

Does Digital Matter: Using a Digital Air Leak Detection Device to Decrease Chest Tube Duration

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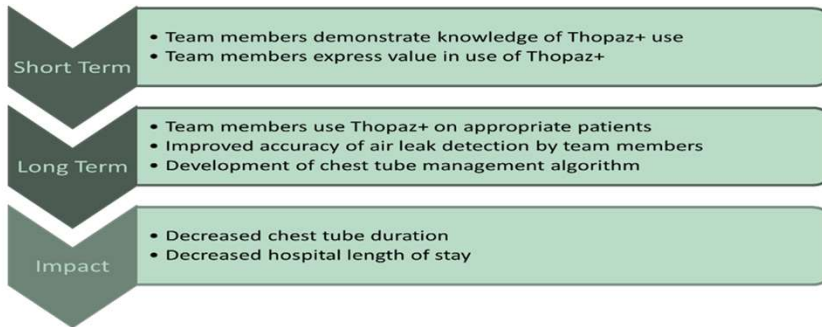
Purpose

- Determine if the utilization of a digital air leak detection device will decrease chest tube duration by one day in 50% of patients who have undergone a pulmonary lobectomy and continue to have an air leak on postoperative day (POD) 3.

Background

- Air leaks are the primary cause for hospital stay & risk for morbidities after a pulmonary lobectomy
- Air leaks can be assessed using analog or digital devices
- Digital devices provide objective, reproducible data, and reduce interobserver variability

Project Goals



Methodology

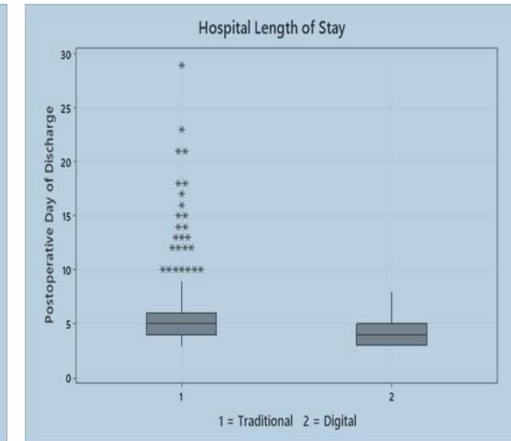
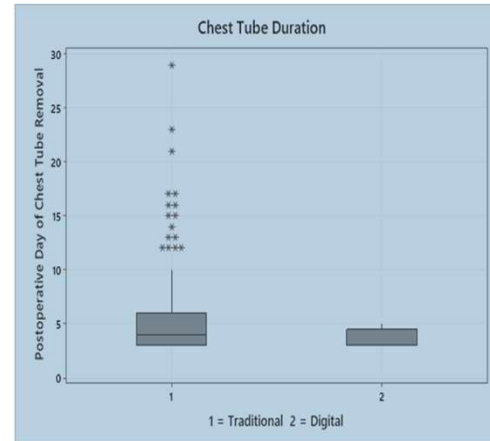
- 25 patients who had a pulmonary lobectomy were compared with historical patients from the previous 2 years for chest tube duration and hospital length of stay
- If air leak persisted on POD 3, patients were changed to the Thopaz+ digital air leak detection device
- Chest tube was removed when airflow was <20mL per minute for 8 hours, output was <400mL/24 hours, and fluid was not sanguinous or chylous



Results

Analysis using the Mann-Whitney test demonstrated:

- 56% median chest tube duration one day less than historical patients (p-value 0.010 with a 95% confidence interval)
- 72% median hospital length of stay one day less than historical patients (p-value 0.004 with a 95% confidence level)
- Cost savings of \$2659 per hospital day



Implications

- Development and implementation of a new chest tube management strategy
- Improved resource utilization for a limited resource
- A reduction in chest tube duration following a pulmonary lobectomy utilizing the digital air leak detection device:

Allows quicker
bed turnover

Decreases
hospital length of
stay

Limits risk of
morbidity

Reduces overall
costs