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## Implementation of Multipronged Approach in Patients with Chest Trauma Reduces VAP and Unplanned Admission to the ICU

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# A Multipronged Approach to Reduce Pulmonary Complications

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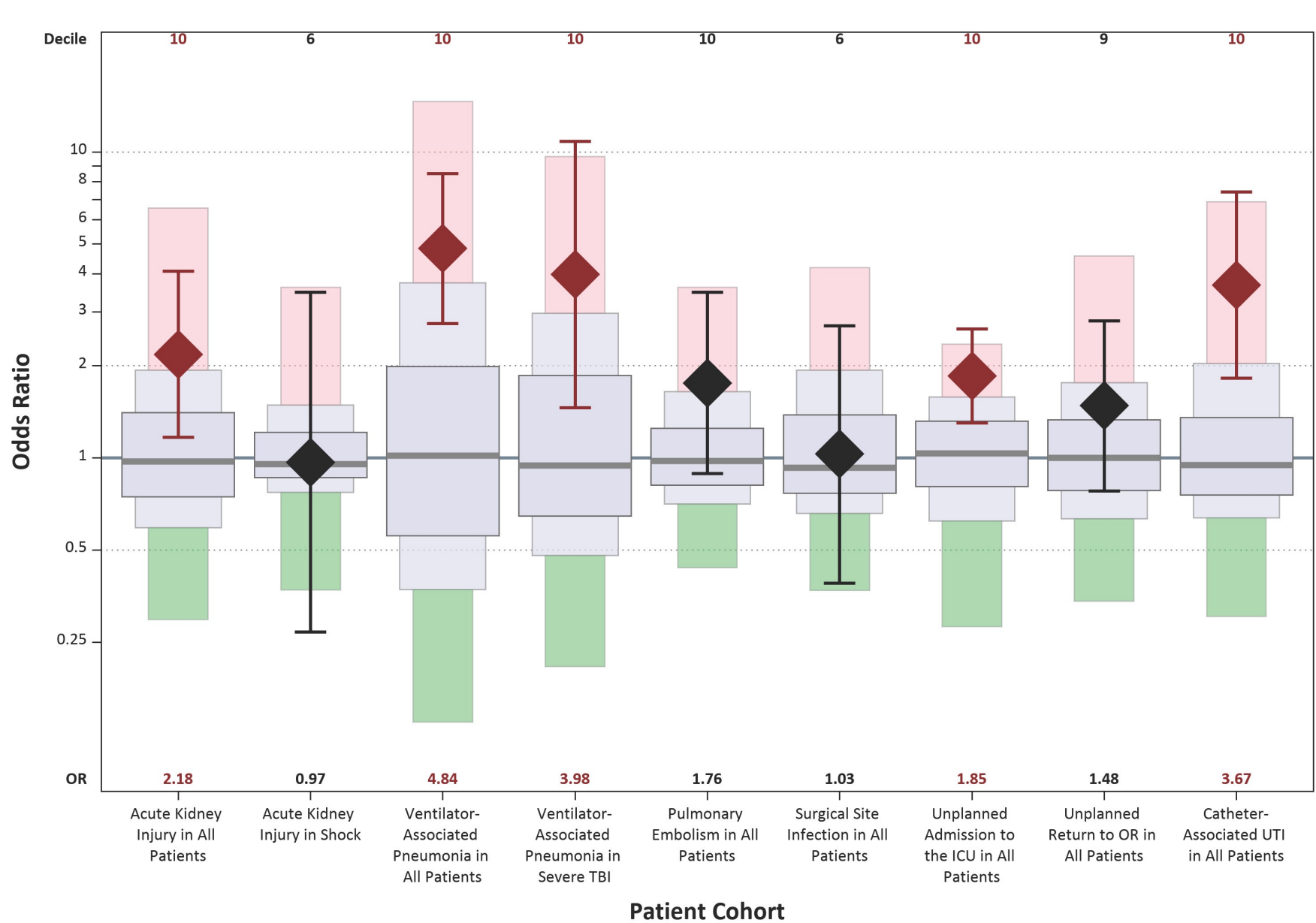
## Problem

The incidence of pulmonary complications in trauma patients with chest trauma has been reported to be as high as 49% (Ruibel L, 2022). However, all trauma patients are at risk for developing pulmonary complications due to a multitude of factors some pre-existing while others injury related sequela. Within our institution, we observed an increase in pulmonary complications through review of our TQIP (Spring 2020) and state registry data.

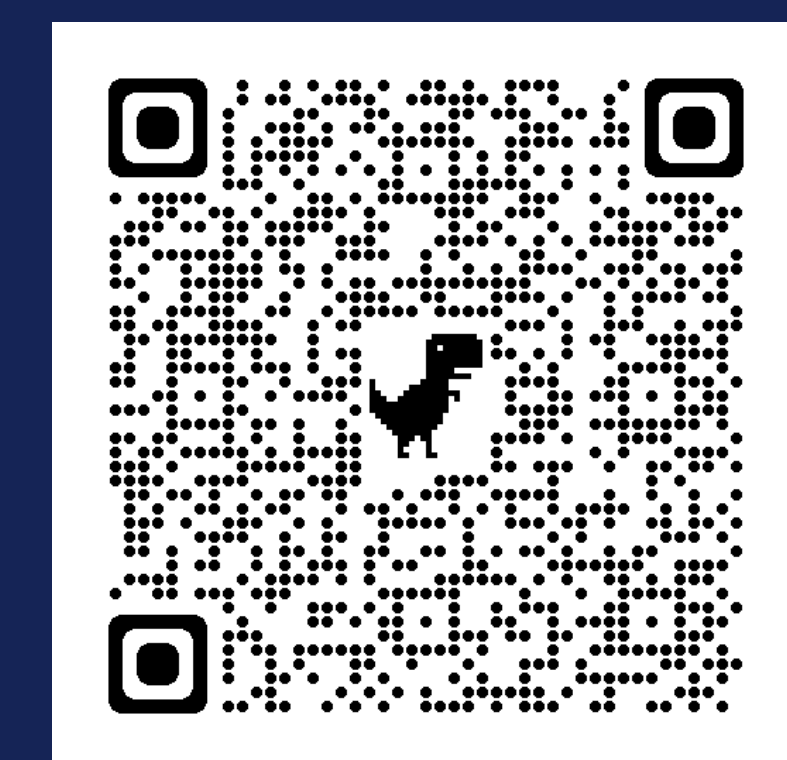
## Areas of Improvement

We identified several areas of improvement including ventilator-associated pneumonia (VAP), unplanned intubations, and unplanned ICU admissions. Concurrent and respective review identified multi-faceted issues related to pulmonary complications in our spinal cord injury, rib fracture, geriatric, and burn patients. Multiple practice changes were implemented to reduce pulmonary complications. I Cough was re-implemented in conjunction with the Yale Swallow Screening. A rib fracture guideline was developed for patients with 3 or more rib fractures and our geriatric guideline and order set was updated. In addition to the practice changes, we collaborated with trauma centers in our state to review and ensure proper classification of VAP through utilization of a check list.

Spring 2020 TQIP Benchmark Report ID: 192  
 Figure 5: Risk-Adjusted Specific Complications by Complication/Cohort



# Implementation of multipronged approach in patients with chest trauma reduces VAP and unplanned admission to the ICU.

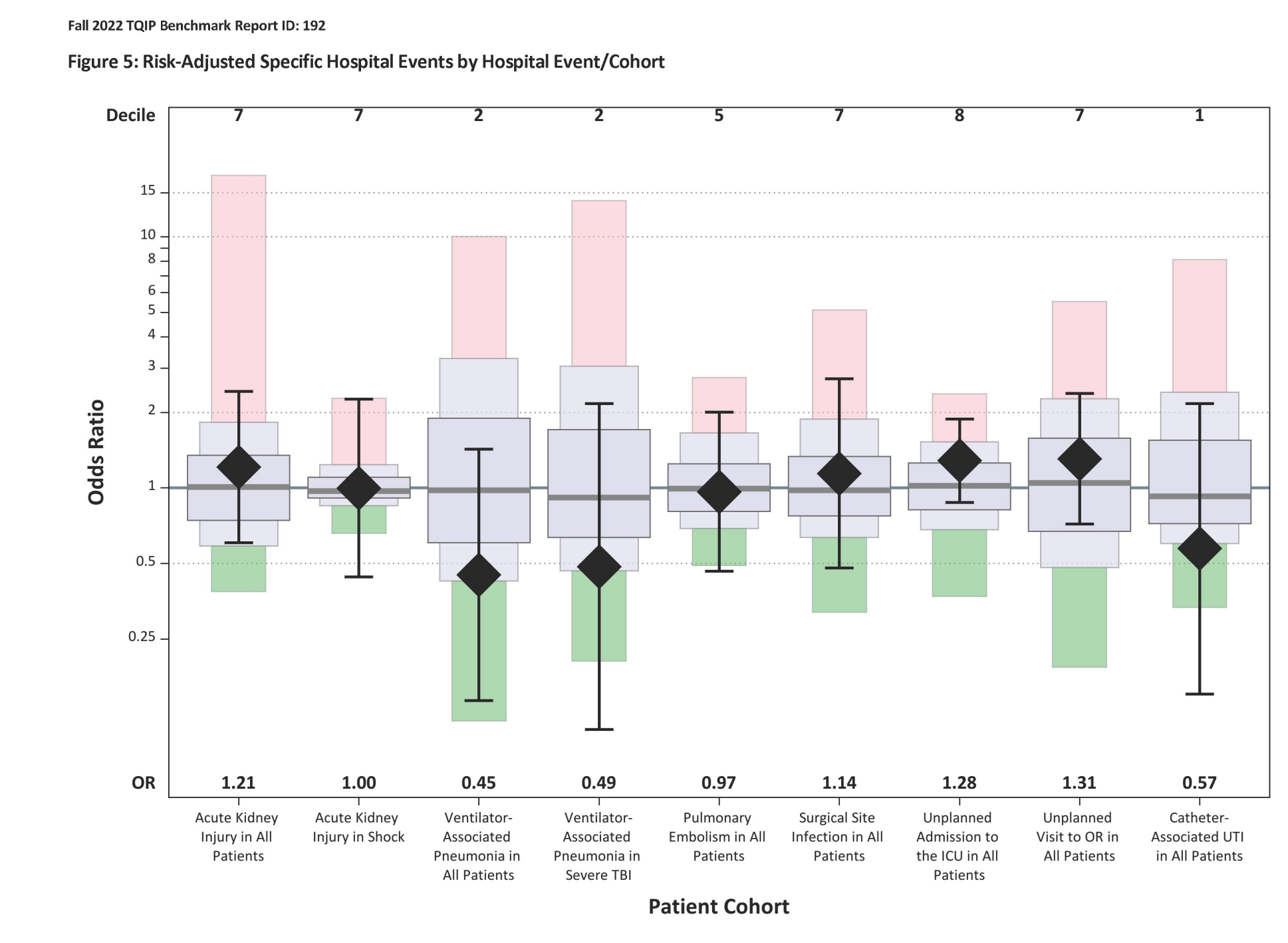


## Action Plan and Implementation

- Practice Changes:**
  - I Cough was re-implemented in conjunction with the Yale Swallow Screening.
  - Rib fracture guideline for patients with 3 or more fractures.
  - Updated our geriatric guideline and order set.
- Collaboration:**
  - Participation in State TQIP Collaborative analyze the VAP definition and proper classification
- Validation:**
  - Implementation of VAP checklist from State TQIP Collaborative working group

## Effect Post Implementation

We observed a reduction (TQIP Fall 2022) from the 10th decile for both VAP and unplanned admission to the ICU to 2nd decile for VAP, and the 8th decile for unplanned admission to the ICU.



## Sustaining Change

Continued reassessment utilizing dashboards for compliance of interventions, state registry data. Further process improvements including post extubation management guidelines and EPIC visual alerts in an attempt to sustain the observed improvement and further reduce our pulmonary complications.

