Implementing and sustaining an early rehabilitation program in a medical intensive care unit: A qualitative analysis

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ABSTRACT

Purpose: Early rehabilitation programs in a medical intensive care unit can improve patient outcomes, but clinicians face barriers in implementing and sustaining such programs. We sought to describe a multidisciplinary team perspective regarding how to implement and sustain a successful early rehabilitation program.
Methods: Semistructured interviews were conducted with 20 staff and faculty who were involved in the early rehabilitation program at the Johns Hopkins Hospital Medical Intensive Care Unit. Transcripts were evaluated using the Consolidated Framework of Implementation Research Theory.
Results: Four major constructs emerged as important, as follows: (1) necessary components, (2) implementation strategies, (3) perceived barriers, and (4) positive outcomes. All participants reported that staff buy-in was necessary, whereas having a multidisciplinary team with good communication among team members was reported as helpful by 90% of participants. The most common barrier reported was increased staff workload (80%). All participants (100%) noted improved patient outcomes as an important benefit, and 95% reported improved job satisfaction.
Conclusions: This qualitative study of a successful early rehabilitation program highlights the importance of assessing and engaging a multidisciplinary team before implementation and the positive outcomes of early rehabilitation on staff by improving job satisfaction and changing the culture of a hospital unit.

1. Introduction

Early rehabilitation interventions in the intensive care unit (ICU) improve patients' muscle strength and physical functioning, as well as decrease the duration of mechanical ventilation and length of stay [1–11]. However, prior research has identified perceived barriers to implementing such early rehabilitation programs, including deep sedation, inadequate staffing and multidisciplinary cooperation, safety concerns, and insufficient knowledge of the benefits of early rehabilitation [7,12–20]. Although many ICUs have addressed these barriers and successfully implemented early rehabilitation into routine clinical care [21–27], widespread implementation remains low, with only 8% to 12% of mechanically ventilated patients mobilized out of bed as reported in 2 large multisite point prevalence studies [12,15]. Hence, it is important to understand critical factors for successfully implementing and sustaining early rehabilitation in the ICU setting [28]. More specifically, additional data are needed regarding how to implement such clinical interventions that require greater staff time and multidisciplinary

collaboration [29] and how to sustain such interventions, especially within a complex ICU environment [30].

One model for formative evaluation of implementation is the Consolidated Framework for Implementation Research (CFIR) that outlines 5 areas that impact implementation: (1) outer environment (eg, hospital administrative support), (2) inner environment (eg, proximal unit culture), (3) intervention characteristics (eg, length of time and resources needed), (4) implementation strategies, and (5) staff (eg, attitudes and skills of staff implementing the intervention). This framework was developed as a meta-theoretical approach by combining previously published theories of implementation to synthesize construct and reduce overlap [31]. It has been applied in many clinical contexts including nursing homes, mental health systems, communities, and hospital-based interventions [32].

An early rehabilitation quality improvement project was successfully implemented in the Johns Hopkins Hospital Medical Intensive Care Unit (MICU) [7,33]. By using a structured quality improvement methodology for implementing the early rehabilitation program, a solid foundation for a change in culture was created with the program sustained for many years after the quality improvement project ended [33]. The purpose of this study was to retrospectively evaluate implementation of this early rehabilitation program and to identify factors that sustained

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the program, from a multidisciplinary perspective, using qualitative, semistructured interviews [7,33].

2. Methods

2.1. Participants

Using purposive sampling, 23 faculty and staff, who were involved in implementing and/or sustaining the early rehabilitation program in the Johns Hopkins MICU, were contacted by e-mail and invited to participate. Individuals were selected from multiple disciplines that were involved in designing, implementing, and/or sustaining the early rehabilitation program as a bedside clinician and/or an administrator/manager/leader. From those 23 individuals, 22 (96%) responded to the e-mail invitation; and 20 (91%) agreed to participate in the semistructured interview process, which was completed from January to March 2013. Oral informed consent was obtained before the interview, and participants received no monetary compensation for participation. The Johns Hopkins University Institutional Review Board approved this study.

2.2. Interview procedures

Participants provided demographic information, followed by an in-person, semistructured qualitative interview conducted using a written interview guide (Appendix). The CFIR model for evaluating implementation and sustainability of clinical programs provided the theoretical basis for the interviews. The written interview guide was constructed based on the 5 CFIR domains and revised based on input from 5 faculty members with expertise across the areas of ICU rehabilitation, implementation science, and provider behavior. All interviews were conducted by a single trained researcher who was independent of the MICU early rehabilitation program. The interviews were based on a naturalistic inquiry approach evaluating beliefs and barriers to implementing and sustaining the MICU program. The interviews were audiotaped and transcribed by a professional medical transcriptionist for data analysis. Each interview was reviewed by the investigators for common themes to determine which themes warranted further investigation. The guide was modified to explore new themes with subsequent participants using an iterative process common to qualitative research [34].

2.3. Data analysis

Transcripts of the interviews were coded by 2 independent raters (TA, LU) using NVivo 10.0 software (QSR International Pty Ltd, 2013, Doncaster, Australia). Coding of common themes involved multiple steps: group consensus identified and defined initial codes using thematic analyses [35]. Thereafter, 2 reviewers independently coded each transcript with discrepancies resolved through discussion with the investigator (MNE); and the investigators provided a final review of themes to ensure clarity and comprehensiveness of definitions and final thematic and construct names. Coding was compared between raters using percentage agreement. Names and descriptions of each theme were developed based on the coded exemplar quotes. Frequencies of coded themes and constructs across participants were tabulated.

3. Results

Demographic data for the 20 participants are reported in Table 1, with the following disciplines represented: physicians (including medical directors and residents); physician assistant; nurses (including clinical nurse specialists); respiratory therapist (RT); clinical program coordinators; and rehabilitation providers including physical therapist (PT), occupational therapist (OT), rehabilitation technician, speech and language pathologist, and rehabilitation psychologist. The mean (± standard deviation) interview duration was 35 ± 12 minutes.

Table 1
Description of 20 participants

Characteristic		Count	%
Sex	Female	12	60
Age, y	<40	13	65
	40-60	4	20
	>60	3	15
Race	White	14	70
	African American	3	15
	Asian or Pacific Islander	2	10
	Prefer not to answer	1	5
Education	Graduate degree	7	35
	Medical degree	7	35
	Bachelor degree	2	10
	Technical certificate/AA	4	20
Clinical discipline			
	Rehabilitation services	6	30
	Physician	5	25
	Nursing	5	25
	Program coordinator	2	10
	Physician assistant	1	5
	RT	1	5
Time working in health care, y			
	≤5	3	15
	6-10	4	20
	11-20	9	45
	>20	4	20
Time working in any ICU, y			
	≤5	10	50
	6-10	4	20
	11-20	2	10
	>20	4	20

AA indicates Associate of Arts degree.

Coding between the 2 raters demonstrated high agreement (mean percentage agreement = 94%).

3.1. Qualitative constructs

Analysis of the interview transcripts produced the following 4 broad constructs regarding implementing and sustaining the MICU early rehabilitation program: (1) necessary components for early rehabilitation, (2) implementation strategies, (3) perceived barriers, and (4) positive outcomes.

3.1.1. Necessary components for early rehabilitation program

Table 2 reflects 9 constructs that were considered part of the first theme, necessary components in implementing and sustaining the early rehabilitation program. The first set of constructs described developing a culture of acceptance and good teamwork. *Buy-In* was the most frequently reported construct, reported by 100% of participants. This construct reflects that staff members involved with the program needed to feel that rehabilitation was beneficial to patients and that all of the participants were committed and supported the program. *Multidisciplinary Team* and *Team Communication* highlighted the importance of a cohesive team working together with open communication for the early rehabilitation program to be successful. For instance, a PT may require the assistance of an RT to ambulate a mechanically ventilated patient, whereas other situations would require coordination of clinicians' schedules to permit multiple therapists to treat the same patient throughout the day. Another overarching construct described the need for leadership both at a broader program level and at an individual discipline level. The construct *Opinion Leader* described the need for a leader who advocated for the early rehabilitation program. For many, one physician was the most visible leader regarding implementation and continuity of the program. This leadership role expanded beyond immediate patient care and included leading the implementation process and fostering growth of the program by gaining staff and administrative buy-in for the program. Alongside opinion leaders, champions from each discipline were also necessary. These *Individual Discipline Champions* were seen not only as key personnel for providing patient care but "strong advocates" for the program among their colleagues, which positively contributed to a more accepting culture and environment for the program.