



Effectiveness of Care Bundle for Reducing Ventilator-Associated Pneumonia in Taiwan

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Objectives

Studies in the literatures have found that healthcare-associated pneumonia increases the hospitalization stay and medical expenses. From 2015 to 2017, in Taiwan, five evidence-based elements were introduced as a care bundle module to prevent ventilator-associated pneumonia (VAP). This study investigated whether the hospital implementation of VAP bundle reduces the incidence of VAP.

Methods

A 3-year program, from 2015 to 2017, which Taiwan Center of Disease Control (CDC), the Joint Commission of Taiwan (JCT), experts, and hospitals worked cooperatively to promote VAP bundle. E-learning courses, posters, pamphlets, and workbooks were used to promote VAP care bundle, including: 1.elevation of the head of the bed between 30°–45°, 2.performing at least twice oral care with chlorhexidine solution every day, 3.emptying accumulated water in the circulated tube of respirators, 4.daily sedation vacation and 5.assessment of readiness to extubate (Fig. 1).

Eighty-six hospitals participated in this program and reported surveillance data periodically. The Poisson regression analysis was used to analyze the changes in infection density from the pre-intervention period (January 2014 to June 2015) to the post- intervention period (July 2015 to September 2017).

Results

Of 86 participating hospitals, only 17 hospitals routinely interrupt sedation 1–3 times a day and monitor sedation status before the intervention. This increased to 65 hospitals after the intervention, and 92.3% of hospitals interrupted sedation once daily. A total of 63 hospitals used the Ramsay scale, RASS, or Glasgow Coma Scale (GCS) to measure the agitation or sedation level of patients. After the intervention, the number of hospitals, which performed oral care with chlorhexidine solution at least twice a day, has increased from 47 to 85, and the rest one is performed once a day. A total of 83 hospitals established regular audits of the daily care situation during VAP bundle promotion. The results showed that infection density in 52 participated hospitals declined from 2014 to 2017 (Fig. 2).

Infection density was 1.32‰ before the intervention and 0.87‰ after the intervention ($P<0.01$). A statistically significant difference was observed.

Conclusion

The results of this study show that promoting care bundle in Taiwan increased awareness and affected behavioral changes in the participating hospitals, thereby effectively reducing the occurrence of VAP. This result serves as a reference for the Taiwan CDC and domestic hospitals to promote VAP care bundle and enhance patient safety and medical quality.

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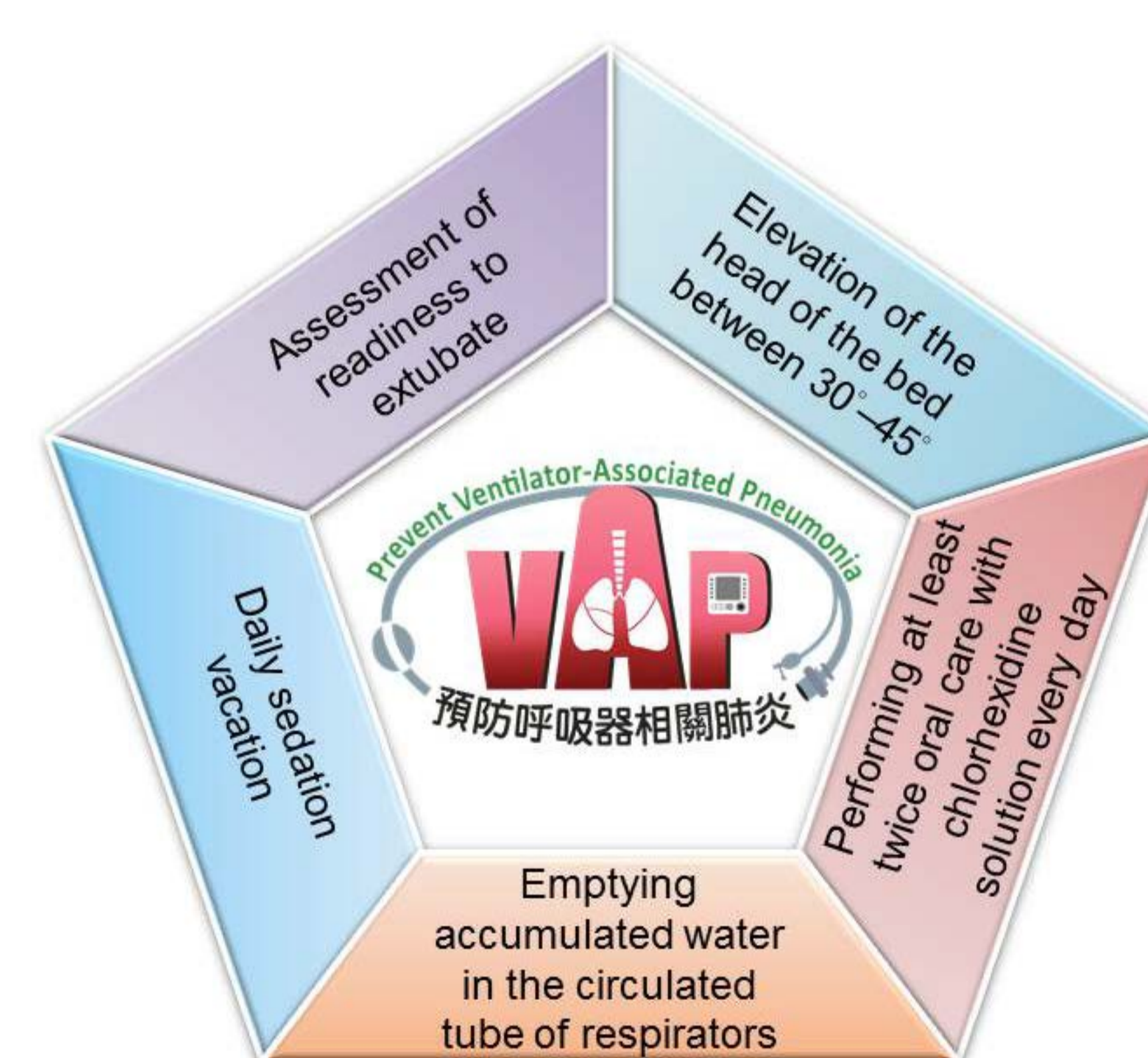


Fig. 1. Elements of VAP bundle

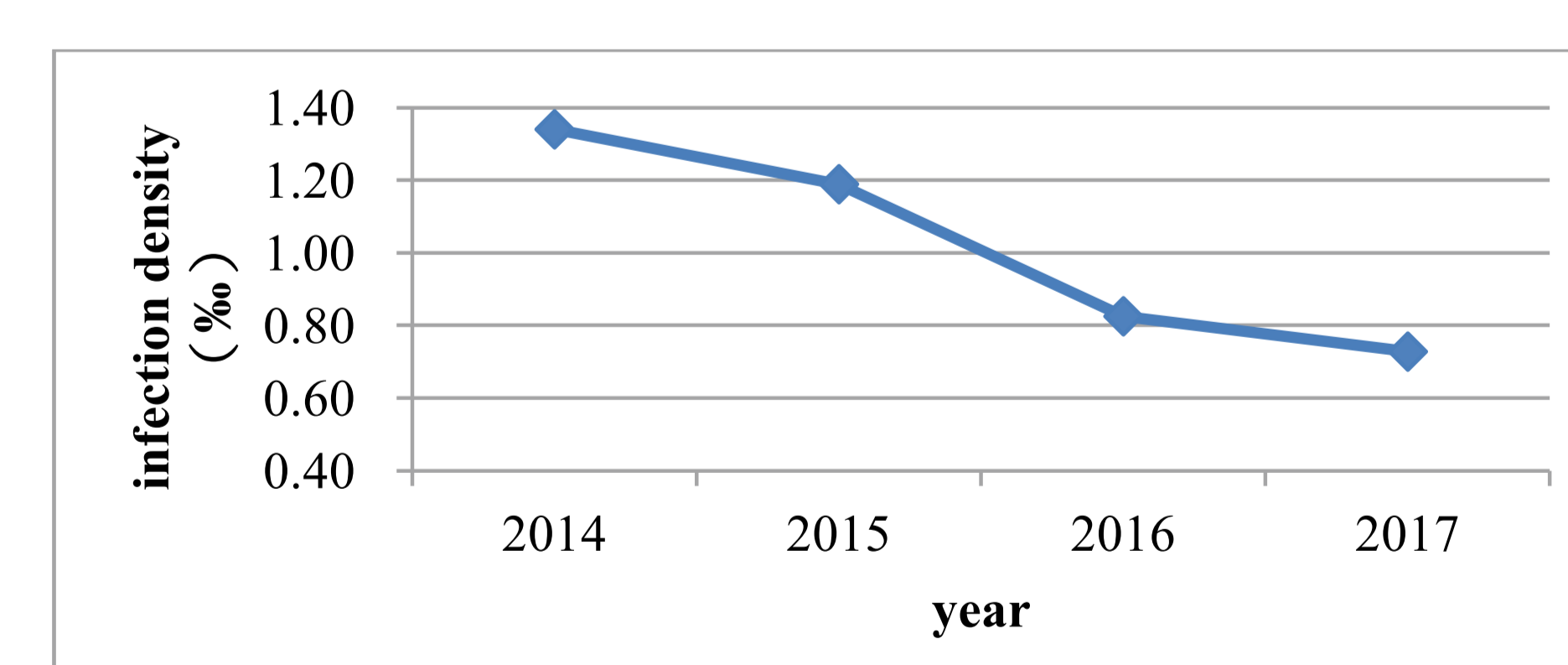


Fig. 2. Infection density in participating hospitals