



Background

Results

Conclusion

Competence in performing certain procedures is integral part of pediatric residency training. The Accreditation Council for Graduate Medical Education mandates competency-based training to teach clinical skills. The Pediatric Residency Review Committee (RRC) specifies that residents must have sufficient training in 16 skills and it is the responsibility of the residency program to ensure that the residents achieve the required competency performing these procedures. One of the first steps towards competency is the self-reported comfort when performing a specific procedure. This assumes that a resident who is not comfortable performing a procedure is also unlikely to be competent in that procedure. Several methods to improve comfort have been used for different procedures in other specialties, but no universal curriculum exists to teach basic procedures to pediatric residents. Bag-mask ventilation (BMV), venipuncture (VP), peripheral intravenous catheter placement (PIV), and lumbar puncture (LP) have been identified as some of the most critical procedural skills for pediatric residents. We selected three of those four procedures (LP, PIV, and VP) and developed a workshop to formally instruct a group of residents in these skills and to assess the change in comfort level occurred as a result of the workshop.

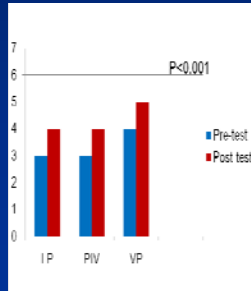


Figure 1: Overall improvement in comfort level with the workshop

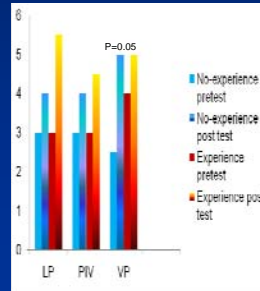


Figure 2: Improvement in comfort level in participants without experience and those with previous experience performing the procedure

	LP			PIV			VP		
	Pre-test	Post-test	p value	Pre-test	Post-test	p value	Pre-test	Post-test	p value
Anatomy	3	5	<0.0001	4	4	0.0005	4	5	0.028
Equipment	3	5	0.0001	3	4	0.0001	4	5	0.0128
Technique	3	4	<0.0001	3	5	0.0001	4	5	0.0164
Complications	3	5	0.0001	4	5	0.005	4	5	0.008

Figure 3: Improvement in the level of comfort before and after the workshop

Practice in training simulators allows residents to obtain experience without depending on encounters with live patients. This study provides data on comfort level with regard to performance of three selected procedures. After participating in the workshop, residents reported a significant improvement in their overall comfort level and in the level of comfort with all four aspects of the procedure. For lumbar puncture, there was significant correlation between previous experience and comfort level performing the procedure, but that was not the case with intravenous catheter insertion and venipuncture. The degree of improvement from baseline comfort levels was similar between those with and those without prior experience.

There was no significant difference between the number of procedures performed per resident in the two years since instituting this procedure workshop.

Further studies are needed to compare the results of this study with the actual success rate performing these procedures in real life.

Methods

Twenty-three incoming pediatric residents participated in a 2 hour procedure workshop. All participants were asked to answer a pre-test, using a 7 point Likert scale, on how comfortable they felt performing each procedure and on the level of comfort on four aspects of the procedure (anatomy, equipment, technique, and complications). The workshop started with an instructional video describing relevant anatomy, equipment needed, and appropriate technique, followed by practice of skills on training simulators. At the conclusion of the workshop, participants were asked to fill out a post-test, rating their level of comfort with each procedure, on a scale of one to seven. Differences between pre and post-tests were analyzed using the Wilcoxon Signed-Rank Test for matched pairs of answers and the Mann-Whitney Test for independent answers.

- Basic and advanced life support
- Endotracheal intubation
- Placement of intraosseous lines
- **Placement of intravenous lines**
- Arterial puncture
- **Venipuncture**
- Umbilical artery and vein catheterization
- **Lumbar puncture**
- Bladder catheterization
- Gynecologic evaluation of prepubertal and postpubertal females
- Wound care and suturing of lacerations
- Subcutaneous, intradermal, and intramuscular injections
- Developmental screening test
- Procedural sedation
- Pain management
- Reduction and splinting of simple dislocations/fractures

Figure 4: Procedures recommended by the Pediatric RRC

	PRE-WORKSHOP 2005-2007	POST-WORKSHOP 2007-2009
Lumbar punctures	6-8	5-6
Iv Placements	2-3	4
Venipunctures	1-3	1-2

Figure 5: PL-1s Average Number of Procedures Per Resident Per Year

References

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