



Parent Participation in Pediatric Intensive Care Unit Rounds via Telemedicine: Feasibility and Impact

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Objectives To evaluate feasibility and impact of telemedicine for remote parent participation in pediatric intensive care unit (PICU) rounds when parents are unable to be present at their child's bedside.

Study design Parents of patients admitted to a 14-bed PICU were approached, and those unable to attend rounds were eligible subjects. Nurse and physician caregivers were also surveyed. Parents received an iPad (Apple Inc, Cupertino, California) with an application enabling audio-video connectivity with the care team. At a predetermined time for bedside rounds with the PICU team, parents entered a virtual meeting room to participate. Following each telemedicine encounter, participants (parent, physician, nurse) completed a brief survey rating satisfaction (0 = not satisfied, 10 = completely satisfied) and disruption (0 = no disruption at all, 10 = very disruptive).

Results A total of 153 surveys were completed following 51 telemedicine encounters involving 13 patients. Parents of enrolled patients cited work demands (62%), care for other dependents (46%), and transportation difficulties (31%) as reasons for study participation. The median levels of satisfaction and disruption were 10 (range 5-10) and 0 (range 0-5), respectively. All parents reported that telemedicine encounters had a positive effect on their level of reassurance regarding their child's care and improved communication with the care team.

Conclusions This proof-of-concept study indicates that remote parent participation in PICU rounds is feasible, enhances parent-provider communication, and offers parents reassurance. Providers reported a high level of satisfaction with minimal disruption. Technological advancements to streamline teleconferencing workflow are needed to ensure program sustainability. (*J Pediatr* 2017;185:181-6).

Many parents of children admitted to a pediatric intensive care unit (PICU) suffer significant traumatic stress.^{1,2} A recent meta-analysis examining post-traumatic stress disorder and the PICU concluded that 10.5%-21% of parents with a child status post PICU admission develop post-traumatic stress disorder, with symptom rates nearing 84%.³ Two sources of stress commonly identified by parents are (1) having to be away from their sick child and (2) not receiving open, timely, and understandable information.⁴ Family-centered care, including family participation on daily rounds and open visitation policies, has been linked to improved parent satisfaction, improved patient outcomes, and decreased stress for patients and parents.⁵ Both the American Academy of Pediatrics and the American College of Critical Care Physicians strongly advocate for incorporation of such practices to promote family-centered care.⁶

Despite the wide-spread adoption of unrestricted intensive care unit visitation policies and the incorporation of families into daily PICU rounds, many parents face barriers preventing them from taking advantage of such offerings. These include the need to care for other dependents and an inability to miss work because of missed wages or threat of job loss (and with it loss of family health benefits).⁷ The US Family and Medical Leave Act may protect some parents from losing their job when caring for a child with a serious health condition, but eligibility is limited and excludes those who work in the private sector for businesses employing fewer than 50 and those who have worked for an employer for less than 12 months.⁸ Even if eligible for this job-protected leave, many parents cannot afford the associated loss of wages. Difficulties with transportation pose another hurdle; there is significant disparity across the US in terms of proximity to pediatric subspecialty care. In some regions less than 10% of the pediatric population lives within 50 miles of a hospital with a PICU.⁹

Telemedicine has been used to improve rapid access to subspecialty critical care expertise by linking patients presenting to community hospitals with pediatric intensivists who can assist with treatment recommendations.¹⁰⁻¹⁵ Nighttime telecommunication between attending pediatric intensivists on home-call with providers, families, and patients has been shown to enhance continuity of care and augment team communication with families during off hours. Parents reported increased satisfaction with these encounters and a sense of relief following updates involving the primary attending.¹⁶ More recently, telemedicine has been used to successfully link hospitalized PICU patients with friends and family via simple, 2-way video conferencing technology. Patients reported feeling happier following these video encounters and

HIPAA Health Insurance Portability and Accountability Act
NICU Neonatal intensive care unit
PICU Pediatric intensive care unit

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exhibited less stress compared with patients without access to the videoconferencing program.^{17,18} Based on the successes of these programs, we hypothesized that telemedicine could be used to enable families unable to be at their child's bedside to remotely join daily rounds in the PICU and that this would help decrease parental stress and increase parent and provider satisfaction.

Methods

Following Institutional Review Board approval a prospective, single center study was conducted in a university-affiliated, 14-bed PICU. Eligible subjects included (1) individuals who were parents or legal guardians of patients between 2 days and 17 years of age admitted to the PICU with an anticipated length of PICU stay greater than 48 hours and who anticipated being unable to attend rounds; and (2) PICU providers (nurses and physicians) directly involved in the care of a patient whose parents were in the study. Parent enrollment was through a convenience sample. On days when the research coordinator was available, all reachable parents of newly admitted PICU patients within the study age range and with an expected length of PICU stay greater than 48 hours were approached. Parents who indicated they would be unable to stay at their child's bedside were offered enrollment. The only exclusion criterion for parents and providers was unwillingness to participate in the study. Informed consent was obtained from all participating parents/guardians. A research information sheet containing the objectives of the study, risks, and benefits was distributed to all PICU staff. Their willingness to interact with the parents via telemedicine and complete the study questionnaire was considered implied consent and approved as such by the hospital's Institutional Review Board.

Once enrolled in the study, parents were provided with an iPad (Apple Inc, Cupertino, California) equipped with both wifi and cellular capability and loaded with free, off-the-shelf teleconferencing software enabling connectivity with the PICU's mobile telemedicine cart (Tandberg/Cisco cart estimated cost \$35 000). The connection between the mobile telemedicine cart and iPad used Health Insurance Portability and Accountability Act (HIPAA)-compliant technology. This included the central administration of user names and passwords, and the encryption of protected health information in the form of data both at rest and in transit. Encounters were not recorded, obviating the need for stored protected health information protection from improper alteration or destruction. Although many parents owned an iPad or computer with video capability, they were discouraged from using these in the study because of concerns that the research coordinator might have greater difficulty troubleshooting potential problems with connectivity using unfamiliar end-user devices. Parents received verbal and written instructions from the research coordinator regarding the workflow to connect with the PICU's mobile teleconferencing unit. They were then asked about their future availability between the hours of 7:30-10:30 a.m. to remotely join bedside rounds. Study staff designated a 15-minute

window for the planned video encounter and shared this with the rounding team for planning purposes. Each day parents received an e-mail confirmation of the planned video conference along with a web link and unique password to allow them to join a private virtual meeting room. The rounding PICU team joined the virtual meeting room within the predetermined 15-minute window using a mobile teleconferencing unit rolled to each patient's bedside. Parents were encouraged to participate in rounds no differently than parents who join rounds in person. Following rounds, the PICU mobile teleconferencing unit was rotated to focus on the patient, enabling parents to remotely visit with their child and continue a dialogue with their child's nurse. Assistance with the mobile teleconferencing unit was provided by a research coordinator. Parents were provided with a prepaid, pre-addressed mailing box for easy iPad return following study participation.

Following each encounter but before disconnecting, a research coordinator conducted a brief satisfaction survey with the participating parent. Answers to study questions were recorded on a paper survey. Provider surveys were distributed to the participating nurse and attending physician for completion after rounds and collected for later review. Parents and providers were asked to rate their level of satisfaction with the remote encounter based on a 10-point scale with 0 indicating not satisfied at all and 10 indicating completely satisfied. Providers were asked to rate how disruptive the remote encounter was to the workflow of rounds with 0 indicating no disruption at all and 10 indicating very disruptive. Parents were asked how the encounter impacted their level of communication with the PICU staff as well as how the encounter impacted their level of reassurance regarding their child's care in the PICU (choices included "positive effect," "no effect," and "negative effect"). Both parent and provider surveys were designed to take no more than a few minutes to complete ([Appendix](#); available at www.jpeds.com).

Completed surveys were analyzed with descriptive statistics. All reported means were calculated by first averaging data within each patient based on the number of encounters completed and then averaging these results based on the total number of patients whose parents enrolled in the study.

Results

Twenty-three sets of parents who had children with expected PICU length of stay greater than 48 hours and who did not expect to be at the bedside for morning rounds were approached, and 100% enrolled in the study. However, 10 did not complete any telemedicine encounters for the following reasons: (1) the parents decided to remain at their child's bedside ($n = 5$); (2) the child was transferred out of the unit within less than 48 hours ($n = 2$); (3) the remote parent was unable to find time to join rounds because of demanding work/school schedule ($n = 2$); and (3) the remote parent declined to participate after initial connectivity difficulty ($n = 1$). A total of 153 surveys were completed following 51 telemedicine encounters involving 13 patients. One parent, 1 nurse, and

Table I. Patient and parent demographics

Ages	Primary diagnosis	PICU LOS (d)	Miles to hospital	Remote encounters	Enrollment reasons*	Parent with personal tablet	Parent participating remotely	Siblings	Parental education
52 d	Airway obstruction	10	22	4	3	Yes	Mother ×3 Father ×1	1 (twin)	B B
54 d	Bronchiolitis	11	14	8	3, 4	Yes	Mother	1 (twin)	B
15 mo	Subglottic stenosis	12	22	3	1	Yes	Mother	5	B
15 mo	Subglottic stenosis	10	16	1	1	Yes	Father	0	D
20 mo	Subglottic stenosis	10	12	3	1	Yes	Mother	0	B
22 mo	Subglottic stenosis	15	11	7	3, 5	Yes	Mother	1 (twin)	P
22 mo	Subglottic stenosis	13	12	3	1, 2	No	Mother	0	HS
2 y	Transverse myelitis	33	15	5	1	Yes	Mother	0	B
2 y	Subglottic stenosis	10	12	2	1	Yes	Mother	0	B
5 y	Subglottic stenosis	13	246	2	1, 5	Yes	Mother	1	B
8 y	Stevens Johnson	24	137	1	2, 5	Yes	Mother	2	HS
15 y	Status epilepticus	82	52	5	1, 5	Yes	Mother	1	B
19 y	Fungal peritonitis	57	22	7	2	Yes	Mother	2	HS

B, bachelor's degree; D, doctorate; HS, high school; LOS, length of stay; P, professional degree.

*Reasons for enrollment: 1, work demands; 2, other dependents; 3, breast feeding; 4, concern for spread of infection; 5, transportation challenges.

1 physician survey were completed for each encounter. Fourteen different parents completed surveys. The number of different nurses and physicians who completed surveys is unknown as no identifying data was collected to ensure anonymity.

Table I provides demographic data for enrolled parents and their hospitalized children. Patients ranged in age from 52 days to 19 years and had a median PICU length of stay of 13 days. One patient who exceeded the upper age limit was enrolled because of a compelling psychosocial situation (single mother with 2 children admitted to different hospitals simultaneously). This was reported to the hospital's Institutional Review Board as a minor protocol deviation. The average number of encounters per patient was 4 with a range of 1 to 8. The average distance between home and hospital was 46 miles and ranged from 11 to 246 miles. The most common reason cited by 8 parents for participating in virtual rounds was the need to return to work. Six parents needed to care for other dependents, including 3 mothers nursing a twin at home while the other was admitted to the PICU, and another mother juggling the care of 1 child in the PICU and another undergoing rehabilitation at a different inpatient facility. Four families also cited long distance between hospital and home or difficult commute in and out of the congested, urban hospital location as reasons to remotely participate in PICU rounds.

On average, all participants reported a high level of satisfaction with each telemedicine encounter with minimal disruption (**Table II**). One parent indicated only a modest degree of satisfaction with her first encounter because of difficulties with wifi connectivity. The problem was due to a firewall around the parent's university-based job location; this was solved by connecting through a cellular network. Another parent experienced audio and video delays and screen freezing during 1 encounter that impeded her ability to ask questions. The root cause was never discovered but did not recur. For both encounters, the nurse indicated a moderate degree of disruption to PICU rounds because of delays in connectivity. During 1 remote encounter, the parent joining rounds from home

indicated she could not hear the resident presenting. The resident was encouraged to speak up and move closer to the microphone on the telemedicine cart, which solved the problem. Following 2 other encounters, the physician indicated that remote parent participation in rounds was somewhat disruptive because the team had to reorder their rounding to accommodate parent availability from work. In both cases, the physicians indicated the encounter was helpful and had a positive effect on communication. Parents unanimously felt reassured about the care their child was receiving in the PICU following remote participation in rounds and virtual visitation with their child. Many parents commented that being able to see their child even if the child was deeply sedated helped confirm the clinical picture described in rounds. Following all but 1 encounter parents indicated that remote participation in rounds had a positive effect on communication with the PICU team (**Table III**). One parent who only participated in a single encounter indicated it had no effect on his level of communication with the PICU because high demands at work impeded his ability to focus on rounds.

Table IV provides representative statements shared by nurses, physicians, and parents immediately following remote participation in rounds. Many parents commented on the convenience of joining rounds remotely without having to abandon other life and work responsibilities. The benefit

Table II. Self-reported levels of satisfaction and disruption with remote encounter

Respondents (n)	Level of satisfaction scale 0-10* mean/median (range)	Level of disruption scale 0-10† mean/median (range)
Parent (51)	9.4/10 (5-10)	—
Nurse (51)	9.8/10 (7-10)	0.3/10 (0-5)
Physician (51)	9.9/10 (8-10)	0.6/10 (0-5)

n indicates number of telemedicine encounters involving 13 patients.

*0 = not satisfied at all, 10 = completely satisfied.

†0 = no disruption at all, 10 = very disruptive.

Table III. Parent self-reported impact of telemedicine on communication and level of reassurance

	Positive effect	No effect	Negative effect
How did this encounter impact your level of communication with the PICU staff caring for your child?	50	1	0
How did this encounter affect your level of reassurance regarding your child's care in the PICU?	51	0	0

highlighted most by parents and providers was improved communication. Some attributed this to rounding together in real time with the ability for active parent participation. Others shared that the visual dimension of the encounters helped them gauge emotions and levels of comprehension and respond more appropriately. Nurses also cited the improved ability to

Table IV. Direct feedback from participants in remote rounds

Participants	Representative statements
Parent	This was perfect. I was able to stay home with [the patient's] twin in the morning and nurse without missing rounds. Then I drove in after rush hour to be with [my other twin].
Parent	It was so helpful to know that my wife was hearing the same things I was hearing. I think this helped to avoid confusion. (father at the bedside, mother joining rounds from home)
Parent	Joining rounds from work made me feel reassured about my daughter's care and made me feel less guilty about not being able to be there.
Nurse	The mother was at home with her twin and sounded very anxious on the phone when she learned her child would be transferred to the floor that day. We were able to schedule a second remote encounter with her to answer her questions and allow her to see how good her son looked. I was able to provide emotional support and she seemed much better after our telemedicine encounter.
Nurse	By having the mother join rounds via telemedicine, we were able to expedite the resolution of an issue where parental input was very important.
Nurse	The father seemed distracted by his job when participating on rounds from work.
Nurse	The father seemed so much more relaxed after he had a chance to see how comfortable his son appeared.
Nurse	Mom had a difficult time hearing so was less likely to ask questions on rounds. I was able to help address her questions during her remote visit to the bedside afterwards.
Nurse	It was great that the parents could receive an update prior to their son's extubation, then see him comfortably extubated.
Nurse	I was able to see the mother's face as I spoke with her and could better gauge her degree of understanding of the situation and her level of concern and then respond more appropriately.
Nurse	Together with the surgical nurse practitioner, we were able to show the mother her daughter's wound and conduct teaching around proper dressing changes as part of discharge planning.
Physician	Being able to see the mother's face as I talked with her helped guide how I spoke with her about her son.
Physician	I found the mother's interruptions on rounds to tell the team she couldn't hear to be somewhat distracting.
Physician	It [remote rounds] didn't slow things down at all. I was surprised.

provide parent education and conduct teaching. Some participants were distracted by technical issues that arose.

Discussion

This study examined the feasibility of and satisfaction with a HIPPA-compliant telemedicine program enabling parents unable to be present in the PICU the opportunity to remotely participate in family-centered rounds. Results of this pilot study indicate that the program is both feasible and effective in terms of enhancing parent-provider communication and increasing parental level of reassurance with minimal disruption to the PICU workflow.

Although there are a number of webcam programs cited in the neonatal intensive care unit (NICU) literature that enable parents to view their infant, the technology does not allow for interaction between the parent and provider.¹⁹⁻²¹ Epstein et al²² recently reported on the use of real-time video-conferencing via Skype and Face Time to provide parental updates in a NICU. However, the technology employed was not HIPAA-compliant and the program was not designed to encourage parent participation in rounds but rather to provide brief (3-10 minutes) updates. The authors highlighted audio/visual difficulties felt secondary to Internet-based wifi connectivity that led some families to drop out of the program. Study staff cited difficulties troubleshooting technical problems originating at the parents' end. Our study offers a highly reliable telemedicine program that ensures privacy, encourages remote participation in family-centered rounds, and provides parents an opportunity to remotely visit with their child. We attribute the high degree of reliability experienced in our study to 2 technology-based interventions: (1) families were provided with loaner iPads already configured to support video encounters thereby omitting the need for parents to upload applications on their own devices and making it easier for study staff to help end-users solve problems that arise; and (2) each iPad was equipped with a cellular plan to ensure connectivity when wifi connectivity proved difficult.

Results of this pilot study must be interpreted in light of several limitations. First, it is possible that the sample of parents in this small study were not representative of the general population as most had completed college and all but 1 had access to their own tablet. These parents may have entered the study with a positive view of the technology leading to more favorable ratings. Furthermore, although the research coordinator encouraged parents to share their honest feedback and reminded them their responses would remain anonymous, survey completion with a research coordinator immediately following encounters may have introduced a degree of social desirability bias. The study was designed this way to ensure surveys were completed and to minimize poor recall over time by parents who were already enduring significant stress. Second, the study did not discriminate between parent satisfaction secondary to remote participation in rounds vs parent satisfaction secondary to remote visits with their child. It is possible that parents highly rated their satisfaction with the program

simply because it afforded them the chance to see their child. Yet most parents specifically commented that the program enhanced communication with the care team and made them feel included in the care of their child. Third, 1 provider was involved in developing the program and may have been biased when completing surveys given their interest in seeing the program succeed. Fourth, many patients in the study had relatively straightforward medical issues, and more complex patients may have been under-represented because their parents were more likely to remain at the bedside. This makes it difficult to fully understand the value of this kind of intervention for families with children experiencing higher illness acuity. The study design did not include collection of comparison data from parents and providers who did not participate in telemedicine rounds, which may have shed further light on the value of the program. Lastly, this was a small pilot study and there were never more than 2 families participating in telemedicine rounds on a given day. The degree of disruption to rounds might have been greater had more families participated at once.

There were a number of important lessons learned during this study. First is the importance of providing iPads with cellular capability because of firewalls and unpredictable or slow internet connectivity. For 1 parent who worked in the technology industry, insisting he use a preconfigured iPad rather than his own device was initially less attractive and may have added to an already stressful time. However, this enabled quick and easy troubleshooting when a connectivity issue arose, resulting in a successful encounter. Second, we learned that it is important to remind team members to speak up in rounds and to have them stand within 5 feet of the PICU cart microphone to ensure being heard clearly. Third, we learned it was best not to schedule telemedicine encounters until at least an hour into rounds to ensure newly admitted and unstable patients could be seen first. Fourth, our program relied upon a study coordinator to facilitate each encounter. Program sustainability will require technological advancements that simplify connectivity and omit the need for extra personnel. In the meantime, it will be vital to identify and train appropriate internal staff to work with families and the PICU team to facilitate video encounters. Fifth, cost is an important factor to consider. The model we employed took advantage of pre-existing, highly sophisticated telemedicine equipment originally meant for remote patient evaluation. The cost of such a system may be prohibitive for some institutions. However, the use of such sophisticated hardware is not necessary for this type of telecommunication and could easily be replaced by a simple webcam mounted on top of an existing computer on wheels. Finally, the advice and support of our institution's telemedicine department was instrumental to the success of this program. Units considering a parent-provider telecommunication program such as ours are highly encouraged to collaborate closely with their technology support teams given the unique challenges that exist at different institutions.

Remote parent participation in PICU rounds using a HIPAA-compliant teleconferencing system is feasible, provides parents unable to be present at the bedside with reassurance regarding

their child's care, and enhances parent communication with the medical team. This innovative use of technology directly answers the call to healthcare providers from the Institute of Medicine and the American Hospital Association to develop programs using today's technology to promote patient- and family-centered care and to provide emotional support to families.^{23,24} Further technological advancements are needed to streamline the HIPAA-compliant teleconferencing workflow to ensure program sustainability without reliance upon a third party to facilitate encounters. ■

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Virtual parent presence in the PICU: Impact on parents and providers
Satisfaction Survey - Parent

Form 1

Version 04/02/2014

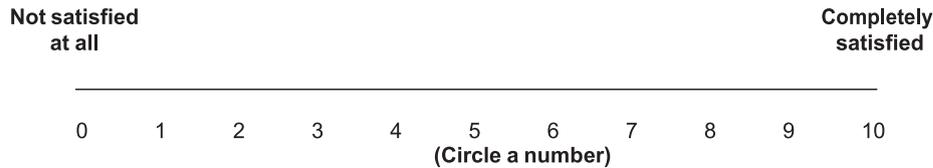
SECTION A: General Information

- A1. Patient Study ID:
- A2. Date form completed: ____/____/____ (MM/DD/YYYY) A2a. Encounter #: _____
- A4. Start time of encounter: ____:____ (24 hour clock)
- A5. End time of encounter: ____:____ (24 hour clock)
- A6: Mother Father

SECTION B: Level of Satisfaction

- B1. How do you feel this encounter **impacted your level of communication** with the PICU staff caring for your child:
- Positive effect on communication
- No effect on communication
- Negative effect on communication
- B2. How did this encounter **affect your level of reassurance** regarding your child's care in the PICU:
- Positive effect on my level of reassurance regarding my child's care
- No effect on my level of reassurance regarding my child's care
- Negative effect on my level of reassurance regarding my child's care
- B4. Were all of your **questions answered and your child's needs addressed** during this encounter:
- Yes
- No If No, please specify: _____

B5. Please indicate your overall level of satisfaction for this encounter:



- B6. Would you have preferred to be present **in person** (to be at your child's bedside) for this encounter as opposed to communicating via telemedicine:
- Yes If Yes, please explain: _____
- No

SECTION C: Technical Issues with Communication via Telemedicine

- C1. Technical issues/difficulties : No Yes
- If No, END OF FORM, if Yes, specify:**
- C1a. Visual difficulties: No Yes
- C1b. Audio difficulties: No Yes
- C1c. Remote control difficulties: No Yes
- C1d. Other difficulties/limitations No Yes
- C1d1. If yes, specify: _____

Appendix. Continues.

Virtual parent presence in the PICU: Impact on parents and providers
Encounter Form – Nurse

Form 2

Version 04/02/2014

SECTION A: General Information

A1. Patient Study ID:

A2. Date form completed: ____/____/____ (MM/DD/YYYY) A2a. Encounter #: _____

A3. Start time of encounter: __:__(24 hour clock)

A4. End time of encounter: __:__(24 hour clock)

SECTION B: Level of Satisfaction

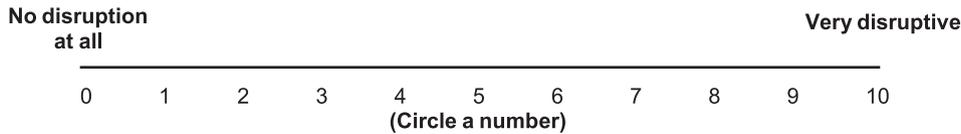
B1. How **helpful** did you find this encounter:

- Very helpful
- Somewhat helpful
- Not helpful at all

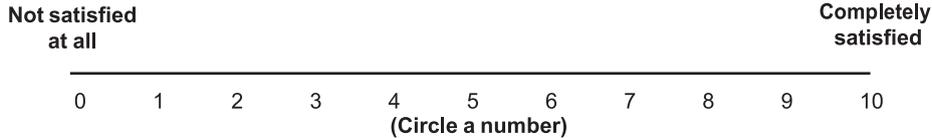
B2. How did this encounter **impact your communication with the patient's family**:

- Positive effect on communication
- No effect on communication
- Negative effect on communication

B3. Please indicate the overall **level of disruption** you experienced as a result of this encounter (i.e., took up more time than you anticipated, kept you from responding to other patients, altered your schedule):



B4. Please indicate your **overall level of satisfaction** for this encounter:



SECTION C: Technical Issues with Communication via Telemedicine

C1. Technical issues/difficulties: No Yes

If No, END OF FORM, if Yes, specify:

- C1a. Visual difficulties: No Yes
- C1b. Audio difficulties: No Yes
- C1c. Remote control difficulties: No Yes
- C1d. Other difficulties/limitations No Yes

C1d1. If yes, specify: _____

Appendix. Continues.

Virtual parent presence in the PICU: Impact on parents and providers

Form 3

Encounter Form - Physician

Version 04/02/2014

SECTION A: General Information

A1. Patient Study ID:

A2. Date form completed: ____/____/____ (MM/DD/YYYY)

A2a. Encounter #: _____

A3. Start time of encounter: __:__(24 hour clock)

A4. End time of encounter: ____:____ (24 hour clock)

SECTION B: Level of Satisfaction
B1. How **helpful** did you find this encounter:

- Very helpful
- Somewhat helpful
- Not helpful at all

B2. How did this encounter **impact your communication with the patient's family**:

- Positive effect on communication
- No effect on communication
- Negative effect on communication

B3. Please indicate the overall level of disruption you experienced as a result of this encounter (i.e., took up more time than you anticipated, kept you from responding to other patients, altered your schedule):
**No disruption
at all**
Very disruptive

0 1 2 3 4 5 6 7 8 9 10

(Circle a number)

B4. Please indicate your overall level of satisfaction for this encounter:
**Not satisfied
at all**
**Completely
satisfied**

0 1 2 3 4 5 6 7 8 9 10

(Circle a number)

SECTION C: Technical Issues with Communication via Telemedicine
C1. Technical issues/difficulties: No Yes
If No, END OF FORM, if Yes, specify:
C1a. Visual difficulties: No YesC1b. Audio difficulties: No YesC1c. Remote control difficulties: No YesC1d. Other difficulties/limitations No Yes

C1d1. If yes, specify: _____

Appendix. Continued.