

# Obstructive Sleep Apnea: A Multidisciplinary Team Approach to Reduce Respiratory

## Complications and ICU Admissions



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PACU

CNS

RT

IT

SDS

Pulmonology

Anesthesia

Surgery

PI

### Purpose

A retrospective chart review revealed two post operative patients who had respiratory events leading to ICU admissions were possibly related to undiagnosed Obstructive Sleep Apnea (OSA). A process was needed to screen, educate, and monitor patients with known OSA and those at risk for OSA.

### Background

- Nearly 80% of men and 93% of women with moderate to severe sleep apnea are undiagnosed (Chung, et al., 2008, [2]).
- Patients with OSA have an increased risk for re-intubations, unexpected ICU transfers, and post-operative infections compared with non-OSA patients (Gammon, 2012).

### Methods

A multidisciplinary team was formed to develop an action plan.

- 1 Patients on patient controlled analgesia (PCA) were placed on capnography and/or oximetry as the first step in addressing the post operative respiratory complications.
- 2 Surgical patients were evaluated preoperatively using the STOP BANG OSA screening tool followed by an algorithm for monitoring and treatment.
  - Patients with a history of, or those found to be at risk for, OSA were placed on capnography monitoring in the Post Anesthesia Care Unit (PACU). Admitted patients continued to be monitored with capnography until discharge.
  - Patients with recurrent respiratory events consistent with OSA were placed on noninvasive positive pressure ventilation (NIPPV).
  - Patients received OSA education upon discharge and instructions to follow up with the primary care physician, as appropriate.
- 3 After implementation the team improved and revised the algorithm:
  - Consultation and evaluation by the physician prior to placing the patient on NIPPV
  - Changes created a more optimal level of communication and care coordination

### OSA SCREENING TOOL

#### STOP BANG

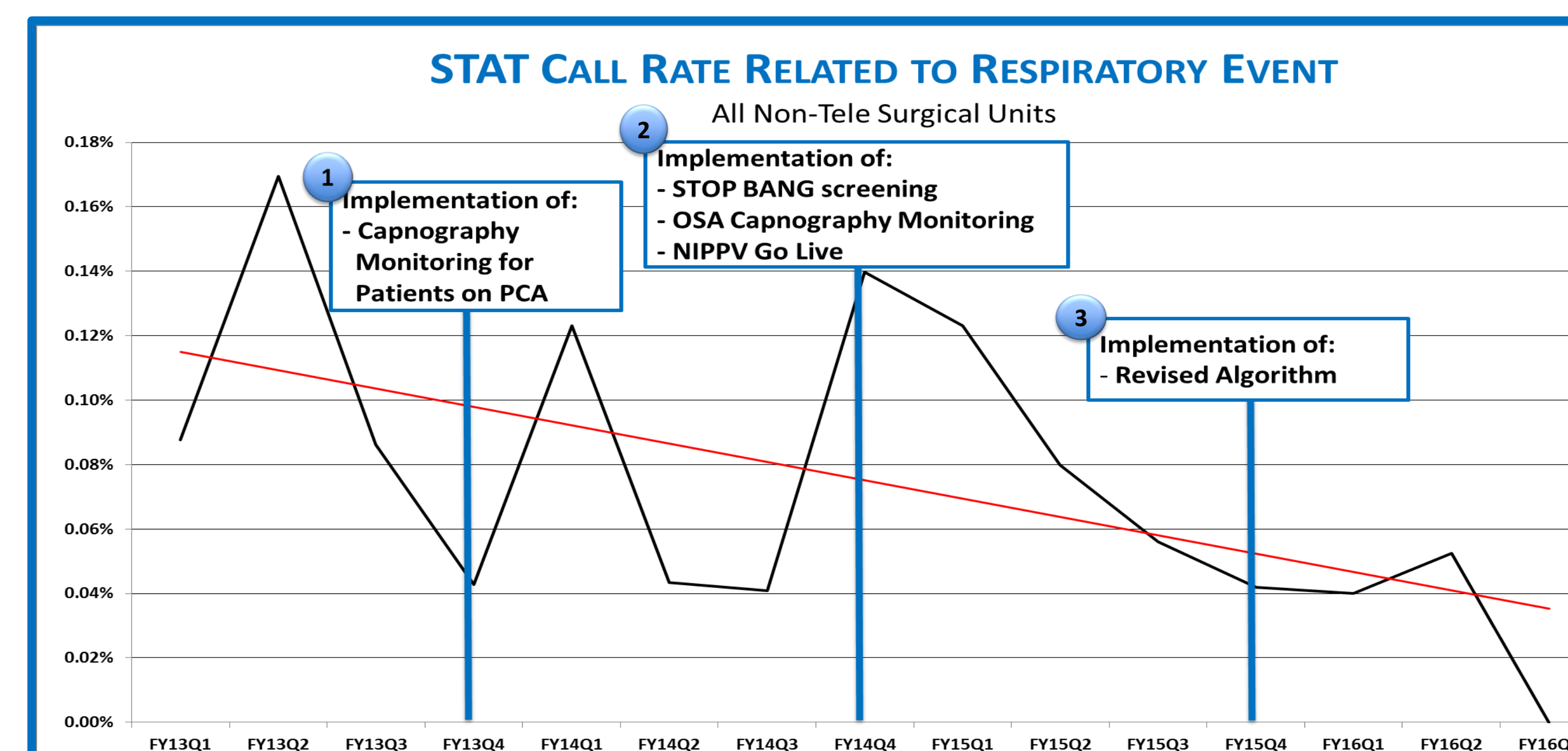
Chung, 2008

- SNORE – Have you been told you snore?
- TIRED – Are you often tired during the day?
- OBSTRUCTION – Do you know if you stop breathing or has anyone witnessed you stop breathing while you are asleep?
- PRESSURE – Do you have high blood pressure or on medication to control high blood pressure?
- BMI – Is your BMI > 28?
- AGE – Are you > 50 years old?
- NECK CIRCUMFERENCE – Is your neck circumference >17 (male) or >16 (female)?
- GENDER – Are you Male?

THE MORE QUESTIONS YES – THE GREATER THE RISK

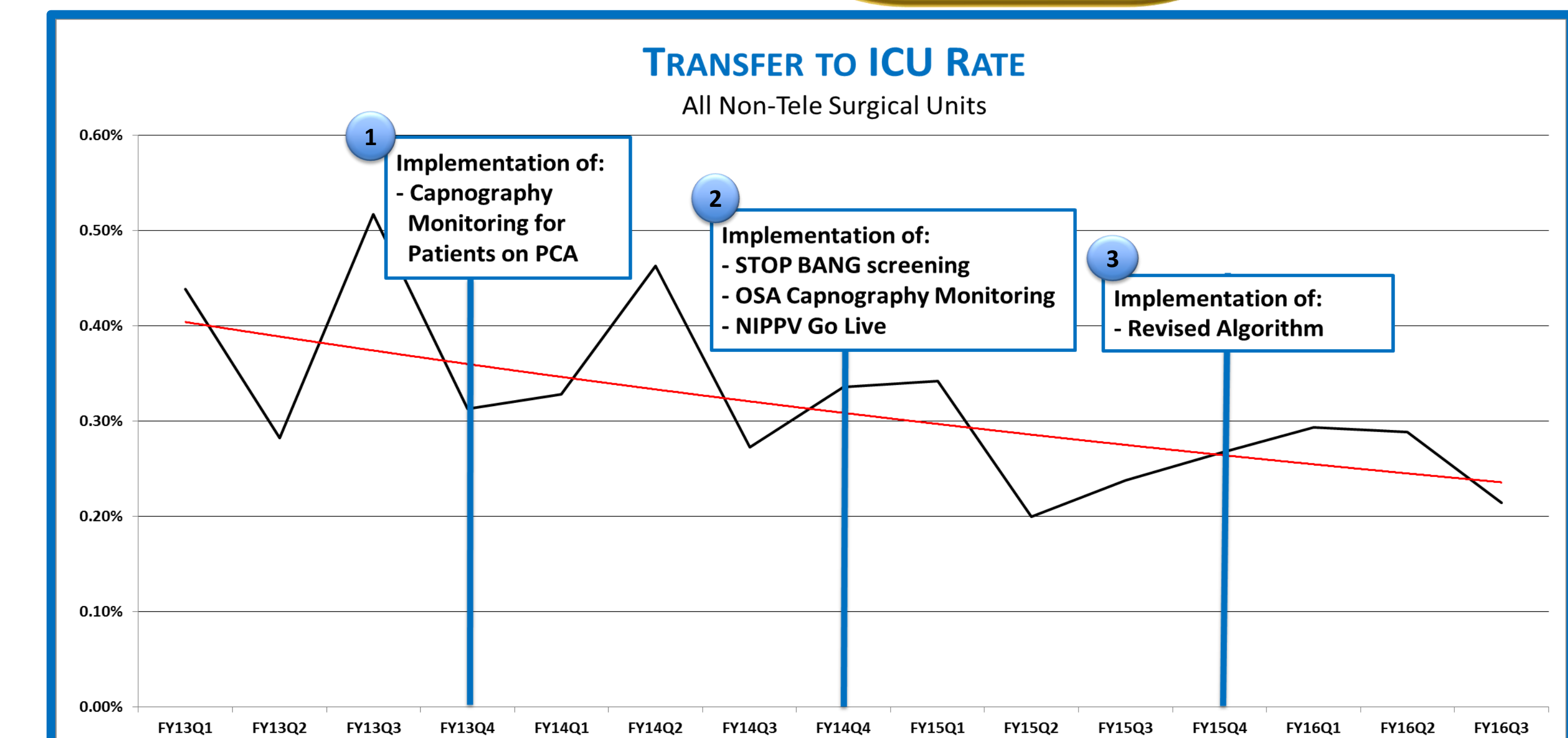
### Results

A two-tailed *t*-test with 95% confidence interval was preformed to evaluate emergency response calls related to respiratory events, transfers to ICU from non-telemetry surgical floors, and Postoperative Respiratory Failure (as defined by the Patient Safety Indicator) rates prior to the teams initiatives compared to the rates at present.

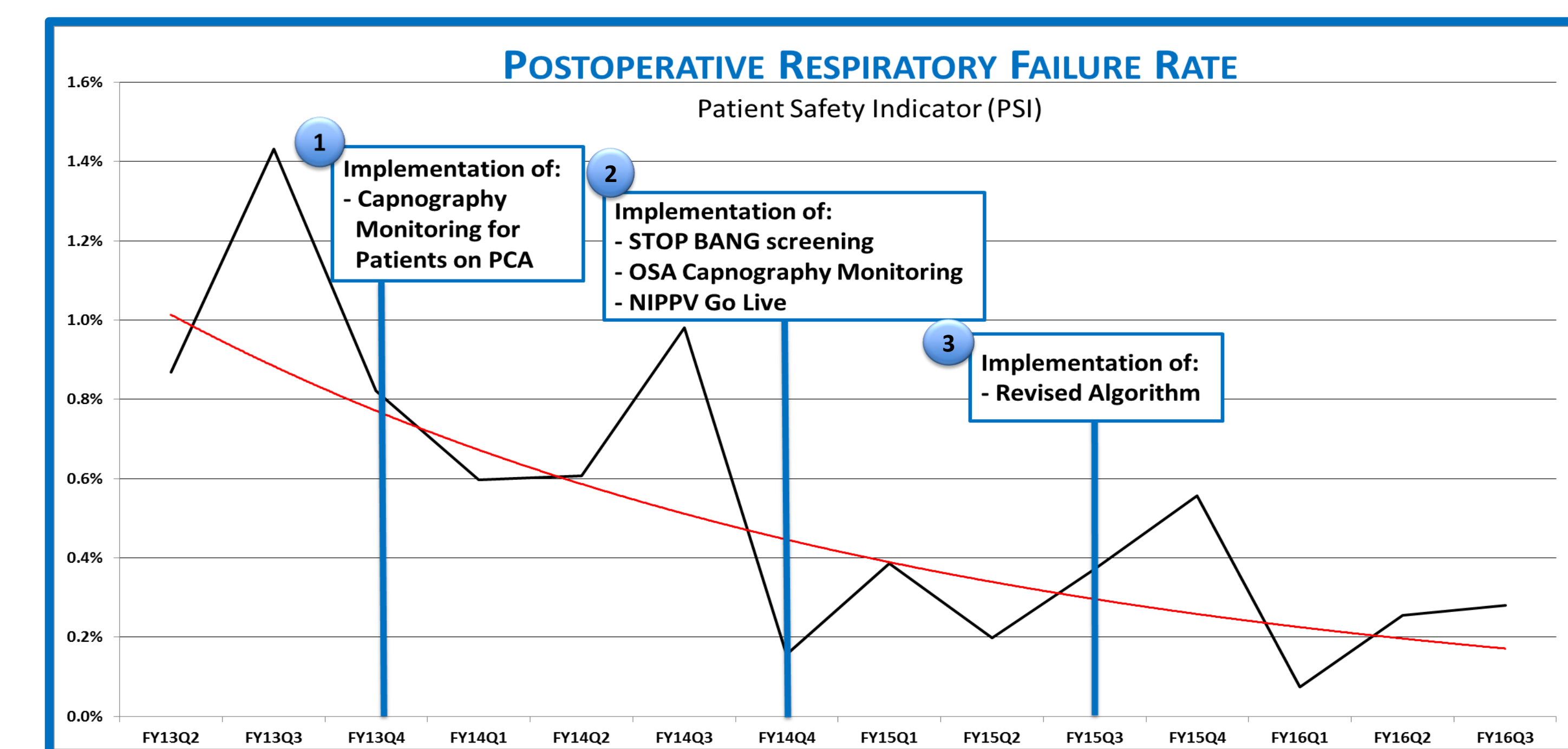


➤ **Emergency response call rates decreased from 0.088% to 0.00% ( $p < 0.01$ )**

- Upon implementation of new OSA protocol an increase in emergency calls was noted. However, the call rate decreased as nurses became more empowered through further education and experience to identify and implement interventions.



➤ **Transfer to ICU Rate decreased from 0.438% to 0.214% ( $p < 0.01$ )**



➤ **Postoperative Respiratory Failure rate decreased from 1.6% to 0.28% ( $p < 0.004$ )**

### Implications for Quality

Using a multidisciplinary team approach improved safety and quality of care for patients who had known or at risk for OSA. This project required the organization and cooperation of multiple departments and disciplines. Every link in the chain of teamwork was essential to the success of the project.

#### Next Steps:

- Development of a similar OSA screening process for non-surgical hospitalized patients with known, or at risk for OSA.
- Ongoing evaluation of the process
- Implementation of protocol for Respiratory Therapy to assess and treat patients with chronic lung issues.