

**Singapore Office**

24-Hour Helpline : (65) 6779 2777  
Fax : (65) 6777 8065  
Email : [iplc@nhg.com.sg](mailto:iplc@nhg.com.sg)

---

**Clinical Practice**

**Impact of Preventive Strategies on Ventilator Associated Pneumonia (VAP) Rates in Medical Surgical Intensive Care Unit (MSICU) in National University Hospital (NUH)**

Objective

The goal was to reduce the VAP rates to less than 5 per thousand device days and to sustain it.

Nosocomial pneumonia is a leading cause of death from hospital-acquired infection with an associated crude mortality rate of approximately 30%. VAP is a common illness in ICU patients. It is also associated with prolonged hospitalization with increased medical costs.

Outcome

The VAP rates in MSICU from June to December 2000 were around 22 per thousand device days.

Three PDSA (Plan-Do-Study-Act) cycles of improvement were implemented in 2001, 2003 and 2004 respectively. Each cycle resulted in reduction of rates.

Evidence based strategy, using International Healthcare Institution (IHI) recommended "ventilator bundle", was implemented in January 2004. The ventilator bundle comprised the following components:

- Position head of bed at 45 degrees
- Use Hi-Lo ETT tube
- ETT cuff assessment is carried out 8 hourly
- Stress ulcer prophylaxis is given
- Weaning assessment is carried out
- Cessation of sedative is carried out daily

This has enabled the rate to come down > 5 per thousand device days and sustain it at that rate for past 2 years. The current rate for January to June 2006 is 2.42 per thousand device days.

**Singapore Office**

24-Hour Helpline : (65) 6779 2777  
Fax : (65) 6777 8065  
Email : [iplc@nhg.com.sg](mailto:iplc@nhg.com.sg)

---

Impact

The impact has resulted in:

- Reduced length of stay (LOS) optimizing ICU bed utilization, reduced resource utilization;
- Better accessibility of ICU beds for doctors;
- Reduced morbidity and mortality in MSICU patients;
- Enhanced patient safety.

This project received the Outstanding Asian Hospital Management Award for Quality and Safety Category in 2004.