

Neonatal Respiratory Therapist-Led Rounds Can Improve Staff Satisfaction and Timeliness of Respiratory Interventions

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BACKGROUND: Interdisciplinary rounding is used to establish and communicate patient care goals and monitor progress toward goal attainment. This study describes staff satisfaction and process outcomes associated with respiratory therapist (RT)-led interdisciplinary rounds in the neonatal ICU. We hypothesized improved staff satisfaction, execution of orders within 30 min of order entry into the electronic medical record, and communication of accurate and complete data during rounds to the interdisciplinary team. **METHODS:** Nurses, RTs, nurse practitioners, residents, and attending physicians completed the 13-question survey eliciting demographic information and evaluating staff engagement and professional satisfaction. The survey was anonymous and confidential, and informed consent was implied. Process data were collected for a 10-d period at 2 intervals through direct observation of the rounding process and electronic medical record review. Descriptive statistics reported patient demographics, responses to job satisfaction and engagement survey questions, the number of patients who were visited in daily rounds, the number and type of orders given during rounds, and the number of respiratory orders that were addressed in multidisciplinary teaching rounds rather than during respiratory rounds. The chi-square test was used to determine differences in the proportion of inaccurate and incomplete data communicated during rounds between the 2 data collection periods. The Mann-Whitney *U* test was used to determine differences in the timeliness of electronic medical record order entry and time to order completion. **RESULTS:** A 94.8% survey response rate ($n = 55$) was obtained. Seventy-six percent of participants reported improved communication. Sixty-nine percent of participants reported improved teamwork. Eighty-six percent of orders were implemented immediately after electronic medical record entry. Correct information was provided on 95% and 99.3% of patients ($P < .066$) and complete information on 93% and 96% of patients ($P = .41$). **CONCLUSIONS:** Implementation of respiratory rounds improved staff satisfaction and the timeliness of completing respiratory orders. Spot monitoring at intermittent intervals verified process sustainability. *Key words:* interdisciplinary rounds; teamwork; outcome measures; organizational efficiency; neonatal; quality improvement; professionalism. [Respir Care 2015;60(3):1–•. © 2015 Daedalus Enterprises]

Introduction

Successful management of hospitalized patients with complex medical needs requires effective team participation and collaboration. Interdisciplinary rounding is a

mechanism that is frequently used to establish and communicate patient care goals and review progress toward the accomplishment of set goals. The literature reports that

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interdisciplinary rounds effectively establish and maintain teamwork,^{1,2} improve patient^{3,4} and financial⁵ outcomes, and increase job satisfaction.⁶

The rounding process, especially in academic medical centers, can be very time-intensive. This forum not only reviews and addresses the global care plan, but provides a venue to educate the clinical team. An effective rounding team requires a vested interest by the facilitator and participants and a commitment to the time it takes to execute this process.⁷

The literature reports that formal opportunities for shared decision making and forums that foster communication and collaboration between nurses and their medical colleagues are mutually beneficial.⁸ Studies have demonstrated that effective physician-nurse collaboration improves staff satisfaction and patient health outcomes through shared patient management decisions.^{8,9} However, there is a little information available with respect to job satisfaction, process efficiency, or patient outcomes when collaboration and responsibility for patient management are extended to all members of the interdisciplinary team.

An unintentional complication of the rounding process may be delays in care. Typically, orders are entered into the electronic medical records and carried out after rounds are completed. There is the potential, especially with high patient acuity and/or census, for this process to become very lengthy, which may impede the timely execution of ordered therapies. This may contribute to delays in initiating therapeutic modalities, such as airway clearance therapy, ventilator weaning trials, or extubating patients. A dearth of literature exists with respect to alternatives to formal interdisciplinary rounds, especially in the neonatal ICU (NICU).

An abbreviated process for addressing the plan of care for patients with respiratory care needs in the NICU, specifically respiratory therapist (RT)-led rounds, conducted before interdisciplinary rounds may provide a viable alternative to address process delays.

The aim of this study was to evaluate the effect RT-led rounds had on the timeliness of care plan orders, staff engagement, and staff job satisfaction in the NICU. We hypothesized that (1) staff satisfaction would improve with the implementation of RT-led rounds, (2) orders would be executed within 30 min of order entry into the electronic medical records, and (3) accurate and complete data would be communicated during rounds to the interdisciplinary team.

Methods

This single-institution study was approved by the institutional review board. The study was conducted in a 59-bed Level 3C NICU with an average daily patient census of 52; ~60% of patients require some form of respiratory

QUICK LOOK

Current knowledge

Multidisciplinary care of the critically ill patient represents the current standard of care in intensive care. Multidisciplinary rounds are frequently used to establish and communicate patient care goals and review progress.

What this paper contributes to our knowledge

In a single-center study using retrospective record review, implementation of patient rounds led by a respiratory therapist improved staff satisfaction and the timeliness of completing respiratory orders.

support. RT assignments are based on respiratory volume units and calculated twice daily, before the beginning of each 12-h shift. Typically, there is an average of 3 RTs assigned to the NICU. RT-led rounds, an abbreviated form of multidisciplinary rounds, provided a formal venue for the RTs assigned to the NICU to review the clinical presentation of each patient and address the global plan of care and patient progress along with the plan of care to the attending neonatologist, resident physicians, and advanced practice and bedside nurses. RT-led rounds were conducted each morning shortly after the beginning of the day or 7:00 AM shift. Multidisciplinary rounds were still conducted later in the morning. RT participation in multidisciplinary rounds occurred when changes in or discussion of the patient's response to the therapeutic plan of care were needed.

Development of the Rounding Process

Before the initiation of RT-led rounds, a reporting tool was developed to facilitate a uniform process for presenting clinical information to the interdisciplinary team. A core team of RTs and neonatologists developed and refined a tool that scripted the process for reporting patients' demographic information, such as gestational age, gender, and birth history, in addition to endotracheal tube size and placement; set, calculated, and measured ventilator parameters; and relevant laboratory results. This tool also included an area to identify the 24-h plan of care and global patient care plan and document patient progress with achieving plan goals. The rounding tool and script for presenting a patient during respiratory rounds were piloted and refined with a larger group of RTs before implementation.

A brief educational session was conducted to introduce the RTs to the concept of the rounding process and use of the rounding tool. A 2-week pilot of the process was con-

ducted after the educational session. The pilot provided an opportunity for the team to adjust to the new process and refine their workflow.

Of the 3 RTs assigned to the NICU, 2 attended RT-led rounds. One RT had the role of presenter, whereas the second RT had the role of transcriber. The RT presenting during the RT-led rounds used the reporting tool that was updated from shift-to-shift with all the pertinent information that occurred during the previous 12 h. The second RT had the role of transcriber, carrying out orders at the bedside and documenting the changes in the electronic medical records along with updating the reporting tool. Extensive orders, such as extubation and modality changes, were carried out after the RT-led rounds were completed. It was the responsibility of the RT assigned to the NICU to carry out the 24-h plan and maintain the global plan for each patient.

Staff Engagement/Satisfaction Assessment

Six months after implementation of the RT-led rounds, a survey was conducted to evaluate the interdisciplinary team's engagement with this process. The survey tool was composed of 13 closed-ended questions that elicited demographic information, perceptions on engagement during RT-led rounds, and job satisfaction. Three demographic questions were used to ascertain the participant's role in the NICU, education, and work experience in the field of neonatal medicine. The remaining 10 questions were used to evaluate the participant's level of engagement with the rounding process and job satisfaction. The survey tool is provided in Figure 1.

The principle investigator kept track of staff who were recruited for and/or consented to study participation. This minimized the propensity to repeatedly approach staff for recruitment purposes. The survey was confidential and did not contain any participant identifiers. Each completed survey was placed in a sealed envelope by the participant and returned to the principle investigator or co-investigator. The sealed envelopes were collected and stored in a secure area until the close of the study period. This method reduced the likelihood that a survey could be linked to a participant.

Quality and Process Monitoring

To evaluate the timeliness of respiratory orders entered into the electronic medical records and accuracy of information reported by the RT during rounds, data were collected from the team during the rounding process. The principle investigator and colleagues physically attended rounds and documented any occurrence when information was missing or incomplete. The principle investigator and colleagues were regular participants in rounds, and the

probability that their presence would influence the outcome of rounding was minimal. To minimize influencing the outcome, the team was not informed that communication data were being collected during RT-led rounds.

Process outcome data were collected through a medical record review. Outcome variables included the time that verbal orders for intervention were discussed on rounds to order entry in the electronic medical records and the time orders were completed by the RT. As a balancing measure, the number of additional respiratory orders entered into the electronic medical records during multidisciplinary teaching rounds was collected.

Two data collection periods were established. All data were collected for 10 d over a 2-week period. The initial data collection period was conducted 6 months after initiation of respiratory rounds, and the second data collection period was conducted 12 months after establishment of the RT-led rounding process.

Analytical Plan

Data were entered into Excel (Microsoft, Redmond, California). Frequencies and percentage were used to describe participants' responses to job satisfaction and engagement survey questions. Descriptive statistics were used to report the number of patients who were visited during daily rounds, the number and type of orders given during rounds, and the number of respiratory orders that were addressed in multidisciplinary teaching rounds rather than during RT-led rounds. The chi-square test was used to determine differences in the proportion of inaccurate and incomplete data communicated during rounds between the 2 data collection periods. The Mann-Whitney *U* test was used to determine differences in the time to order entry in the electronic medical records after discussion on rounds and the time to order completion after orders were entered into the electronic medical records.

Results

Staff Engagement/Satisfaction Assessment

A 94.8% survey response rate ($n = 55$) was obtained. Fifty-two percent ($n = 29$) of the responses were received from registered nurses, whereas 18.1% ($n = 10$) were completed by RTs. The remaining responses were completed by attending physicians, medical residents, and neonatal nurse practitioners. Forty percent of the RTs and nurses were baccalaureate prepared ($n = 22$) and had > 20 y of NICU experience ($n = 22$). The complete evaluation of the RT-led rounding process, perceptions of bedside care, and professional satisfaction results are provided in Table 1.

For the following questions check the response that best applies. Check only 1 response per question.

1. What is your role in the NICU?
 - Licensed Practical Nurse
 - Attending physician
 - Neonatal Nurse Practitioner
 - Registered Nurse
 - Registered Respiratory Therapist
 - RRT1
 - RRT2
 - Other Please specify _____
2. What is the highest academic degree you have completed?
 - Associate
 - Baccalaureate
 - Masters
 - Doctor of Medicine (MD) or Doctor of Osteopathic Medicine (DO)
 - PhD
3. How many years of NICU experience have you completed?
 - < 5 years
 - 6 – 9 years
 - 10 – 14 years
 - 15 – 19 years
 - ≥20 years

Please provide your opinions regarding the respiratory rounds process. Please check SA for strongly agree, A for agree, N for neutral, D for disagree, and SD for strongly disagree.

4. Respiratory rounds have improved my understanding of the status of patients requiring respiratory support.
 SA A N D SD
5. Respiratory rounds have improved the communication among the interdisciplinary team members.
 SA A N D SD
6. Respiratory rounds have improved the timeliness of respiratory orders.
 SA A N D SD
7. The initiation of respiratory rounds has helped to create better time management.
 SA A N D SD
8. Respiratory rounds have improved staff morale.
 SA A N D SD
9. Respiratory rounds have improved interdisciplinary teamwork.
 SA A N D SD
10. During respiratory rounds, the rounding team is supportive of the presentation and recommendations for care.
 SA A N D SD

Discipline Specific Questions:

Please skip to question 12 if you are a respiratory therapist.

11. Respiratory rounds have influenced the culture in the NICU toward the implementation of nurse-led rounds.
 SA A N D SD

Please answer question 12 if you are a respiratory therapist.

12. Since the implementation of respiratory rounds, I have more time for patient care.
 SA A N D SD
13. Respiratory rounds have improved my self-confidence.
 SA A N D SD

Thank-you for your participation in this survey. Please place this survey in the attached envelope, seal and deliver to _____.

Fig. 1. Multidisciplinary survey tool used to measure staff satisfaction with the respiratory therapist-led rounding process.

Table 1. Interdisciplinary Team Engagement and Satisfaction Survey Results

Survey Instrument Question No.	NICU Staff Perceptions Regarding RT-Led Rounding Process	Likert Scale Responses Reported, <i>n</i> (%) of total				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4	Improved my understanding of the status of patients requiring respiratory support	3 (5.5)	28 (50.9)	19 (34.5)	4 (7.3)	1 (1.8)
5	Improved communication among the interdisciplinary team members	12 (21.8)	30 (54.5)	10 (18.2)	3 (5.5)	0 (0)
6	Improved the timeliness of completed respiratory orders	9 (16.4)	30 (54.5)	12 (21.8)	3 (5.5)	1 (1.8)
7	Helped to create better time management	10 (18.2)	14 (25.5)	22 (40)	7 (12.7)	2 (3.8)
8	Improved staff morale	1 (1.8)	11 (20)	31 (35.4)	6 (10.9)	1 (1.8)
9	Improved interdisciplinary teamwork	11 (20)	27 (49.1)	14 (25.5)	2 (3.6)	1 (1.8)
10	The rounding team is supportive of the RTs' presentation and recommendations for care	4 (7.3)	42 (76.4)	6 (10.9)	2 (3.6)	0 (0)
11	Positively influenced the culture in the NICU toward the implementation of nurse-led rounds	2 (3.6)	19 (34.5)	19 (34.5)	4 (7.3)	0 (0)
12	RTs have more time for patient care	1 (1.8)	2 (3.6)	4 (7.3)	2 (3.6)	1 (1.8)
13	Improved RTs' self-confidence	0 (0)	5 (9.1)	4 (7.3)	0 (0)	2 (3.6)

Question No. 11 was answered by all except the respiratory therapists (RTs). Questions No. 12 and No. 13 were only to be answered by the RTs.
 NICU = neonatal ICU

Table 2. Comparison of Process and Quality Outcomes From the Initial and Subsequent Data Collection Periods

	First Data Collection Period (6 mo after implementation)	Second Data Collection Period (12 mo after implementation)	<i>P</i>
Patients with data collected, <i>n</i> (%)	135 (100)	133 (100)	
Patients with missing information noted on rounds, <i>n</i> (%)	9 (7)	9 (4)	.41
Incorrect information communicated on RT-led rounds, <i>n</i> (%)	7 (5)	1 (0.8)	.066
Time to execute orders entered into the electronic medical records, min			
Mean	1.96	0.29	< .001
Median	1.0	0	
Range	0–45	0–10	
± SD	5.7	1.2	
Time to electronic medical record order entry, min			
Mean	0.29	0.29	.99
Median	0	0	
Range	0–5.7	0–5.4	
± SD	0.93	1.03	

0 min was used as the time stamp for order entry that was observed to occur immediately following communication of the plan of care. 0 min was used as the time stamp for orders that were implemented immediately after order entry in the electronic medical records.
 RT = respiratory therapist

Quality and Process Monitoring

RTs reported on 135 patients during the first of 2 data collection periods, conducted approximately 6 months after implementation of this process. Correct patient information was provided on 95% of patients, and complete information was provided on 93% of patients. Forty-seven percent of orders were immediately entered into the electronic medical records after there was consensus on the

patient's plan of care (Table 2). Eighty-six percent of orders were immediately implemented when the orders were placed in the electronic medical records. There was one outlier in which an order was not carried out for 5 h and 45 min after entry into the medical record. Four additional respiratory care orders were placed in the electronic medical records during multidisciplinary rounds, representing 5% of all respiratory care orders entered into the electronic medical records during the first data collection period.

RTs reported and data were recorded on 133 patients during the second data collection period ~1 y after implementation of this process. Correct patient information was provided on 99.3% of patients, and complete information was provided on 96% of patients. Eighty-four percent of orders were immediately entered into the electronic medical records after there was consensus on the patient's plan of care. Seventy-nine percent of orders were immediately executed after orders were entered into the electronic medical records (see Table 2). There were 8 additional respiratory care orders placed during multidisciplinary rounds, representing 11% of all respiratory orders entered during this second data collection period. There was no statistical difference in the time to enter orders or change in quality measures (missing and incomplete information communicated to the team by the RT during rounds) between the 2 data collection periods. However, there was a statistically significant improvement in the timeliness of order execution.

Discussion

RTs are integral members of the health-care team; however, few data are available to support their decision making role during interdisciplinary rounds. We sought to address this gap in the literature by describing staff satisfaction and process outcomes associated with RT-led rounds in the NICU. In concert with the nursing literature, those surveyed reported an improvement in interdisciplinary communication and teamwork. More than three quarters of those surveyed perceived that RT-led rounds improved communication among the interdisciplinary team members. More than half (69%) of participants reported improvement in interdisciplinary teamwork. These findings are contrary to those of Thomas et al,¹⁰ who reported that perception discrepancies between the disciplines occurred. In a survey of 320 adult critical care physicians and nurses, 72% of whom were nurses, Thomas et al¹⁰ reported that 33% of nurses rated the quality of collaboration and communication with the physicians as high or very high, whereas 73% of physicians rated the quality of collaboration and communication with nurses as high or very high. Similar to the nursing literature,¹¹ staff morale improved, and respiratory staff felt supported by bedside and advanced practice nurses and their physician colleagues.

The staff accurately perceived that this structured process improved the timeliness of orders. This was evidenced by the initial and sustained improvement in the entry and execution of respiratory care-related orders. There was a statistically significant decrease in the time in minutes to execute orders entered into the electronic medical records ($P < .001$). Although the results did not reach statistical significance, from a quality perspective, the patient care information that the rounding team received during RT-led

rounds became more accurate as the process matured. The workflow that the RTs developed for participation in RT-led rounds to completing the orders for the patient plan of care was sustained for a 12-month period. This may be attributed to the participation in the development of this process by the bedside team. The process was created by the bedside practitioners and only facilitated by respiratory leadership, which may have enculturated a commitment to the process and commitment to a sustainable model. Therefore, as time progressed and the process became the standard of care, the RTs were aware of how important the communication of accurate and complete information was to the evaluation and determination of each patient's care plan.

Conclusions

The implementation of RT-led rounds improved staff satisfaction and the timeliness of completing respiratory orders. Spot assessments supported sustainability of the process and identified areas of improved efficiency. A limitation of this process included our inability to gather pre-implementation quality data. A measure of incorrect and/or incomplete information communicated by the RT before the implementation of RT-led rounds may have demonstrated the need to standardize the methods for and type of information provided to the rounding team. Additional effort focusing on the effects RT-led rounds may have on clinical outcomes, such as time to liberation from ventilation, use of noninvasive ventilation, length of time with oxygen, hospital stay, and chronic lung disease rate, will be the next step in the process improvement continuum.

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