

A New Approach to Postpartum Rounds: Patient-Centered Collaborative Care Improves Efficiency

SALLY SEGEL, MD
 JASON HASHIMA, MD, MPH
 WILLIAM THOMAS GREGORY, MD
 ALISON EDELMAN, MD, MPH
 HONG LI, MD, MSPH
 JEANNE-MARIE GUISE, MD, PHD

Abstract

Objective At our institution, traditional postpartum rounds were time consuming and inefficient with a low percentage (approximately 12%) of patients meeting the goal of being discharged by 11:00 AM. A patient-centered collaborative care (PCCC) initiative was implemented to improve discharge efficiency, staff communication, and patient satisfaction. We investigated whether this paradigm shift to PCCC could improve clinical inefficiencies and timely discharge.

Methods The PCCC rounding system was created by a representative group of physicians, residents, nurses, case managers, and social workers. An intervention study was conducted to examine the impact of PCCC during which physicians, residents, medical students, nurses, case managers, and social workers made rounds together. Efficiency data were collected for patients whose infants were delivered by the obstetric service for a 1-month period before and 6 months after implementing PCCC.

Comparisons were made on the time of discharge and whether Foley catheter removal affected discharge time. χ^2 test, Wilcoxon 2-sample test, and Pearson correlation coefficient were used where appropriate.

Results Three hundred five patients were included in this analysis, of which 156 participated in traditional postpartum rounds and 149 in PCCC rounds. Discharge efficiency significantly improved with PCCC rounds, with 20.8% of patients being discharged by 11:00 AM as compared to 11.5% for traditional postpartum rounds ($P = .03$). Early Foley catheter removal was significantly associated with time to discharge order (Pearson correlation coefficient, 0.22; $P = .01$) and discharge time (Pearson correlation coefficient, 0.28; $P = .002$).

Conclusions Patient-centered collaborative care rounds improve the efficiency of postpartum care and discharge time.

Background

Postpartum rounds at our academic institution have traditionally been complex and laborious, which resulted in both patient and staff dissatisfaction, and overall inefficiencies in clinical care. The patients were awoken at early hours of the morning and had to repeat similar conversations with several different levels of providers, medical students, residents, and attending physicians. This process resulted in patient care plans that were varied and miscommunicated and often lead to delays in patient care.

All authors are at Oregon Health & Science University. **Sally Segel, MD**, is Assistant Professor of Maternal-Fetal Medicine in Obstetrics and Gynecology; **Jason Hashima, MD, MPH**, is a Fellow of Maternal-Fetal Medicine in Obstetrics and Gynecology; **William Thomas Gregory, MD**, is Associate Professor of Obstetrics-Gynecology; **Alison Edelman, MD, MPH**, is Associate Professor of Obstetrics-Gynecology; **Hong Li, MD, MSPH**, is Research Associate in Biostatistics & Design Program at Oregon Translational Research Institute; and **Jeanne-Marie Guise, MD, PhD**, is Associate Professor of Obstetrics-Gynecology.

Corresponding author: Sally Y. Segel, MD, Oregon Health & Science University, Department of Obstetrics and Gynecology, 3181 SW Sam Jackson Park Rd, L466, Portland, OR 97239, 503.494.7968, segels@ohsu.edu

Received September 23, 2009; revisions received October 30, 2009 and January 12, 2010; accepted January 19, 2010.

DOI: 10.4300/JGME-D-09-00060.1

These disjointed rounds left attending physicians struggling to see every patient while still managing labor and delivery. As a result, traditional postpartum rounds were inconvenient to the patient, time consuming, and inefficient.

In the current economic environment, hospitals need to become more cost-effective while simultaneously improving patient safety and patient care. To conserve resources and maintain service excellence, hospital systems, especially teaching institutions, need to develop new strategies to achieve discharge goals and decrease waste while concurrently educating residents in the core competencies. The combination of staff frustration, patient dissatisfaction, financial pressures, and the desire to enhance patient safety led us to develop and test an interdisciplinary collaborative approach to postpartum rounds called patient-centered collaborative care (PCCC) rounds for the postpartum service.

Collaborative care rounds involve a multidisciplinary care team, which includes physicians, nurses, case managers, social workers, and in some units, also include pharmacists, respiratory therapists, and physical therapists. This approach has been used in many areas of medicine and has improved efficiency and patient satisfaction. In

addition, in certain medical and surgical units, multidisciplinary rounds have also improved quality and decreased mortality.¹⁻⁵ We performed a preintervention and postintervention study to investigate whether our paradigm shift from traditional postpartum rounds to PCCC rounds would improve clinical efficiency and discharge time in order to achieve the institutional goal of postpartum patient discharge by 11:00 AM.

Methods

At our institution, many different services provide obstetric care: obstetrics-gynecology residents, obstetrics-gynecology generalists, maternal fetal medicine, family medicine, and nurse midwives. The obstetric service includes obstetrics-gynecology resident patients, obstetrics-gynecology generalist patients, and maternal fetal medicine patients. The family medicine and nurse midwifery services function independently and did not participate in the development or execution of PCCC rounds.

A multidisciplinary team with representatives from the Department of Obstetrics and Gynecology (staff and resident physicians), nurse management, postpartum nursing, social work services, and case management met from March 2008 to September 2008 to design a rounding system that worked within our existing system. The multidisciplinary team comprised representatives from all aspects of the traditional rounding system. This group of individuals was committed to improving the system for both patients and providers. The multidisciplinary team evaluated the traditional rounding system and determined the elements that were inefficient and ineffective. The team then focused on PCCC format and context, as well as the development of computerized rounding sheets. The Institutional Review Board (IRB) of Oregon Health & Science University approved the study protocol and the study received a waiver for written consent (IRB approval No. 3662).

Patient-centered collaborative care rounds were designed to improve communication, efficiency, and overall patient and staff satisfaction. The basic framework for the PCCC rounds involved medical students and residents reviewing and “prepping” the patient’s chart before PCCC rounds and presenting a small summary to the team. Nurses, case management, and social work staff would add any pertinent positive/negative remarks before the team entered the room. The medical student, residents, nurse, social worker, case manager, and attending physician would then enter the room, and management plans were determined by the multidisciplinary team, with patient and family input. Any sensitive issues or examinations would be addressed with the patient and family, with 1 or 2 team members, after the main rounding occurred. A medical interpreter was present to provide in-person translation for Spanish-speaking patients or a phone interpreter was used for other languages. Portable

computers taken into each patient room allowed the resident to participate in the patient rounds while completing the patient progress note and orders, which would then be signed by the attending physician. The time to complete the PCCC rounds depended on the patient census, but in general was started at 6:45 AM and was completed by 8:30 AM.

To assess the effect of PCCC rounds on efficiency, we collected patient care information from all of the postpartum patients on the obstetric service for a 1-month period of the traditional rounds and compared this to the same patient information from all of the postpartum patients on the obstetric service for a 1-month period of the PCCC rounds, after the PCCC rounds had been in place for 6 months. The same groups of patient care providers participated in both rounding systems. Nurses collected data regarding the date and time of the following events: admission, breast feeding, Foley catheter removal, first urination, first bowel movement, discharge teaching, discharge order, and patient discharge from the postpartum floor. This information was then given to a research assistant who was responsible for finding any missing data and entering it into a database.

Student *t* test and χ^2 test were used to evaluate the difference in characteristics at admission for those patients in the traditional rounds compared to those in the PCCC rounds. χ^2 analyses were also used to examine the association between the types of rounding the patient participated in and whether discharge orders were being written and patients were being discharged before 11:00 AM. For those patients undergoing a cesarean delivery, Spearman correlation analyses were used to evaluate the association between the time of Foley catheter use (in hours) and the time from delivery to obtaining a written discharge order (in hours). A similar analysis was conducted for the time of Foley catheter use and the time from delivery to time of discharge from the postpartum floor. Lastly, Wilcoxon 2-sample test was used to compare the time of Foley catheter use (in hours) for the traditional and PCCC rounding groups.

Results

A total of 305 women were included in this analysis; 156 of them participated in traditional postpartum rounds and 149 participated in PCCC rounds. Characteristics of the cohort in both traditional and PCCC rounds are listed in TABLE 1. Maternal age, pregnancy, delivery history, and infant disposition were comparable between traditional and PCCC rounding patients. One-third of the patients were nulliparous, more than 70% of the patients gave birth at term, and more than 80% of the infants accompanied their mothers to the postpartum floor.

TABLE 2 shows that, compared to patients in traditional rounds, patients in PCCC rounds were more likely to have their discharge order written before 11:00 AM (77.6% versus

TABLE 1 MATERNAL AND NEONATAL CHARACTERISTICS^a

	Traditional N = 156	PCCC N = 149	Comparison P Value
Maternal age			
Mean ± SD	28.3 ± 6.8	28.6 ± 6.0	.73
35 or older	31 (20.3)	26 (17.7)	.57
Gravidity			
Median	2	3	.33
1	40 (26.1)	32 (21.8)	.63
2 or 3	69 (45.1)	73 (49.7)	
4 or more	44 (28.7)	42 (28.6)	
Nulliparous	45 (29.4)	51 (35.2)	.29
Gestational age (wk)			
Median	39	39	.34
<28	2 (1.3)	2 (1.4)	.35
28 to 34	6 (4.0)	12 (8.2)	
34 to 37	22 (14.5)	26 (17.7)	
≥37	122 (80.3)	107 (72.8)	
Cesarean delivery	65 (41.7)	65 (43.6)	.73
Neonatal disposition			
MBU	131 (86.2)	117 (80.7)	.09
NICC	19 (12.5)	28 (19.3)	
Morgue	2 (1.3)	0	

Abbreviations: MBU, mother-baby unit; NICC, neonatal infant care center; PCCC, patient-centered collaborative care; SD, standard deviation.

^a Mean or median was presented for continuous variables and frequency (percentage) was used for categorical variables.

89.2%, $P = .008$) and leave postpartum floor by 11:00 AM (11.5% versus 20.8%, $P = .03$). Similar patterns were seen when the patients were grouped by mode of delivery. FIGURE 1 shows the significant association between time of Foley catheter use (in hours) and both the time from delivery to having a discharge order written (Spearman correlation coefficient, 0.37; $P < .0001$) and the time from delivery to the time of patient discharge from the postpartum floor (Spearman correlation coefficient, 0.36; $P = .0001$). FIGURE 2 shows a significantly lower median time of Foley catheter use (in hours) after delivery in the PCCC rounding group compared to the traditional rounding group (23.8 versus 21.2 hours, $P = .007$).

The overall discharge rate increased from 12% with the traditional rounds to 21% with the PCCC rounds. While this was a significant improvement of 42%, the overall low

discharge rate of 21% was likely attributable to several issues. One potential issue was felt to be the number of patients with infants in the neonatal infant care center (NICU). Many of these patients were from outlying areas, and to help facilitate their care and their continued support of their infant in the NICU, we traditionally did not require that these patients leave by 11:00 AM. When the patients with infants in the NICU were excluded from the analysis, there was a similar increase in achieving patient discharge by 11:00 AM (from 10.5% to 20.5%, $P = .03$; data not shown). Other factors that were identified as contributing to the overall low discharge rate were interactions with the pediatric service and the lactation service. Initially, the pediatric service believed its goal was to write the discharge order by 11:00 AM. In addition, the pediatric service was unable to see all of the newborns in a timely fashion, and as

TABLE 2 DISCHARGE ORDER AND DISCHARGED BY 11 AM				
Discharge	Traditional	PCCC	Odds Ratio	P Value
	n (%)	n (%)	(95% CI)	
Discharge ordered by 11 AM				
Overall	121 (77.6)	132 (89.2)	2.39 (1.26–4.53)	.008
Vaginal	65 (71.4)	73 (86.9)	2.66 (1.22–5.79)	.01
Cesarean	56 (86.2)	59 (92.2)	1.90 (0.60–6.01)	.27
Discharged by 11 AM				
Overall	18 (11.5)	31 (20.8)	2.01 (1.07–3.78)	.03
Vaginal	10 (11.0)	15 (17.9)	1.76 (0.74–4.17)	.19
Cesarean	8 (12.3)	16 (24.6)	2.33 (0.92–5.90)	.07

Abbreviations: CI, confidence interval; PCCC, patient-centered collaborative care.

a result, infant discharge orders were delayed. Since establishing this process, we have had additional meetings with the pediatrics department, which will hopefully streamline the process and improve our ability to meet the institutional discharge goal. Finally, many women, especially new mothers and mothers of multiples, need

significant lactation support. To ensure basic breast feeding fundamentals, these mothers have additional lactation services and as a result, their discharge is delayed.

Patient-centered collaborative care rounds also improved postoperative cesarean delivery care. With traditional rounds, postoperative cesarean delivery order

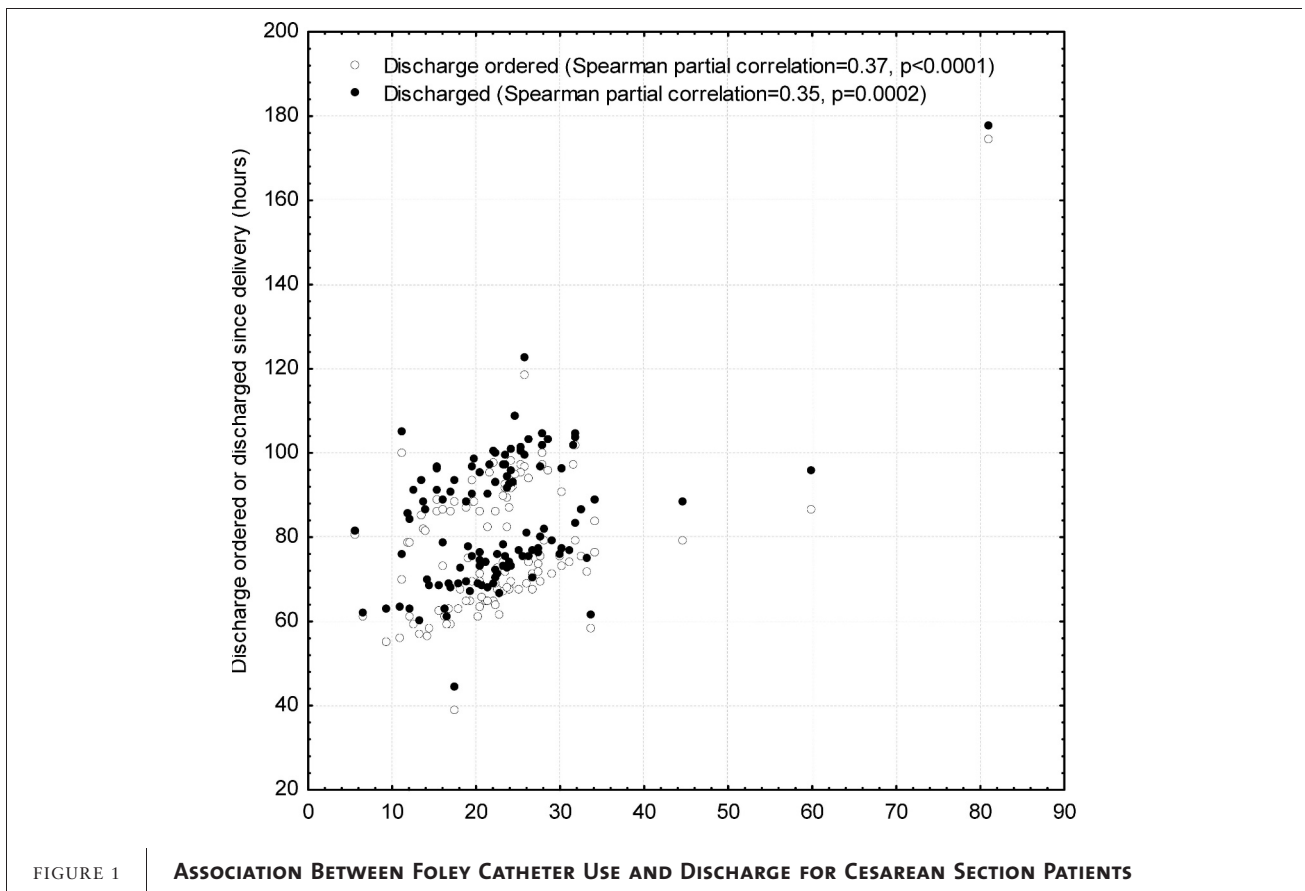


FIGURE 1 ASSOCIATION BETWEEN FOLEY CATHETER USE AND DISCHARGE FOR CESAREAN SECTION PATIENTS

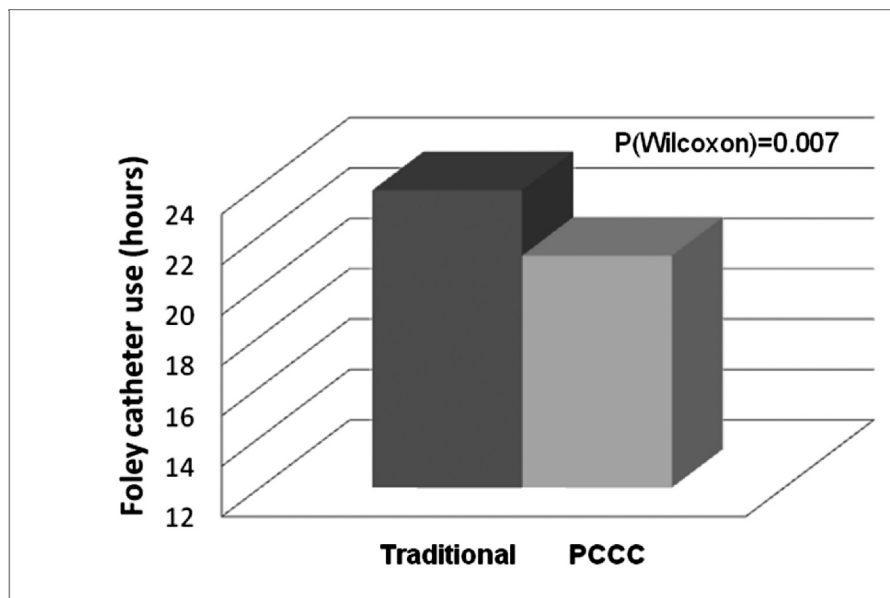


FIGURE 2 | MEDIAN TIME OF FOLEY CATHETER USE IN TRADITIONAL AND PATIENT-CENTERED COLLABORATIVE CARE (PCCC) ROUNDS

sets had too much flexibility in removal of the Foley catheter. Oftentimes, it remained in place longer than 18 hours. Patient-centered collaborative care rounds significantly decreased the latitude about Foley catheter removal and as a result, a significant improvement was seen in the Foley catheter removal time, which ultimately improved discharge results.

Discussion

In addition to improving communication and discharge efficiency, PCCC rounds changed resident education on the postpartum service. Previously, the educational component consisted of a didactic session during which the medical students and residents would review the patients at the beginning of the day. The attending physician would review a few of the disease processes affecting the postpartum patients. With the advent of PCCC rounds, the didactic session was eliminated and the focus moved to professionalism and interpersonal and communication skills. Attending physicians actively evaluate the patient-resident interaction, and constructive criticism and necessary adjustments are made after rounds. In addition, residents and students have the opportunity to observe the attending physicians interact with their private patients and develop unique postpartum management plans. Further effects on resident experience and education can be found in the companion article⁶ *Patient-Centered Collaborative Care: The Impact of a New Approach to Postpartum Rounds on Residents' Perception of the Work Environment*. Our study demonstrates that multidisciplinary PCCC rounds improve discharge efficiency and change the focus of

resident education to align with the required core competencies.

The study has several limitations common to field interventions. One includes the inability to track the communication between the nurses and the residents, measured by the number of pages from the nurses to the residents for clarification of the management plan. The postpartum nurses were unable to accurately keep track of the number of times they needed to page the house staff for management clarification. In addition, the telecommunication system for the hospital had reassigned the chief residents' beepers, so an accurate tally for the entire team could not be collected. Another limitation was the inability to adequately evaluate patient satisfaction. One of the goals of PCCC rounds was to improve patient satisfaction; however, secondary to the limited distribution and poor completion, we were unable to include this outcome in our preintervention and postintervention study.

Our study indicates that PCCC rounds improve efficiencies in the management of postpartum patients. These results are similar to findings in studies outside of obstetrics. Our paradigm shift was modeled after the rounding system developed in Concord Hospital's cardiac surgery intensive care unit, where a patient-centered multidisciplinary rounding system was established.¹ In that study, collaborative care rounding resulted in a statistically significant improvement in the time to extubation and a significant decrease in mortality while significantly improving patient satisfaction and employee quality of work life.¹ This multidisciplinary rounding process has also been adopted by conventional hospital wards.⁶

Cincinnati's Children Hospital Medical Center developed a family-centered model, and there has been a significant improvement in the number of discharges by the first shift, with improvement in communication between team members.⁷ This new system has been enthusiastically adopted by most inpatient units in this institution.⁷ Rosen et al⁸ attempted to study the effect of family-centered multidisciplinary rounds on hospital staff satisfaction in an adolescent ward at the University of Pittsburgh Children's Hospital. Using a "quasi-experimental" design, the authors found that the new rounding process facilitated teamwork and improved communication with the families.⁸

Through observation, we noted that we routinely spent a significant amount of time reviewing and discussing contraceptive options with each patient. Since a sufficient and current postpartum contraceptive video was not available, we decided to create our own video with the assistance of the Family Planning Division and lactation services. The video will allow patients to educate themselves about postpartum contraceptive options before PCCC rounds, and as a result, we will be able to answer their questions in a more efficient manner.

Conclusions

Patient-centered collaborative care rounds improve the efficiency of postpartum care and discharge time.

References

- 1 Uhlig PN, Brown J, Nason AK, Camelio A, Kendall E, John M. John M. Eisenberg Patient Safety Awards—system innovation: Concord Hospital. *Jt Comm J Qual Improv.* 2002;28(12):666–672.
- 2 Young MP, Gooder VJ, Oltermann MH, Bohman CB, French TK, James BC. The impact of a multidisciplinary approach on caring for ventilator-dependent patients. *Int J Qual Health Care.* 1998;10(1):15–26.
- 3 Leape LL, Cullen DJ, Clapp MD, et al. Pharmacist participation on physician rounds and adverse drug events in the intensive care unit. *JAMA.* 1999;282(3):267–270.
- 4 Dutton RP, Cooper C, Jones A, Leone S, Kramer ME, Scalea TM. Daily multidisciplinary rounds shorten length of stay for trauma patients. *J Trauma.* 2003;55(5):913–919.
- 5 O'Mahony S, Mazur E, Charney P, Wang Y, Fine J. Use of multidisciplinary rounds to simultaneously improve quality outcomes, enhance resident education, and shorten length of stay. *J Gen Intern Med.* 2007;22(8):1073–1079.
- 6 Baldwin MK, Hashima J, Guise J, Gregory WT, Edelman A, Segel S. Patient-centered collaborative care: the impact of a new approach to postpartum rounds on residents' perception of their work environment. *J Grad Med Educ.* 2010. In press.
- 7 Muething SE, Kotagal UR, Schoettker PJ, Gonzalez del Rey J, DeWitt TG. Family-centered bedside rounds: a new approach to patient care and teaching. *Pediatrics.* 2007;119(4):829–832.
- 8 Rosen P, Stenger E, Bochkoris M, Hannon MJ, Kwok CK. Family-centered multidisciplinary rounds enhance the team approach in pediatrics. *Pediatrics.* 2009;123(4):e603–e608.