

# Use of upright body positioning for early rehabilitation of the critically ill patient



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## Background

Patients with acute respiratory failure are typically in bed while on mechanical ventilation. Early ICU rehabilitation strategies have been associated with improvements in some outcomes in this patient population. Our quality improvement project focused on the incorporation of upright bed position as part of early ICU rehabilitation. We focused on safety and the feasibility of upright patient positioning using a specialized bed that attained a 90° upright positioning.

## Rationale

We hypothesize that the incorporation of upright bed positioning feasible and safe in critically ill patients with acute respiratory failure.

## Methods

Mechanically ventilated, intensive care unit, hemodynamically stable patients were assessed for this project. We used a specialized bed which moves upright while keeping the patient in a strict supine position (figure 2). This project was protocol driven (Figure 1). Data collected included vital signs, angle of upright positioning, percent weight bearing while in upright position. Also, particular attention was given to the patient to evaluate for increased pain, lightheadedness, hemodynamic instability, and knee buckling. We transferred subjects from a standard critical care bed to the specialty VitalGo Total Lift Bed™. The increasing angle of incline was paused every 10° at a minimum of 5 minutes to ensure safety. Beds were supplied by VitalGo Inc. (Fort Lauderdale, FL). This project was conducted with a team of nurses, respiratory therapist, physical therapist, and supervising physician.

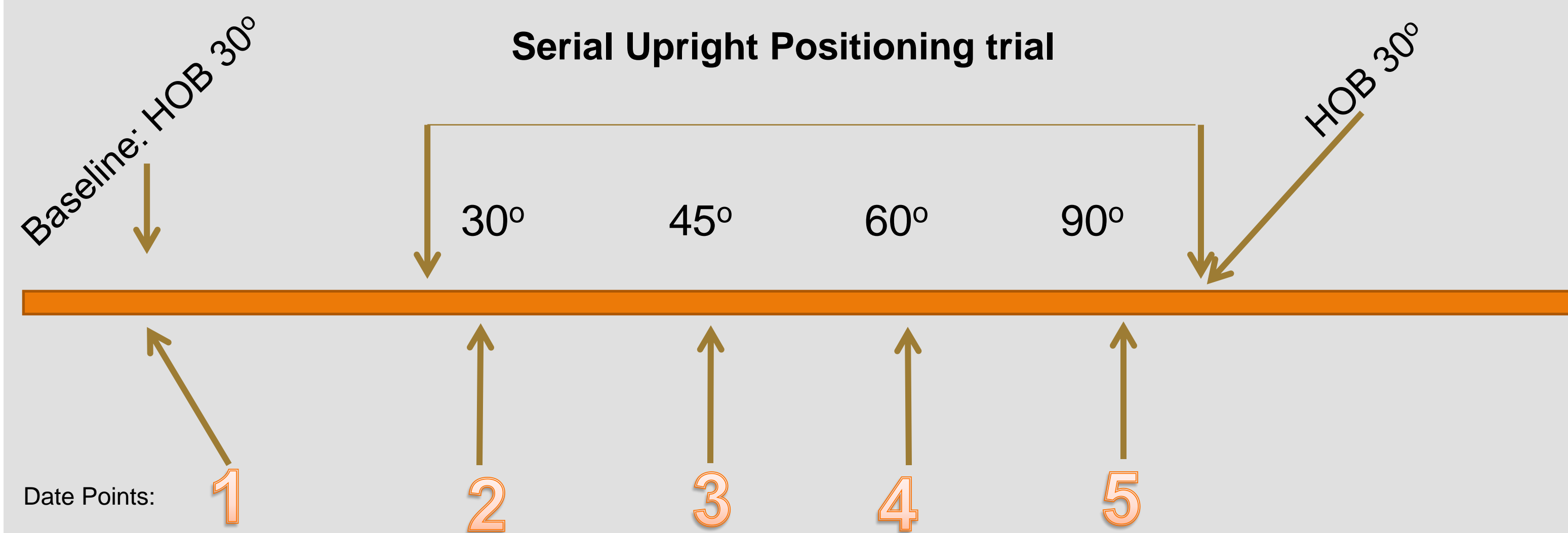


Figure 1



Figure 2, Supine



Figure 3, Upright body position

| Characteristic            | Mean (Stand. Deviation)                     |
|---------------------------|---|
| N = 14                    |   |
| Age, years                | 59.21 (+/- 12.27 )                          |
| Height, cm                | 171.61 (+/- 8.78 )                          |
| Weight, kg                | 103.46 (+/- 24.01 )                         |
| BMI, kg body weight / cm2 | 35.25 (+/- 6.60 )                           |
| Mode of ventilation       | 10 Trach Collar<br>4 Mechanical Ventilation |
| Gender                    | 6 Males<br>8 Females                        |

Table 1, Patient Characteristics

## Results

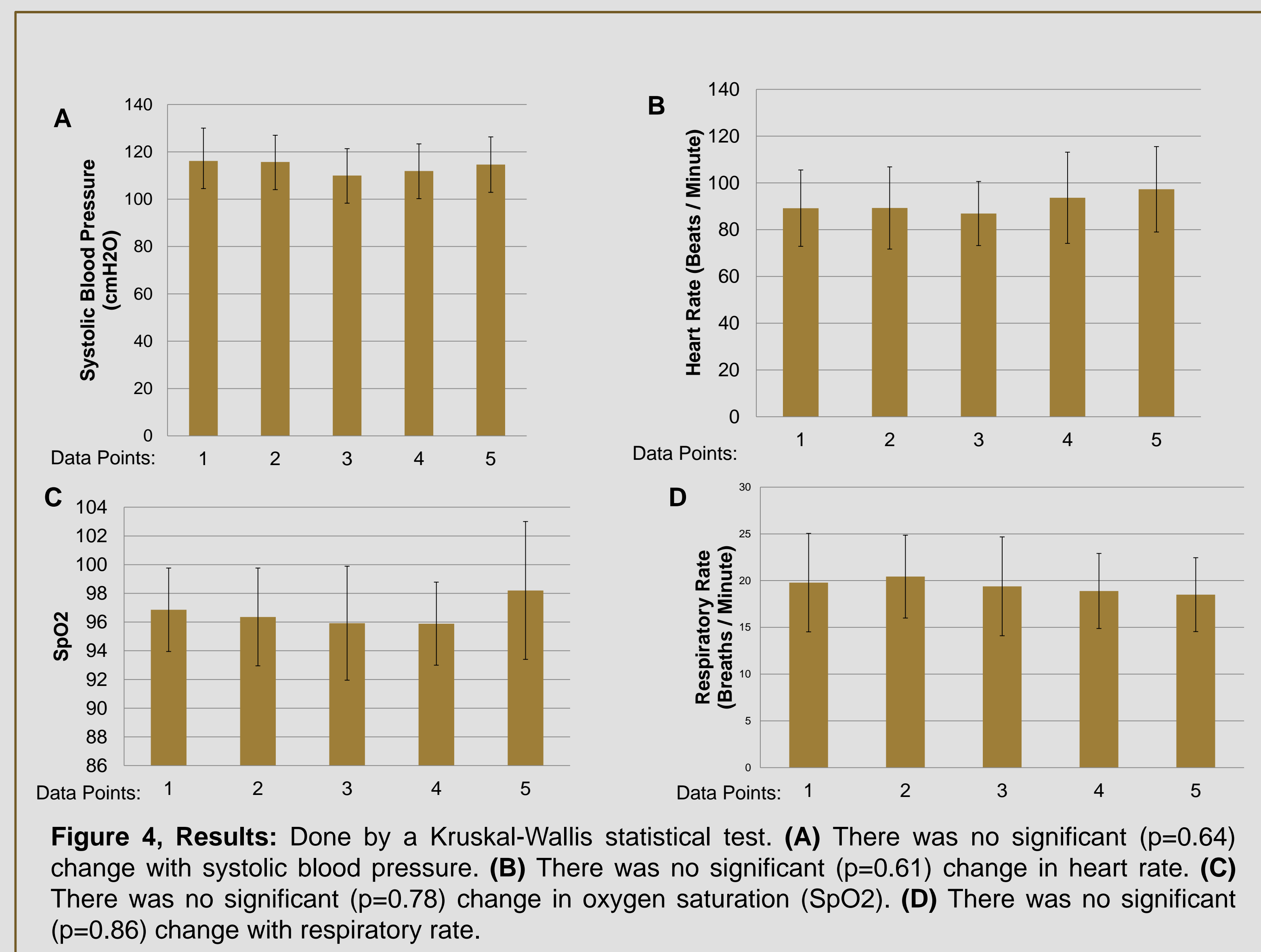


Figure 4, Results

## Conclusions

All patients were able to participate in the Quality Improvement project. All patients were transferred safely onto and off of the specialty VitalGo Total Lift Bed™. There was no statistical difference with respect to systolic blood pressure, heart rate, oxygen saturation (SpO2), and respiratory rate during the intervention. One patient did have to stop the intervention early due to hypotension. Other patients stopped before reaching 90° upright body positioning due to weakness and knee buckling which is expected in this critically ill patient population. Further quality improvement projects using upright body positioning study may allow such techniques to become incorporated into early ICU rehabilitation strategies for mechanically ventilated ICU patient populations.

## References:

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