A Randomized Trial of Facilitated Family-Centered Rounds

abstract

BACKGROUND: Family-centered rounds (FCR) are becoming the status quo for inpatient pediatric medical care; however, barriers still exist. The use of facilitators in FCR is gaining popularity. Although facilitators can increase comfort with FCR, the choice of preferred facilitator has not been studied by using rigorous methodology. In this study, we performed a randomized trial of facilitated FCR with bunnies and clowns, 2 commonly mentioned facilitators, and compared their results with the usual care condition.

METHODS: The 3 floor teams were randomized to have rounds facilitated with bunnies and clowns or the usual care model facilitated by distracted residents and overbearing attending physicians. Infection control procedures were instituted. Outcome measures were parent satisfaction scores, use of anxiolytic agents during examinations as part of FCR, resident satisfaction, and the number of times presenters were interrupted by their attending. Differences between the experimental and control groups were analyzed by using t tests, χ² statistics, and multiple regression analysis. Qualitative analyses were also performed by using participant-observers.

RESULTS: Bunnies had the best overall improvement in parent satisfaction, anxiety, and resident satisfaction. Both intervention groups were successful at reducing attending interruptions. The clown arm was suspended by the Data Safety Monitoring Board before study completion due to adverse events.

DISCUSSION: Facilitated FCR has the potential to improve satisfaction among parents, patients, and residents, and to decrease attending interruptions. Care needs to be taken, however, to avoid unanticipated adverse effects from potentially emotionally damaging interventions. Tularemia was not identified in any of our treatment conditions.

The implementation of family-centered rounds (FCR) in pediatric hospital medicine has swept the nation and is now quotidian practice in many inpatient pediatric settings. A survey in 2010 of pediatric hospitalists showed that almost one-half of academic hospitalists and one-third of nonacademic hospitalists engaged in FCR. Use of FCR has been shown to improve patient satisfaction, communication, and family understanding of the care plan. Despite early evidence supporting FCR, however, problems have been encountered that may be impediments to successful implementation. Families have expressed concerns over their comfort with FCR, specifically regarding the undue broadcasting of private health information on the wards. Spanish-speaking families are also less likely than English-speaking families to benefit from FCR. Furthermore, both residents and medical students have expressed reservations about didactic teaching during
Thus, although FCR may be beneficial for families, some practitioners, patients, and families experience stress and anxiety, which can reduce efficacy of and compliance with this practice.

There is outstanding evidence for the beneficial use of clowns in the inpatient pediatric setting. In her landmark study of the psychological underpinning of clown efficacy, Dr Lotta Linge argued effectively for an actual “magic” connection between clowns and pediatric patients. This theory is borne out by the careful work of Bertini et al., who demonstrated an improvement in heart rate and blood pressure in children with respiratory conditions, although these data did not achieve statistical significance. Most importantly, clowns have been shown to be more effective at reducing anxiety in children than either their parents or use of midazolam; however, this phenomenon has only been reported in French clowns, who are known for their increased use of miming.

Another common source for solace among children is small furry animals. A benchmark study in child psychology demonstrated that children naturally gravitate toward bunnies as a source of comfort (although in this study, the bunnies were stuffed). We hypothesized that bunnies and clowns may be facilitators of improved FCR for hospitalized children. For clowns, the evidence is overwhelming that they reduce anxiety, which is a prime reason for noncompliance with FCR. For animals, we did consider other pets but were concerned regarding possible zoonoses of cats (eg, Bartonella species, toxoplasmosis). We briefly considered dogs, but there is emerging evidence that prepubertal children prefer bunnies to dogs. Rabbit allergy is rare compared with cats and dogs, despite the fact that they are common household pets. Furthermore, although tularemia has been implicated in bunnies, it is necessary to skin the rabbit to acquire the infection, and we were confident in our ability to prevent our patients from skinning or processing the meat of the animals during FCR as carrying knives has been strictly forbidden for parents and patients in our institution since 2005.

We conducted the first prospective, nonblinded randomized trial comparing the role of bunnies, clowns, and placebo in the functioning of FCR during the hospitalization of children on the general pediatrics ward. We hypothesized that both bunnies and clowns would have a greater positive impact on functioning of FCR, with bunnies preferred by younger patients and clowns preferred by the older patients.

**METHODS**

**Setting**

Our study was conducted at the Children’s Hospital of Ulaanbaatar (CHU), a quaternary care facility serving a wide catchment area. Floor teams are unit-based and comprise an attending, senior (third-year) resident, 2 interns, and innumerable medical students. CHU has a well-instituted program of FCR; all medical teams perform FCR 7 days per week. There are 3 units with medical teams.

**Study Design**

Our study design was a cluster-randomized, mixed-methods trial of 3 conditions: bunny facilitation, clown facilitation, and usual care (Fig 1). We originally considered blinding the teams and families to the 2 conditions, but this was believed to be animal cruelty according to the Vertebrate Animal Review Board, even after we explained that we were not actually blinding the bunny. The study was approved by the CHU Research Subjects Review Board, the Vertebrate Animal Review Board, and the International Society for the Protection of Cruelty to Clowns. Because our institutional review board would not allow pawprints in lieu of signatures on the photo consent form, the bunnies’ identities were protected in all photographs. It was felt that the large nose and wig would effectively conceal the identity of the clown, without needing photographic alteration.

**Interventions**

We chose the American Fuzzy Lop bunny for its compact body type and

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**FIGURE 1** Study design. aBalanced translocation.
generally friendly disposition; 2 were recruited to take part in the study in case of inadvertent bunny attrition. We attempted to include bunnies of the same gender to avoid proliferation (as discussed later in the text regarding study limitations). Our intervention clown was recruited from the Ohio College of Clown Arts, which has a rigorous selection process, including a background check and ensuring excellent performance on the Test of Juggling Proficiency and the Test of Inflatable Balloon Animal Creation.

Training
Each intervention condition team was given a 1-hour training session on use of their facilitator. Special attention was paid to infection control procedures (Fig 2). Bunny holders and the clowns were instructed to encourage distraction of children and the attending to allow parents and residents time to focus on FCR.

Outcomes
Our outcome measures included parent satisfaction scores, use of anxiolytic agents during examinations as part of FCR, resident satisfaction, and the number of times presenters were interrupted by their attending. Differences between the experimental and control groups were analyzed by using t tests, χ² statistics, and multiple regression analysis with Wald coefficient correction; normality was assessed by using the method of Kolmogorov and Smirnov. All analyses were done by using Stata version 10 (Stata Corp, College Station, TX).

To obtain qualitative data on the use of a facilitator in FCR, we embedded a qualitative methodologist on each team to act as a participant-observer; these trained observers also completed qualitative interviews with 30 families (10 from each condition) to explore overall opinions about the use of enhancements in FCR. The field notebooks and interview transcriptions were entered into our qualitative database, examined for themes, and analyzed by using NUD*IST version 4 (QRS International, Victoria, Australia).¹⁴

RESULTS
Overall
Over the 3-week study, the bunny team had 248 patient encounters with 73 unique families; the clown team had 80 patient encounters with 23 families (see Adverse Events section); and the usual care team had 237 patient encounters with 68 families. A 6-year-old girl assigned to the usual care team heard about the bunny rounds from a friend on the other floor and demanded bunny rounds; her data are included in the usual care group as an intention-to-treat analysis. Overall, the bunny-facilitated group had the greatest increase in satisfaction scores over usual care, with an average Press Ganey score difference of 9.9 versus 8.5 (P < .05); the clown team also had improved Press Ganey scores over usual care (9.5; P = not significant). As hypothesized, anxiolytic use during rounds was lower in the 2 facilitated conditions: only 60% of parents in the bunny arm and 59% of parents in the clown arm required anxiolytic agents for rounds, compared with 75% in the usual care arm (P < .02) (Fig 3).

Resident satisfaction was variable. Seventy-five percent of residents reported being “very” or “moderately” satisfied with the bunny condition; 25% reported having a previously unknown allergy to small furry animals. All of the residents reported being “very” or “moderately” satisfied with the usual care and clown conditions. However, the results from 3 interns were excluded from the clown condition analysis (see Adverse Events section).

Finally, attending physicians in all 3 groups interrupted medical students on average 18 times per presentation and interns 8 times per presentation.
(except for the clown arm interns; see Adverse Events section); this rate was significantly lower in the clown and bunny groups (Table 1).

Utilizing regression coefficients, Wald statistics, statistical significance levels, odds ratios, and 95% confidence intervals in a secondary analysis, we were able to derive a prediction model for enjoying FCR. This model was found to be remarkably similar to the Lyme meningitis prediction rule of Avery et al.\textsuperscript{15} We are confident, therefore, that its usefulness will be high in Lyme-endemic areas. Our final model found that the probability of enjoying FCR = $1/(1 + e^{-2.063 + 0.026 \times [\text{cumulative length of bunny ears}] + 0.128 \times \frac{1}{\text{duration of clown exposure}} + [-2.833 \times (1 - \text{yak})]})$.

### Qualitative Data

Participant-observation notes uncovered several important themes. First, they provided context for the finding that the facilitated FCR groups had fewer attending interruptions, noting that attending physicians in these conditions were more relaxed and almost seemed distracted by the facilitators, allowing the trainees to finish their entire presentation before asking questions that were already answered. The participant-observers also noted an increase in the presence of nursing staff in the facilitated condition; in fact, nurses would seek out the rounding team when clowns or bunnies were present. The third theme arose only in the clown condition and is highlighted in the following passage, as well as in Fig 4:

“Today is our second day of rounding with [name redacted] the clown. He is wearing a big red nose, yellow wig, and really big shoes. I’m noticing today that the interns are standing at the opposite end of every room from him and have barely looked up from their notes. [Name redacted] keeps trying to approach them and engage them in conversation, but they aren’t showing any interest. In fact, they almost seem to be shivering! How strange!” Please see the Adverse Events section for more detail.

#### Families Interviews Revealed a Strong Preference for Facilitated FCR

“Those doctors are so BORING, and the clown made a doggy with a balloon—what could be cooler than that! It almost made me forget I was in the hospital” – Dan, 25, parent, clown arm.

“I LOVED having the bunny on rounds; just watching him (her?) made me feel more calm and relaxed.” – Jennifer, 30, parent, bunny arm.

“Clowns totally rock!” Katie, 9, patient, clown arm.

“I’m going to kill the team if they wake me up again before noon.” Jeremy, 17, patient, usual care arm.

“J’ai eu faim et de vouloir fricassée de lapin après les rondes centrées sur la famille.” Pierre, 35, parent, bunny arm.

### Adverse Events

There were no adverse events in the usual care or bunny groups; no cases of tularemia were reported among bunny arm participants. The clown developed a chronic cough and lung infiltrates attributable to talc granulomatosis, a rare but reported occupational hazard of balloon blowers.\textsuperscript{16} There were no adverse events among the families treated in the clown condition; however, there were 3 instances of coulrophobia among pediatric interns on the clown team. While the interns are currently recovering at an undisclosed but safe location, our Data Safety Monitoring Board elected to suspend data collection from the clown arm of the study after 1 week. Our residency committee is currently considering whether a lack of sleep deprivation or too many handoffs lead the residents to have increased susceptibility to phobias.\textsuperscript{17}

### DISCUSSION

FCR continue to be an important tool for communicating with families; our study shows that carefully chosen facilitators can enhance parent and family enjoyment of FCR, and reduce attending interruption of trainees during presentations. However, we identified several potential limitations to this approach. The prevalence of coulrophobia in our study (3 of 12 residents)
is well above the baseline prevalence and was a surprise to the study investigators. Future research may show whether this was an anomaly at CHU or whether residents have a baseline increased risk of coulrophobia compared with the general public. We were pleased with the lack of adverse events in the bunny condition, as was our infection control department, although there was a significant financial investment for the bunny suits. Of note, the hand sanitizer company was not pleased when we informed them their product had now been tested on animals.

One epiphenomenon noted and worth discussion was “Clown Captioning for the Humor Impaired.” Multiple participant-observers noted times when physicians attempted to use humor during care, but either the joke deliverer or the recipient was humor-impaired. Participant-observers emphasized that the clowns were proficient at assisting with comedic impact. Specifically, the clown’s ability to augment language-dependent humor with matched visual humor may have improved activation of recipients’ inferior frontal gyrus, especially for jokes with semantic ambiguity.

One patient confirmed:

At first I didn’t get that joke about my rash, but the clown-miming really helped. – Phillip, 14, patient, clown arm.

Further studies on clown captioning for the humor-impaired are warranted.

This study suffers from several important limitations. First, we were unable to blind the resident teams or the families to the treatment condition allocation. Second, the study was suspended early due to unforeseen circumstances (see Adverse Events section); it is unclear whether better results would have been obtained had we had residents with fewer required handoffs. Although our bunny condition was very successful from an FCR point of view, we are now looking for homes for 6 baby bunnies; studies have shown that bunny sexing is an inexact science at best. Finally, the appearance of a yak in our final regression model was unexpected, and we are currently using this finding to investigate including a yak on FCR, though we are not sure the finding was due to a faunal yak or the finding of a new proto-oncogene.

CONCLUSIONS

FCR can be improved by adding facilitators. In our study, identification of the appropriate facilitator was critical; bunnies are a low-risk, beneficial, and darned cute addition to the rounding team, whereas clowns proved to be popular with patients and parents but detrimental to the emotional well-being of our house staff. Future studies should examine the role of other facilitators in FCR; potential areas for exploration could include other small, nonthreatening creatures, such as lemurs, schnoodles, or Justin Bieber. FCR are a critical way for medical teams to review information together and for hospitalist attendings to model sensitive and effective communication skills with patients and families; facilitated rounds can help to lighten the mood on rounds, relax the participants, and even inject a little humor into a stressful situation.

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Pediatrics, for being willing to publish this, and our parents, for putting up with us. If you have made it this far into the article, you have probably guessed that this is a work of fiction. Names, characters, places, and incidents either are products of the authors’ extensive and strange imaginations or are used fictitiously. Any resemblance to actual events or locales, persons, or bunnies, living or dead, is entirely coincidental.

REFERENCES