UTILIZATION OF AN INNOVATIVE REAL-TIME BEDSIDE SURVEILLANCE AND EARLY WARNING ALERT SYSTEM TO IMPROVE ADHERENCE TO LOW TIDAL VOLUME VENTILATION FOR PATIENT ON MECHANICAL VENTILATION

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Background
It is historically known that for patients with acute respiratory distress syndrome (ARDS) , mechanical ventilation (MV) with low tidal volume strategies (LTV) helps reduce mortality, length of stay, and duration of MV. Even in patients without ARDS, LTV has been associated with a lower risk of subsequent development of ARDS, pulmonary infections, and mortality. Also, delayed implementation of LTV strategies are associated with increased ICU mortality. Utilization of LTV during MV is a simple, virtually no-cost, low-risk intervention that saves lives and reduces costs and resource utilization. Despite this widely recognized benefit, adherence rates to LTV in both community and academic settings remain quite low, with recent studies reporting adherence rates ranging from 7-37%.

Objectives
The objective of this study is to determine if a novel bedside, real-time surveillance and early warning system helps to improve timely adherence to LTV strategies for patients supported with MV.

Methods
In a tertiary care, academic hospital (Baylor St. Luke's Medical Center, Houston, TX USA), two medical intensive care units were equipped with large display screens above each patient's bed. For all mechanically ventilated patients, the screen displayed real-time data reflecting the delivered tidal volume (TV) and the calculated tidal volume per kilogram per probable body weight (ml/kg PBW). This value was displayed in green, yellow, or red for values ≤6, 6-8, and ≥8 ml/kg PBW, respectively. This data was recorded hourly for each mechanically ventilated patient over the course of six months. Data from the intervention group was compared to two control groups. Data from the first control group (Group A)was from the same two medical ICU's, obtained six consecutive months prior to the intervention. The second control group (Group B)was obtained from different ICU's (a combination of medical, surgical, and neurologic units) during the same six month time period as the intervention group. The primary outcome for the intervention group was the change in rates of adherence to LTV. Secondary outcomes were days of MV, ICU LOS, and rates of progression to ARDS.

Results
The weekly mean LTV adherence rate ranged from XX to XX%, with the overall mean over six months being XX%. The weekly mean LTV adherence rate for control Group A ranged from XX to XX%, with the overall mean over six months XX%. The weekly mean LTV adherence rate for control Group B ranged from XX to XX%, with the overall mean over six months XX%. The intervention group had a significant/non-significant improvement in adherence to LTV when compared to control Group A and control Group B (p=x.xx).

Discussion
TBD based on results