



Singapore Healthcare Management 2016

Zero VAP for Better Care

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BACKGROUND

The use of mechanical ventilation for respiratory support is an essential and integral care in the intensive care units (ICU).

Ventilated-associated pneumonia (VAP) and its prevention is a significant concern for ventilated patients as it is the leading cause of nosocomial infection in adult critically ill patients.

In 2012, a team of nurses and doctors from medical ICU embarked on a project to prevent VAP and improve patients' outcome.

PROBLEM

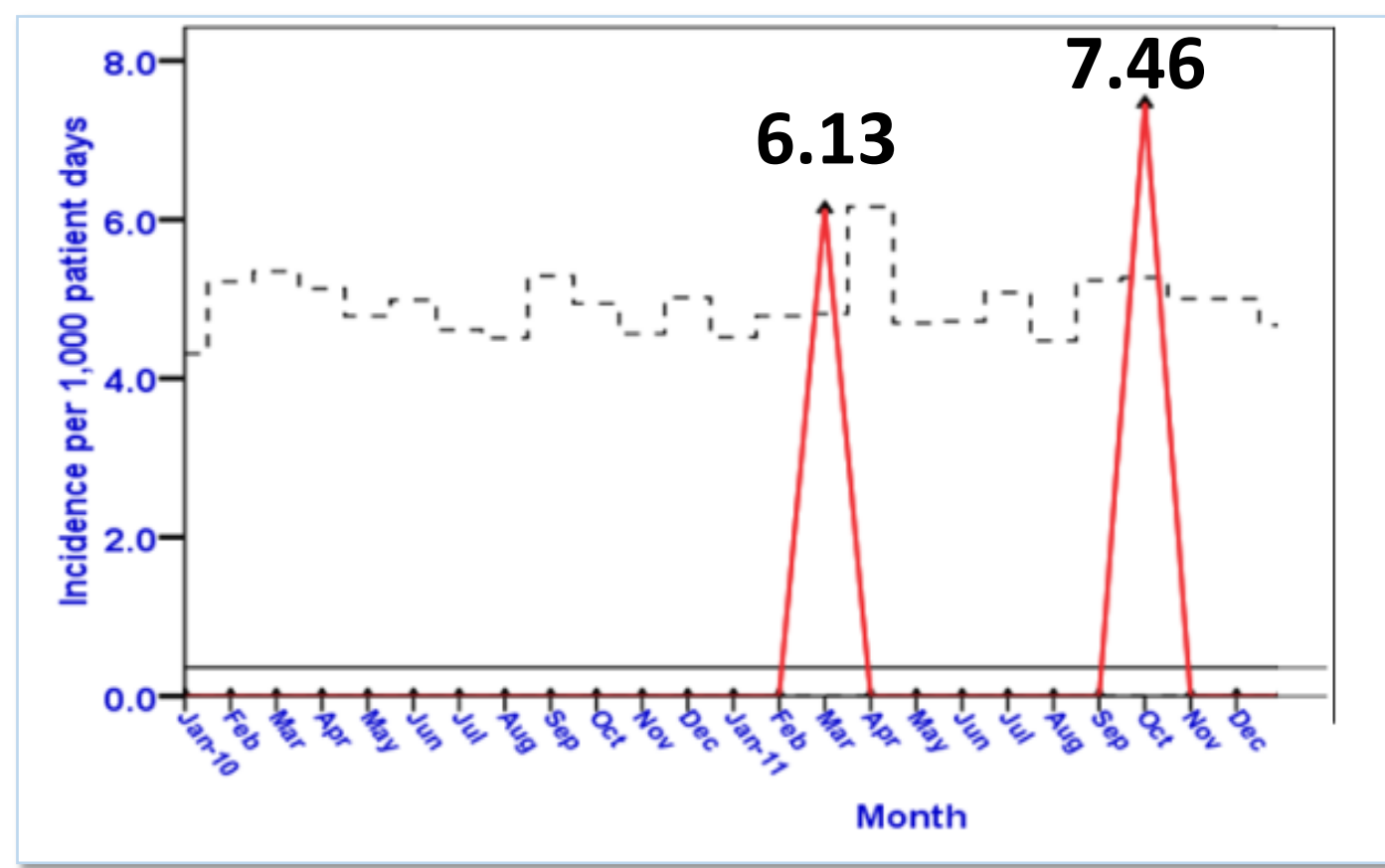
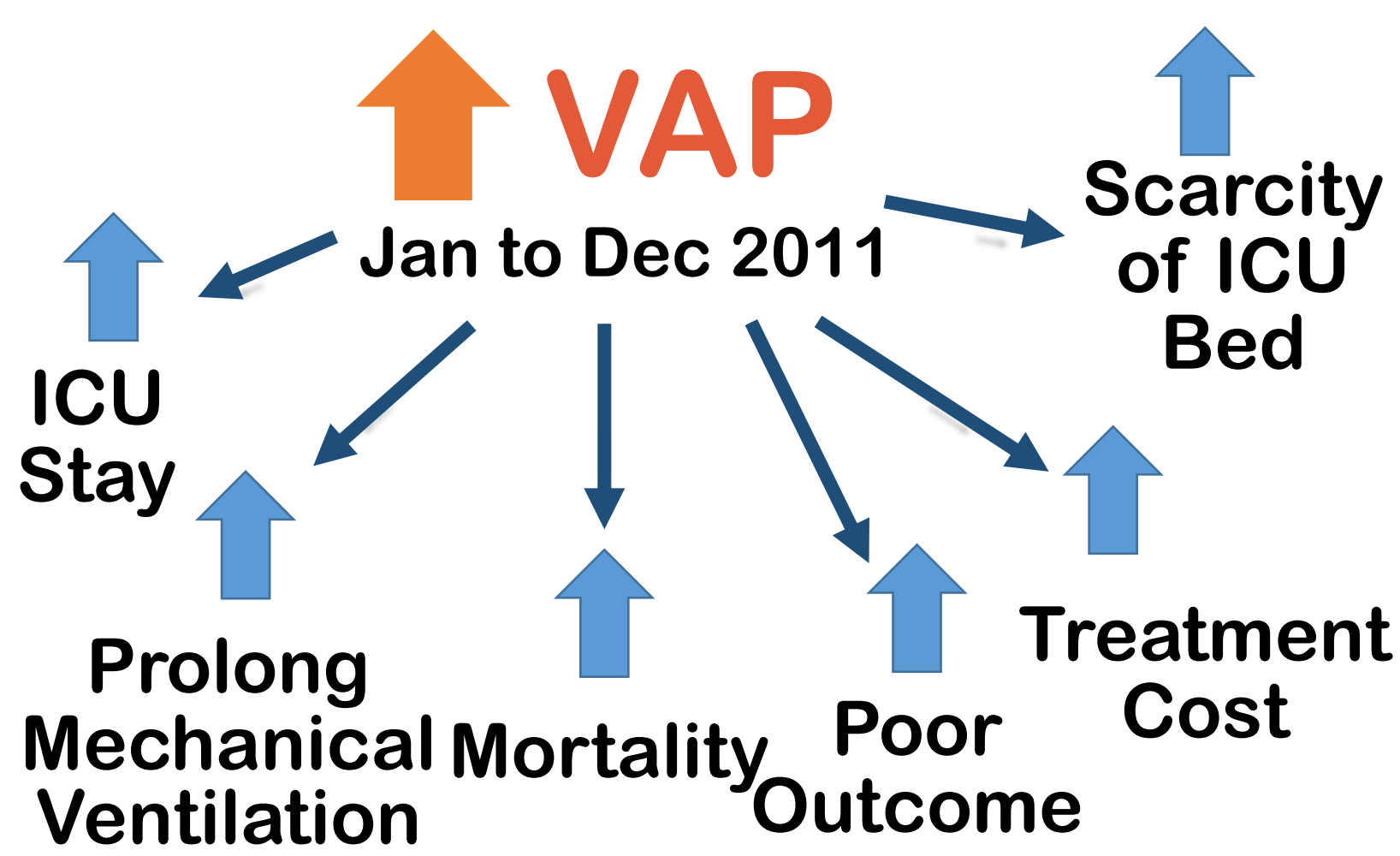


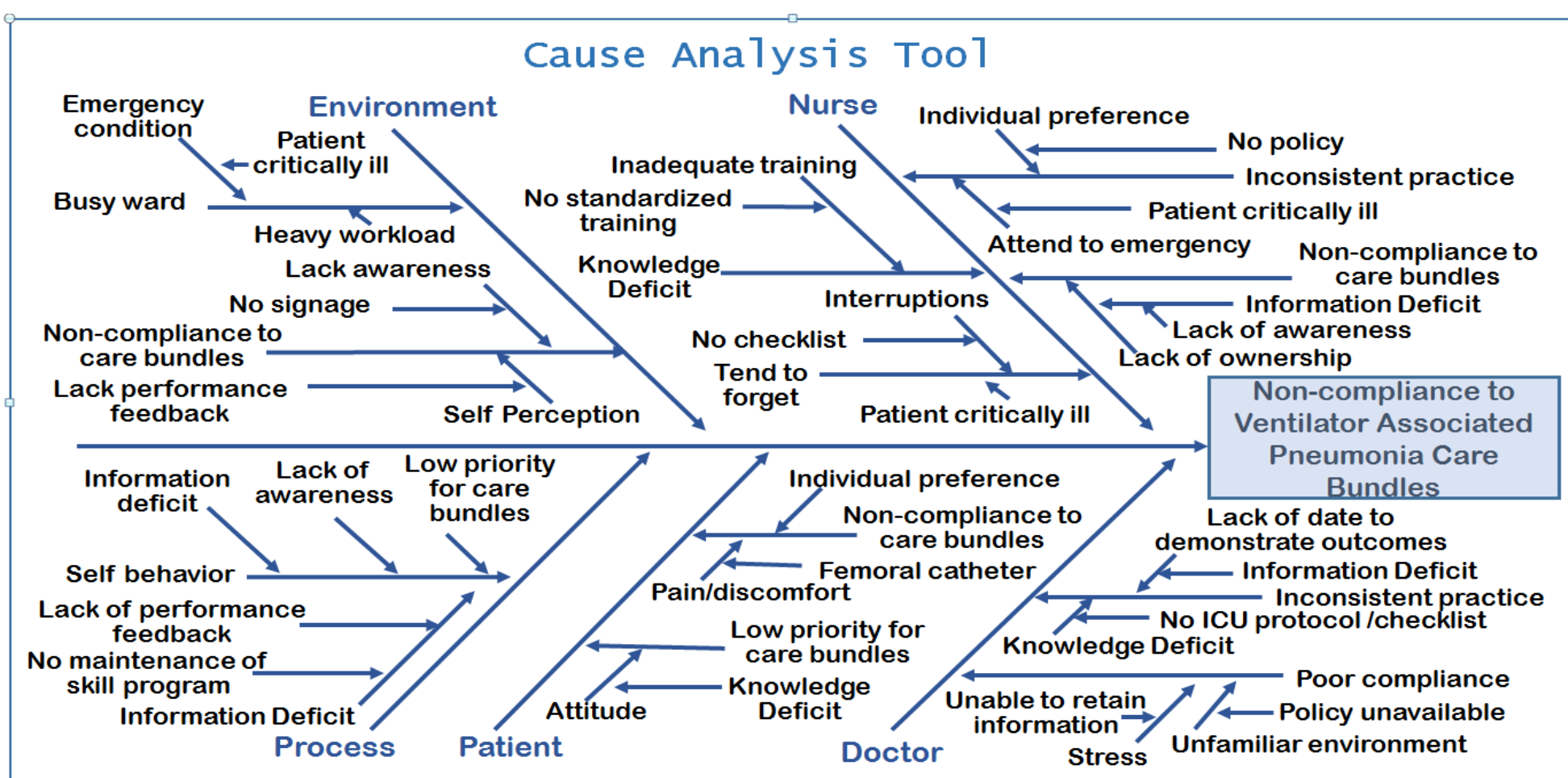
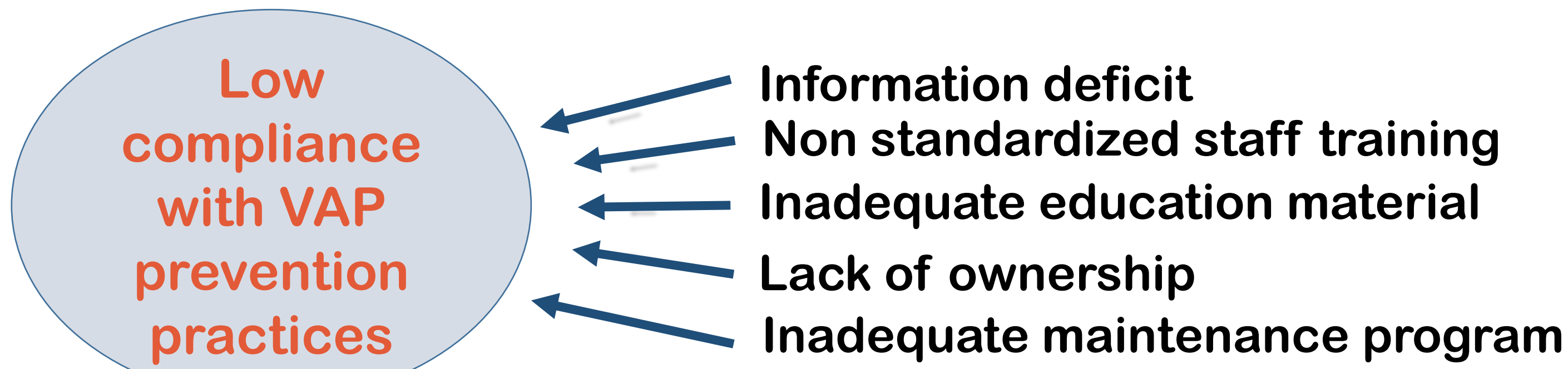
Figure 1: VAP rate in MICU 2010-2011

There are many complications associated with VAP.

INTERVENTION



ANALYSIS OF CAUSE



To identify the root cause, team members observe and record the ICU ventilator care processes, staffs and patient's behaviors. Brainstorming sessions were conducted.

Fig 2: Cause Analysis using Ishikawa Diagrams

RESULTS

0 VAP per 1,000 ventilator-day
2012-2014 vs Nov 2011 (7.46)

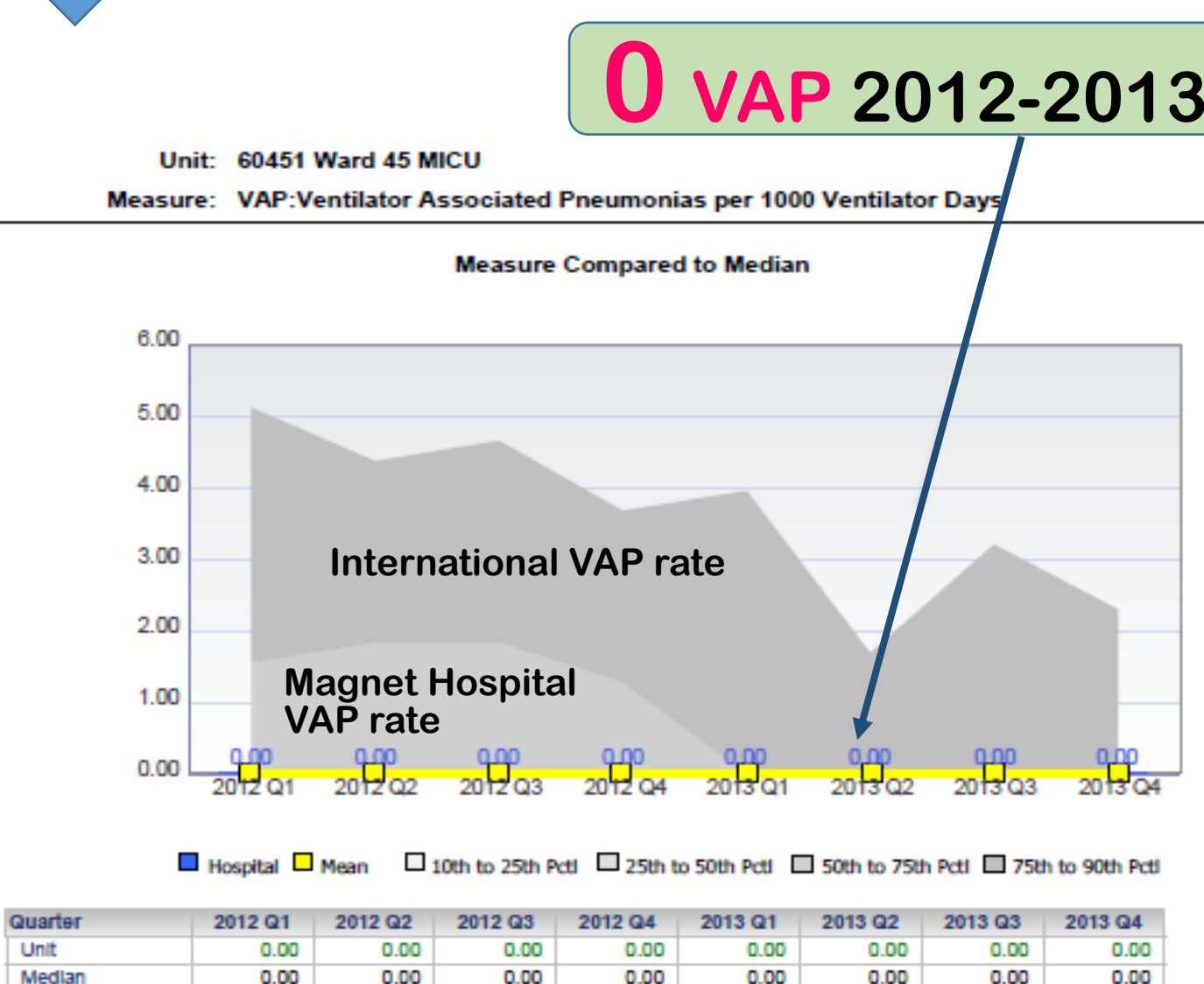


Fig 3: VAP rate in MICU 2012-2013

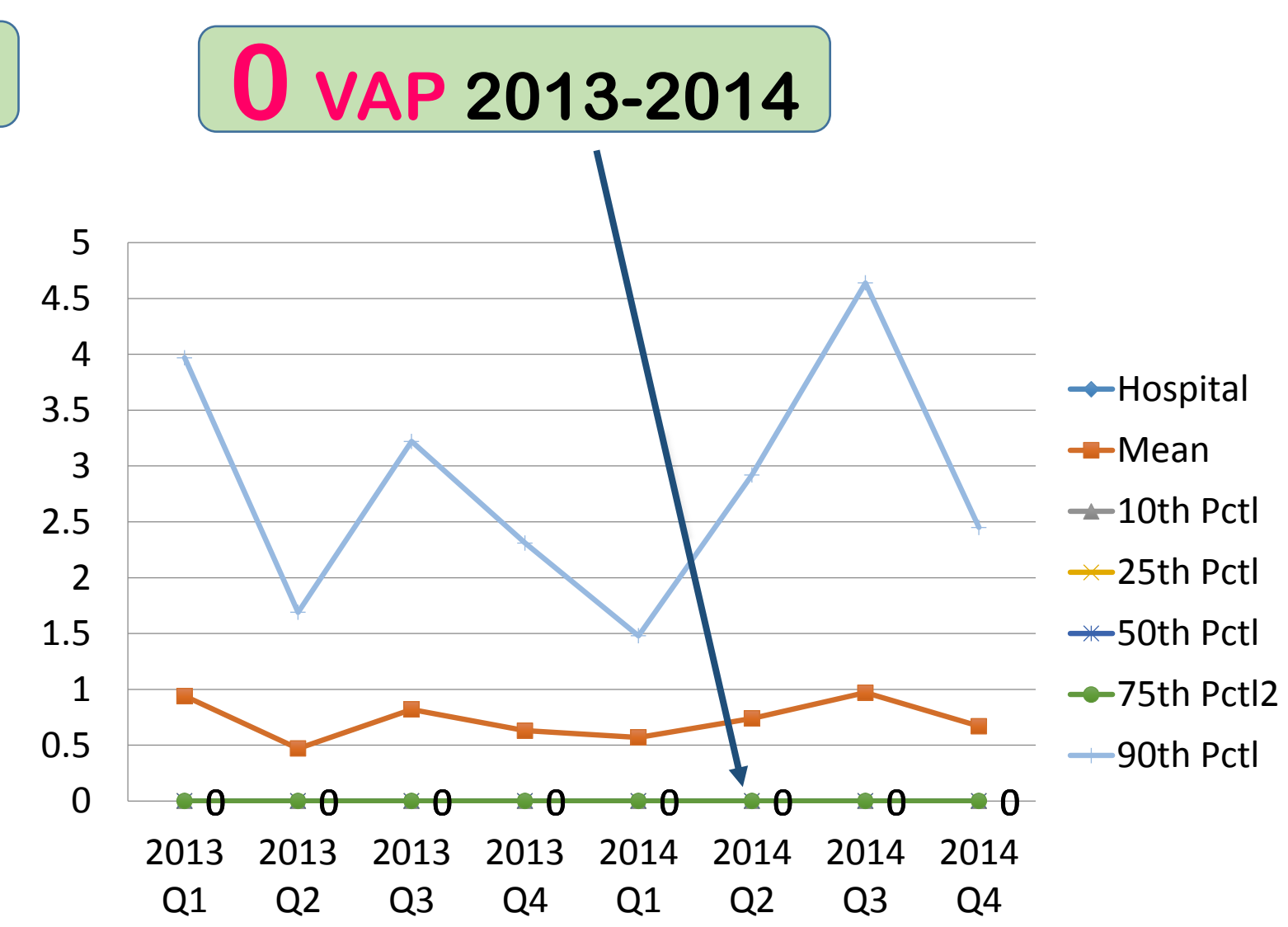
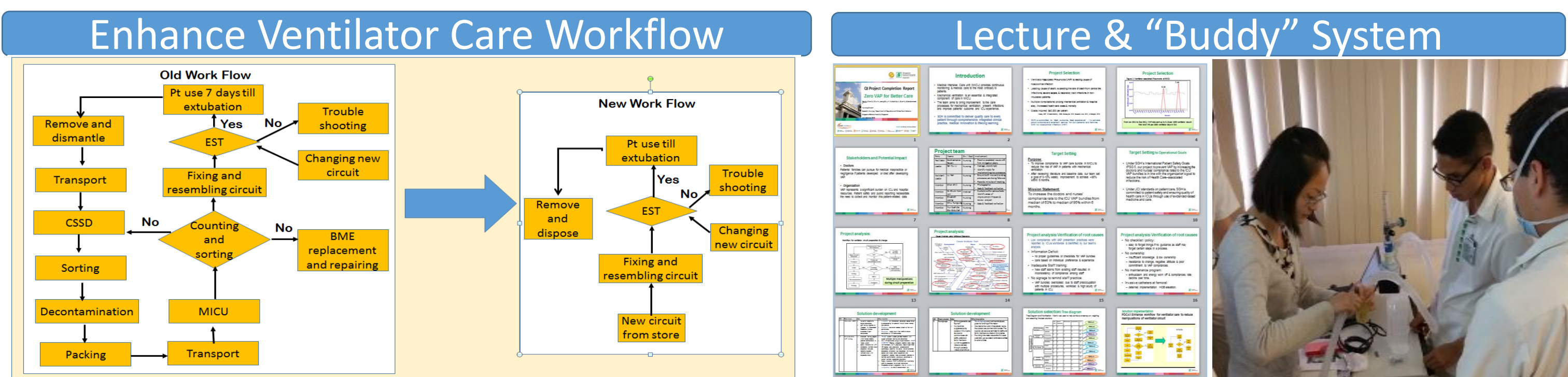


Fig 4: VAP rate in MICU 2013-2014

INTERVENTION



Daily Bundle Checklist
progress notes: **FAST HUG BID**

- Feeding
- Analgesic
- Sedation
- DVT prophylaxis
 - SC Clexane 40mg om
 - SC heparin
 - Pneumatic calf pump
 - TED stocking
- HOB >30 degree
- Peptic Ulcer prophylaxis (coagulation, Intubation > 48hrs, septic shock, surgery, etc)
 - Ranitidine, famotidine
 - Omeprazole
- Bowel
- Indwelling catheters (CVP, urine cath, vascular cath, PAC etc)
- De-escalated antibiotic as indicated

Daily Monitoring VAP Rate & Display

99.5% VAP bundle compliance
Dec 2014 vs Feb 2012 (63%)

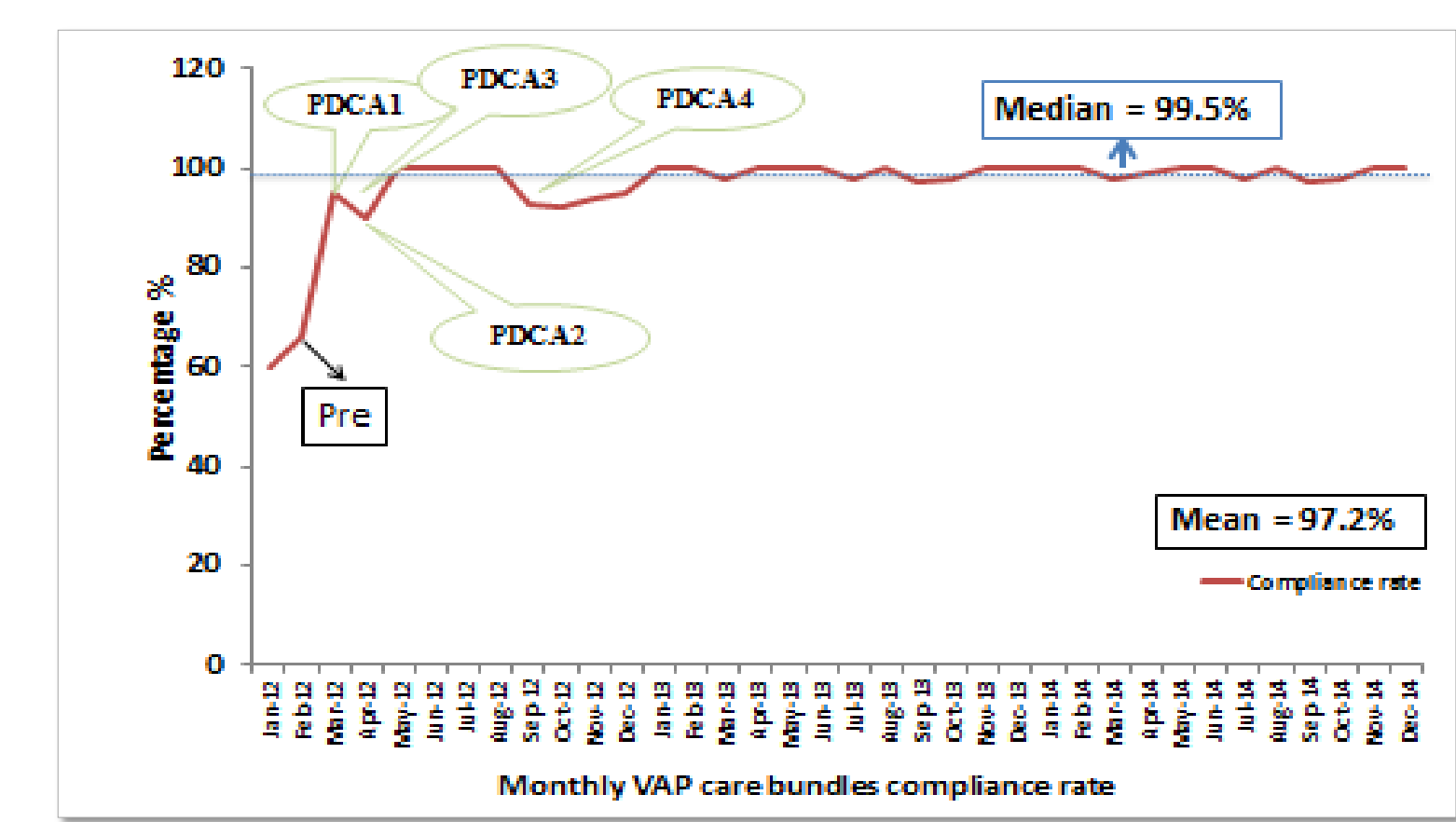


Fig 5: VAP Bundle Compliance Rate

The quality of patient care was perceived positively by staffs, patients and family members with effective communication and information delivery. Staff, patient and family's satisfaction with ICU care and communication significantly increased (staff 45% to 85%, patient 35% to 78%, family 38% to 82%).

Cost Saved
Using Disposable Ventilator Circuit Save

\$21,900.00 /annual

Time Saved
Ventilator Circuit Preparation Time Reduced by

> 70%

CONCLUSION

The importance of VAP prevention was communicated to ICU staff, patients and family members. Change in culture, attitude and teamwork were essential to ensure success and sustainability. "Buy in" from stakeholders encouraged compliance to care bundles. Patients and their families also developed positive relationship with ICU staffs through effective communications.