have been demonstrated to be effective in aborting impending syncope.

When reviewing various physical interventions, Melby, Cytron, and Benditt (2004) conclude that the leg crossing procedure is the most effective intervention. In adult samples, a leg crossing and muscle tensing procedure has been demonstrated to be effective at decreasing vasovagal response to IV placement and venipuncture.

"This easy-to-perform maneuver has a significant clinical effect, is without any side effects or additional patient burden, and may be equally effective in combating presyncope and syncope." Krediet, CTP, van Dijk, N, Linzer, M, van Lieshout, JJ, & Wieling, W. (2002).

Elements of the Study

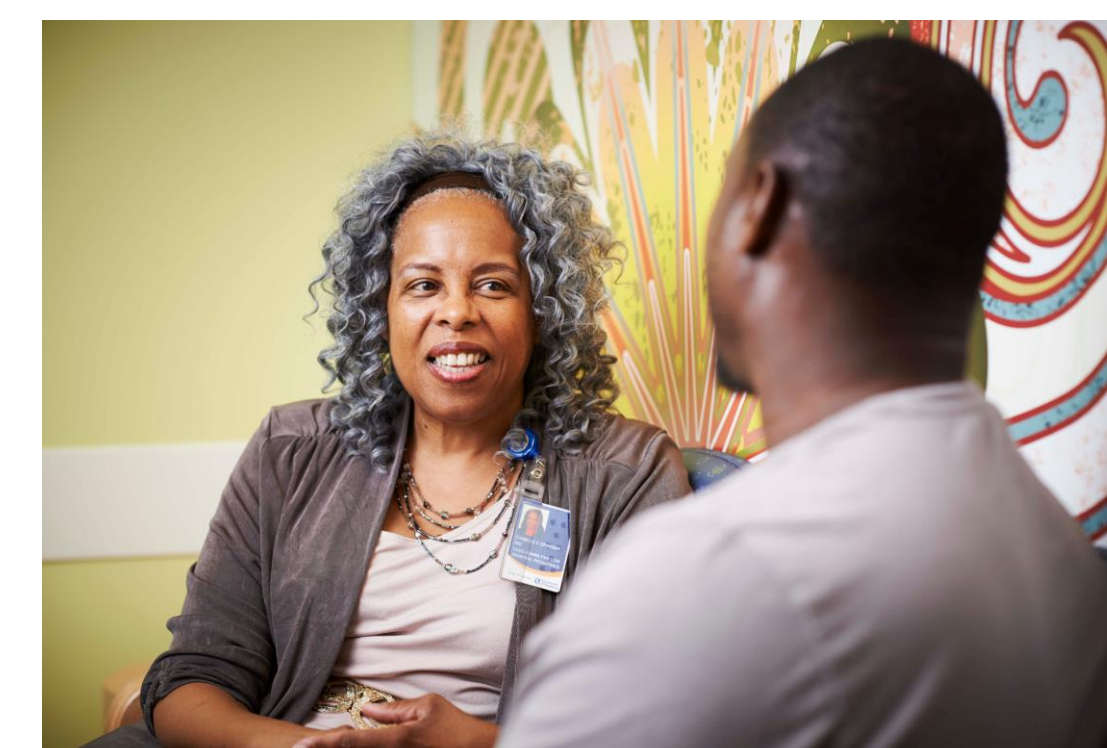
The purpose of the study was to assess whether pediatric patients are able to perform the leg crossing and muscle tensing procedure and then determine the effects of this procedure on vasovagal symptoms among pediatric and young adult patients undergoing IV catheter placement. Subjects who met the following criteria were eligible to be included in the study:

- 10-20 years of age
- Requiring an IV placement for their clinical visit
- English-speaking
- Parent/guardian is English-speaking
- Report a history of nausea, vomiting, dizziness, pallor, sweating/diaphoresis, or fainting during previous IV placement or venipuncture



A randomized controlled design was used to compare the number of vasovagal symptoms experienced by patients who practice the leg crossing and muscle tensing procedure during IV insertion.

Staff met with patients and families to screen for inclusion/exclusion criteria. If patient met eligibility criteria, informed consent was obtained from patient and family. The study was performed in the Same Day Surgery area with patients who were scheduled for surgery and would be required to have an IV placed.



It was hypothesized that :

- (1) Pediatric patients will be able to perform the leg crossing and muscle tensing technique.
- (2) Patients who participate in the leg crossing and muscle tensing would experience fewer number of vasovagal symptoms as compared patients who do not participate in the leg crossing and muscle tensing.

The Role of Child Life in the Study

In Same Day Surgery, child life specialists are part of the multidisciplinary team that help assess, prepare, and support patients coming for surgery.

- For some patients, an IV placement is required prior to surgery to be used for general anesthesia induction and/or for giving pre-medication and fluids.
- The primary investigator for this study, a Same Day Surgery RN, recognized the child life role in IV placement, and asked for the child life staff to be included in this study.
- As part of the multidisciplinary team, the child life staff always looks for opportunities to be included in research that will help advance and benefit the care provided to our patients and families.

As patients were identified as possible candidates for this study, child life staff were contacted to meet with the patient to assess for appropriateness for inclusion.

- Once patients were enrolled, patients and families were not told whether they would be placed into the standard care group or experimental group.
- All Same Day surgery Child life specialists were trained in the study protocol and technique. Child life specialists were present for each IV placement for those patients enrolled in this study.
- For those patients enrolled in the standard care group, specialists provided support and coping interventions.
- For patients in the leg crossing and muscle tensing group, a specialist met briefly with patients and families, and provided instruction on performing the technique.
- A standardized script along with visual supports were used during the preparation.

Leg Crossing-Muscle Tensing Technique

Patient will perform the technique from a seated position with legs up. The patient will:

- Cross his/her legs at the ankles
- Squeeze their buttocks together
- Use deep breathing while keeping arm relaxed
- Patient performs all three steps during the IV placement, just prior to placement, and through taping process of the IV.



Visual supports were used to help those patients who learn best with visuals and to be an aid to the script. Patients practiced along with the visual supports, prior to IV placement, and then again during the placement.

The teaching script and visual supports were designed by the child life specialist team. It was designed to use developmentally appropriate language and simplified the teaching into manageable steps for patients.

Outcomes

A sample of 28 pediatric and young adult patients 10-20 years of old, who required an IV placement prior to surgery, and were identified as having prior vasovagal symptoms with IV placement, were enrolled. A Child Life Specialist was present during all IV insertions and three consistent nursing staff completed all of the IV placements.

For patients enrolled in the control group who received standard care without additional interventions, 75% experienced vasovagal symptoms during IV placement. For patients enrolled in the experimental group, who were taught the leg crossing and muscle tensing technique, only 15% experienced vasovagal symptoms during IV placement.

Relevance to Child Life Practice

A leg crossing and muscle tensing intervention is a low cost technique that can be easily implemented in a pediatric setting. Though the intervention is simple when used in the pediatric setting, it is imperative that appropriate assessment of the patient is part of the decision making for teaching this intervention. Child life specialists have the background and skill to make these assessments and determine if the intervention would be helpful and attainable. The technique requires that a patient be able to :

- Able to understand the directions and follow a multiple step direction
- Able to tense particular areas of the body while relaxing other parts
- Able to accept support and direction during IV placement