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Implementing early mobilisation in the intensive care unit: An integrative review

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ABSTRACT

Background: The intensive care unit provides complex care for critically ill patients. Consequently, due to the nature of critical illness and the therapies administered in intensive care, patients are often on prolonged periods of bed rest with limited mobility. It has been recognised that mobilising critically ill patients is beneficial to patients' recovery, however implementing early mobility as a standard of care remains challenging in practice.
Objectives: To identify the key factors that underpin successful implementation and sustainability of early mobilisation in adult intensive care units.
Design: Integrative Review.
Data source: A systematic search strategy guided by SPICE framework (Setting, Perspective, Intervention, Comparison, Evaluation) was used to formulate the research question, identify study inclusion and exclusion criteria, and guide the database search strategy. Computerised databases were searched from August–September 2016. Quality improvement articles that identified project implementation of early mobilisation of mechanically ventilated adult intensive care patients were included.
Review methods: After screening the articles, extracting project data and completing summary tables, critical appraisal of the quality improvement projects was completed using the Quality Improvement Minimum Quality Criteria Set. A modified version of the Cochrane Effective Practice and Organisation of Care taxonomy was used to synthesise the multifaceted implementation strategies the projects utilised to help bring about changes in clinician behaviour.
Results: Thirteen articles, reflecting 12 projects meeting the inclusion criteria were included in the final analysis. Eleven projects were conducted in the United States, and one in the United Kingdom. Quality scores ranged from 6 to 15. A formal framework to guide the quality improvement process was used in 9 projects. The three most frequently used groups of implementation strategies were educational meetings, clinical practice guidelines and tailored interventions. Managing the change process through strong leadership, designing strategies and interventions to overcome barriers to implementation, multidisciplinary team collaboration and data collection and feedback underpinned successful and sustainable early mobility practice change.
Conclusion: The use of a quality improvement appraisal tool can help identify high quality projects when planning a similar mobility program. Even though projects were conducted in a variety of intensive care unit settings, and implementation frameworks and strategies varied, all began with strong leadership commitment to early mobilisation. This along with using the quality improvement process and multidisciplinary team approach ensured success and sustainability of mobilising ventilated patients.

What is already known about this topic?

- Early mobilisation of ventilated intensive care patients is safe, feasible, and improves patient outcomes, however its implementation can be challenging.
- Early mobilisation of ventilated intensive care patients is an emerging strategy which may help to explain why its prevalence is low.
- Quality improvement projects are designed to improve a performance gap, and bring about positive changes in health care processes.

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What this paper adds

- Successful early mobilisation involves multifaceted implementation strategies.
- Strong leaders who lead the change management process, and designing strategies to overcome barriers to early mobilisation support staff in their efforts.
- Multidisciplinary collaboration and providing data feedback to staff are important factors to facilitate early mobilisation.

1. Introduction

In the last few decades, advances in intensive care and mechanical ventilation have improved the survival rates of critically ill patients (Engel et al., 2013a; Needham et al., 2010). Traditionally, it was rare to mobilise ventilated intensive care unit (ICU) patients, but now there is mounting evidence on the benefits of early mobilisation including shorter duration of delirium, more ventilator free days, and shorter ICU and hospital length of stay (Schweickert et al., 2009; Li et al., 2013; Adler and Malone, 2012). Yet, there are many barriers to implementing early mobilisation in the ICU (Dubb et al., 2016). In the context of ventilated ICU patients, this integrated review sought to better understand the strategies for supporting the implementation of early mobilisation, which was defined as active patient participation in physical activity that produces physiological benefits; such as sitting at the bedside, standing beside the bed, stand transferring to a chair, and assisted or independent ambulation (Castro-Avila et al., 2015; Li et al., 2013).

2. Background

ICU patients who are intubated and mechanically ventilated are generally managed with sedation, and their mobility restricted (Hodgson et al., 2014; King, 2012), receiving only passive movement from routine standard nursing practice and regular repositioning (Makic et al., 2014). Prolonged bed rest, sedation, and immobility can cause many complications, such as depression, delirium, muscle wasting, and profound muscle weakness (Truong et al., 2009; Zomorodi et al., 2012). Furthermore, some of these ICU survivors will experience significant disabling side effects, regardless of their admitting diagnosis (Engel et al., 2013a). Consequently, poor quality of life, severe weakness, self-care deficits, hospital readmission, and death have been reported up to five years post discharge from ICU (Adler and Malone, 2012; Hill et al., 2016).

In the past, mechanically ventilated patients have been deemed medically unstable, and have not been considered appropriate for early physical activity (Engel et al., 2013a). However, these assumptions have been challenged by recent research that demonstrates early mobility interventions are feasible, safe, and beneficial (Pohlman et al., 2010; Li et al., 2013; Bailey et al., 2007) in improving patients' cognitive, neuromuscular and psychiatric functioning (Parker et al., 2013). Furthermore, an early mobility program can reduce hospital costs by decreasing the duration of mechanical ventilation, ICU and hospital length of stay, and hospital readmissions (Lord et al., 2013; Schweickert et al., 2009; Li et al., 2013; Adler and Malone, 2012).

Translating research to clinical practice can be challenging, especially in the complex ICU environment, resulting in a gap between evidence and practice (Elliott et al., 2014; Needham, 2010). Previous research has identified several potential reasons why early mobilisation does not occur, including patient sedation practices, safety concerns, presence of invasive lines and tubes, inadequate knowledge of the benefits of early mobility, and unit culture (Needham and Korupolu, 2010; Dubb et al., 2016). While several ICUs in the United States have identified barriers to early mobilisation, and using them to develop strategies to implement and embed this practice into routine care (Bakhru et al., 2015), limited data of the practice patterns in other countries is available. One point prevalence mobilisation audit of 38 Australia and New Zealand ICUs showed that out of the 498 patients included in the study, no mechanically ventilated patients sat out of bed or mobilised on the day of the study (Berney et al., 2013). Since this study was undertaken there has been more of a focus on early mobilisation, however the extent to which it is currently occurring in countries such as Australia is unknown.

The introduction of new evidence into clinical practice can be challenging especially when: 1) complex changes to clinical routine are needed; 2) there is a change in organisation of care; and 3) collaboration among the multidisciplinary team is required (Grol et al., 2007). The quality improvement (QI) process has been one approach used to facilitate incorporating new evidence into practice (Ohtake et al., 2013). QI aims to achieve measurable improvements in processes of care, and examines how interventions can be delivered reliability and consistently (Perla et al., 2013). The review of published QI projects can be used to determine effective strategies for implementation within various settings, and what elements may need to be adapted, rather than adopting or replicating the QI project itself (Ovretveit, 2011).

Recent published reviews on early mobilisation indicate that early mobilisation in ICU patients is safe and effective, and improve patient outcomes (Adler and Malone, 2012; Li et al., 2013; Azevedo and Gomes, 2015). However, because the focus of these reviews are patient outcomes, there is a gap in understanding implementation strategies that support early mobilisation. QI projects, which are often excluded in reviews, may provide this insight. With increasing evidence supporting early mobilisation in critically ill patients, it is important to both better understand the implementation process and critically appraise published QI reports to assess study quality (Hempel et al., 2015). This quality appraisal of QI projects is required because reports can be problematic with poor quality of measurement and interpretation of data (Portela et al., 2015).

Thus, the aim of this integrative review was to critically appraise QI projects and identify the key factors that underpinned implementation and sustainability of early mobility in adult ICU patients.

3. Methods

An integrative review methodology was used to systematically identify, search, analyse, synthesise, and summarise available QI projects. This method allows for the use of diverse study designs in order to provide a comprehensive understanding of a complex health intervention (Whittemore and Knafl, 2005).

3.1. Search methods

The SPICE framework (Setting, Perspective, Intervention, Comparison, Evaluation) (Booth, 2006) was used to formulate the research question, identify key words, inclusion and exclusion criteria; and guide the database search strategy (Table 1). A comprehensive online database search was conducted from August-September 2016 using Cumulative Index of Nursing and Allied Health Literature (CINAHL); Medline (via EBSCO Host). Guided by search terms previously used in systematic reviews of early mobilisation (Castro-Avila et al., 2015; Li et al., 2013); our search terms including intensive care unit or critical care or intensive care or ICU were combined with the Boolean operators 'and/or' with the following terms: mobility; mobili*; ambulation; walking; program; quality; quality improvement; intervention; initiative; protocol. Searches were performed without language restrictions or exclusion terms; and date limiters were not set in order to ensure we did not miss QI initiatives. Articles were included if they addressed QI projects on the implementation of early mobilisation in adult (age > 18 years old) intensive care unit patients; requiring mechanical ventilation with an artificial airway (endotracheal tube or tracheostomy). Articles were excluded if they identified hospital wards other then an intensive care; intensive care patients without an artificial