

中文題目：於區域教學醫院外科加護病房導入組合式照護對預防及管制醫療照護相關感染之影響

英文題目：Impact of bundles care on prevention and control of healthcare associated infections in a surgical intensive care unit of a regional teaching hospital

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**Background:** Invasive medical devices are necessary for intensive care unit, and these are the risk factor of healthcare-associated infections (HAIs). HAIs are a leading cause of morbidity and mortality in hospitalized patients. The Central Vascular Catheter (CVC) care bundles, Ventilator Associated Pneumonia (VAP) care bundles, and Catheter Associated Urinary Tract Infection (CAUTI) care bundles have promoted according Taiwan Centers for Disease Control (Taiwan CDC) project since March 2014 in our surgical intensive care unit (SICU). We implement bundles care for prevention and control healthcare associated infections in a SICU.

**Method:** In total 20-bed of SICU of a regional teaching hospital, the elements of each care bundle is based on recommendations of Taiwan CDC. The CVC care bundles promote including 1. Hand hygiene, 2. Maximum barrier precautions, 3. Use alcohol-based 2% chlorhexidine gluconate (CGH) for site preparation, 4. Avoid femoral vein for site selection, 5. Daily review of device necessity since March 2013. Since June 2015, the strategy of VAP and CAUTI bundles care were implementing. The five elements of VAP care bundles are including 1. Elevation of the head of the bed to 30°, 2. Using 0.2% chlorhexidine for daily oral care twice, 3. Sedation reviewed and stopped every 8 hours if appropriate, 4. Emptying ponding water in conduits of ventilators, 5. Assess for weaning and extubation daily. A serial strategy of CAUTI care bundles is implemented including 1. Hand hygiene, 2. Assessing the needs of catheterization daily, 3. Unobstructed flow/continuous closed drainage

system, 4. Keeping bag below bladder, and 5. Insertion of catheter using aseptic technique. The medical staffs also introduced three board for reminding Foley catheter care; 1. The board of reminding indwelling Foley catheter days in bed side, 2. The card of reminding hand hygiene and genital cleaning before procedure, 3. The board of reminding indwelling Foley catheter indications since December 2014. We conducted observational study by using data from January 2014 to July 2016. We performed an observational, retrospective analysis to assess changes in infection rates before and after bundles care was initiated (July 2014) to reduce the rate of each device-related infection of a SICU.

**Result:** Implementation of CVC bundle care was associated with a 70% reduction in the mean monthly central line-associated blood stream infection (CLBSI) rate ( $P = .017$ ) from 6.84 to 2.11 per 1000 catheter-days. The median monthly catheter utilization ratio remained unchanged. After bundles care intervention, the infection rate of VAP was decreased 30% from 1.3 to 0.91 per 1000 catheter-days ( $P=0.588$ ). The infection rate of CAUTI was reduced 40% from average 5.33 to 3.25 per 1000 catheter-days ( $P=0.105$ ). Finally, the infection rate of the SICU significant reduced 36% from 8.17 to 5.21 (95% confidence interval 0.62 to 5.31,  $P=0.016$ ).

**Conclusion:** Implementation of multidisciplinary intervention of bundles care at same time significantly reduced healthcare-associated infections in high infection rate unit of a SICU. The combination of these bundles is also helped achieve less fluctuation of each invasive device-related infection rates.