IMPACT OF A SUPERVISION AND EDUCATION DIRECTED BUNDLE IN VENTILATOR ASSOCIATED PNEUMONIA (VAP) ON A PEDIATRIC CRITICAL CARE UNIT OF A TEACHING HOSPITAL.

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BACKGROUND

Proven measures to prevent ventilator-associated pneumonia (VAP) include 35-45° inclination of the head, hand hygiene prior to intubation, oral hygiene with chlorhexidine, minimize secretion pooling above the endotracheal tube cuff and prompt extubation. Adherence to these methods remains an angular point in preventing VAP's. Increasing rates of VAP in the pediatric critical care unit (PICU) of a reference 900-bed teaching hospital in Guatemala led the Hospital Infection Prevention and Control (HIPC) team to implement a bundle to control VAP's.

METHODS

A daily active surveillance to identify cases of VAP according to the Center for Disease Control (CDC) definition was performed for 10 months before the HIPC intervention. The HIPC implemented a bundle defined as: 1. Head elevation (35° degree inclination) 2. Hand hygiene prior to intubation 3. Oral Hygiene with chlorhexidine 4. Minimize secretion pooling 5. Daily evaluation of extubation 6. Daily surveillance 7. Continuous Education of personnel 8. Adequate supplies distribution analysis. After the intervention rates and trends of VAP were analyzed for 30 months.

RESULTS

In the pre-intervention observational period (PERIOD A) the rates of VAP increased from 18 (Sep 2014) to 28 cases per 1000 ventilator-days (Jun 2015). The first month after the bundle implementation (PERIOD B, Jul 2015) a 50% VAP rate decreased was evidenced. A constant decrease in VAP rates was reported in the 24 months after the implementation of the bundle, reaching the lowest rate in August 2017 (5 cases per 1000 ventilator-days). For administrative reasons adherence to oral hygiene with chlorhexidine was sub-optimal due to a lack of supplies from August 2017 to December 2017 which coincided with an increase in VAP rates from 5 to 14 per cases 1000 ventilator-days.

CONCLUSION

A notable and constant reduction of VAP rates in the PICU was achieved after the implementation of the bundle. Even though many of the measures included in the bundle were already protocoted in the PICU, a probable lack of adherence could explain the high rates observed pre-intervention. By adding the continuous education and supervision of the personnel by a member of the HIPC team, to previously proven methods, the VAP rates decreased in almost 80%. This makes a strong case for the idea that protocols without continuous enforcement might not be enough to control infections.