ARTICLE

Family Presence During Invasive Procedures in the Pediatric Intensive Care Unit

A Prospective Study

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Objectives: To determine if allowing 1 or both parents to be present during invasive procedures reduces the anxiety that parents experience while their child is in the pediatric intensive care unit; to evaluate if the parent's presence was helpful to the child and parent; and to determine whether this presence was harmful to the nurses or physicians.

Design: A prospective study using surveys (5-point Likert scale) of parents of children requiring intubation, placement of central lines, or chest tubes. Additional surveys were completed by bedside nurses to evaluate the effects of parental presence.

Setting: A 12-bed pediatric intensive care unit in upstate New York.

Participants: The study population consisted of the parents of 16 children undergoing 1 or more procedures; 7 had undergone intubation, 11 had central lines placed, and 2 had chest tubes placed. The control population consisted of the parents of 7 children undergoing 1 or more procedures; 7 had undergone intubation, 5 had central lines placed, and 3 had chest tubes placed.

Results: Parental presence significantly reduced the parental anxiety related to the procedure ($P = .005$; Mann-Whitney test), but did not change condition-related anxiety ($P = 0.9$; Mann-Whitney test). Thirteen of 16 parents found their presence helpful to themselves (10 very, 3 somewhat) and the medical staff (11 very); 14 of 16 found their presence helpful to their child (11 very). Fifteen (94%) of 16 parents would repeat their choice to watch. Fifteen (94%) of 16 nurses found parents' presence helpful to the child (9 very) and to the parents (10 very). One nurse found a parent's presence somewhat harmful to nurses and very harmful to the parent. Thirteen (72%) of 18 nurses indicated that allowing parents to observe procedures was an appropriate policy. There were no significant differences noted in response of nurses based on years of experience.

Conclusions: Allowing parental presence during procedures decreases procedure-related anxiety. The implications of such a policy change on physicians and other aspects of pediatric intensive care, including medical education, need further evaluation.

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Editor's Note: This "pilot" study provides us with some very interesting data—now for the large, multisite study.

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HAVING a child in the pediatric intensive care unit creates major anxiety for parents. The source of this anxiety is both the fear of the child's death or morbidity and the unfamiliar nature of the technologic environment. This strangeness can be further compounded by the exclusion of parents from the bedside at times that are perceived by the parent to be crucial to the child's course, such as during an invasive procedure. Although many experienced pediatricians are comfortable having a parent observe minor procedures, we recognize that exclusion from observing invasive procedures is standard practice in most pediatric intensive care units.

Carter and Miles[1] derived and validated a scale to measure the parental stress surrounding a pediatric intensive care unit admission and attempted to measure the specific effects of procedures. Interestingly, most of the items regarding procedures were eliminated because the parents responded that they were "not experienced" since they had not witnessed them. The results of a recent survey[2] of parents whose children were undergoing procedures in a pediatric intensive care unit showed that almost two thirds of parents felt that the bedside procedure was the most stressful aspect of their child's intensive care unit stay.

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SUBJECTS AND METHODS

Parents whose children were admitted to the pediatric intensive care unit and were about to undergo intubation, central venous catheter placement, and/or thoracostomy tube placement were asked to participate in the survey. The study was approved by the institutional review board. Informed consent was waived, yet all participants received an information letter to review prior to completion of the parent questionnaire.

This particular intensive care unit is staffed by 5 board-certified intensivists. There were no fellows rotating through the unit at the time of this study. All procedures were performed by the attending intensivist. The authors (study group) have been practicing critical care for 8 and 11 years, and the other intensivists (control group) had been practicing for 5, 9, and 15 years, respectively.

Parents of patients were assigned to groups according to the attending intensivist as follows. If the procedure was to be performed by one of us, then the parents were invited to attend the procedure. The procedure was explained to the parents in the usual fashion. All of the children received adequate sedation and/or analgesia. Generally, midazolam and/or fentanyl was used during chest tube insertion and central line placement. Muscle relaxants were added when necessary. Most intubations were performed using the rapid-sequence technique and intravenous anesthesia. Following the procedure, the parents were asked to complete survey 1 (**Figure 1**) within 24 hours. If the procedure was to be performed by another intensivist, parents were not invited to stay during the procedure. These parents served as controls. They had the procedure that their child was about to undergo explained to them in the usual fashion and were asked to wait in the family room while the procedure was performed. Again, all of the children received sedation and/or analgesia as described earlier. Following completion of the procedure, these parents were asked to complete survey 2 within 24 hours. Following the completion of each procedure, the nursing staff that was involved in the procedure were asked to complete survey 3 (**Figure 2**).

Study surveys (survey 1) used a 5-point Likert scale and consisted of items related to demographic information and items related to quantification of parental anxiety about their child's condition, the procedure, and the effects of their presence on themselves, their child, and the medical personnel involved in the procedure.[6] Surveys of control parents (survey 2) consisted of the identical demographic elements and parental anxiety items about their child's condition and the procedure as survey 1. Items regarding how the parent's presence affected the parent, child, and staff were eliminated from survey 2. Nurses in the study group completed a survey that included demographic information and was primarily related to their views on the effects of the parent's presence on the physician, nurse, parent, and child during the specific procedure (survey 3).

All questionnaires were distributed following the procedures and were completed within 24 hours of the procedures. On occasion, more than 1 procedure was performed under the same sedation; in those cases, the parents received only 1 questionnaire. All parents received similar information about the procedure and gave informed consent. No additional procedures were performed prior to completion of the survey. There was no difference in the approach to procedure-related sedation between the groups.

Comparisons of the level of condition-related and procedure-related anxiety reported by study and control groups were made using the Mann-Whitney-Wilcoxon rank sum test. $P \leq .05$ was used to define statistical significance.

Parent Questionnaire
Survey 1

(1) Please rate your anxiety regarding your child's overall condition.
- ☐ Not anxious
- ☐ Minimally anxious
- ☐ Moderately anxious
- ☐ Very anxious
- ☐ Extremely anxious

(2) Please rate your anxienty regarding your child undergoing the previous procedure.
- ☐ Not anxious
- ☐ Minimally anxious
- ☐ Moderately anxious
- ☐ Very anxious
- ☐ Extremely anxious

Please rate how you felt your presence during the procedure affected:

(3) Yourself:
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(4) Your child:
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(5) The doctors and nurses performing the procedure:
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(6) If the opportunity were to arise, would you again want to be an observer?
- ☐ Yes
- ☐ No

Figure 1. *Parent questionnaire.*

Staff Questionnaire
Survey 3

No. of years practicing nursing:
- ☐ <1
- ☐ 1-3
- ☐ 4-6
- ☐ 7-9
- ☐ ≥10

Please rate how you felt the parent's presence during the procedure affected:

(1) The child:
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(2) Your performance:
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(3) The parent(s):
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(4) The physician's performance:
- ☐ Very helpful
- ☐ Somewhat helpful
- ☐ No effect
- ☐ Somewhat harmful
- ☐ Very harmful

(5) Do you think this is a good idea for general policy in the intensive care unit?
- ☐ Yes
- ☐ No

Why or why not?

Figure 2. *Staff questionnaire.*

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Table 1. Demographic Information*

Survey Completed by	Education/ Occupation	Head of Household Education/Occupation	Child's Age	No. of Other Children	Any Children Previously Hospitalized	Any Children Previously in ICU
			Study Group			
MWF	C/Educator	C/Business owner	13 y	1	Y	N
MWF, 34 y	H/Cosmetologist	H/Technician	8 y	3	Y	N
MWF, 39 y	C/Stenographer	G/Management	14 y	1	Y	Y
MWM, 39 y	C/Construction	Same	15 y	2	N	N
MOF, 32 y	C/Homemaker	H/Machine operator	9 y	1	Y	Y
MWF, 29 y	C/Nurse	C/Sales representative	3 mo	1	Y	Y
MWM, 36 y	C/Engineer	Same	5 y	0	Y	Y
MWF, 39 y	C/Receptionist	C/Equipment operator	15 y	2	N	N
MOF	G/Professor	G/Engineer	15 y	1	Y	Y
MWM	C/Manager	Same	14 y	0	N	N
SWM	C/Photographer	Same	27 mo	0	Y	Y
DWF	G/Nurse anesthetist	Same	16 y	3	Y	Y
MBF	C/Homemaker	G/Manager	8 y	0	N	N
DWF	C/Educator	Same	12 y	2	N	N
MWF	H/Teacher's aide	C/Manager	18 y	2	N	N
MWM, 44 y	C/Manager	Same	18 y	2	Y	Y
			Control Group			
MWF, 39 y	C/Homemaker	C/Sales	2 y	1	Y	Y
SWM, 21 y	H/Laborer	Same	9 mo	0	N	N
MWF, 36 y	. . . /Manager	C/Engineer	5 y	0	N	N
SWF, 25 y	C/ . . .	Same	20 mo	1	N	N
MWF, 41 y	C/Educator	G/Pharmacist	12 y	1	N	N
MWF	C/Nurse	C/Construction	1 y	1	N	N
MWF	G/Educator	C/Manufacturer	22 mo	3	N	N

*Age data were not available for all respondents. ICU indicates intensive care unit; MWF, married white female; C, college education; H, high school education; G, graduate school education; MWM, married white male; MOF, married "other" female; SWM, single white male; DWF, divorced white female; MBF, married black female; and ellipses, data not given.

Almost two thirds of parents would have stayed with their child for all procedures and almost all (95%) for some procedures if they had been allowed. Most (84%) thought they would be a comfort to their child during this time. In a related study limited to the emergency department, Bauchner et al[3] asked 250 parents if they would like to watch their child have blood drawn or an intravenous line started. Seventy-eight percent of the parents responded yes. Of this group, 80% felt it would make them feel better, 91% believed it would make their child feel better, and 73% thought it would help the physician. These researchers also surveyed parents who stayed in the room as their child underwent a procedure. Ninety percent of these parents thought their child wanted them in the room, 77% wanted to know what the physician was doing, and 81% thought it would help calm their child.[4] In addition, Ross and Ross[5] reported in a large study of children between the ages of 9 and 12 years that the children felt that the presence of their mother was the "thing that helped most" as they underwent a painful procedure. To our knowledge, no study has evaluated the effects of allowing parental presence during procedures on parental stress in the pediatric intensive care unit.

RESULTS

Sixteen children in the study group underwent 20 invasive procedures (7 intubations, 11 central line placements, and 2 chest tube placements). Fifteen procedures (7 intubations, 5 central line placements, and 3 chest tube placements) were performed on 7 children in the control group. Similar demographics were noted in the study and control parent groups (**Table 1**). All procedures were successfully completed without additional morbidity.

Parental presence significantly reduced the parental anxiety related to the procedure ($P = .005$; Mann-Whitney-Wilcoxon rank sum test) (**Table 2**). However, parental presence did not change the condition-related anxiety ($P = .90$; Mann-Whitney-Wilcoxon rank sum test).

Thirteen of the 16 parents in the study group felt that their presence during the procedure was helpful to themselves, with 10 of those feeling it to be very helpful and 3 feeling it to be somewhat helpful. Thirteen of these 16 parents also felt that their presence was helpful to the medical staff, with 11 of those feeling their presence was very helpful. Fourteen of the 16 study subjects thought that their presence was helpful to their child; 11 felt it was very helpful.

Fifteen (94%) of the 16 nurses felt that the parents' presence was helpful to the child (9 very helpful) and to the parents (10 very helpful). One nurse found a parent's presence somewhat harmful to nurses and very harmful to the parent. Thirteen (72%) of the 18 nurses indicated that allowing parents to observe procedures was an appropriate policy. Fifteen (94%) of the 16 parents in the study group would repeat their choice to be present if asked again.

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Table 2. Parental Procedure- and Condition-Related Anxiety as Measured by a 5-Point Likert Scale

Group	No.	1 (Not Anxious)	2 (Minimally Anxious)	3 (Moderately Anxious)	4 (Very Anxious)	5 (Extremely Anxious)
			Procedure-Related Anxiety			
Study	16	1	6	7	0	2
Control	7	0	0	1	4	2
			Condition-Related Anxiety			
Study	16	1	3	3	4	5
Control	7	0	0	3	1	3

Neither of the study physicians felt that the parents interfered or were in the way of them successfully performing all procedures.

COMMENT

Parents have traditionally been excluded from being present at invasive procedures in the pediatric intensive care unit. This is often done because of physician preference, the feeling that a parent could intentionally or unintentionally interfere with the success of the procedure, or because of paternalistic views that it is better for the parent "not to see." Residents and nurses indicated in one study that parents should not be allowed to observe procedures because (1) 93% felt observing procedures would make the parents nervous or upset, (2) 60% felt the parents would not understand what was happening, (3) 46% thought it would make the physician nervous, (4) 40% felt it would upset the child more, and (5) 40% felt the parents would get in the way.[4] In the survey of residents and nurses, very few thought that they were too busy to explain the procedure to the parents (14%) or that it was not good for the parent or the child to have a parent present (28%).[4] The results of our study challenge these assumptions. Allowing parents to watch the procedure clearly decreased procedure-related anxiety; nurses and parents agreed that parental presence was helpful throughout the procedure.

Similar results have been obtained in the adult emergency department setting when families were offered the chance to be present during resuscitation. During a 9-year experience, 94% of family members stated that they would observe cardiopulmonary resuscitation again, three quarters found that their adjustment to a family member's death was improved, and two thirds thought their presence was beneficial to the dying family member.[7,8]

Our study demonstrates that allowing parents to be present while their child is undergoing an invasive procedure objectively decreases procedure-related anxiety. Although this study did not specifically address why observing the procedures decreased parental anxiety, some conclusions can be drawn from comments made from parents. Almost all parents felt that their presence was a comfort to their child as sedation was given. Many parents found that the actual procedure was far less noxious than what they had imagined. Reinforcing this observation is the fact that no parent left the room while the procedure was being performed despite clear opportunities to do so after sedation was accomplished.

It is apparent that allowing parents access to their children during procedures can have positive effects for patients and families. The implications of allowing parents access to their children during procedures on physician performance and on training aspects of pediatric intensive care are more problematic and need further evaluation.

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REFERENCES

1. Carter MC, Miles MS. The parental stressor scale: pediatric intensive care unit. *Matern Child Nurs J.* 1989;18:187-198.
2. Taylor N, Bonilla L, Silver P, et al. Pediatric procedures: do parents want to be present? *Crit Care Med.* 1996;24(suppl):A131.
3. Bauchner H, Vinci R, Waring C. Pediatric procedures: do parents want to watch? *Pediatrics.* 1989;84:907-909.
4. Bauchner H, Waring C, Vinci R. Parental presence during procedures in an emergency room: results from 50 observations. *Pediatrics.* 1991;87:544-547.
5. Ross DM, Ross SA. The importance of type of question, psychological climate and subject set in interviewing children about pain. *Pain.* 1984;19:71-79.
6. Oppenheim A. *Questionnaire Design and Attitude Measurement.* London, England: Heinemann; 1966.
7. Hanson C, Strawser D. Family presence during cardiopulmonary resuscitation: Foote Hospital emergency department's nine-year perspective. *J Emerg Nurs.* 1992;18:104-106.
8. Doyle CJ, Post H, Burney RE, et al. Family participation during resuscitation: an option. *Ann Emerg Med.* 1987;16:107-109.

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