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A Randomized, Controlled Trial of Bedside Versus Conference-Room Case Presentation in a Pediatric Intensive Care Unit

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ABSTRACT

OBJECTIVES. Case presentation and teaching performed at the bedside are declining. Patients’ preference between bedside case presentation and conference-room case presentation is divergent in the literature. Residents seem to prefer the conference room. The objective of this study was to ascertain whether there was a difference of satisfaction and comfort between bedside case presentation and conference-room case presentation for the parents of patients hospitalized in the PICU and for the residents in training in the PICU.

METHODS. Every child hospitalized in the PICU who had 2 consecutive morning rounds, performed in the presence of the same resident, attending pediatrician, and parent, was eligible for the study. The study began with the first patient’s case presentation after admission in the PICU. Randomization was on the first case presentation: bedside or conference room. On the second day, the other type of case presentation was performed. After each round, the parents and the resident filled out a questionnaire.

RESULTS. Twenty-seven parents of 22 patients answered both questionnaires, and 21 questionnaires were answered by residents. Parents’ satisfaction was significantly higher during bedside case presentation (96 vs 92, answers reported on a 100-mm linear scale), they preferred bedside case presentation (95 vs 15), and they were more comfortable attending bedside teaching (89 vs 19). There was no difference in the residents’ satisfaction nor in their comfort giving the actual case presentation. Residents, on the other hand, were significantly more comfortable asking questions (84 vs 69) and being asked questions (85 vs 67) during conference-room case presentation. A total of 81% of the parents wished that the next case presentation would take place at the bedside.

CONCLUSIONS. This study demonstrates the feasibility of a clinical case presentation performed at the bedside in the PICU context that seems to satisfy parents without causing too much discomfort to residents. Thus, bedside case presentation could be a very good teaching strategy in university hospitals.
During the last few decades, medical education has changed greatly. Traditionally, teaching and case presentations occurred, for the most part, at the bedside of the patient. Since the 1960s, this type of practice is in constant decline. Less than 16% of the clinical case presentations were performed at the bedside in 1997 versus 75% in 1960. Fear that the patients will not understand or will be uncomfortable has strongly encouraged this migration outside the patient’s room. However, there were recent surveys of the patients’ preference: 77% to 85% were satisfied with bedside case presentation (BCP). Some studies tried to compare bedside with conference-room case presentation (CRCP) by measuring the satisfaction or the comfort of patients on internal medicine wards and outpatient clinics, on the maternity ward, and on a pediatric oncology ward. Three studies concluded that patients were more satisfied by BCP. Another study found patients more comfortable during BCP. Two other studies found no preference between the 2 types of presentation. Another study demonstrated no physiologic or psychological stress inferred by BCP in a coronary unit. On the other hand, all studies seemed to demonstrate that residents and students prefer CRCP. To our knowledge, nobody has studied this question in the context of the PICU.

The ideal would be that the case presentation that would satisfy the patient (and the patient’s parents) also pleases the resident. The objective of this study was to ascertain whether there was a difference of satisfaction and comfort between BCP and CRCP for the parents of patients hospitalized in PICU and for the residents in training in the PICU.

METHODS

Design

Every child admitted to the PICU after October 2004 was eligible for the study. The 7-bed unit of general pediatric tertiary care center, without transplant or cardiac surgery, admits between 400 and 600 patients a year. The study began with the first case presentation after the patient’s admission to the PICU. To be eligible, the patient had to be hospitalized for a minimum of 48 hours in the PICU so that he could have 2 different case presentations on 2 consecutive mornings. Both case presentations had to be performed in the presence of the same resident, pediatrician, and parent. Every child admitted in a medicolegal context (e.g., shaken infant) and those with a diagnosis or a suspicion of brain death or an imminent death within 48 hours after the beginning of the research project were excluded. Every child was subject to both types of case presentation. A computer-generated randomization was made on the first round: BCP or CRCP (Fig 1). Randomization was made by block for every pediatrician participating in the study. Only the parents were blinded to the types of case presentation.

Case Presentation

BCP was a clinical case presentation performed by the resident to the attending pediatrician in the child’s and parents’ presence. This presentation usually included the history, physical examination, and test results, as well as the treatment plan proposed by the resident. Any information asked by the parents about the illness or the prognosis could be answered by the resident or the attending pediatrician. The attending physician was allowed to ask additional questions to the family or the resident on any part of the presentation and to do some teaching.

CRCP was the same type of presentation performed in the absence of the child and of the child’s parents. The parents were not aware that the presentation was under way. It was performed at the doctors’ desk at a reasonable distance from the beds. After the presentation, the pediatrician was allowed to reassess parts of history or physical examination. All patients and parents had a wrap-up session after CRCP.

After every presentation, parents and residents had to fill out a questionnaire. Parental consent was obtained (and child's assent if possible). Consent of all the residents was obtained at the beginning of the research project. The institutional review board of the Centre Hospitalier Universitaire de Sherbrooke approved this research project.

Questionnaires

Both questionnaires (parent and resident) were constructed from patients, parents, and physicians satisfaction questionnaire, and from research on patient-physician communication, bedside teaching, and parents’ experience in the PICU. The parent questionnaire was validated with 2 pediatricians working in the PICU and 2 parents of a child who was recently hospitalized in PICU. The resident questionnaire was validated with 2 pediatricians and 2 residents in training in the PICU. Both questionnaires were self-administered.

The day-1 parent questionnaire included demographic questions and 28 questions to answer on a 100-mm linear scale not graduated and without intermediary descriptor (0 = completely disagree and 100 = completely agree). The questionnaire was divided into 5 subjects: satisfaction (2 questions), understanding (5 questions), elements related to the case presentation (13 questions), staff (4 questions), and bedside versus conference-room preference (4 questions). A 29th multiple-choice question asked parents to identify the type of case presentation that they thought they had that morning. The day-2 questionnaire repeated all 29 questions from the day-1 questionnaire, and 2 questions with multiple
choices were added. The first one asked parents whether they noticed a difference between case presentations on each day. A second one asked their preference between bedside and conference room (both were briefly described).

The day-1 resident questionnaire included demographic questions and 25 questions on the same scale. The questionnaire was divided into 4 subjects: satisfaction and comfort of the resident (4 questions), elements of case presentation (12 questions), performance (2 questions), and satisfaction or comfort for the patient (7 questions). The day-2 questionnaire repeated all 25 questions from the questionnaire on the first day. A multiple-choice question on their preference between bedside and conference room was added.

For the nominal variables with normal distribution, we opted for the paired Student’s t test. We used Statview 5.0 for Windows (SAS Institute, Inc, Cary, NC).

RESULTS

Demography
Twenty-two patients (17 boys) were recruited. Twenty-one mothers and 10 fathers answered the day-1 questionnaire. Nineteen mothers and 8 fathers answered the day-2 questionnaire. Thus, only the 27 parents that answered the 2 questionnaires were analyzed; 13 in the group that began with BCP and 14 in the group that began with CRCP. A total of 21 questionnaires were answered by 10 different residents (9 women) on both days. Ten were in the group that began with BCP, and 11 were in the other group.

Three pediatricians participated in 3, 11, and 8 patient case presentations. Seven children were ≤1 year, 8 between 1 and 3 years, and 7 ≥3 years. Eight children had a previous hospitalization, and 7 were hospitalized twice or more. Six patients had previously been admitted in PICU.

Parents were 19 to 46 years old (median: 31 years). Eleven parents had a university diploma. Eight families earned more than $60 000.

Residents were 22 to 31 years old (median: 24 years). Four were first-year pediatric residents, 4 were in the second year, 1 in the third year, and 1 in the fifth year.

Parents’ Questionnaire
By comparing all BCP with all CRCP, parents’ satisfaction was higher during BCP (96 vs 92; = .0016; Table 1). Asking for the next case presentation, 81% of the parents desired that it be performed at the bedside. Table 1 lists some elements surveyed by the questionnaires.

To the question “I prefer when the doctors discuss my child in front of me and also give me the news of the
day,” the mean parents’ agreement was 95. To the question “I prefer when the doctors discuss my child at a distance (far from the bed, in my absence) and come to give me news afterward,” the mean parents’ agreement was 15. Preference for bedside was statistically significant (P < .0001).

To the question “I am comfortable when the pediatrician does his teaching to the resident at the bedside (near my child and near me),” the mean parents’ agreement was 89. To the question “I prefer that the pediatrician does his teaching to the resident at a distance (far from the bed, in my absence),” the mean parents’ agreement was 19. Preference for bedside was statistically significant (P < .0001).

Several elements scored significantly higher for BCP when we compared both types of presentation on day 1. The parents better understood what the doctor said to them (96 vs 86; P = .016) and felt that confidentiality and intimacy were more respected (97 vs 86; P = .007) for BCP. The parents perceived that more of their questions were answered (97 vs 91; P = .013) and that the time spent with them was enough (96 vs 87; P = .016) for BCP. In addition, parents felt that their child was more respected (97 vs 93; P = .016) and that their problem was taken more seriously (98 vs 94; P = .026). They also felt that information about the tests performed was better (97 vs 89; P = .05) and was the same with treatment plan (97 vs 89; P = .04). To the question “The doctors told me all that I wanted to know about the current condition of my child” BCP scored 97 vs 92 for CRCP (P = .02). Parents found the resident to be more competent during BCP (98 vs 92; P = .04). On the other hand, residents felt more competent during CRCP (75 vs 56; P = .017) on the same day.

Parents who began with BCP were not more satisfied with CRCP the second day (96 vs 95). Those who began with CRCP scored significantly higher for BCP the next day (96 vs 90; P = .0005).

Residents’ Questionnaire

By comparing all BCP with all CRCP, there was no difference in the residents’ satisfaction (79 vs 76; Table 2) nor in their comfort giving the actual case presentation (80 vs 78; Table 2). Residents were, on the other hand, significantly more comfortable asking questions and being asked questions during CRCP (see Table 2). Asking for the next case presentation, 19% of resident answered that they would prefer BCP with the parents present, 14% preferred BCP without the parents, 10% preferred CRCP, and 57% did not have a preference. Table 2 lists some elements surveyed by the questionnaire.

Residents were afraid that BCP would be more disturbing for the patient (20 vs 9; P = .048; Table 2) or the patient’s family (13 vs 7; P = .009; Table 2). By comparing all BCPs with CRCPs, there was no difference in the perception of disturbance to the patient (12 vs 10) or the patient’s family (7 vs 7) after each case presentation. The residents found BCP more beneficial for the patient (68 vs 45; P = .0006; Table 2) and they perceived the parents more satisfied during BCP (83 vs 69; P = .017; Table 2).

There was no difference between BCP and CRCP for the residents’ comfort in presenting the different parts of the clinical case (history, physical examination, plan) and for the perception of the teaching received on the physical examination, diagnosis, management, and fundamental sciences.

**DISCUSSION**

In our study in a PICU, we demonstrated that the parents were more satisfied during BCP. These results are in the same direction as other studies that demonstrated that the patient or their parents were more satisfied with BCP.1,3,8,9 Whereas bedsides demonstrated higher satisfaction for BCP, we also found a preference for bedside teaching among parents.

We obtained no difference of satisfaction or comfort from the residents between both types of case presentation. Other studies seemed to demonstrate a preference for the conference room.1,3,8,9 In our study, only 10% of residents would prefer the next case presentation to be performed in the conference room. However, we observed that the residents were more comfortable asking

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**TABLE 1** Parents’ Questionnaires (N = 27)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Bedside, Mean (SD)</th>
<th>Conference Room, Mean (SD)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case presentation satisfaction</td>
<td>96 (5)</td>
<td>92 (10)</td>
<td>.016</td>
</tr>
<tr>
<td>Understanding during round</td>
<td>95 (5)</td>
<td>93 (8)</td>
<td>—</td>
</tr>
<tr>
<td>Confidentiality and intimacy</td>
<td>96 (3)</td>
<td>93 (9)</td>
<td>.03</td>
</tr>
<tr>
<td>Obtain answers to all the questions</td>
<td>96 (4)</td>
<td>95 (5)</td>
<td>—</td>
</tr>
<tr>
<td>Use of clear and simple words</td>
<td>95 (6)</td>
<td>93 (9)</td>
<td>—</td>
</tr>
<tr>
<td>Respect of the child</td>
<td>95 (6)</td>
<td>95 (4)</td>
<td>—</td>
</tr>
<tr>
<td>Respect of the parent</td>
<td>96 (3)</td>
<td>94 (7)</td>
<td>—</td>
</tr>
<tr>
<td>Well informed about tests</td>
<td>95 (5)</td>
<td>92 (9)</td>
<td>.04</td>
</tr>
<tr>
<td>Well informed about diagnosis</td>
<td>95 (5)</td>
<td>92 (13)</td>
<td>—</td>
</tr>
<tr>
<td>Well informed about treatment plan</td>
<td>94 (8)</td>
<td>94 (7)</td>
<td>—</td>
</tr>
</tbody>
</table>

* Only statistically significant P values are reported.

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**TABLE 2** Residents’ Questionnaires (N = 21)

<table>
<thead>
<tr>
<th>Questions</th>
<th>Bedside, Mean (SD)</th>
<th>Conference Room, Mean (SD)</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case presentation satisfaction</td>
<td>79 (16)</td>
<td>76 (17)</td>
<td>—</td>
</tr>
<tr>
<td>Comfort during case presentation</td>
<td>80 (14)</td>
<td>78 (16)</td>
<td>—</td>
</tr>
<tr>
<td>This type of case presentation</td>
<td>20 (26)</td>
<td>9 (8)</td>
<td>.048</td>
</tr>
<tr>
<td>This type of case presentation</td>
<td>13 (12)</td>
<td>7 (6)</td>
<td>.009</td>
</tr>
<tr>
<td>BCP</td>
<td>68 (22)</td>
<td>45 (20)</td>
<td>.0006</td>
</tr>
<tr>
<td>CRCP</td>
<td>83 (11)</td>
<td>69 (23)</td>
<td>.017</td>
</tr>
<tr>
<td>BCP</td>
<td>69 (17)</td>
<td>84 (10)</td>
<td>.0001</td>
</tr>
<tr>
<td>BCP</td>
<td>67 (17)</td>
<td>85 (9)</td>
<td>.0001</td>
</tr>
</tbody>
</table>

* Only statistically significant P values are reported.
questions and being asked questions during CRCP. Residents were not uncomfortable giving the actual case presentation in front of patients; it is the questioning that caused discomfort.

The main limit of this study was the number of patients (n = 22). Patient recruitment was more difficult than estimated, and the study’s criteria were very restrictive. In practice, only new admissions between Monday and Thursday were eligible for the study, given the obligation of the presence of the same trio (parent-resident-pediatrician). Because the majority of PICU admissions occurred during the weekend, parents were not asked to present a case presentation that could have biased their judgment. In addition, many admissions were estimated to last <48 hours, which was insufficiently long for the study. The study was performed in a single institution and in a specific setting (PICU), limiting the generalizability of the observations.

We were surprised by the very high rate of overall parents’ satisfaction, oscillating from 92 to 96. Social desirability might be involved. The PICU environment being so distressful could also explain the parents’ non-willingness to complain about the care given to their child. Satisfaction with BCP concords to the rates presented in the other studies. Despite the statistical difference, the differences we demonstrated are not that clinically significant. Nevertheless, there was a preference for BCP, and this high level of satisfaction with CRCP should have allowed us to detect any negative impact of BCP.

Residents believed that BCP was more beneficial for parents, similar to the findings of a pediatric oncology ward study. Residents also thought that parents were more satisfied during BCP. However, they were more afraid of disturbing the patients and their family during this type of presentation. Maybe the residents were simply afraid to be asked questions or to ask their questions at the bedside. This fear of disturbing parents and patients may be the expression of a phenomenon common in North American medicine, and may be driving the tendency away from bedside round, which decreases doctor-patient contact. On the other hand, this fear of disturbing patients did not seem to occur more often during BCP than during CRCP, when the resident was questioned after case presentation.

Interestingly, we saw parents’ evaluation of the resident’s competence was higher at the bedside on the first day. Conversely, the residents felt that they performed better in the conference room, the same day. This discordance may be explained by the fact that parents have a point of comparison that is probably different. Parents found the residents more competent at the bedside, probably because BCP allowed them to recognize more of the resident’s global competence. The resident seem not to be aware of their own impact on the parents. According to the parents, resident were evaluated highly.

Parents found that clear and simple words were used in both types of case presentation. Despite the medical language used during BCP, parents did not seem to find that they were addressed in a too complex language, which is often an argument offered against BCP.

At the bedside, residents acquire competences, not only knowledge. In addition, attending staff can serve as role models and observe competences, such as expertise, communication, collaboration, health advocacy, scholarship, and professionalism, which CRCP does not allow. In our study, the residents demonstrated no difference between BCP and CRCP in their perceptions regarding reception of different types of teaching. This differs from the pediatric oncology study, where some preferences were expressed for BCP (psychosocial problem, physical diagnosis, and communication skills) and for CRCP (differential diagnosis, prognosis, and natural history of disease).

CONCLUSIONS
In our study, the parents were more satisfied with and preferred BCP. Bedside teaching also pleased them. Residents did not demonstrate satisfaction or comfort differences between giving either type of case presentation. This study demonstrates the feasibility of a clinical case presentation that seems to satisfy the parents without causing increased discomfort to the resident. Going along with new ways of teaching in a university context, medical education is now more focused on competences than on knowledge. BCP thus seems to be a better teaching strategy to develop those competences. A similar study could be conducted on a general pediatrics ward to confirm the preference for bedside, when their child is not in an intensive care context.

ACKNOWLEDGMENTS
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REFERENCES
1. Rogers HD, Carline JD, Paaw DS. Examination room presentations in general internal medicine clinic: patient’s and student’s perception. Acad Med. 2003;78:945–949
6. Anderson RJ, Cyran E, Schilling L, et al. Outpatient case pre-

PAY SHOWS SCANT EFFECT ON MEDICAL TREATMENT

“A central premise of the government’s Medicare planners in recent years has been a concept called ‘pay for performance’—the idea that medical care can be improved by financially rewarding better treatment. But the results of a Medicare-agency pilot project, published this week, suggest the efforts may be less effective than proponents hope. Researchers at Duke University, examining heart-attack treatment at 500 hospitals, found that hospitals that received financial incentives to follow treatment guidelines didn’t improve their practices significantly more than hospitals that got no financial benefit.”


Noted by JFL, MD