

Elimination of Ventilator-Associated Pneumonias (VAPs) in the Surgical Intensive Care Unit at Johns Hopkins Hospital

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1 Background

VAPs are lung infections that may develop after 48 hours of the onset of intubation for patients that are mechanically ventilated. VAPs are responsible for 27-47% of infections acquired in ICUs and is considered the second most common hospital-acquired infection in the United States. VAPs lead to prolonged mechanical ventilation, increased ICU and hospital length of stay, increase in morbidity and mortality, and an average of \$40,000 cost in hospital services (Grap, et al, 2012; Koenig, et al, 2006).

The *Armstrong Institute for Quality and Safety* designed a 5 year quality improvement project to reduce the rates of VAPs in ICUs in Maryland and Pennsylvania. The project uses a VAP prevention bundle and the implementation of a Comprehensive Unit-Based Program to promote a culture of safety in efforts to eliminate VAPs.

The interventions included in the VAP prevention bundle are:

- Oral care at least every 4 hours
- Oral care with chlorhexidine every 12 hours
- Subglottic suctioning
- HOB of 30 degrees or higher
- Assessment of readiness to stop sedation
- Assessment of readiness to stop the use of mechanical ventilation

2 Objectives

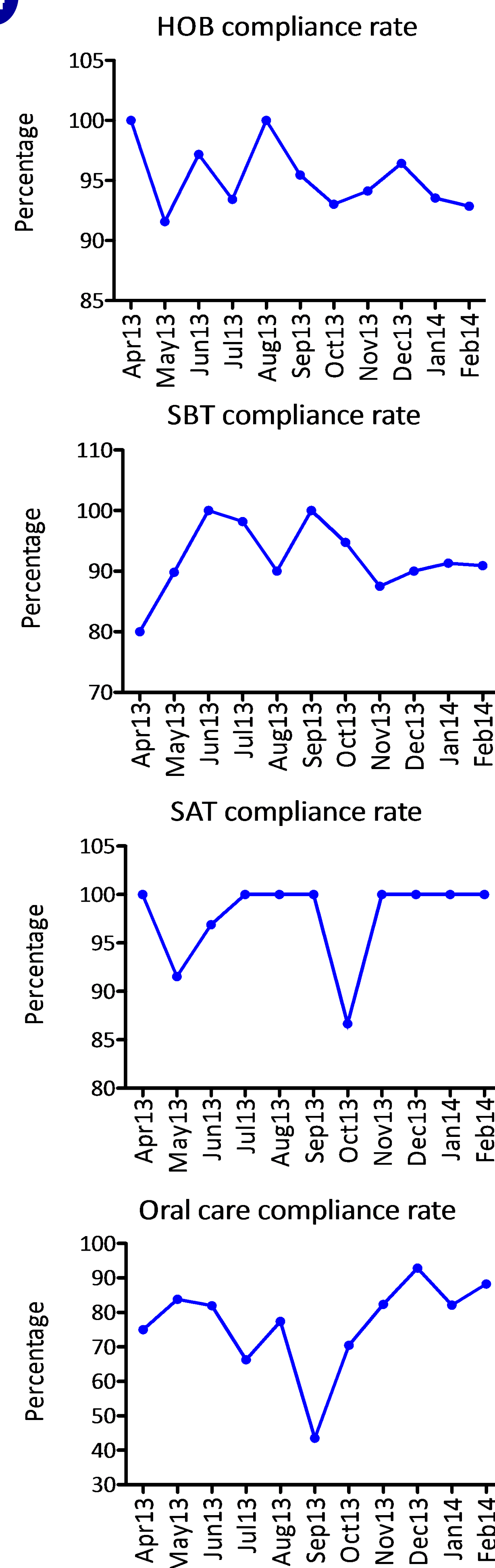
- Collect data from ventilated patients to evaluate compliance of the measures performed to reduce VAPs.
- Help pilot the collection of early mobility data on ventilated patients.

3 Methods

Data is collected on a daily basis at the SICU, JHH by observing the performance of the interventions included in the *Armstrong Institute's* VAP prevention bundle. It is then entered into the project's database, so we are able to follow our compliance rates.

The data is collected by completing the VAP Daily Rounding Form.

4 Results



Average compliance rates from Apr 2013 to Feb 2014

Interventions	Compliance rate (%)
HOB	95.2
SAT	97.7
SBT	92.0
Oral care	76.7
Oral care with CHD	82.0
Subglottic suctioning	57.2

VAPs rates from Apr 2013 to Dec 2013

Possible VAPs	0
Probable VAPs	1 (May 2013)

5 Conclusions

The introduction of interventions to reduce VAP rates has been shown to be successful. The greater the level of compliance with all the items in the prevention bundle, the better the reduction in VAP rates. Preliminary data suggests that the SICU has effectively implemented these interventions. However, a barrier that was identified was patients being off the unit for periods of times. This factor prevented 100% implementation of the interventions, thereby reducing the compliance rates. Ways to control this are a consideration for the future.

6 Future Directions

The hospital participation for the project includes 2 years of interventions and 1 year of evaluation of sustainability.

- Finish the 2nd year of data collection
- Perform year of sustainability
- Continue collection of mobility data as indicated by the *Armstrong Institute*

7 References

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2. Koenig, S.M. & Truwit, J.D. (2006). Ventilator-associated pneumonia: diagnosis, treatment, and prevention. *Clin Microbiol Rev.*, 19(4): 637-657.
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