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IDENTIFYING BARRIERS TO NURSE-FACILITATED PATIENT MOBILITY IN THE INTENSIVE CARE UNIT

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Abstract

Background—Nurse-facilitated mobility of patients in the intensive care unit can improve outcomes. However, a gap exists between research findings and their implementation as part of routine clinical practice. Such a gap is often attributed, in part, to the barrier of lack of time. The Translating Evidence Into Practice model provides a framework for research implementation, including recommendations for identifying barriers to implementation via direct observation of clinical care.

Objectives—To report on design, implementation, and outcomes of an approach to identify and understand lack of time as a barrier to nurse-facilitated mobility in the intensive care unit.

Methods—An interprofessional team designed the observational process and evaluated the resulting data by using qualitative content analysis.

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Results—During three 4-hour observations of 2 nurses and 1 nursing technician, 194 distinct tasks were performed (ie, events). A total of 4 categories of nurses' work were identified: patient care (47% of observation time), provider communication (25%), documentation (18%), and down time (10%). In addition, 3 types of potential mobility events were identified: in bed, edge of bed, and out of bed. The 194 observed events included 34 instances (18%) of potential mobility events that could be implemented: in bed (53%), edge of bed (6%), and out of bed (41%).

Conclusions—Nurses have limited time for additional clinical activities but may miss potentially important opportunities for facilitating patient mobility during existing patient care. The proposed method is feasible and helpful in empirically investigating barriers to nurse-facilitated patient mobility in the intensive care unit.

The muscle weakness commonly experienced by survivors of critical illness is a potentially modifiable risk factor for long-term functional impairment, mortality, and use of health care resources.^{1–12} Facilitating early mobility of patients in the intensive care unit (ICU) can reduce such muscle weakness^{13,14} and can be done safely and feasibly, even in patients receiving mechanical ventilation who have an endotracheal tube in place.^{15–21} Many ICU mobilization efforts have engaged physical and occupational therapists (PTs and OTs), but successfully changing an ICU culture of bed rest requires the involvement of all clinicians.^{13,19,22}

Engaging ICU nurses to mobilize patients can have positive outcomes.^{23–25} In an international, multicentered, blinded randomized controlled trial,^{8,26} a multidisciplinary team set a daily mobility goal for each patient, and ICU nurses worked with the patient to meet that goal. The results indicated that such nurse-facilitated mobility improved patients' mobility status and decreased length of stay.⁸ However, a gap exists between research evidence and its implementation as part of routine clinical practice in the ICU.^{17,27,28} Structured quality improvement projects play a critical role in bridging that gap.^{29,30}

One framework for designing and executing structured quality improvement projects is the Translating Evidence Into Practice (TRIP) model.³¹ The model has 4 stages: summarize the evidence, identify local barriers, measure performance, and ensure patients receive the intervention via an iterative process of engaging, educating, executing, and evaluating. Within the TRIP model, stage 2 highlights the need to identify local barriers to implementation and recommends direct observation of clinicians as a successful approach to inform quality improvement efforts. For nurse-facilitated mobilization in the ICU, a commonly cited barrier is lack of time.^{17,20,32,33} However, to our knowledge, design and implementation of a method to understand this specific barrier have not been undertaken. Hence, our objective was to report on the design, implementation, and outcomes of an approach to identifying and understanding the barrier of lack of time for nurse-facilitated mobility in the ICU.

Methods

Background

An early rehabilitation quality improvement project with the TRIP model was previously conducted in the Johns Hopkins Hospital medical ICU (MICU).^{29,34} This project increased

early rehabilitation, with interventions primarily performed by PTs and OTs. However, lighter sedation³⁵ and a growing culture of mobility clearly indicated that MICU patients have the potential for mobility and activity via interventions facilitated by nurses and clinical technicians in addition to interventions performed by PTs and OTs. To understand time-related barriers to performing such interventions in our MICU, we directly observed the work carried out by nurses and a clinical technician and measured the time required for that work in order to understand the feasibility of integrating mobility interventions into the daily activities of nurses and technicians.

Interprofessional Generation of Ideas

The first step in this project involved interprofessional discussions and planning by members of the quality improvement team, including physicians (D.M.N., A.M.P.), nurses (M.G., C.O.), physical therapists (J.S., A.T.), an occupational therapist (A.L.), and a senior clinical coordinator for the ICU clinical rehabilitation program (E.M.). In these meetings, team members discussed the idea of directly observing and recording work-related activities of nurses and clinical technicians. Including clinical technicians was suggested because they are delegated certain tasks to perform by MICU nurses, including mobility-related interventions. The quality improvement team decided that direct observation would be a valuable way to “walk the process” of nurses’ work activities and clarify the lack-of-time barrier. The Johns Hopkins University institutional review board deemed the project quality improvement, under the US Office for Human Research Protections guidance, with no need for consent of patients or clinicians.

Planning the Observations

Within the framework of typical case sampling,³⁶ a type of purposive sampling, representative days, times of day, and personnel for the observations were determined via discussions with nurses on the quality improvement team. The quality improvement team wanted to observe times that included typical responsibilities of nurses, such as morning report, initial patient assessment, routine patient assessments, and MICU team rounds, because these routine nursing events were generalizable to most patients. The quality improvement team wanted to avoid observations of times when nonroutine events occur more frequently or when mobility may be less feasible. In our MICU, such times include 11:30 AM to 3:30 PM, when tests and procedures unique to individual patients occur more frequently, and during the night shift. Hence, observations were planned for 3 consecutive days: day 1, from 3 PM to 7:30 PM; day 2, from 7 AM to 10 AM; and day 3, from 7 AM to 11 AM. The nurse or technician to be observed was selected to achieve variability in staff experience and patient characteristics. In the MICU, 1 nurse with more than 5 years of experience and 1 with less than 2 years of experience were chosen. One nurse had a 2-patient assignment; the other, a 1-patient assignment. The third observation was designated for a clinical technician, as previously explained. The quality improvement team thought that this mix of days, times, and personnel was representative and feasible for this project.

Executing Direct Observations

A physical therapist (J.S.), the rehabilitation team coordinator for the hospital’s adult ICUs, performed all observations, for a total of 10 hours. During these times, the observer’s goal

was to watch the designated nurse or clinical technician and record all of their activities and the time spent on each activity. Using a paper-based logbook, the observer chronologically recorded a description of each task performed by the nurse or technician (eg, assessments, administering medications) with the associated starting and ending time for each event. In order to reduce the potential for modifying staff attitudes or behaviors, the specific purpose of the observation was described as better understanding nurses' workflow, without mentioning the specific focus on understanding barriers to patient mobilization.

Review of the Observation Logbook

Four members of the project team, 2 nurses (M.G., C.O.) and 2 physical therapists (J.S., D.L.Y.), met in person to receive a brief orientation (by J.S.) to the observation logbook, including definition of abbreviations, and to receive a copy of the logbook for their individual reviews. These 4 team members used qualitative content analysis³⁷ to evaluate the logbooks. First, each of the 4 members independently read the logbook to become familiar with its content, identify "meaning units," and categorize those meaning units into codes.³⁷ For example, 1 activity logbook entry reads, "Additional family member calls to talk to RN. On phone discusses social aspects of pt care, too many family members involved asking for updates. RN arranges specific family members who are identified by current family member (P.O.A.) who can receive info." The meaning unit here would be family member calls to talk to RN, and the code created was family-centered care. D.L.Y. then reviewed all 4 coded logbooks and identified 4 categories³⁷ into which all codes fit: patient care (eg, measuring blood pressure, administering medication, talking to a patient's family), documentation (eg, keying in the electronic medical record), provider communication (eg, talking with the patient's physician, taking report from another nurse), and down time (eg, time during which the nurse or technician had no active demands). The categories assigned to each event were then reviewed by the other 3 members of the research team in a group meeting, and discrepancies were resolved by consensus.

Review of Potential for Mobility

Using the analyses of the logbooks, the 4 members of the project team (M.G., C.O., J.S., D.L.Y.) met and collectively discussed potential for nurse-facilitated mobility events, what those activities might have been, and when the activities could have occurred. For example, when the logbook stated, "Bed laid flat, bed elevated to begin clean up. Changing chucks [disposable bed pads], linens that are soiled, places new brief down," the 4 members thought that the nurse could have encouraged the patient to "roll and bridge actively" (1 example of a code from this process) as the linens, chuck, and brief were changed. Another example that was noted several times in the logbook was meals being served in bed, and the 4 members identified the opportunity for the nurse to help the patient sit at the edge of bed, or get out of bed to a chair, to eat the meal ("out of bed for meals" was the code used). When the logbook indicated that time was spent in work away from the patient (eg, documentation), the 4 members thought that mobility was not possible. On the basis of these group discussions, 4 categories of potential mobility events emerged: not possible, in bed, edge of bed, and out of bed. These categories for potential mobility events, along with the codes from which they were created, were added to the logbook. As a result of this process, each event in the logbook was assigned 2 categories, 1 for general workload (patient care, documentation,

provider communication, down time) and 1 for potential mobility (not determined, in bed, edge of bed, out of bed).

Results

Design

The first step in the design process was assembling the interdisciplinary quality improvement team. This process was an iterative one, conducted during 3 MICU quality improvement group meetings, devoted to identifying appropriate personnel needed for this specific project. Once the team members to execute this specific project were identified, two 1-hour meetings were needed to outline the plan for the observations and discuss questions about those specific methods. One of the more time-consuming items on the agenda of those 2 meetings was discussing who and when to observe. Selecting the right person to perform the observations was also discussed in detail. The final issue was creating the logbook. Attention was given to create adequate space for detailed descriptions of desired elements for the observed work and for notation of potential mobility activities. The original logbooks were created and implemented in paper form, but for analysis, they were transcribed into an electronic document.

Implementation

As planned, the observations took approximately 11 hours (655 minutes). We found no indication that the observations created disruption or concern for the clinicians being observed, the patient, or anyone else coming into a patient's room. Transcription of the observation log into an electronic document took 1.5 hours. The qualitative analysis involved three 1-hour meetings with 4 of the team members (M.G., C.O., J.S., D.L.Y.), 1 hour for each person to identify the meaning units and codes independently, and another 2 hours for D.L.Y. to apply categories to the logs. Total time for this part of the project was approximately 11 hours for observation and 20 person-hours for analysis.

Outcomes

The results of the qualitative content analysis of activities and time revealed 194 distinct events observed during a period of 655 total minutes (Table 1). As expected, patient care accounted for the largest part of observed time (47%) among the 4 defined categories. The second largest time commitment (25%) was communication with other health care providers. Documentation accounted for 18% and down time for 10%. Table 2 provides examples of logbook entries and the codes and categories that were assigned to those entries during the qualitative content analysis.

The final step in completing the qualitative content analysis of the logbook data was identifying potential mobility events. The number of logbook entries during which mobility could have been facilitated is reported in Table 3. As expected, all potential mobility events were identified during times of direct patient care or down time. The not possible category for mobility events had the most events (82%) and time (79% of observed minutes) and included all time spent in communication with other providers and in documentation. More opportunities were identified for in-bed activities (9%) and out-of-bed activities (7%) than

for edge-of-bed activities (1%). However, in-bed activities were the third largest category in terms of minutes (6%), after not possible (79%) and out of bed (15%). Table 4 provides examples of logbook entries, codes, and categories that were assigned to those entries during the qualitative content analysis.

Discussion

We devised a process to investigate the lack-of-time barrier that nurses often express when asked about facilitating mobility of their patients. Using the TRIP model³¹ as a guide, we explored this barrier by using a direct observation approach. Herein we have provided the design, implementation, and outcomes of the approach. This approach was feasible and provided valuable insight into how nurses and clinical technicians spend their time and where potential mobility could occur. We observed that nurses and clinical technicians working with nurses have relatively little time not already filled with patient care and related tasks. However, coinciding with direct patient care, we detected important opportunities for patient mobility that could be facilitated by a nurse or a technician.

Our observations confirm that nurses are busy.^{38–41} The nurses and clinician technician were completely free from work tasks for only 10% of the observed time, and most of that time was attributed to the clinical technician, rather than nurses. This down time may be a target for increasing patient mobility. Documentation was a major time requirement; nearly 20% of all time observed was devoted to this task. Other reports of the proportion of nurses' time spent documenting range from 7%³⁸ to 35%.⁴² In 2 studies of critical care nurses, values were relatively similar to ours: 24%³⁹ and 30%.⁴⁰ These results support efforts to streamline documentation to allow more time for direct patient care.^{43,44} Despite the relative lack of down time among the nurses in our project, we observed opportunities to facilitate patient mobility concurrently with other tasks of direct patient care.

During the logbook review, when searching for potential mobility opportunities, the nursing members of the project team repeatedly commented that, in retrospect, mobility was possible, but not performed, because nurses "just don't think to do it." In order for nurses to think more about mobility and to facilitate mobility, a shift in culture and behavior must occur.^{19,29,45–51} In a systematic review, Coquhoun et al⁵² highlighted 4 key components: identifying barriers, selecting intervention components, using theory, and engaging end users. Direct observation is a potentially important component of identifying barriers and engaging end users. The results from direct observation could be effectively used as a starting point for discussions about the what and when of nurse-facilitated patient mobility. Another strategy to help detect missed mobility opportunities could be setting specific mobility goals for a nursing shift, facilitated by using a simple and clear mobility scale, as successfully done in a recent randomized controlled trial.^{8,53,54}

Our project has potential limitations. First, this project was conducted in a single MICU in which 2 nurses and 1 clinical technician were observed by only 1 physical therapist. Observing other providers, at different times, in different units or hospitals, could change the findings. The observer also may not have been completely objective regarding documentation of observations in the logbook, and a different physical therapist or a nurse

might have differed in documentation. Although qualitative evaluations have this type of limitation, they offer an important framework for other researchers to replicate and obtain results specific to other institutions.⁵⁵ Finally, because the potential mobility events were not actually observed, but inferred from post hoc review of logbooks, the number of those potential mobility events and the time required may contain measurement error.

Conclusion

We have described a process for better understanding the lack-of-time barrier to nurse-facilitated patient mobility. The design and implementation of this process were feasible and provided valuable insights for our quality improvement project. We observed that nurses have relatively little available time for additional clinical activities, but they may miss opportunities to facilitate patient mobility as part of existing patient care activities. Using our observational process, other researchers can begin to better understand barriers to nurse-facilitated patient mobility in other clinical settings.

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Table 1

Direct observation of nurse and clinical technician activity, by category

Activity observed	Distinct tasks observed, No. (%)	Time required, min (%)
Patient care	115 (59)	305 (47)
Provider communication	47 (24)	166 (25)
Documentation	27 (14)	116 (18)
Down time	5 (3)	68 (10)
Total	194 (100)	655 (100)

Table 2
Examples of logbook observations of clinician activities with assigned codes and categories

Logbook observation	Code	Category
Enters room 58, checks blood pressure to assess vitals prior to giving BP meds	Performing assessment	Patient care
Approached by buddy to take report on 2 patients (room 59 and...) while buddy is on lunch break	Face-to-face communication	Provider communication
Pillows replaced under both arms, pt assists with placement of pillows, demonstrating shoulder AROM	Comfort and safety	Patient care
Prepare to enter room 60 where pt is delirious, asking to go to bathroom. Pt is put on bedpan	Facilitating ADLs/IADLs	Patient care
Done charting	NA	Down time
Pt spontaneously moving, RN addressing pt directly at eye level to attempt to calm down	Communication with patient	Patient care
Gathers supplies from supply room for 58: chucks, briefs, wipes, linens	Getting supplies/medications	Patient care
Starts filing out rounding template (update to provide to team since last report, issues, concerns, drips pt has been started on)	Documentation	Documentation
Breakfast arrives, sets pt up to eat in bed and takes dexi	Facilitating ADLs/IADLs Performing assessment	Patient care
Updates and rereads notes from multi D rounds for better understanding of pt social issues	Documentation	Documentation
Checks on pt to see if he wants or needs anything	Patient safety and comfort	Patient care
Reviews CT scan with RN for pt who was scheduled for level 1 to OR	Face-to-face communication	Provider communication

Abbreviations: ADL, activities of daily living; AROM, active range of motion; BP, blood pressure; chucks, disposable bed pads; CT, computed tomography; dexi, Dextrostix (reagent strip for estimating blood sugar levels); drips, infusions; D rounds, multidisciplinary rounds; IADL, instrumental activities of daily living; meds, medications; NA, not applicable; OR, operating room; pt, patient; RN, nurse.

Table 3

Potential mobility events during observed clinician activities

Mobility event category	No. (%)^a	Minutes (%)^a
Not possible	160 (82)	518 (79)
In bed	18 (9)	39 (6)
Out of bed	14 (7)	95 (15)
Edge of bed	2 (1)	3 (< 1)
Total	194 (100)	655 (100)

^aBecause of rounding, percentages do not total 100.

Table 4

Examples of logbook observations of potential mobility events with assigned codes and categories

Logbook observation	Code	Category
Assessment: lung/abdominal sounds, pain, pulses, strength by assessing resisted DF/hip flexion via heel slide, orientation questions mixed in throughout; asks pt what he would like for breakfast	Ask pt to sit at side of bed for assessment	Edge of bed
Gets up to check on rm 58 who is agitated, vent alarming	In-bed exercise	In bed
Prepares to give meds to pt. Pt is mobile in bed, moves into long sitting in bed to take oral meds, RN raises HOB to support pt while pt is sitting upright. Pt returns to resting against support of bed	Have patient get out of bed to chair for oral medication	Out of bed
Breakfast arrives, sets pt up to eat in bed and takes dexi	Have patient get out of bed to chair for meals	Out of bed
Talks to providers about labs requested	Face-to-face communication	Not possible
Walk past rm 56 and pt now in chair at bedside, with assistance of son	Ambulate with patient	Out of bed
Gives pt his toothbrush while pt seated in chair. Tech gets TB from table on opposite side of room, prepares it with water cup, gives in to pt while pt is seated in chair	Help patient stand at sink in room	Out of bed
BP did not record, needs retake—asks pt how he does moving around in bed	In-bed exercise: rolling, bridging, scooting	In bed
Pt asks to be boosted/moved to HOB	In-bed exercise: scooting, bridging	In bed

Abbreviations: BP, blood pressure; dexi, Dextrostix (reagent strip for estimating blood sugar levels); DF, dorsiflexion; HOB, head of bed; labs, laboratory tests; meds, medications; pt, patient; rm, room; RN, nurse; TB, toothbrush; tech, technologist; vent, ventilator.