Challenges of Sustaining Momentum in Quality Improvement: Lessons from a Multidisciplinary Postoperative Pulmonary Care Program

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Postoperative Pulmonary Complications

- NSQIP definition includes
  - Postoperative pneumonia
  - Unplanned intubation
  - Failure to liberate from mechanical ventilation

- Morbid
- Costly
  - Some have estimated attributable cost at $52,466 per occurrence

- Ventilator-associated pneumonia is well described, but there is paucity of literature about prevention of non-VAP postoperative pulmonary complications

Pneumonia – Calendar Year 2009

Observed Rate: 2.55%

O/E Ratio: 2.13

Status: Needs Improvement
Unplanned Intubation – Calendar Year 2009

Observed Rate: 1.98%

O/E Ratio: 2.10

Status: Needs Improvement
Objective

To design, implement, and determine the efficacy of a standardized suite of interventions for reducing postoperative pulmonary complications to link outcomes to performance measures over time.
Setting

- Boston Medical Center
- Merger of Boston City Hospital and Boston University Hospital
- An urban, academic, safety-net hospital
- 509 licensed beds
- One-quarter of patients do not speak English
- Racial and ethnic minorities constitute 70% of all patients
# Pulmonary Care Working Group

## Composition
- Surgery (Attending Surgeons and Residents)
- Nursing (ICU and Ward Nurses)
- Quality Improvement
- NSQIP Team
- Respiratory Therapy
- Internal Medicine Preoperative Assessment Clinic
- Infection Control
- Physical Therapy

## Goals
- Understand hospital practices
- Review literature on postoperative pulmonary care
- Multidisciplinary approach
- Bundled interventions
- Establish a simple, inexpensive suite of pulmonary care guidelines

## Consensus
- Lung expansion exercises
- Early frequent mobilization
- Oral hygiene
- Education
I COUGH

- Incentive spirometry
- Cough and deep breathe
- Oral care (brushing teeth and using mouthwash twice daily)
- Understanding (patient, family, staff, nursing, and physician education)
- Get out of bed
- Head of bed elevation
I COUGH Elements

• Preoperative and postoperative education of patients and families
  – Brochures
  – Videos
  – Posters
  – Multiple language translations
  – IS demonstration
  – Simple instructions
  – Multiple settings

• Ongoing education & feedback for multi-disciplinary staff
  – Performance assessment data
  – Outcomes data
  – Need for improvement
  – Rationale for I COUGH interventions

• Standardized order sets
Nursing Audits

- Nursing practice was audited before and after implementation of I COUGH, with particular attention to:
  - Patients being out of bed
  - Head of bed elevation
  - Incentive spirometry availability

- Audits were performed three times daily by QI staff

- Nurses were unaware of initial audits
# Pulmonary Care Trends

<table>
<thead>
<tr>
<th>Care Standard</th>
<th>Percent Compliance</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Pre-ICOUGH</td>
<td>Immediately Post-ICOUGH</td>
<td></td>
</tr>
<tr>
<td>Out of Bed</td>
<td>20%</td>
<td>69%</td>
<td></td>
</tr>
<tr>
<td>HOB &gt; 30°</td>
<td>91%</td>
<td>83%</td>
<td></td>
</tr>
<tr>
<td>Incentive Spirometry</td>
<td>53%</td>
<td>77%</td>
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Unplanned Intubation

Before I COUGH

I COUGH Transition

After I COUGH

Raw Data (%)

Risk Adjusted Ratio (O/E or OR)

# Pulmonary Care Trends

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<tr>
<th>Care Standard</th>
<th>Pre-ICOUGH</th>
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<th>Two Years Post-ICOUGH</th>
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<tr>
<td>Out of Bed</td>
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<td>29%</td>
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<tr>
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Postoperative Pneumonia

Risk Adjusted Ratio

Before I COUGH | I COUGH Transition | After I COUGH

Raw Data %

BMC Pneumonia %

Comparable Hospitals % Raw Data

BMC Risk Adjusted Data


Before I COUGH | I COUGH Transition | After I COUGH
Initial Keys to Success

• Involvement of multidisciplinary team

• Standardization of care

• Simplicity

• Education of patients and families

• Education of nurses, physicians, and staff
Failure of Momentum

- Loss of institutional support of audits and patient/family education
- Loss of QI Department support
- Inability to initially establish as standard of care across all subspecialty surgery services
- Failure to provide continuous performance feedback
- Misinterpretation of performance feedback as confrontational rather than collegial
- Loss of novelty; redirection of priorities
Rejuvenation of I COUGH

- Data collection, analysis, and presentation
- Control of pre-procedure clinic
  - Risk assessment at every pre-procedure visit
  - Smoking cessation support
  - Respiratory therapy consults for high-risk patients
- Grants for AV support
- ICU efforts
  - Mobilization
  - Sedation vacations
  - RN/RT initiated ventilator weans
  - Biweekly ICU meetings
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Strategies for Sustaining Momentum

• Continuous performance evaluation, along with continuous and constructive performance feedback to nurses and physicians

• Linking performance to outcome measures

• Ongoing education about quality principles

• Uniform standards across all subspecialties

• Personnel and leadership support

• Establishing commitment to quality as the essence of culture