Reducing Post-Operative Respiratory Failure on Medical-Surgical Units through a Nursing Best Practice Bundle, I-COUGH: A Quality Improvement Initiative

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Introduction

- Post-operative respiratory failure has an incidence rate of 0.2-7.5%, with a 25-40% mortality.
- Post-operative respiratory failure is associated with increased morbidity, mortality, and significant healthcare costs.

Background

I-COUGH: incentive spirometry, coughing and deep breathing, oral care (brushing teeth and using mouthwash twice daily), understanding (patient and family education), getting out of bed frequently (at least three times daily), and head-of-bed elevations showed promising results in reducing Acute Respiratory Failure (ARF) in medical surgical units.

Purpose and Aims

This quality improvement project evaluated the impact of a nursing care bundle for the management of post-operative patients on medical-surgical unit.

Aims were:

1. To increase the nursing knowledge around post-operative respiratory failure and I-COUGH a best-practice nursing care bundle by the date of I-COUGH implementation in Fall 2021.
2. To increase the nursing care provided in the post-operative period to decrease the number of post-operative respiratory failure in the Medical-Surgical population by implementing a best-practice nursing care bundle over 12-weeks.
3. Determine the compliance of the nursing care bundle interventions implemented with I-COUGH over 12-weeks.

Methods

Design/Setting: Pre/post implementation design on a not-for-profit community hospital in Northeastern Maryland between August thru December 2021
Intervention: I-COUGH bundled nursing intervention
Measures:
1. Change in pre and post test scores.
2. Change in documented nursing interventions and post-operative respiratory failure cases.
3. Change in documented bundled interventions.
Statistical Analysis: SPSS version software using descriptive statistics
Patient Sample: Patients that were adults age 18 or older, admitted to a acute care unit, post-surgery, current patient, & met Maryland Hospital Association criteria for ARF
Nurse Sample: Medical-surgical unit
Convenience sampling was used.

Results

Aim 1: 36 RNs completed the pre-education test scores: average of 17% (SD 11). Post-education test scores: average of 92% (SD 8) average. Statistically significant improvement in test scores utilizing the Wilcoxon signed-rank test (p = 0.00).
Aim 2: Process Measure: 40 patient charts were reviewed pre and post. All the interventions had increased compliance and documented. Cough/deep breathing increased from 38% to 73% post-intervention, and was statistically significant. Incentive spirometry use increased from 40% to 75% post-intervention.
Outcome Measure: three cases over the four months pre-intervention to zero post-intervention.
Aim 3: Bundled intervention pre-intervention compliance was 20% compared to 57.5% post-intervention.

Intervention n (%)	Pre-Intervention (n = 40)	Post-Intervention: Prepared dataset (n= 40)
Incentive Spirometry Use	16 (40.0)	30 (75.0)
Cough/Deep Breathing	15 (38.0)	29 (73.0)
Oral Care	41 (77.5)	34 (85.0)
Patient Understanding	35 (87.5)	38 (95.0)
Out of Bed	28 (70.0)	35 (87.5)
Head of Bed Elevated	29 (72.5)	36 (90.0)
Entire Bundle Completed	8 (20.0)	23 (57.5)

Discussion and Limitations

Findings demonstrated an increase in bundle intervention, nursing knowledge, and reduction in patient cases of post-operative respiratory failure.
Limitations: Use of a prepared dataset, COVID-19, small sample size

Conclusion

Nurse-driven care bundles can improve post-operative patient outcomes.
Sustainability: unit champions, interventions as unit metrics that must be met quarterly
Future research: Future randomized control trials (RCTs) using the I-COUGH interventions

References

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