

The Effects of Designated ICU Beds on Quality Care Indicators in Oncology Patients

Lillian Rubenstein, BSN Candidate & Brenda Shelton, DNP, RN, CCRN, AOCN

JOHNS HOPKINS UNIVERSITY SCHOOL OF NURSING, BALTIMORE, MD; JOHNS HOPKINS HOSPITAL, BALTIMORE, MD

1 Background

- The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins Hospital historically managed patients with an integrated practice model of care in which the oncology team provided primary care of patients with consultation and assistance of intensivists. This helped ensure that oncologic issues were in the forefront of care and allowed patients to remain on the same unit throughout their inpatient experience.
- Leadership changes and growing acuity of non-critically ill patients led to a re-evaluation of practice in early 2014. On October 19, 2014, a new cohorting model was implemented in which critically ill inpatient and outpatient oncology patients were transferred or admitted to a unit with designated ICU beds. There, primary care is provided by the pulmonary/critical care service with the support of specialty trained on-call physicians and critical care trained nurses.
- This QI pilot study evaluates the differences in quality care metrics between the integrated model of care (pre-implementation) and the cohort model (post-implementation).

2 Objectives

- This QI pilot study aimed to evaluate whether the care of critically ill oncology patients was changed by the implementation of the cohort model.
- This model change involved the following adjustments in care:
 - The pulmonary/critical care intensivists acting as primary directors of critical care, with communication and consultative involvement of oncologists.
 - Advanced practitioners in oncology and critical care acting as the primary providers of care rather than medicine house staff physicians.
 - Care provided by one group of critical care trained nurses on a single designated unit.

3 Methods

- A random sample of eighteen patients receiving mechanical ventilation in the six months prior to implementation of the cohorting model and sixteen patients after implementation of the cohorting model were evaluated retrospectively by chart review.
- Post-implementation data were collected for patients who became critically ill at least three months after the start of cohorting to allow for a period of adjustment for staff. Six quality care indicators based on previously studied and accepted best practices for ventilated patients were reviewed (Burns, 2006; Klompas, 2015):
 - Percent of time wean screen, mouth care, Richmond Agitation-Sedation Scale (RASS), and head of bed at 30 degrees or higher documented at least every four hours.
 - Percent of time blood glucose readings were within desired range (71-179).
 - Mobility scores for first and last four days of ventilation.
- Outcome data in the form of hours of mechanical ventilation was also compared between the populations.
- If the patient was mechanically ventilated for over eight days, quality care indicator data was only reviewed for the first and last four days.
- Data was then analyzed in SPSS to determine whether statistically significant differences in care occurred.

4 Results

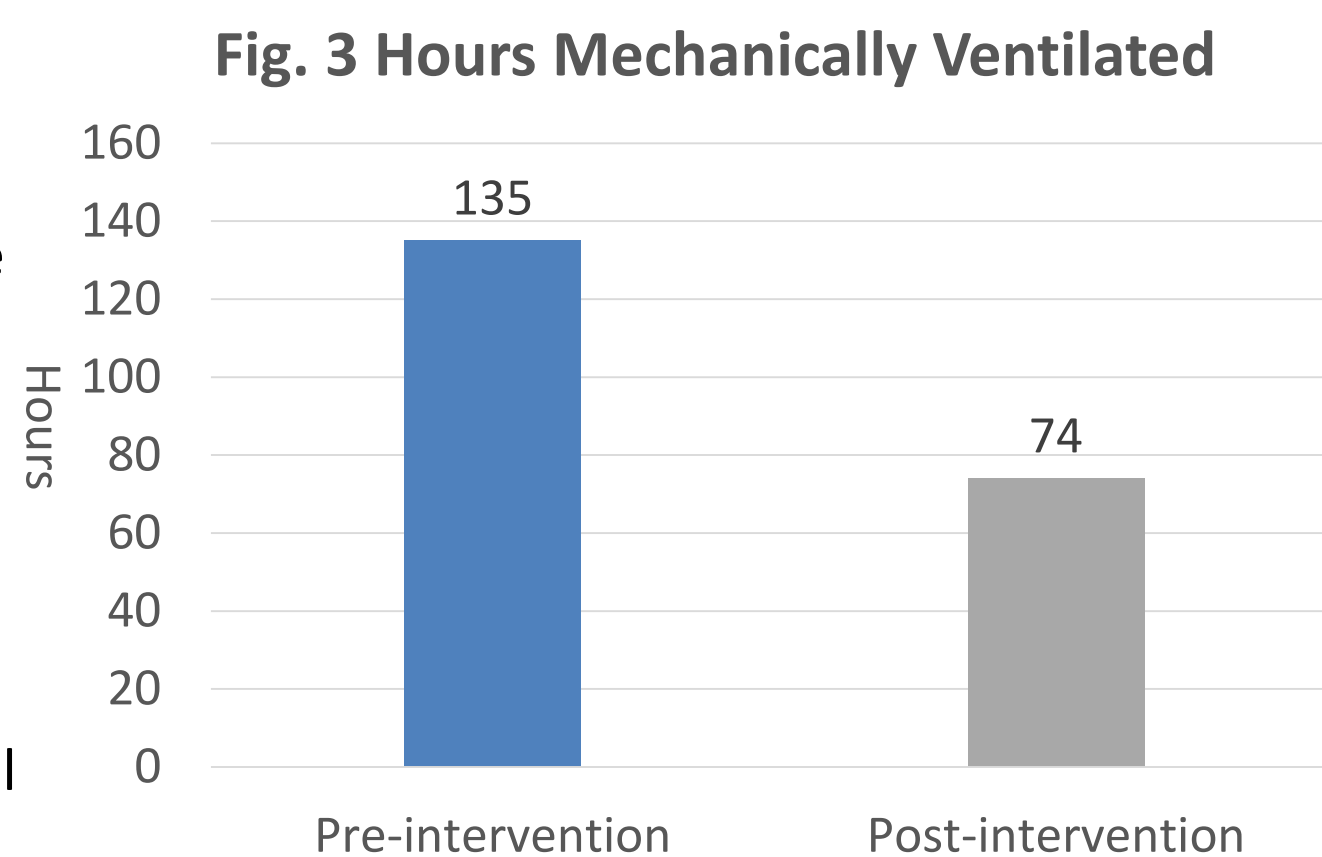
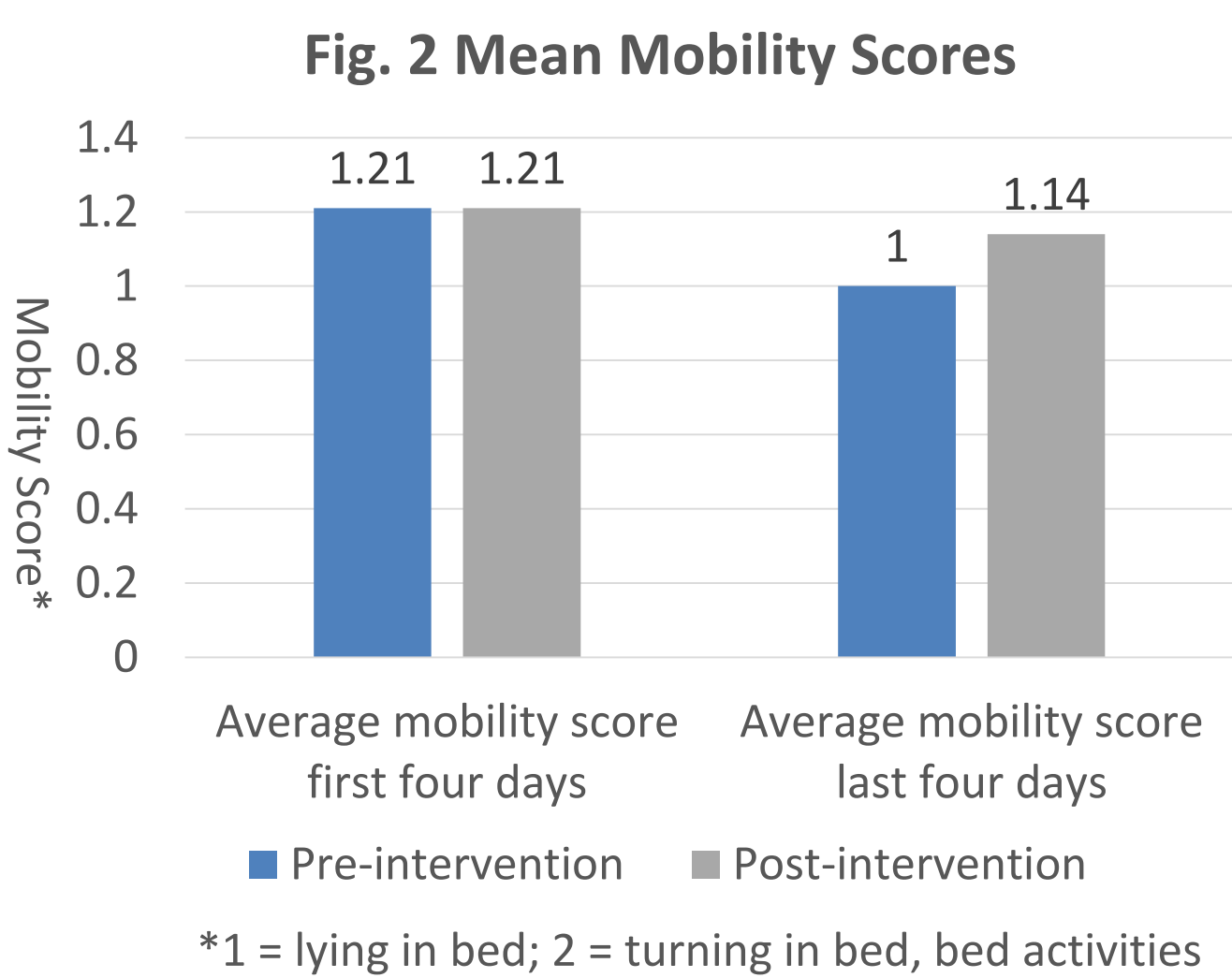
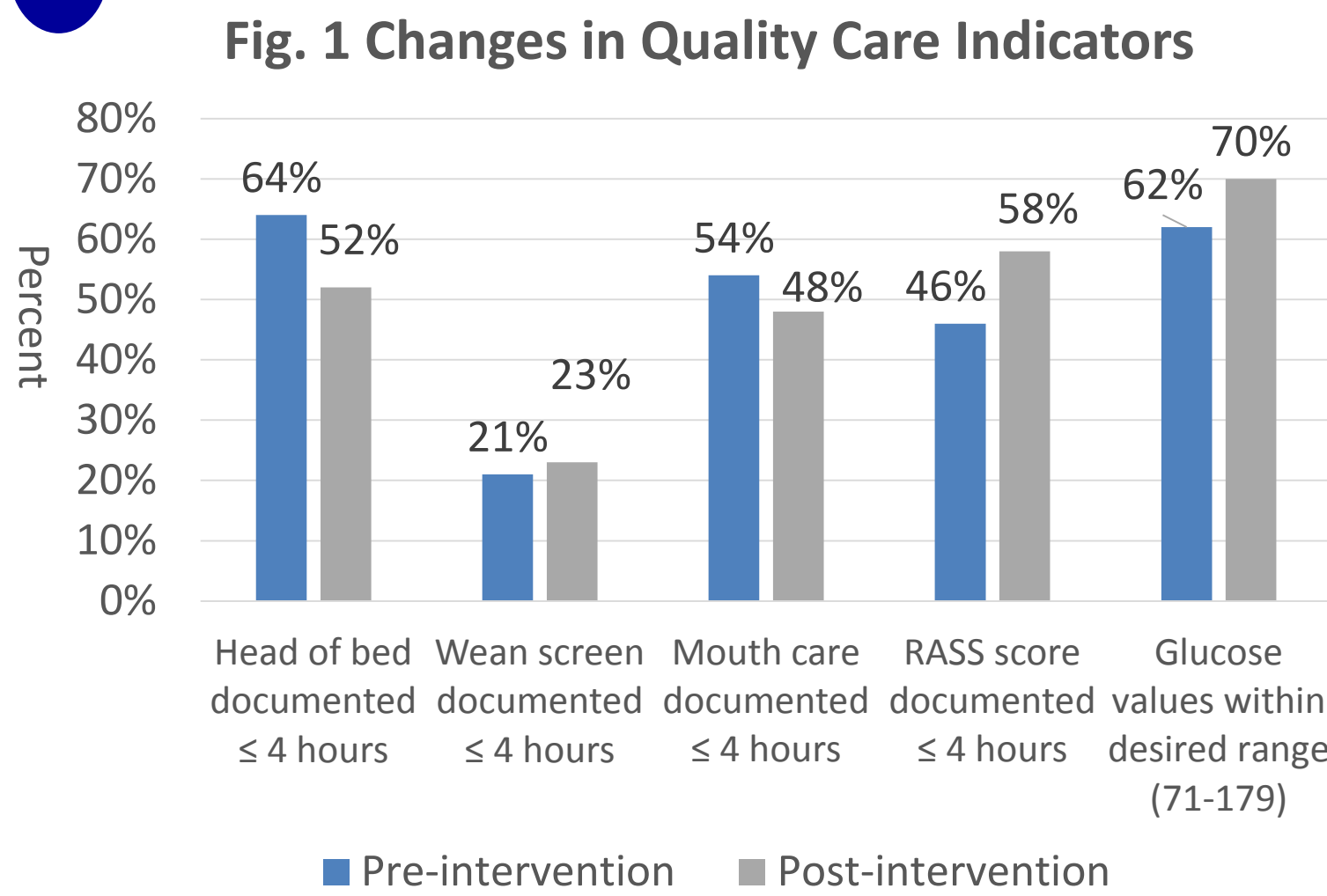


Fig. 4 Significance of Quality Care Indicators

Quality Care Indicator	Significance (Independent samples T-test, alpha = .05)
Head of bed documented ≤ 4 hours	.276
Wean screen documented ≤ 4 hours	.913
Mouth care documented ≤ 4 hours	.373
RASS score documented ≤ 4 hours	.446
Glucose values within desired range (71-179)	.491
Number of hours of mechanical ventilation	.148
Number of hours of mechanical ventilation*	.120
Average mobility score first four days	.965
Average mobility score last four days	.356

*Outlier of 1598 hours removed from pre-intervention group

5 Conclusions

- The percent of time wean screen and RASS score were documented at least every 4 hours improved post-implementation.
- The percent of the time glucose values were within range and the mean mobility score in the last four days of critical illness increased post-implementation.
- The hours of mechanical ventilation decreased post-implementation.
- These improvements in quality care indicators post-implementation show some positive trends towards providing best practice care for ventilated patients. However, none of these changes were statistically significant at alpha = .05.
- This study looked at only a small percentage of best practice indicators for mechanically ventilated patients.
- The accuracy of this pilot study depends on the reliability of nurse and physician charting.

6 Future Directions

- This pilot project should be repeated and expanded as the number of critically ill patients receiving care in designated ICU beds increases to allow for a great sample size.
- A larger sample size and additional quality care indicators will give a more comprehensive view of changes in care since the implementation of cohorting.
- Qualitative data from those oncology nurses and physicians who worked pre- and post-implementation may also be collected to supplement chart review and gain a deeper understanding of changes (or lack thereof) in care practices.

7 References

1. Burns, S. (2006). *AACN Protocols for Practice: Care of Mechanically Ventilated Patients* (2nd ed.). Boston, MA: Jones and Bartlett Publishers.
2. Klompas, M. (2015). Potential Strategies to Prevent Ventilator-Associated Events. *Am J Respir Crit Care Med*. Advance online publication. <http://dx.doi.org/10.1164/rccm.201506-1161CI>

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