

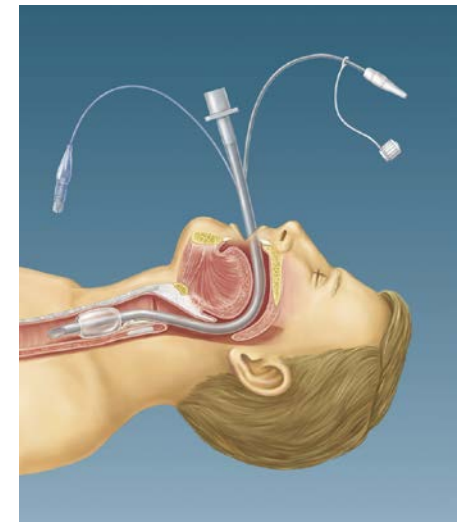
Highlights of the Guidelines On Prevention Of VAP

P.T.Y. Ching

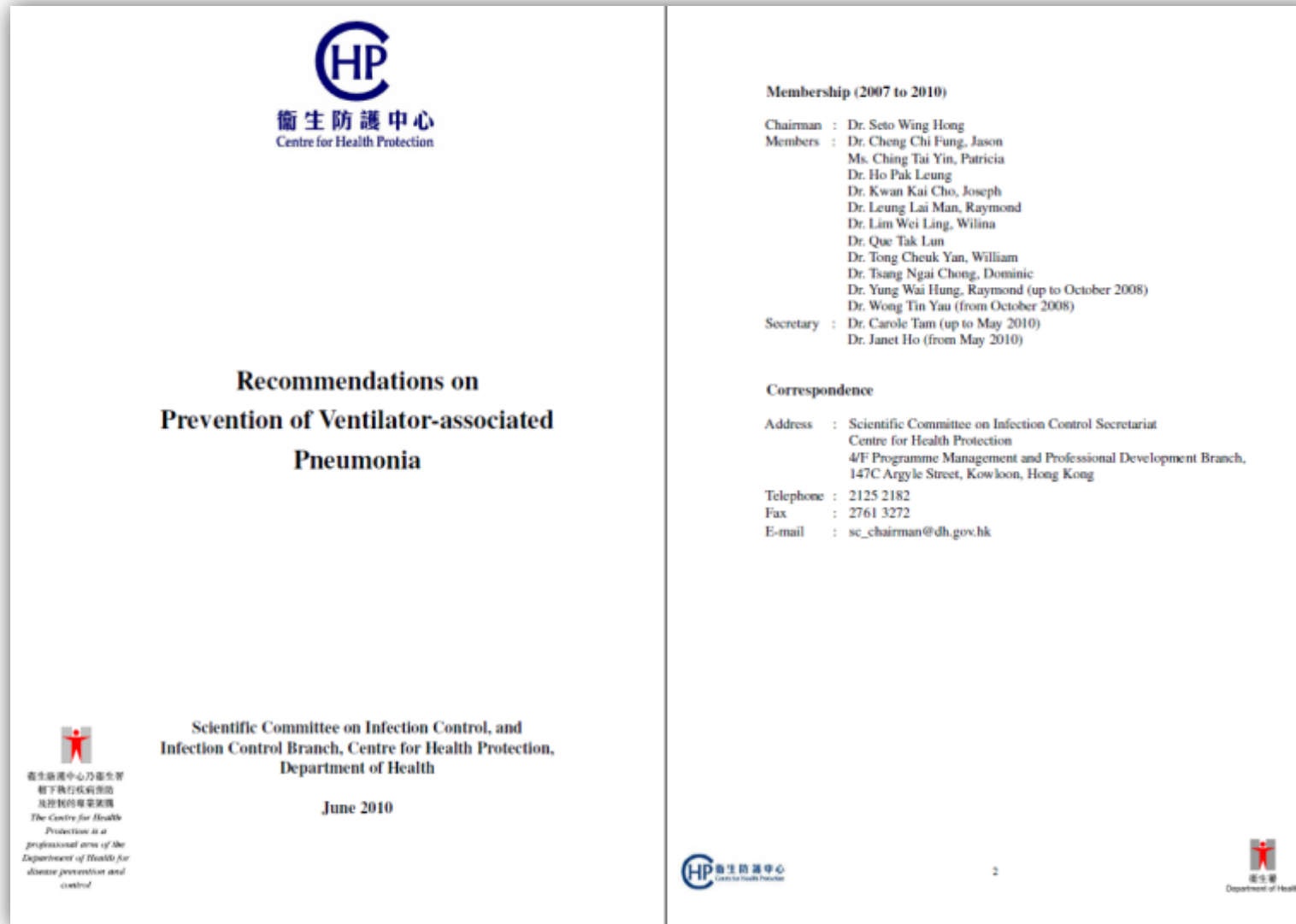
Scientific Committee of Infection Control

Centre for Health Protection

Hong Kong



Previous edition (June 2010)



- CDC guideline for preventing healthcare associated pneumonia 2003
- Prevent VAP how to guide from IHI 2008

Major international guidelines

International ERS/ESICM/ESCMID/ALAT guidelines for the management of hospital-acquired pneumonia and ventilator-associated pneumonia

Guidelines for the management of hospital-acquired pneumonia (HAP)/ventilator-associated pneumonia (VAP) of the European Respiratory Society (ERS), European Society of Intensive Care Medicine (ESICM), European Society of Clinical Microbiology and Infectious Diseases (ESCMID) and Asociación Latinoamericana del Tórax (ALAT)

Antoni Torres^{1,16}, Michael S. Niederman^{2,16}, Jean Chastre³, Santiago Ewig⁴, Patricia Fernandez-Vandellos⁵, Hakan Hanberger⁶, Marin Kollef⁷, Gianluigi Li Bassi¹, Carlos M. Luna⁸, Ignacio Martin-Loeches⁹, J. Artur Paiva¹⁰, Robert C. Read¹¹, David Rigau¹², Jean François Timsit¹³, Tobias Welte¹⁴ and Richard Wunderink¹⁵

@ERSpublications

ERS/ESICM/ESCMID/ALAT evidence-based recommendations for HAP/VAP diagnosis, treatment and prevention <http://ow.ly/dGhv30dAVoa>

Cite this article as: Torres A, Niederman MS, Chastre J, *et al.* International ERS/ESICM/ESCMID/ALAT guidelines for the management of hospital-acquired pneumonia and ventilator-associated pneumonia. *Eur Respir J* 2017; 50: 1700582 [<https://doi.org/10.1183/13993003.00582-2017>].

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY AUGUST 2014, VOL. 35, NO. 8

SHEA/IDSA PRACTICE RECOMMENDATION

Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals: 2014 Update

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PURPOSE

Previously published guidelines are available that provide comprehensive recommendations for detecting and preventing healthcare-associated infections (HAIs). The intent of this document is to highlight practical recommendations in a concise format to assist acute care hospitals in implementing and prioritizing strategies to prevent ventilator-associated pneumonia (VAP) and other ventilator-associated events (VAEs) and to improve outcomes for mechanically ventilated adults, children, and neonates. This document updates “Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals,” published in 2008.¹ This expert guidance document is sponsored by the Society for Healthcare Epidemiology of America (SHEA) and is the product of a collaborative effort

surveillance definitions are subjective and nonspecific. Historically, 10%–20% of ventilated patients have developed VAP. More recent reports suggest much lower rates, but it is unclear to what extent these lower rates reflect better care versus stricter application of subjective surveillance criteria.^{3,4} Notwithstanding surveillance rates that hover near zero, clinical surveys suggest that 5%–15% of ventilated patients still develop nosocomial pneumonias.^{5–9}

B. Patients on mechanical ventilation are at risk for a variety of serious complications in addition to pneumonia. These include acute respiratory distress syndrome, pneumothorax, pulmonary embolism, lobar atelectasis, and pulmonary edema. The Centers for Disease Control

Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society

Andre C. Kalil,^{1,a} Mark L. Metersky,^{2,a} Michael Klompas,^{3,4} John Muscedere,⁵ Daniel A. Sweeney,⁶ Lucy B. Palmer,⁷ Lena M. Napolitano,⁸ Naomi P. O'Grady,⁹ John G. Bartlett,¹⁰ Jordi Carratalà,¹¹ Ali A. El Solh,¹² Santiago Ewig,¹³ Paul D. Fey,¹⁴ Thomas M. File Jr,¹⁵ Marcos I. Restrepo,¹⁶ Jason A. Roberts,^{17,18} Grant W. Waterer,¹⁹ Peggy Cruse,²⁰ Shandra L. Knight,²⁰ and Jan L. Brozek²¹

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Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

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Evidence-based guidelines for implementation and measurement of antibiotic stewardship interventions in inpatient populations including long-term care were prepared by a multidisciplinary expert panel of the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. The panel included clinicians and investigators representing internal medicine, emergency medicine, microbiology, critical care, surgery, epidemiology, pharmacy, and adult and pediatric infectious diseases specialties. These recommendations address the best approaches for antibiotic stewardship programs to influence the optimal use of antibiotics.

Keywords. antibiotic stewardship; antibiotic stewardship programs; antibiotics; implementation



衛生防護中心
Centre for Health Protection

**Recommendations on
Prevention of Ventilator-associated
Pneumonia**

2nd Edition

**Scientific Committee on Infection Control, and
Infection Control Branch, Centre for Health Protection,
Department of Health**



衛生署
Department of Health

衛生防護中心乃衛生署
轄下執行疾病預防
及控制的專業架構

*The Centre for Health
Protection is a
professional arm of the
Department of Health for
disease prevention and
control*

xxxx 2018

First version of Draft guideline

Sent to PYNEH ICU team in Jan 2018

Local – PYNEH ICU team

Dr. Yan WW

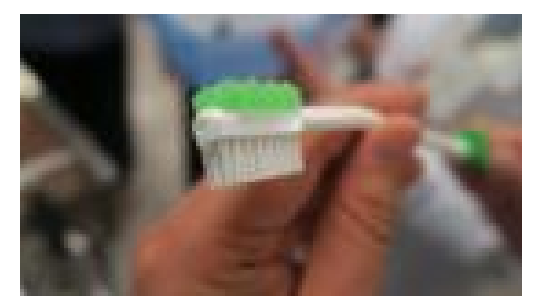
Dr. C W Lau

Dr. HM So

Visit to PYNEH ICU

- Scheduled on 1.11.2017 with the following aims:
 - To understand more on clinical practice
 - To know more about how surveillance of VAP is carried out under the new definitions (VAE) from CDC
 - To seek opinions on the guideline contents
 - E.g. Dr. Yan proposed addition of a new section on ASP in the guideline

Photos from PYNEH ICU Visit



Valuable comments from International Reviewer – Prof. Michael Klompas (totally 26)

- Include high flow Oxygen as part of the NIV as an alternative to Intubation
- Use of Sedation assessment scales e.g. RASS*.
- Oral care with Chlorhexidine (CHG) is increasingly recognized to present with side effects e.g aspiration pneumonitis and mortality in VAP patients. Use of antiseptics as routine oral care is not recommended
- Stress ulcer prophylaxis e.g. histamine blockers, PPIs, and other antacids should be selective towards patients with high-risk of GI bleeding e.g. those with recent bleed

*Richman Agitation Sedation Scale

Draft text	Ext reviewer	Reference	Proposed change
<p>1. Infrastructure 1.1 Establish ventilator-associated pneumonia (VAP) quality improvement team in intensive care units (9–13). Multidisciplinary teams should include doctors, nurses, chest physiotherapists at the minimum. (7)</p>	<p>consider also including respiratory therapists and pharmacists as well given the importance of spontaneous breathing trials and minimizing sedation.</p>	<p>Klompas, et al. SHEA 2014</p>	<p>Change ‘chest physiotherapist’ to ‘respiratory therapist’ and to discuss whether include pharmacist</p> <p>Did not change cos no respiratory therapist in HK</p>

Extra role of respiratory therapist

- Managing life support mechanical ventilation systems (ventilator)
- Analyzing blood samples to determine levels of oxygen and other gases

Comments from PYNEH ICU

- Dr. Yan

- Minimize ventilator circuit break and change ventilator circuit only if visibly soiled or malfunctioning
- An observational study of 637 mechanically ventilated patients compared circuit changes every two, seven, or 30 days [reference attached below]. The incidence of VAP was significantly greater in the group who underwent circuit changes every two days, compared to those who underwent circuit changes every seven days or every 30 days. (*Fink JB, Krause SA, Barrett L, et al. Extending ventilator circuit change interval beyond 2 days reduces the likelihood of ventilator-associated pneumonia. Chest 1998; 113:405.*)

- Dr. Lau

- The incidence of VAP is on decrease only in CDC data... it may be more objective to say that the rates in different countries vary, and could be static or on the decrease. <https://www.jwatch.org/na42854/2016/12/13/ventilator-associated-pneumonia-rates-havent-fallen>
- Residual gastric volume monitoring does not increase the risk of VAP. According to "Effect of Not Monitoring Residual Gastric Volume on Risk of Ventilator-Associated Pneumonia in Adults Receiving Mechanical Ventilation and Early Enteral Feeding. A Randomized Controlled Trial" in JAMA 2013
- Sucralfate for stress ulcer prophylaxis is no longer used
- RASS sedation scale is used quite commonly at weaning, RASS 0 to -2 and to further scale down if medically fit

- Dr. So

- HME can be considered an acceptable option because it is easier to use, especially in patients with short term mechanical ventilation. It may not save manpower if nurses follow the company recommendation to have the HME changed daily
- Perform oral suction to clear secretion before tracheal suction and disconnection of ventilator circuit so as to minimize aspiration from above the cuff (reference attached)

Survey on local practice

Aims and Objectives

To understand the current practice in ICU / hospital to facilitate formulation of practical and practicable guidelines on prevention of VAP

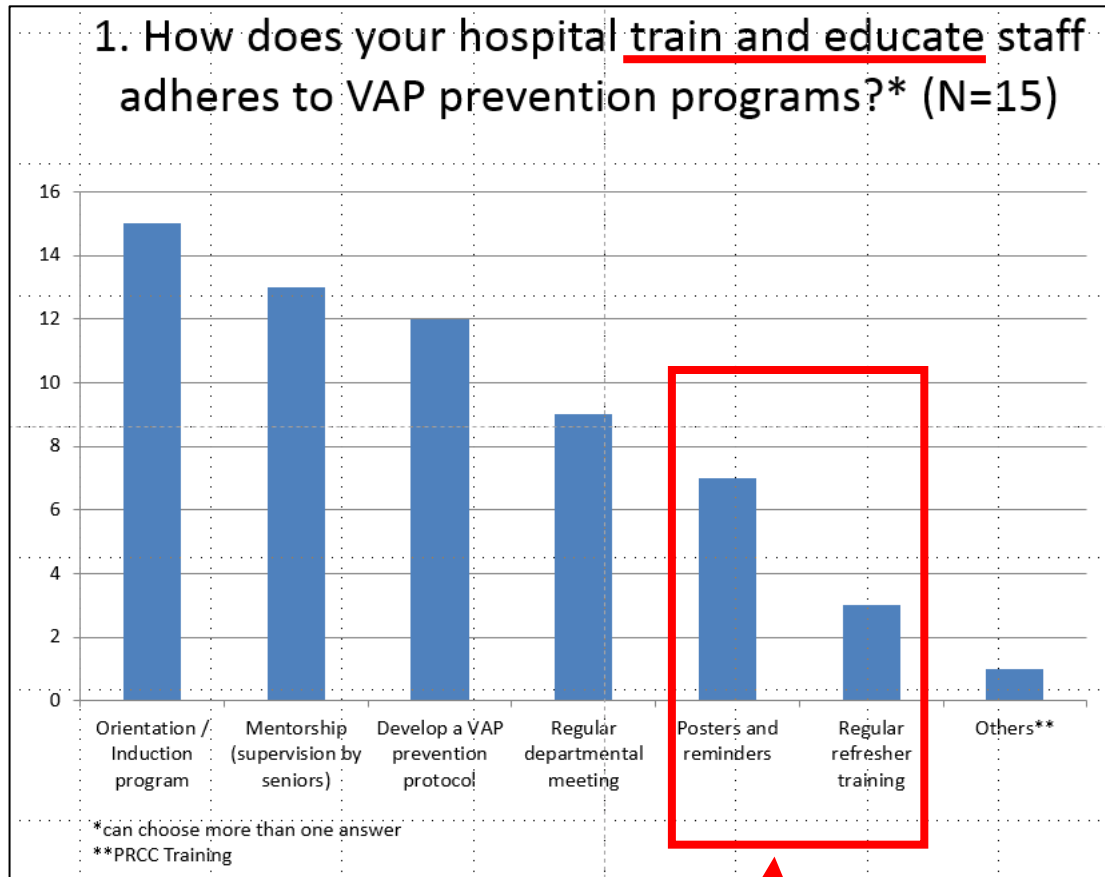
Questionnaire

- Parts A and B
- The questionnaire was sent to PYNEH for comments
- Final version was sent to 15 HA hospitals and 8 private hospitals
- The questionnaire included 2 parts: A for nurses and B for doctors

Survey on :

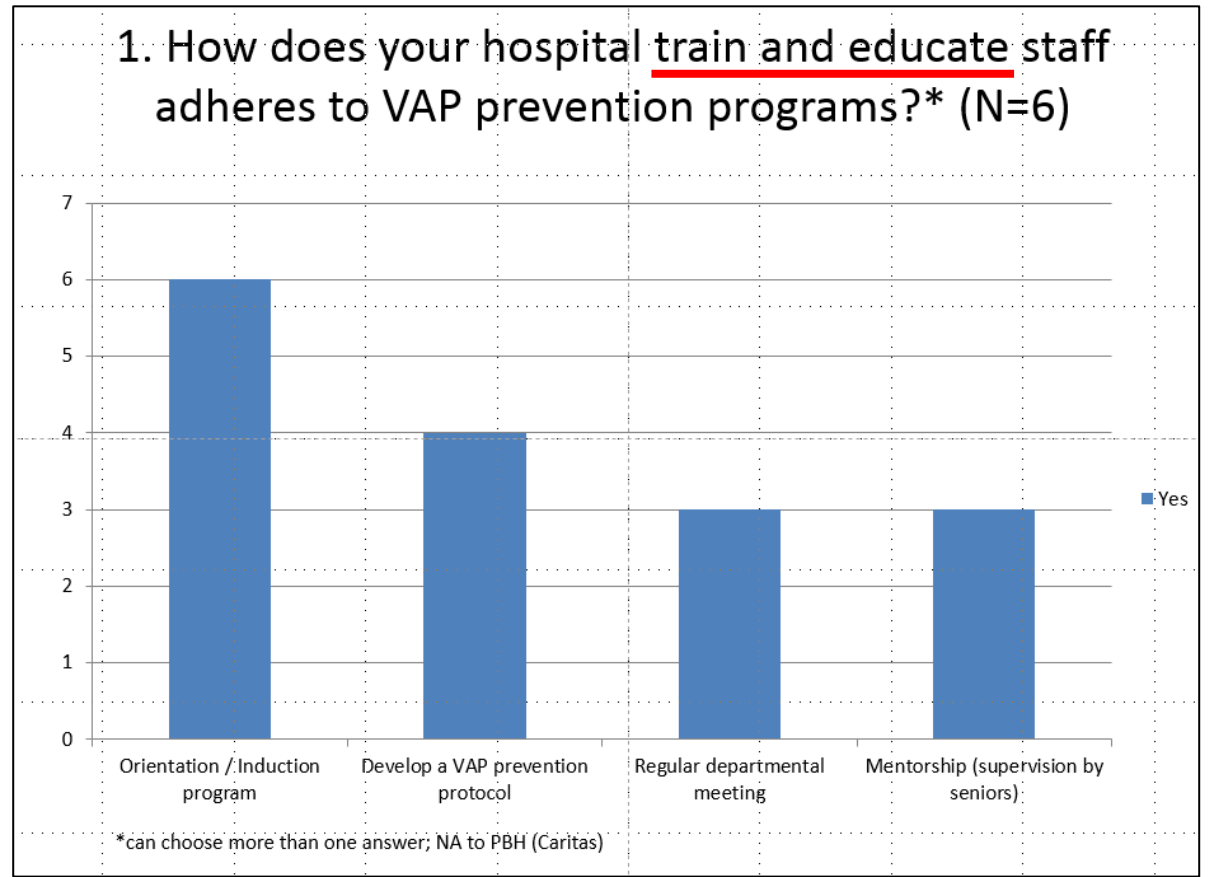
1. Education and training
2. VAP prevention practices adoption
3. Surveillance on processes – Bundle compliance and feedback
4. Surveillance program VAP / VAE
5. Antibiotic usage and treatment
6. Antibiotic stewardship in action

Public Hospitals



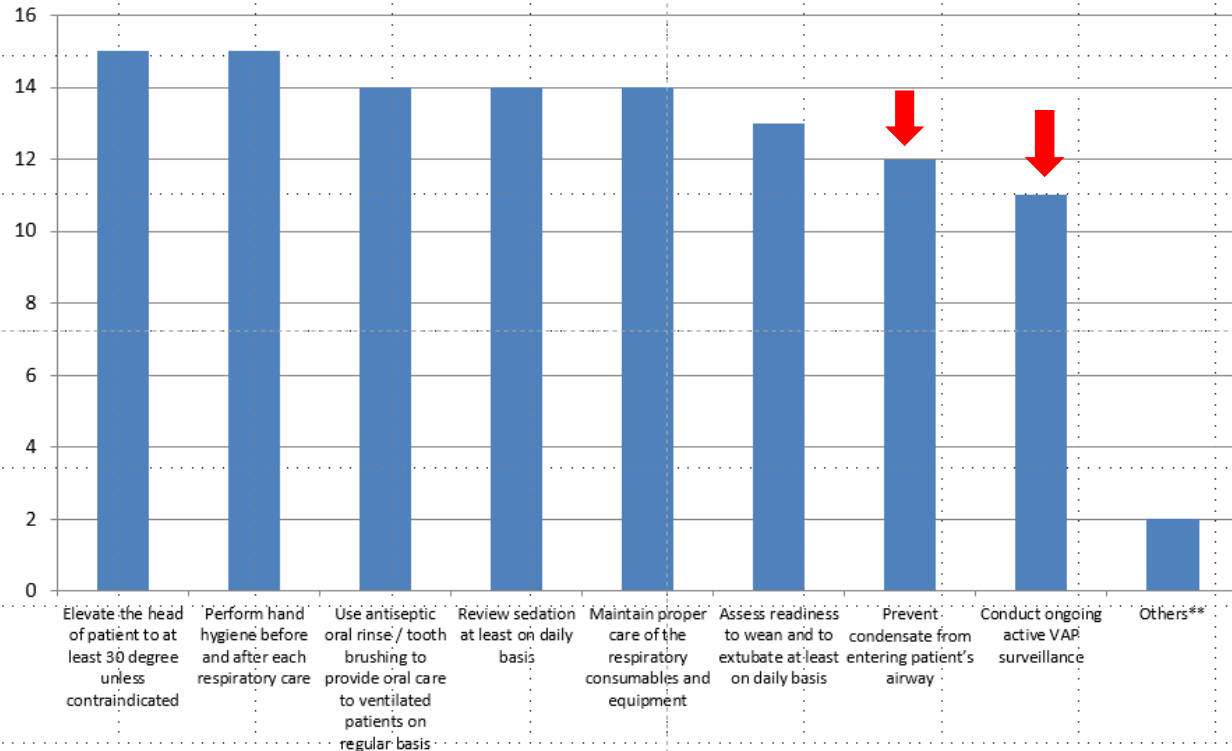
Poster, refresher training

Private Hospitals



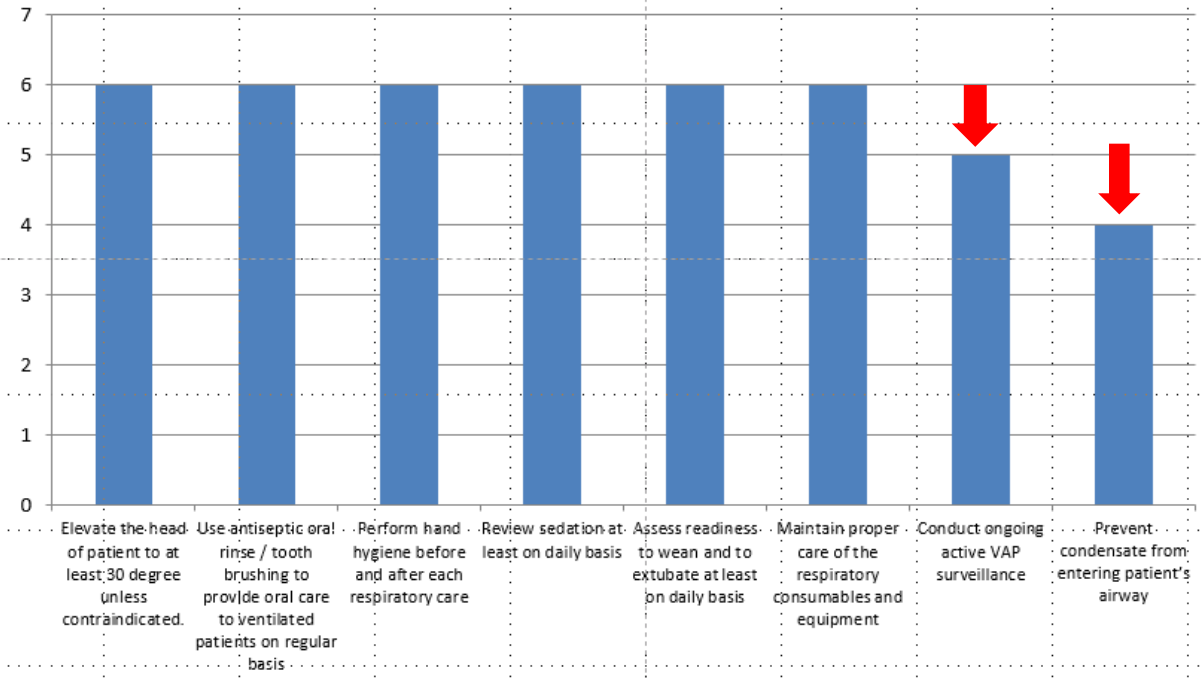
Public Hospitals

2. Which component(s) is / are included in the VAP prevention program?* (N=15)



Private Hospitals

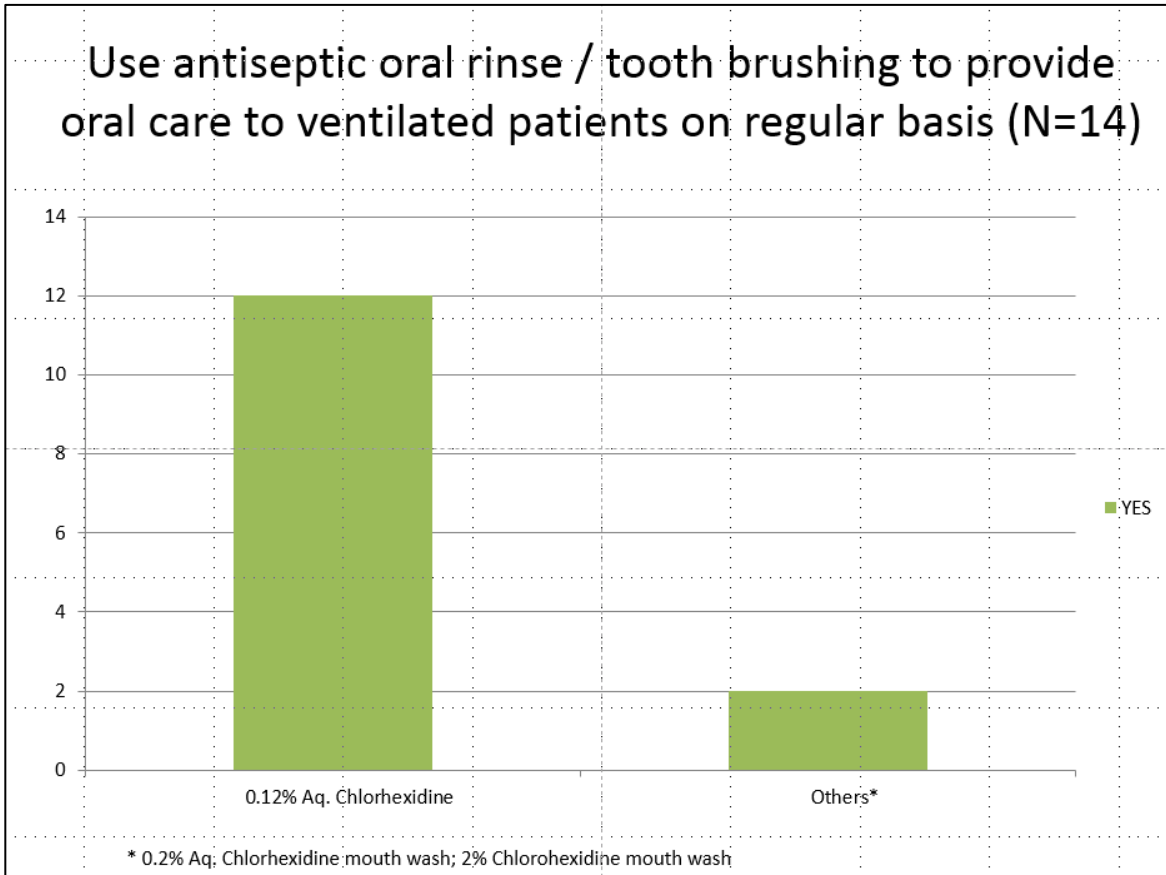
2. Which component(s) is / are included in the VAP prevention program?* (N=6)



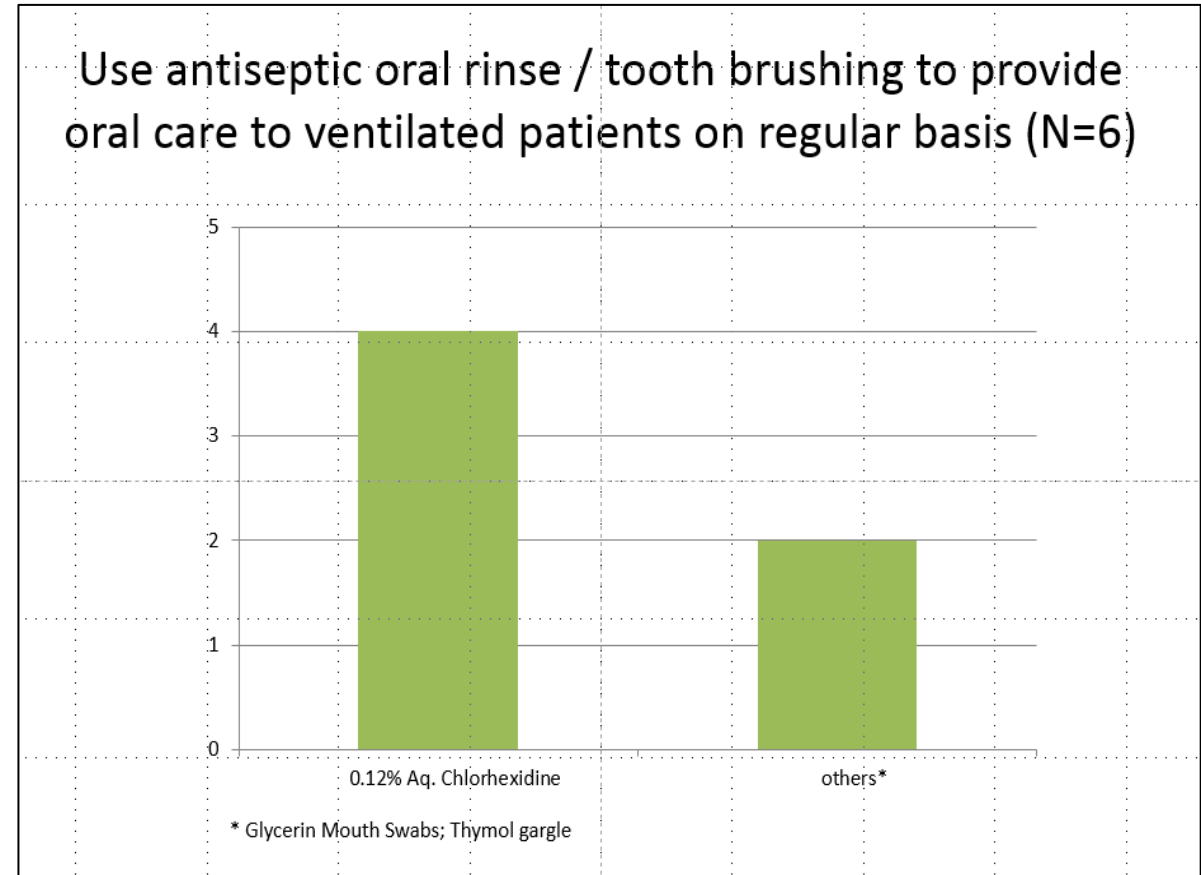
** Verify correct placement of feeding tube at regular interval and regular assessment of patient's tolerance to NG feeding

Concerns:
24% no surveillance of VAP and not preventing condensate from entering the patients

Public Hospitals



Private Hospitals

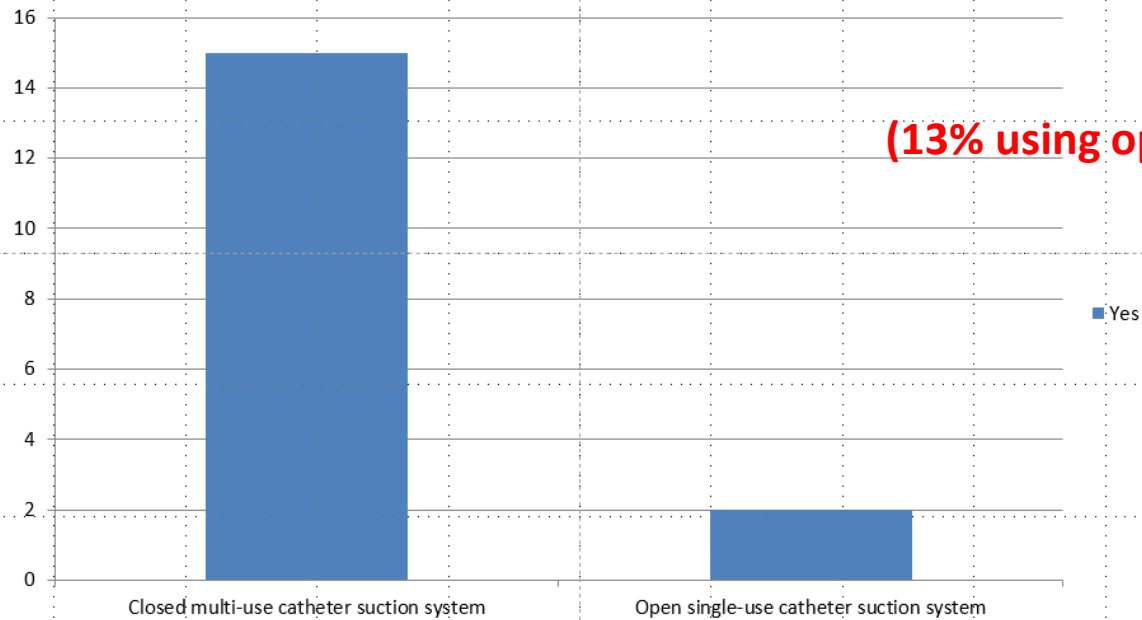


Recommendation:

An increasing amount of data suggests that oral care with Chlorhexidine may actually increase mortality rate. It is recommended to perform oral care with normal saline.

Public Hospitals

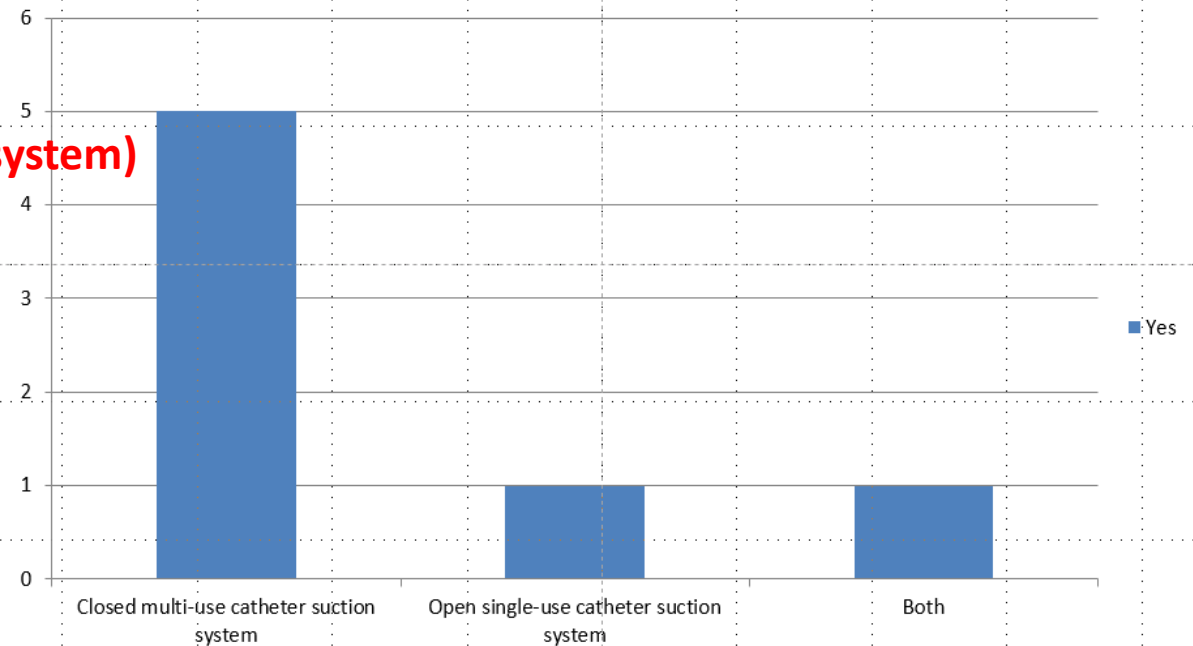
3. Which tracheal suction method is/are currently used in your unit/department?* (N=15)



*can choose more than one answer

Private Hospitals

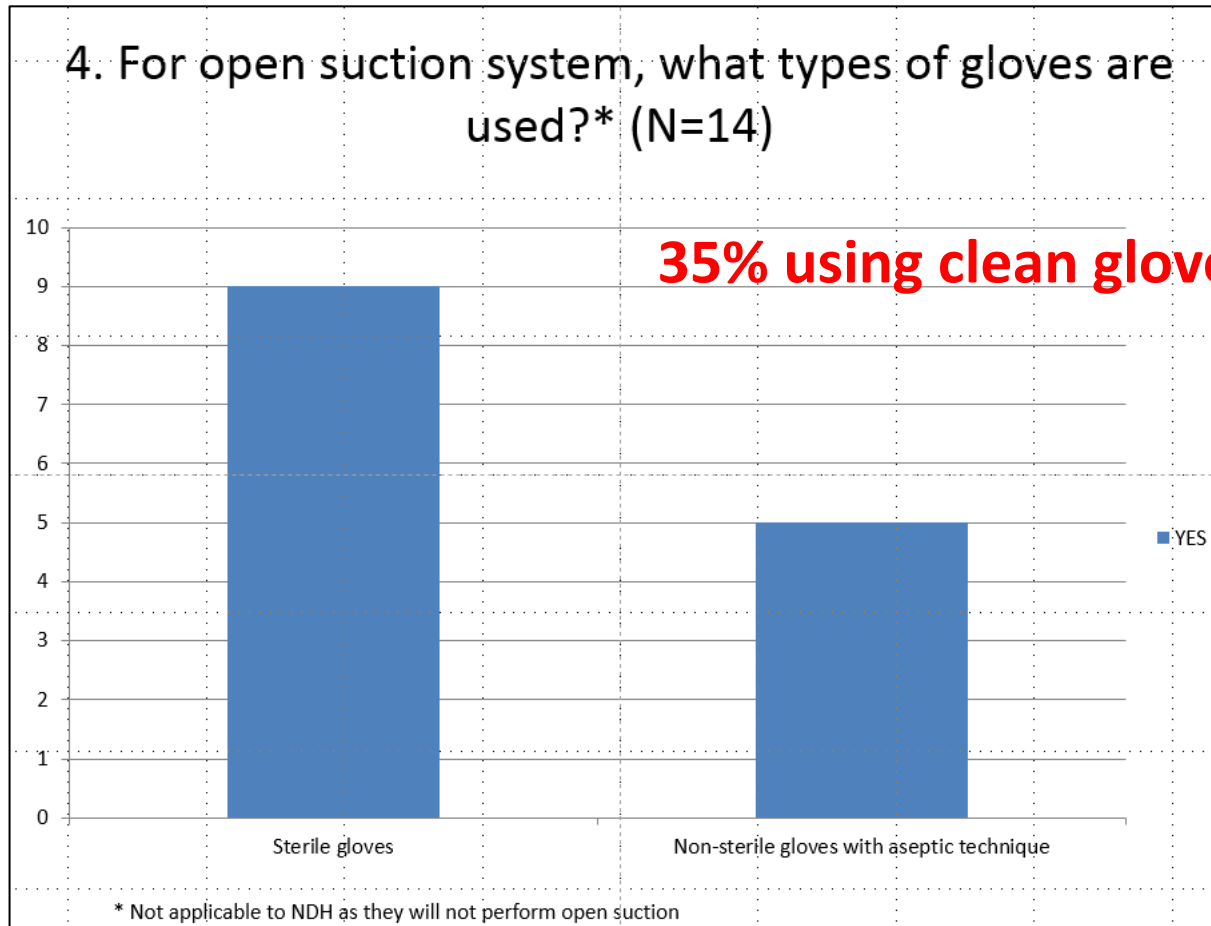
3. Which tracheal suction method is/are currently used in your unit/department? (N=7)



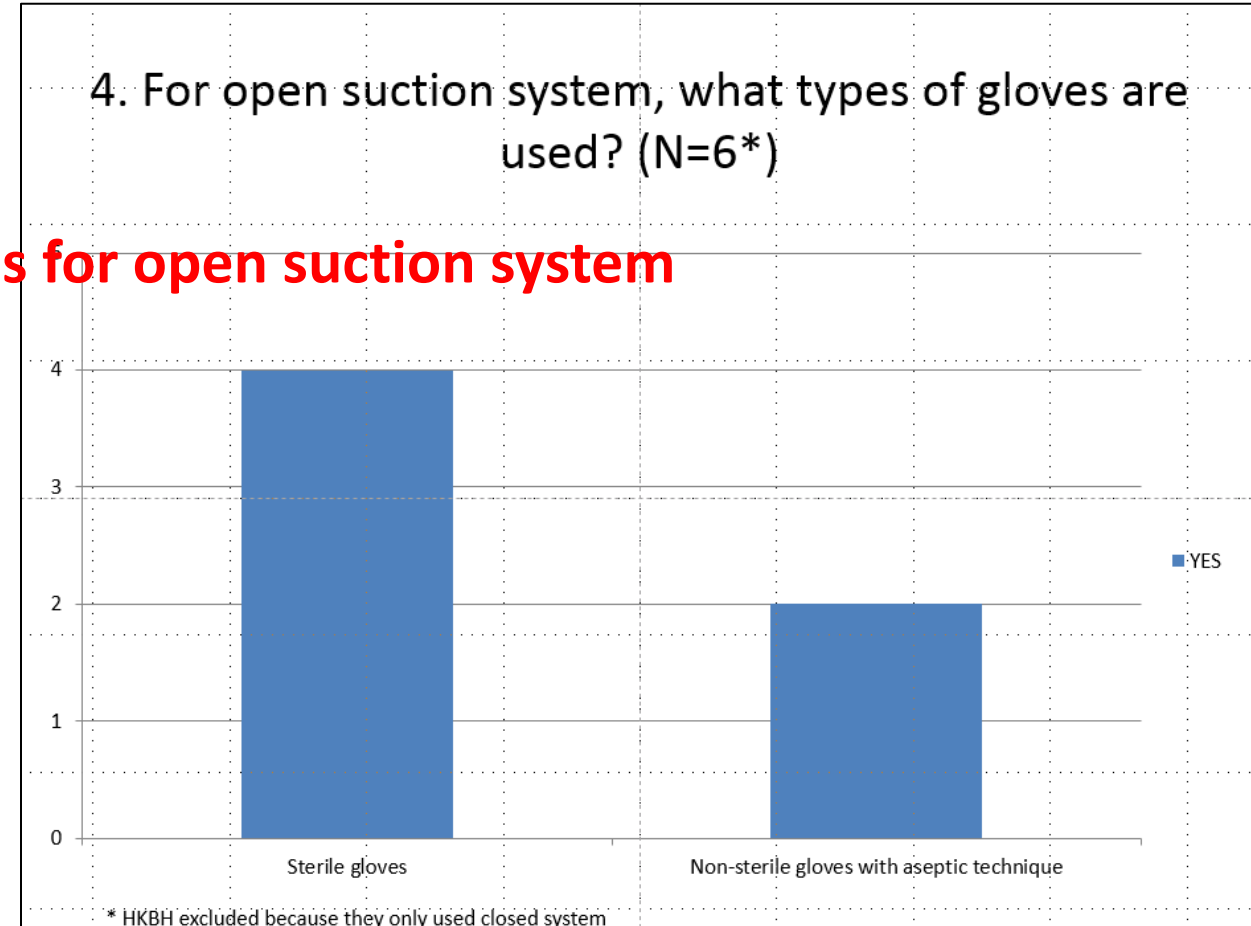
Recommendation:

The advantage of closed suction method is that there is no dissemination of aerosols. Therefore, measures to prevent the transmission of infectious aerosols are not required.

Public Hospitals



Private Hospitals

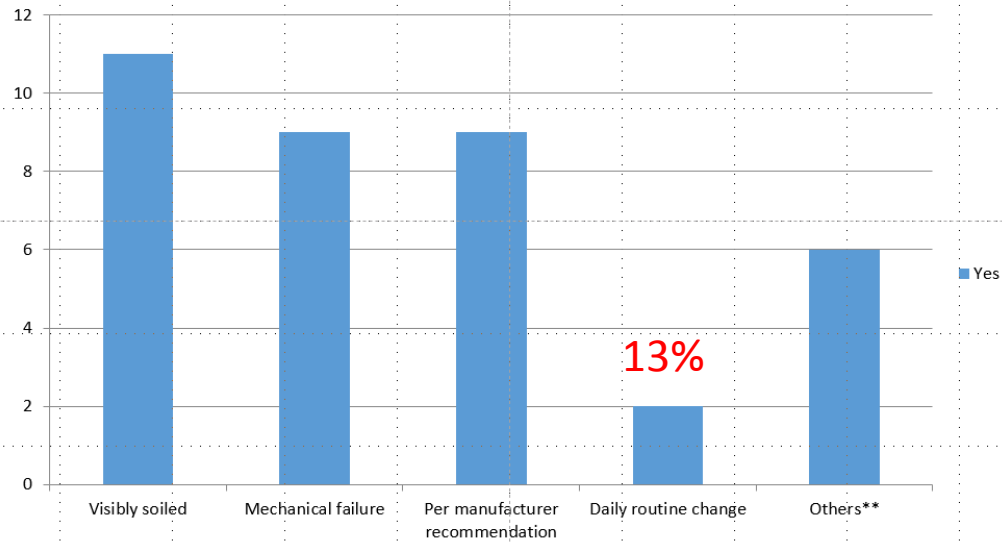


Recommendation: (for open suction)

It is preferable to use sterile gloves than clean gloves for endotracheal suction. If clean gloves are used, ensure the sterility of inserted part of suction catheter is maintained

Public Hospitals

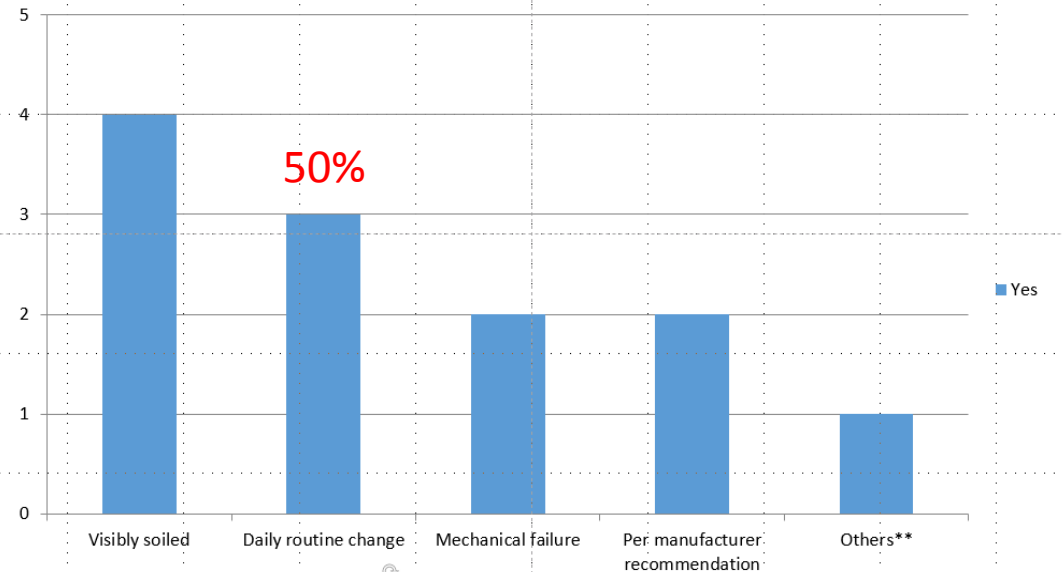
5. For closed suction system, when is the suction catheter changed? (N=15)



**Before save sputum for culture; at each ventilator circuit change (Q4 days to Q7 days); Q7 days; Q3 days; 96 hours or when collecting specimens C/ST

Private Hospitals

5. For closed suction system, when is the suction catheter changed? (N=6)



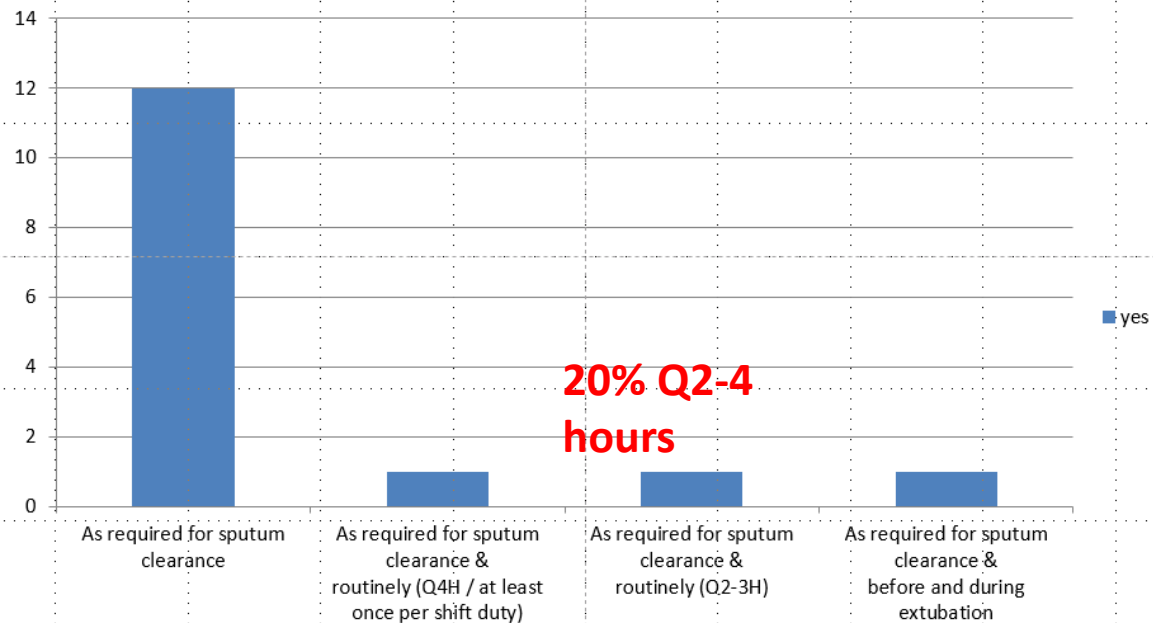
** specimen collection for culture

Recommendation:

Change the in-line suction catheter following manufacturer's recommendation or when the suction catheter is visibly soiled.

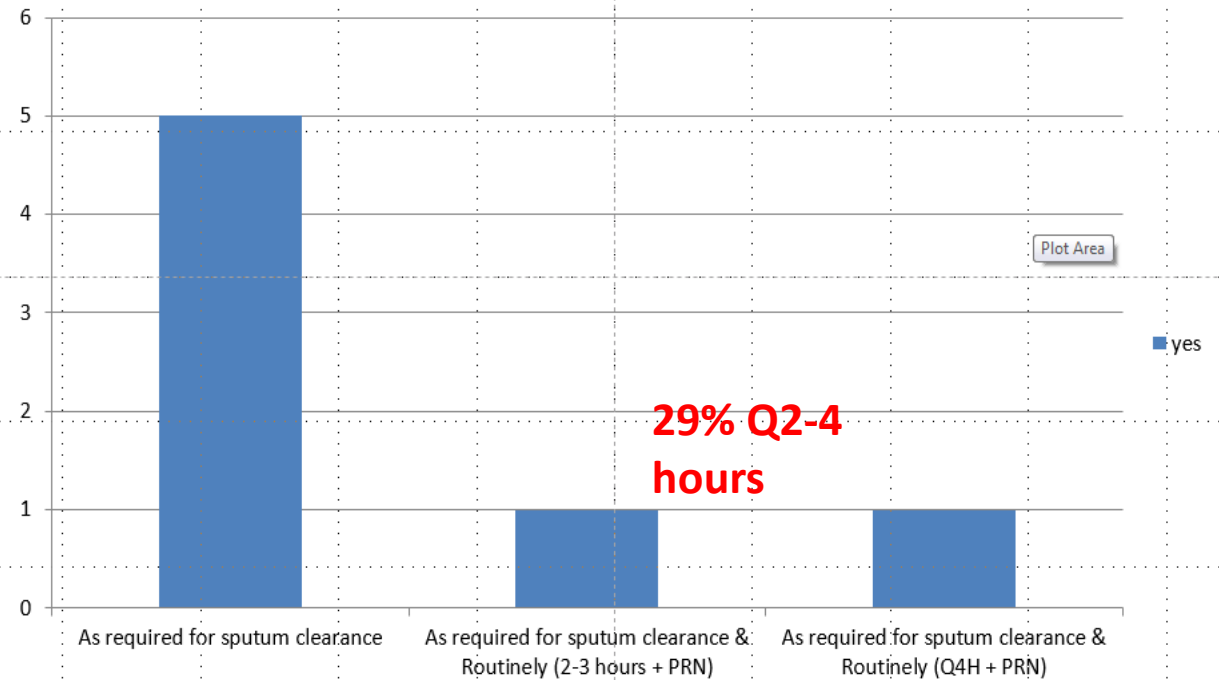
Public Hospitals

6. How often is endotracheal suction performed?
(N=15)



Private Hospitals

6. How often is endotracheal suction performed? (N=7)

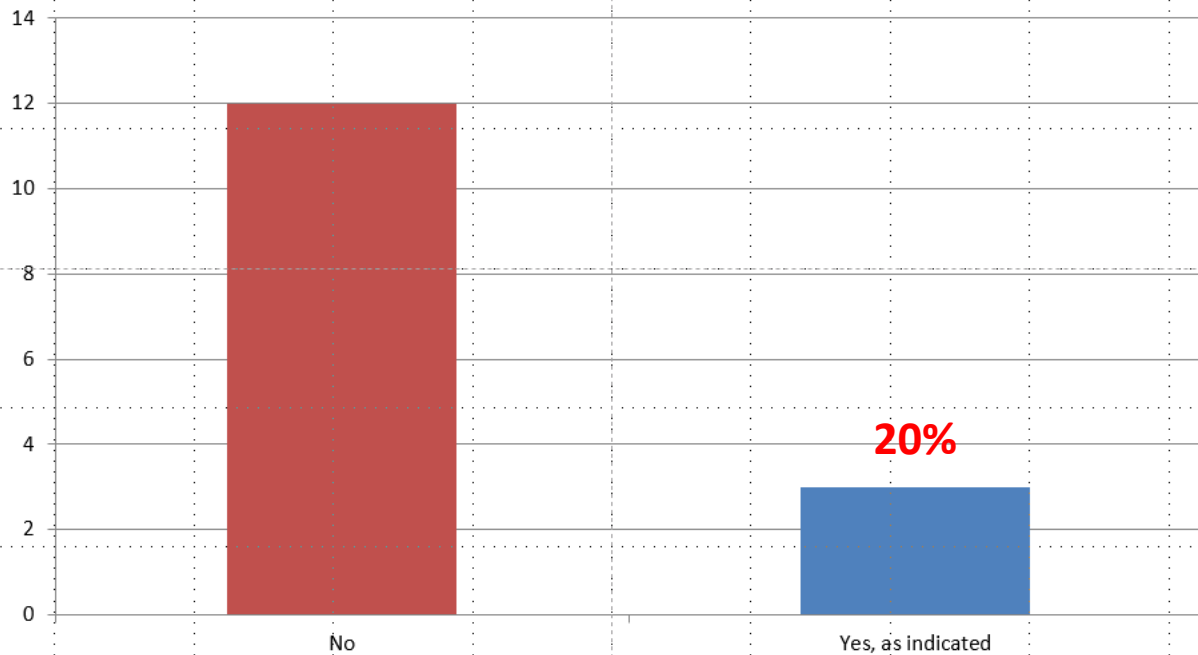


Recommendation:
Perform suction only when indicated. Avoid routine suction.

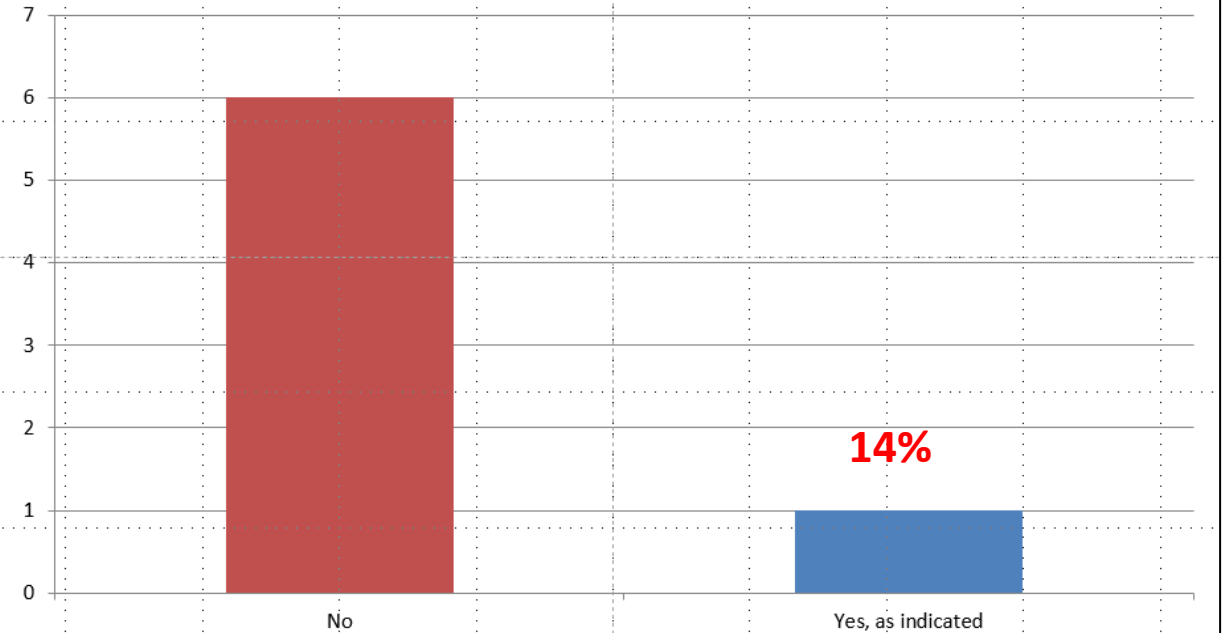
Public Hospitals

Private Hospitals

7. Is saline instillation before endotracheal suction practiced? (N=15)



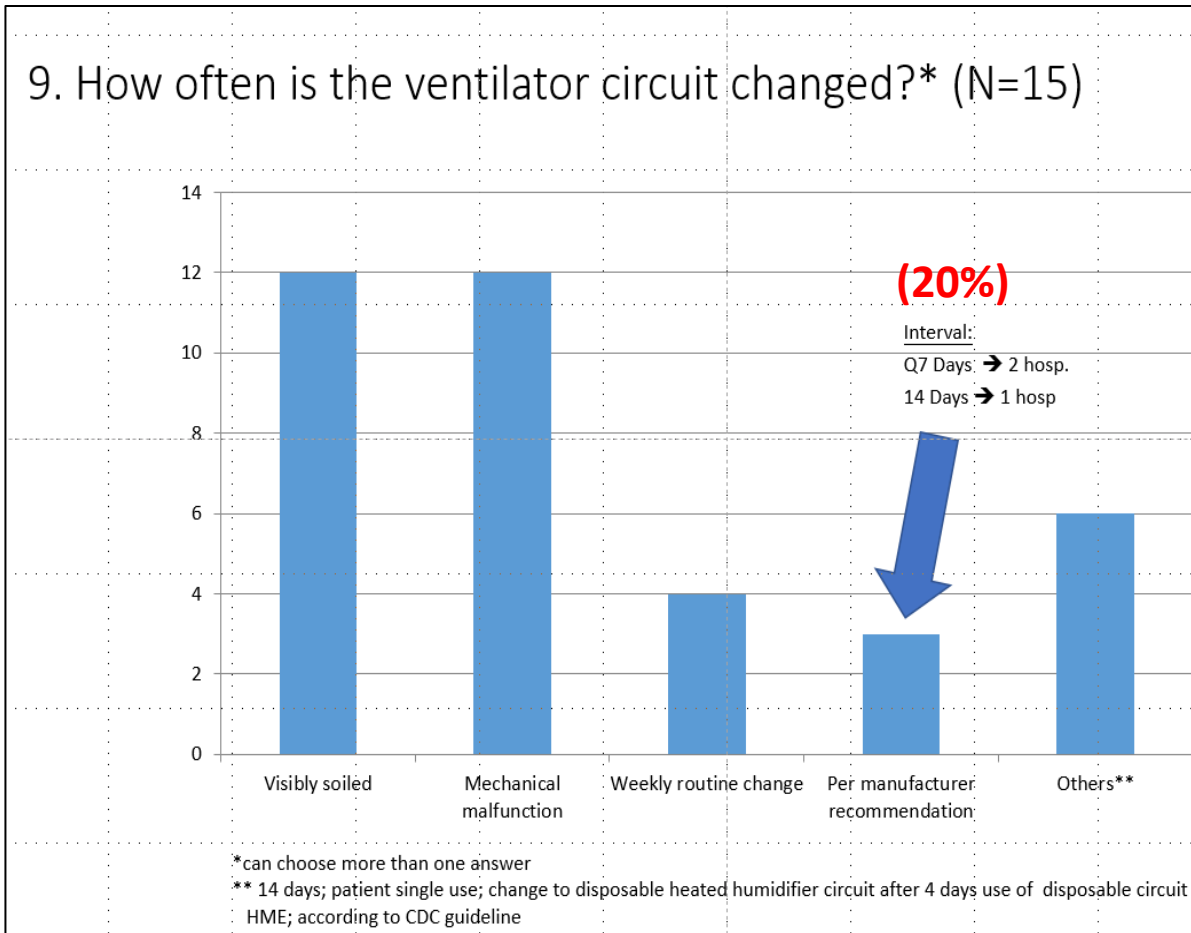
7. Is saline instillation before endotracheal suction practiced? (N=7)



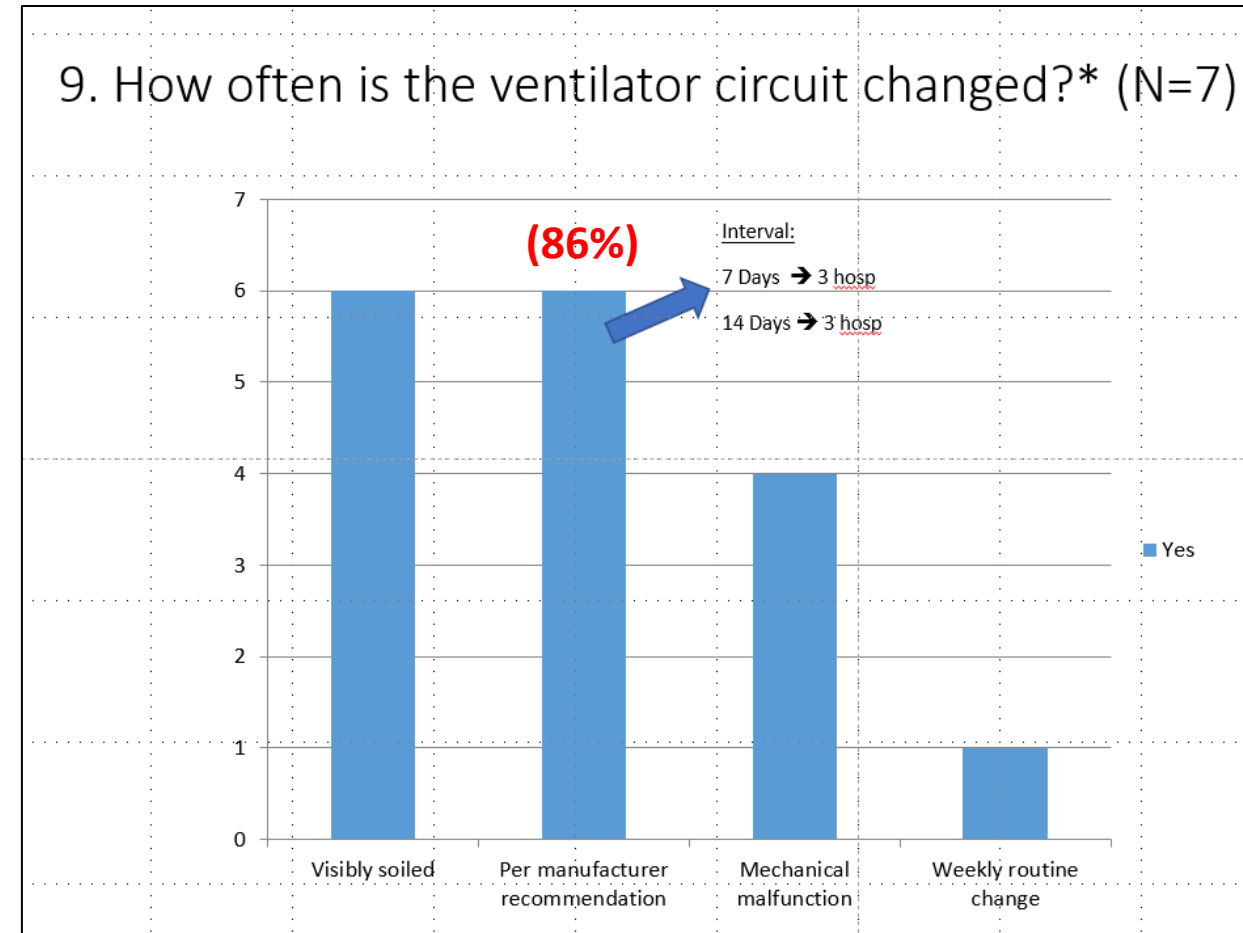
Recommendation :

The practice of using saline instillation to loosen sputum for suction before tracheal suctioning is controversial and cannot be recommended until sufficient data is available

Public Hospitals



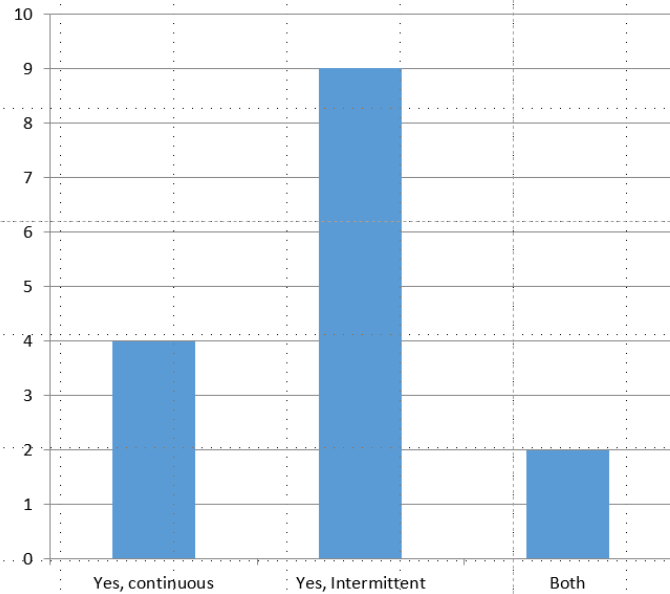
Private Hospitals



Recommendation:
Minimize ventilator circuit breaks and change the ventilator circuit only if visibly soiled or malfunctioning

Public Hospitals

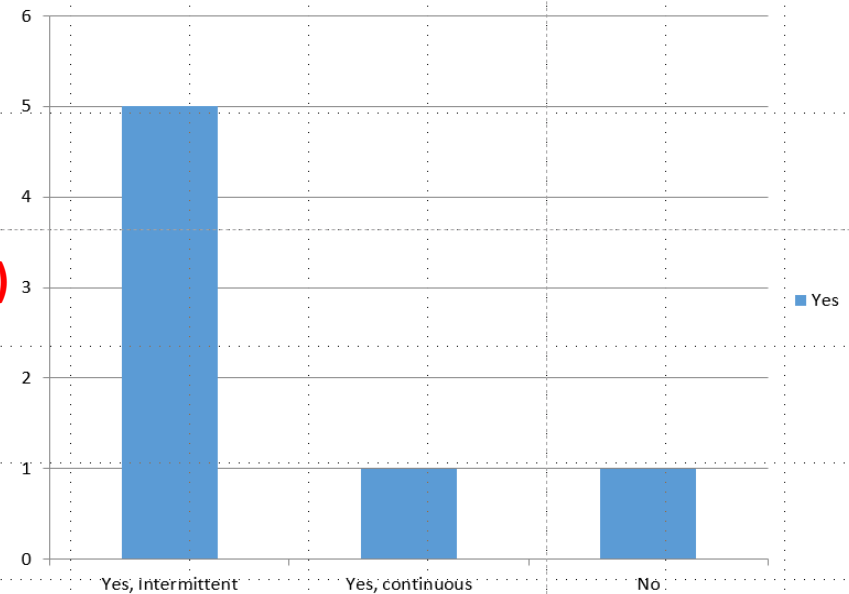
10. Is endotracheal tube cuff pressure routinely monitored? (N=15)



(23% continuous)

Private Hospitals

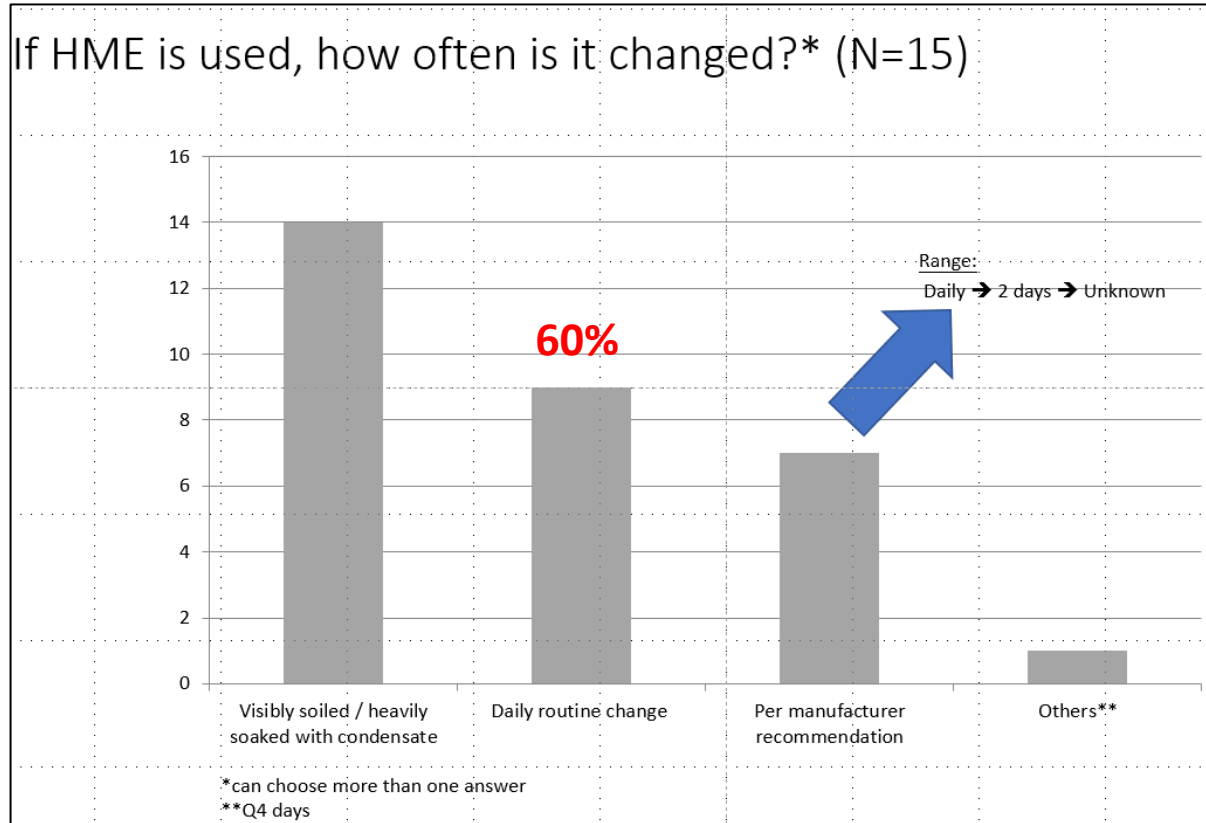
10. Is endotracheal tube cuff pressure routinely monitored? (N=7)



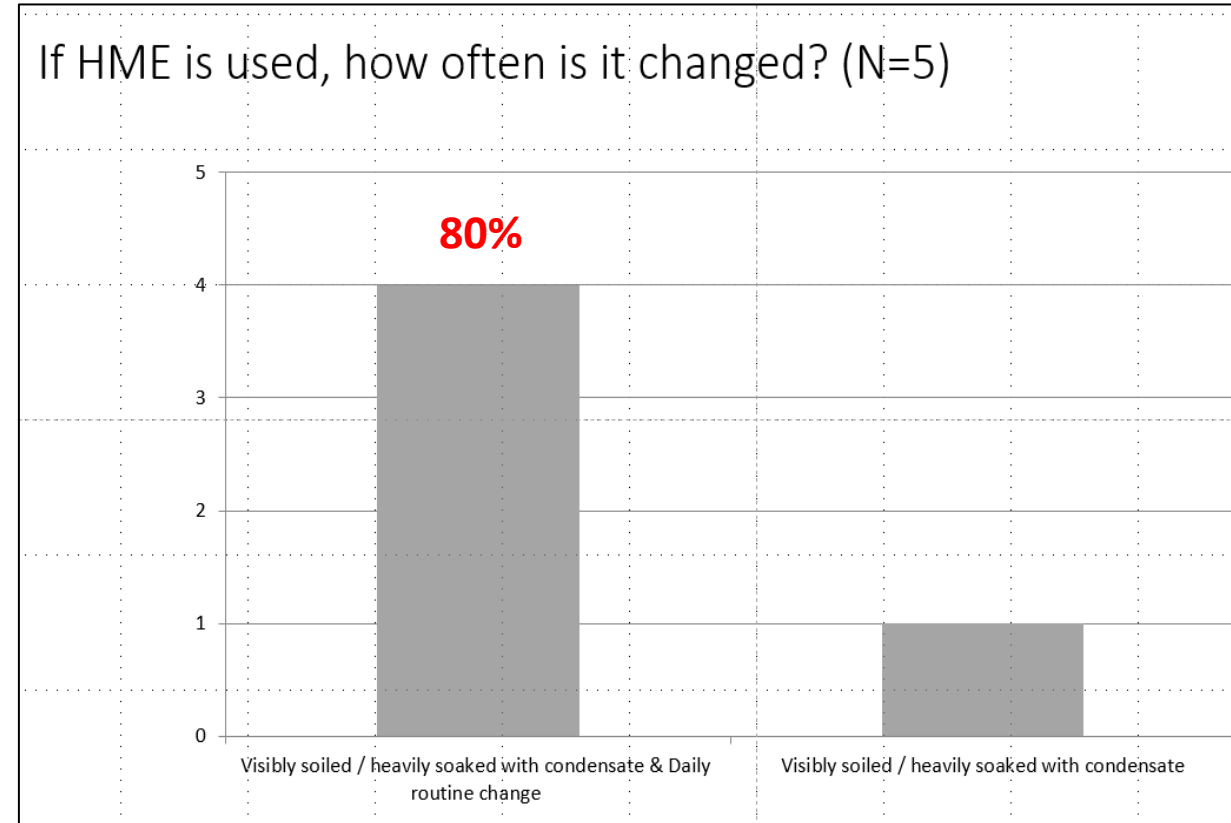
Recommendation:

Maintain the tracheal tube cuff pressure adequately to prevent the leakage of secretion into the lower airway

Public Hospitals

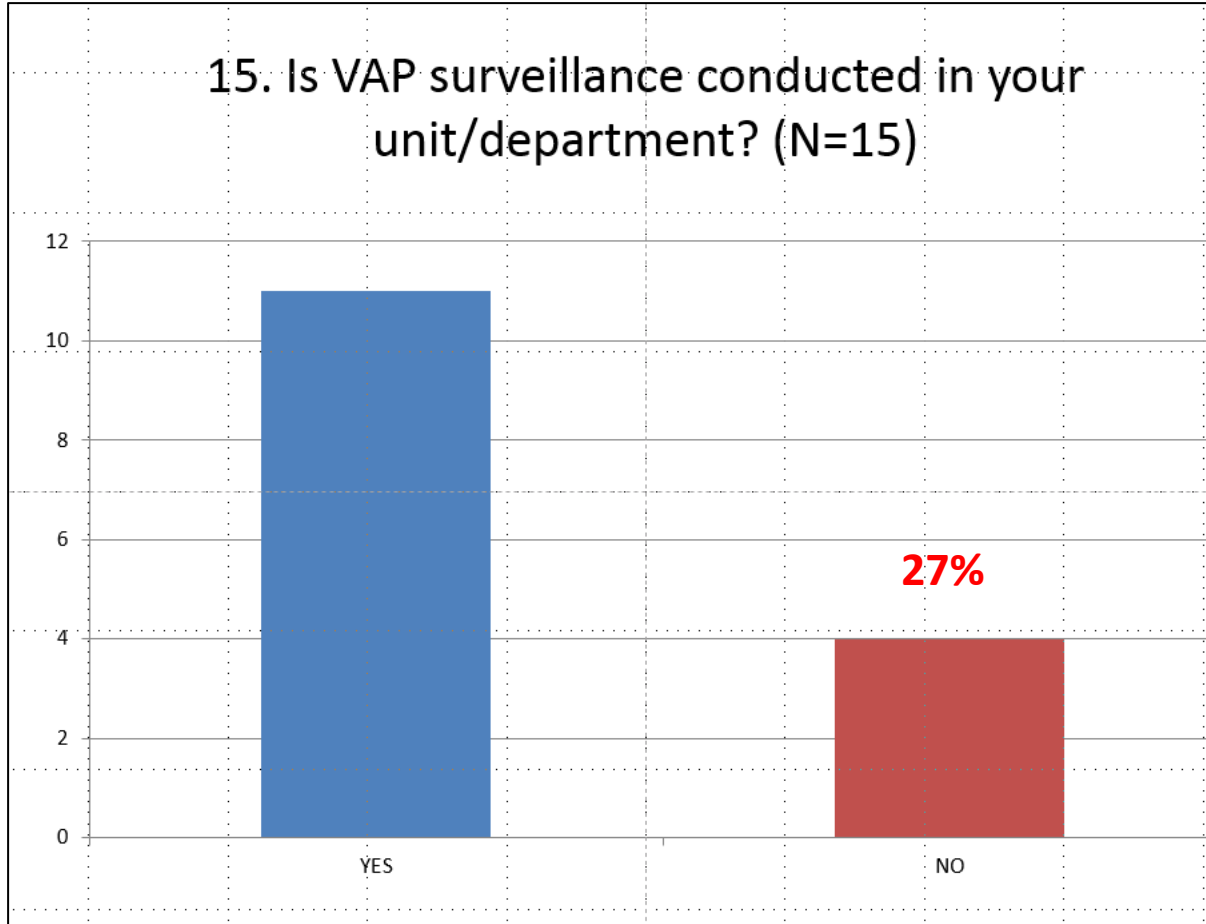


Private Hospitals

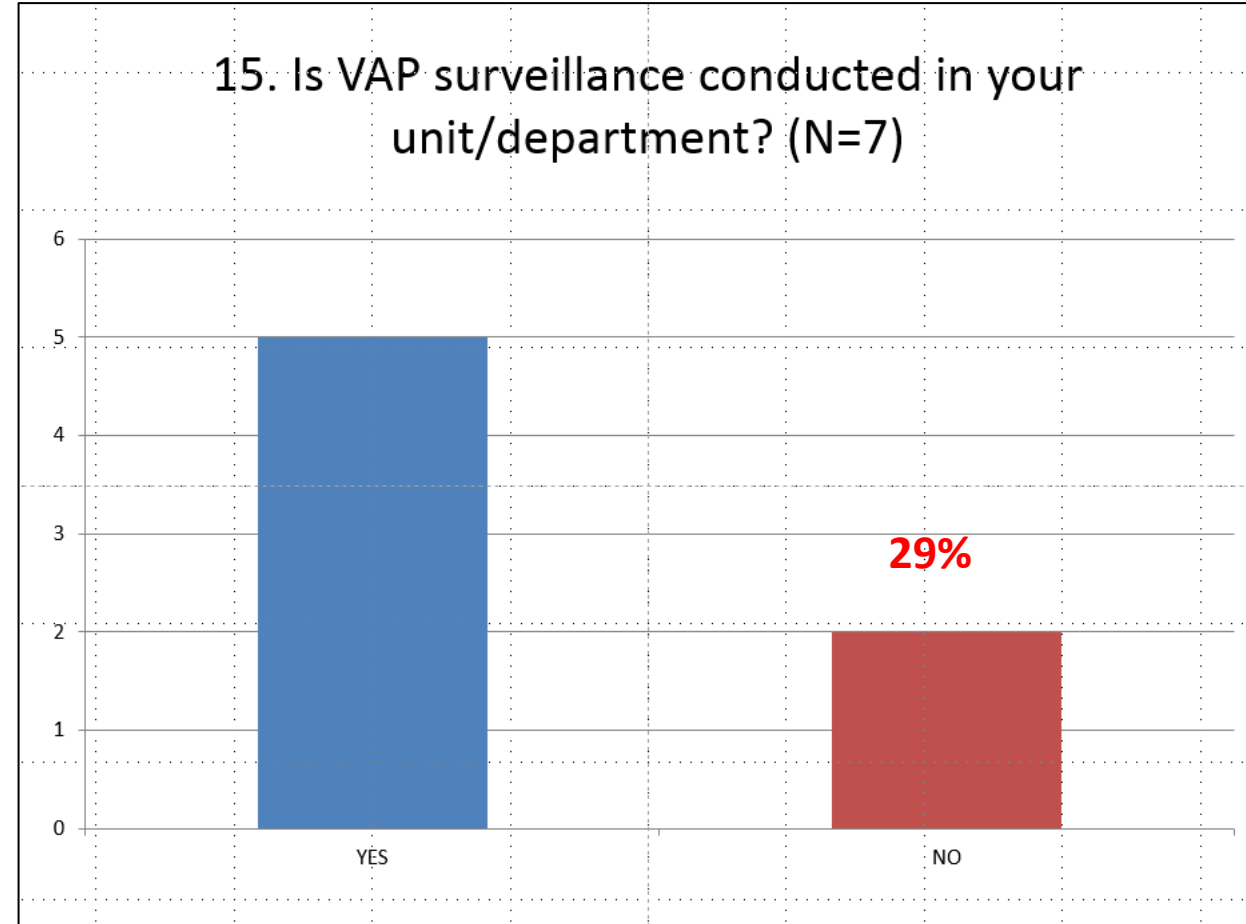


Recommendation;
Change an HME when it malfunctions mechanically or becomes visibly soiled

Public Hospitals



Private Hospitals

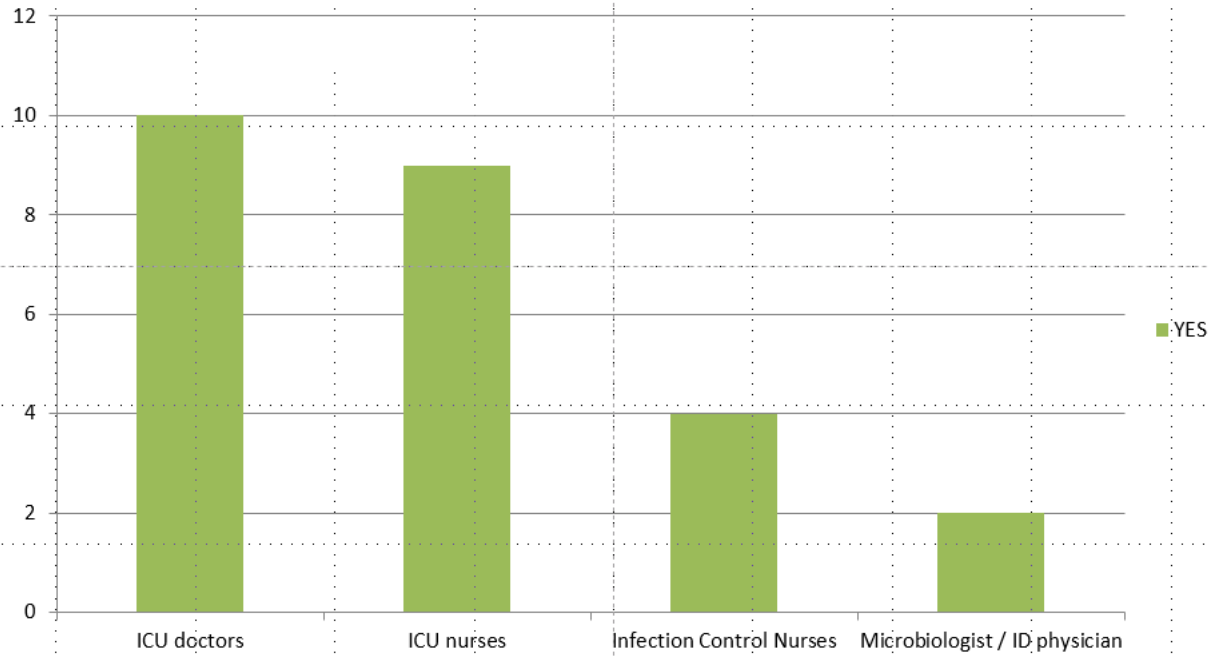


Recommendation:

Outcome measures: Conduct ongoing active surveillance for ventilator-associated pneumonia in ICU or high dependent area.

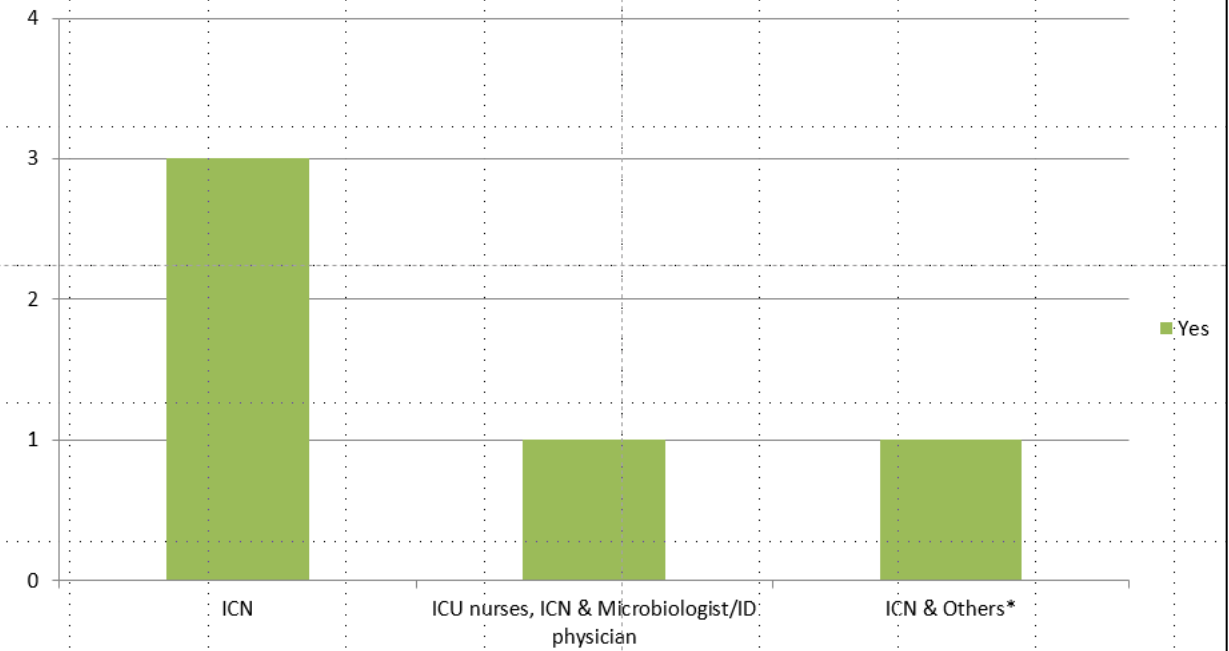
Public Hospitals

18. Who is responsible to conduct VAP surveillance?*(N=11)



Private Hospitals

18. Who is responsible to conduct VAP surveillance?*(N=5)



*Special Care Unit Nurse

Public Hospitals

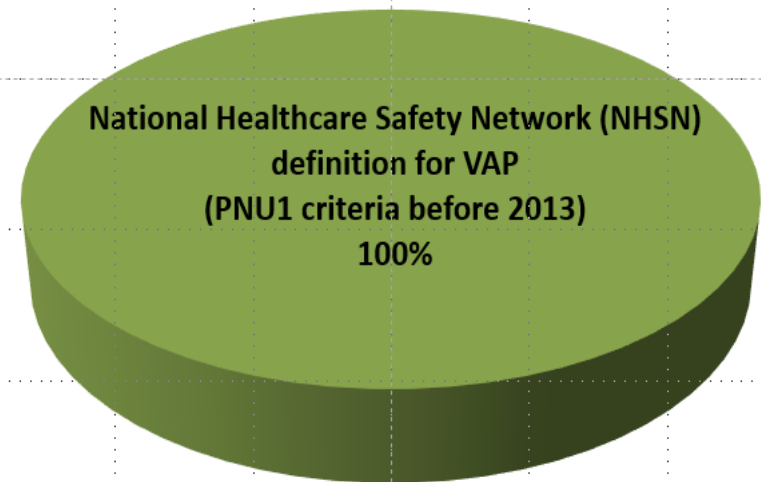
16. Which surveillance definition is adopted in your unit/ department? (N=11)



*NHSN definition of VAP (CPIS)

Private Hospitals

16. Which surveillance definition is adopted in your unit/ department? (N=5)

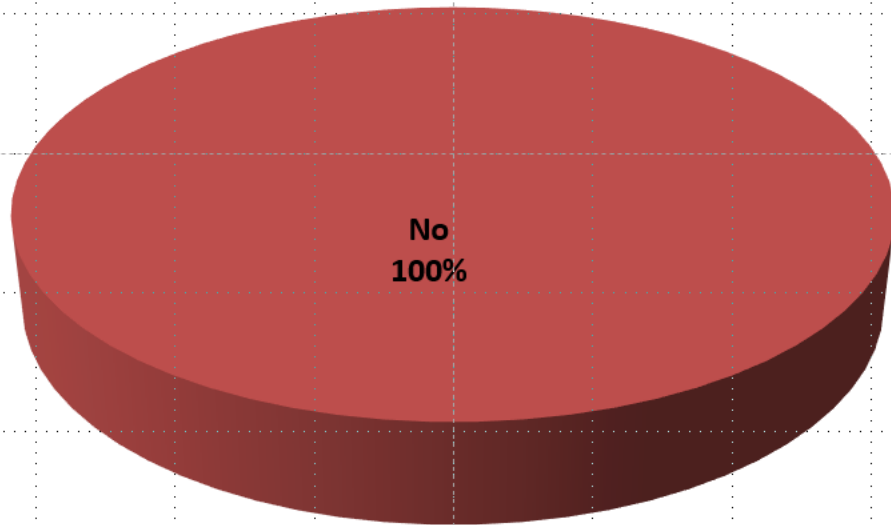


Only one hospital using NHSN 2013 definition of VAE, VAC, IVAC & PVAP

Antibiotic Stewardship Survey

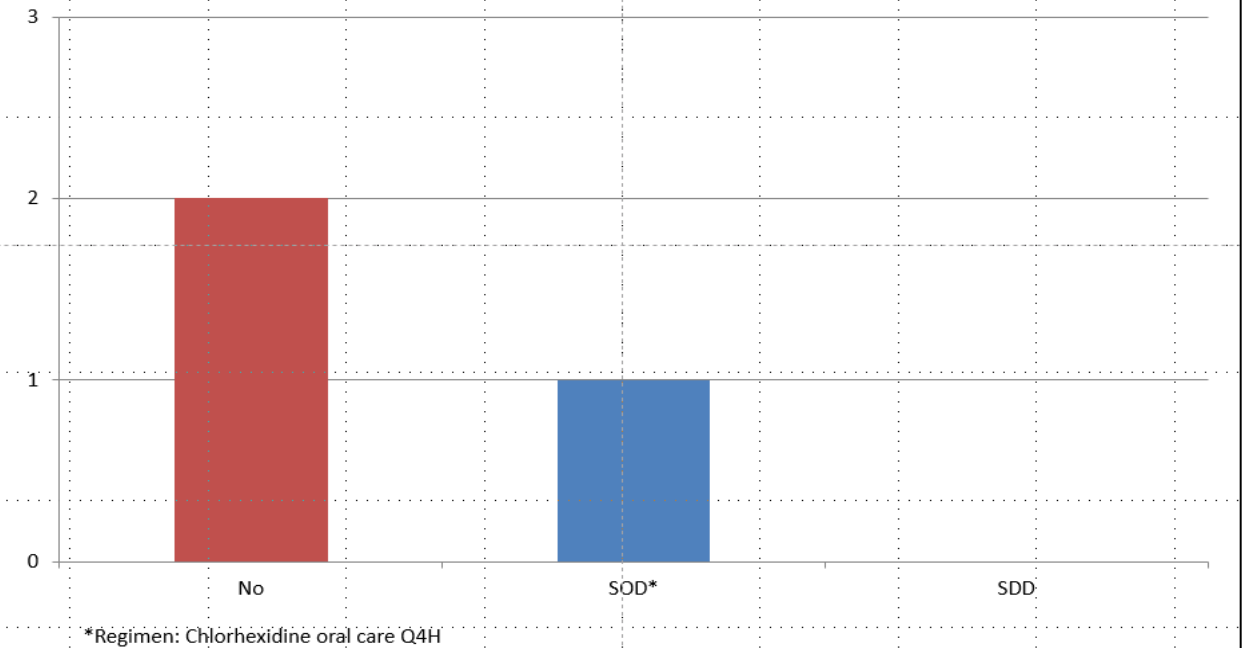
Public Hospitals

1. Does your service prescribe SDD/SOD to prevent VAP? (N=15)



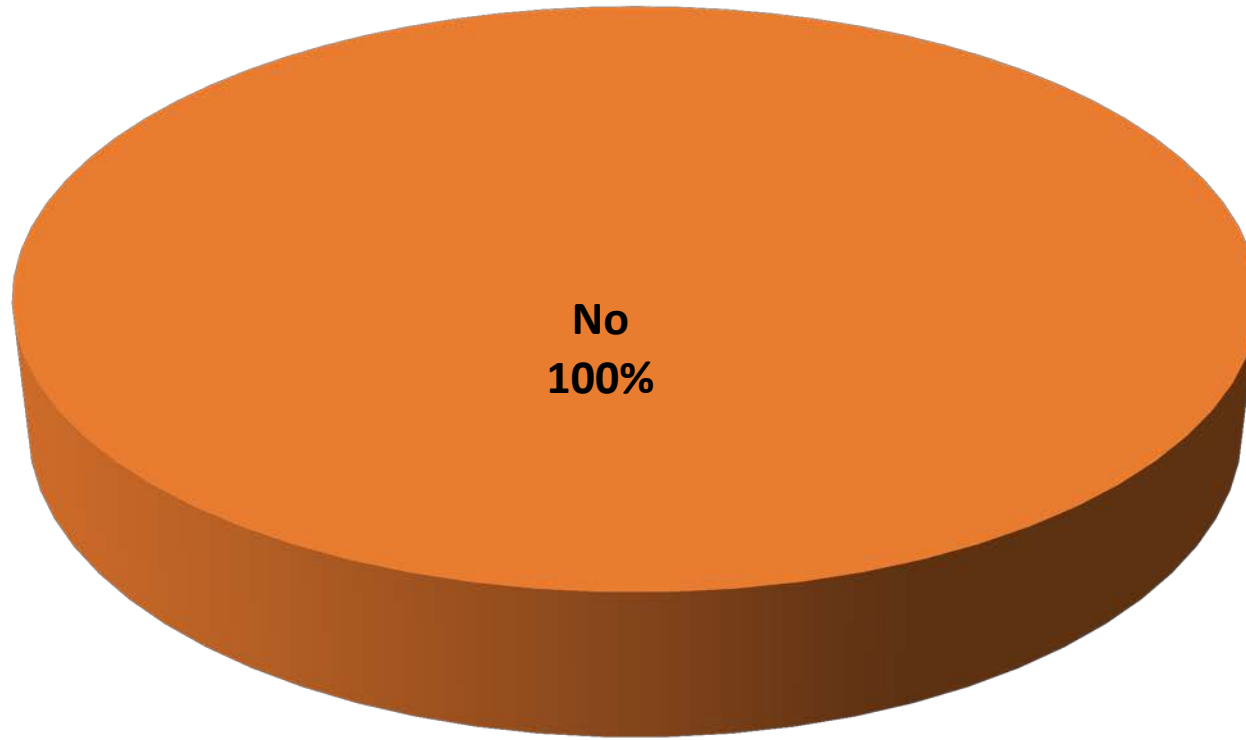
Private Hospitals

1. Does your service prescribe SDD/SOD to prevent VAP? (N=3)



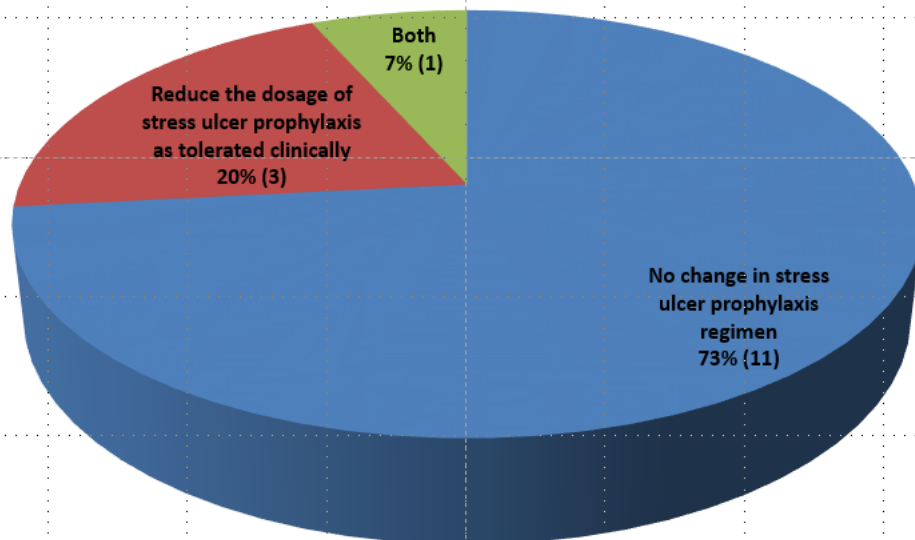
SDD - selective digestive tract decontamination
SOD - selective oropharyngeal decontamination

2. Does your unit prescribe prophylactic antibiotics at the time of intubation for prevention of VAP? (n=15 HA ,n= 3 Private)



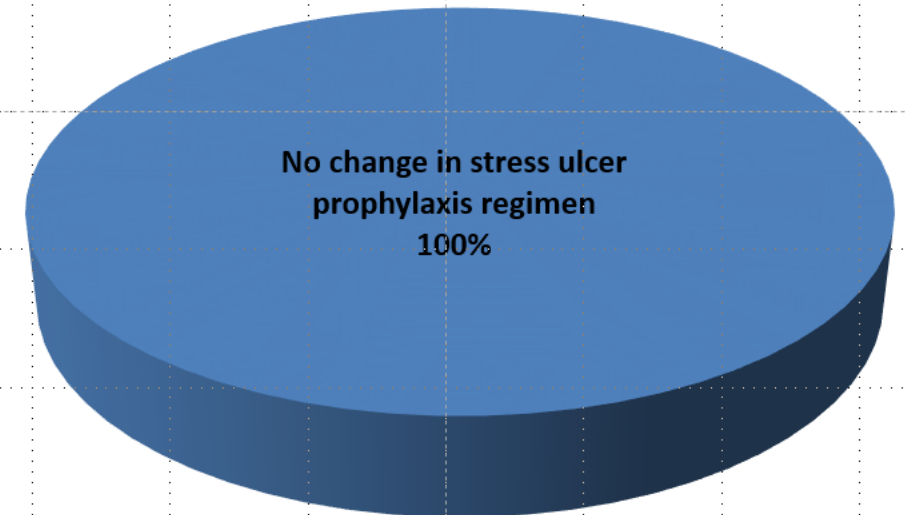
Public Hospitals

3. What is the usual practice of stress ulcer prophylaxis in your unit/department for patients at risk of or having VAP? (N=15)



Private Hospitals

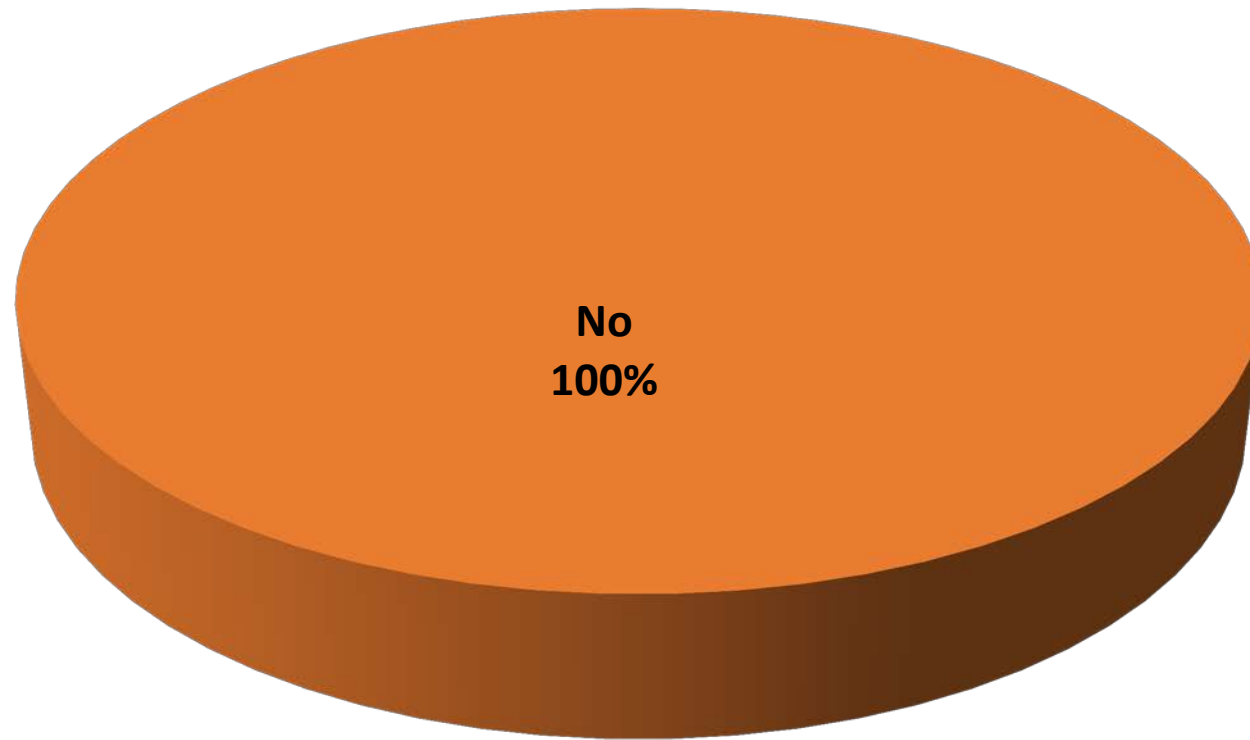
3. What is the usual practice of stress ulcer prophylaxis in your unit/department for patients at risk of or having VAP? (N=3)



Recommendation

Stress ulcer prophylaxis e.g. histamine blockers, PPIs, and other antacids should be selective towards patients with high-risk of GI bleeding e.g. those with recent bleed

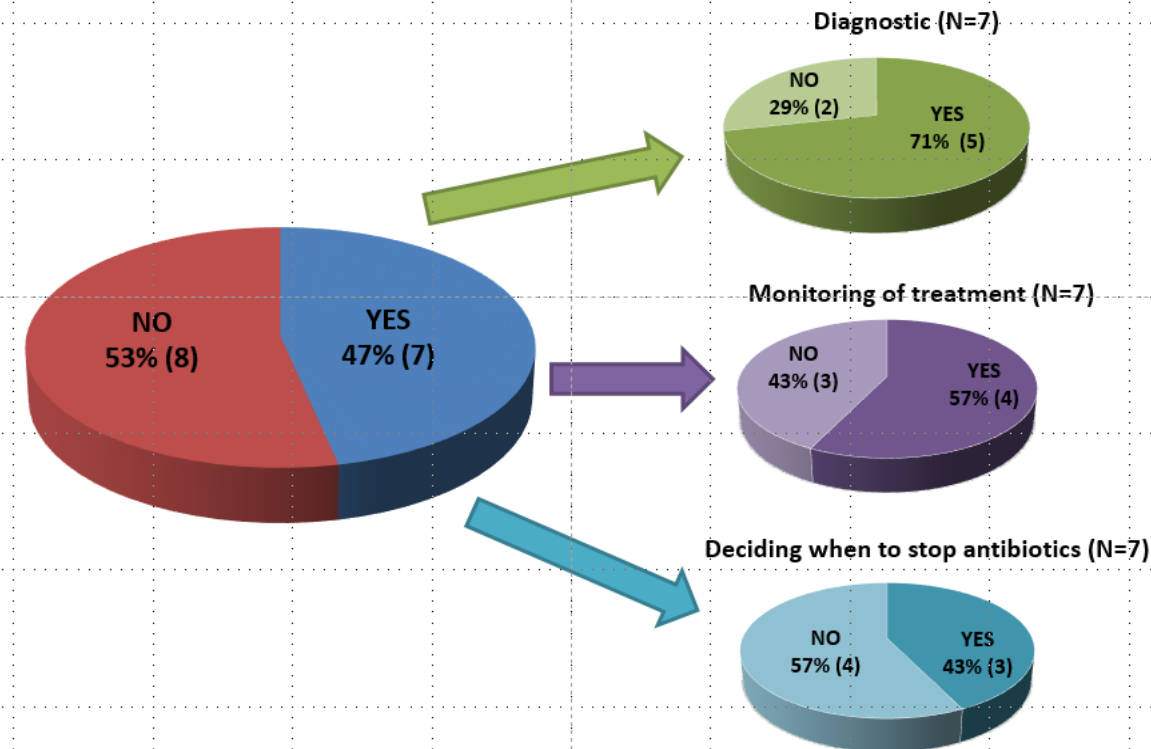
4. Is sucralfate used for stress ulcer prophylaxis in your unit/department?
(n=15 HA , n=3 Private)



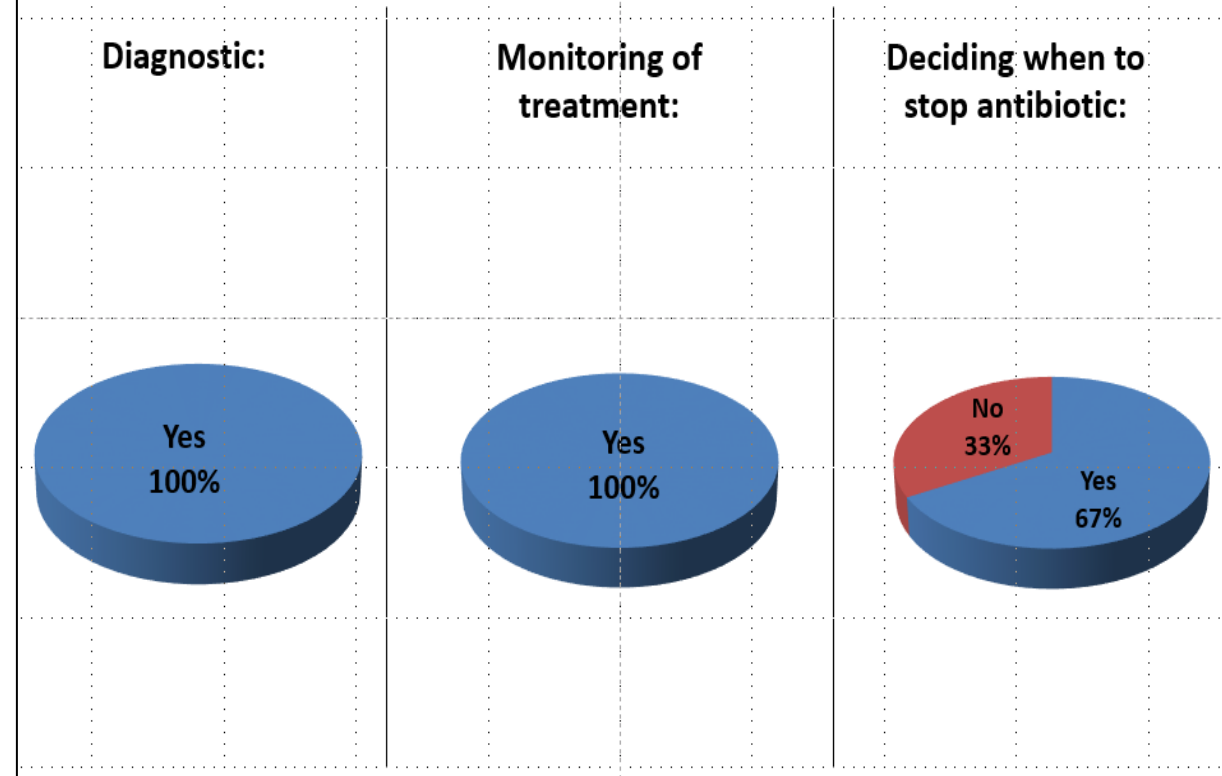
Public Hospitals

Private Hospitals

6. Do you check procalcitonin for patients suspected with VAP? (N=15)



6. Do you check procalcitonin for patients suspected with VAP? (N=3)



Recommendation

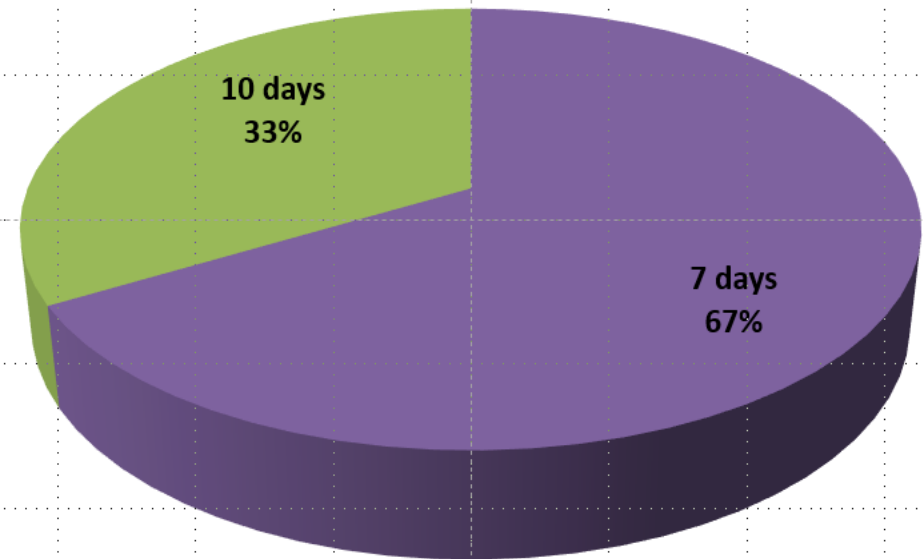
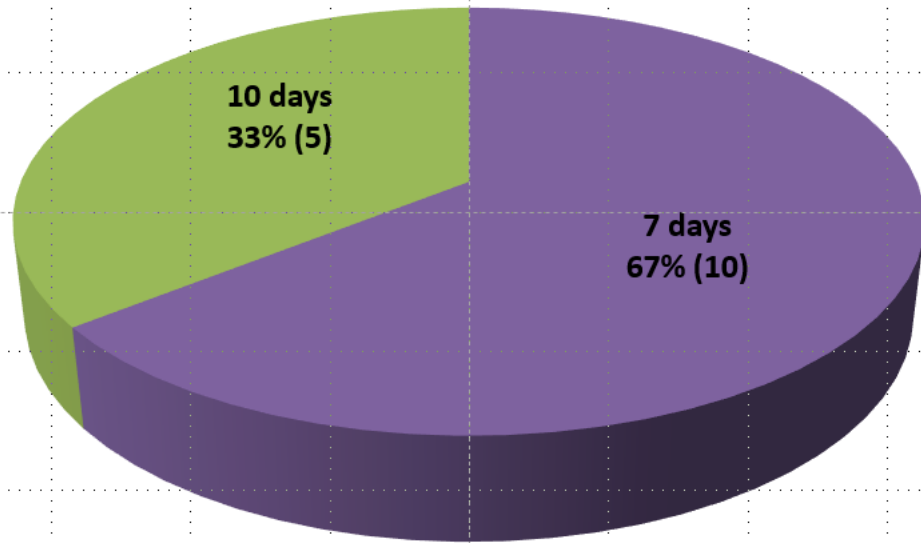
To use clinical criteria alone, rather than serum Procalcitonin (PCT) plus clinical criteria, to decide on initiation of antibiotic therapy. (1) Procalcitonin is useful to guide antibiotic duration in cases with anticipated course of treatment lasting for more than 7-8 days

Public Hospitals

Private Hospitals

7. What is usual duration of treatment for uncomplicated VAP in your unit / department? (N=15)

7. What is usual duration of treatment for uncomplicated VAP in your unit / department? (N=3)

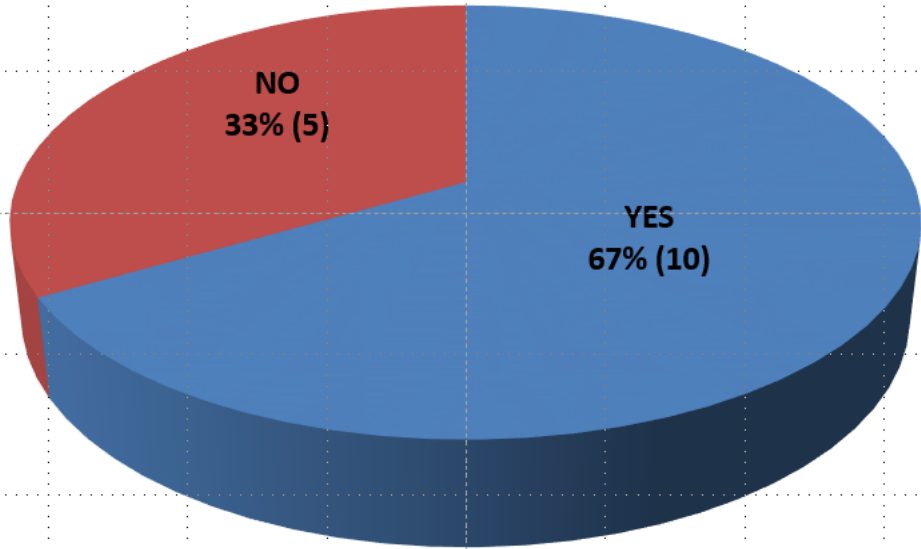


Recommendation:

A 7-day course of antimicrobial therapy for patients with VAP rather than a longer duration is recommended

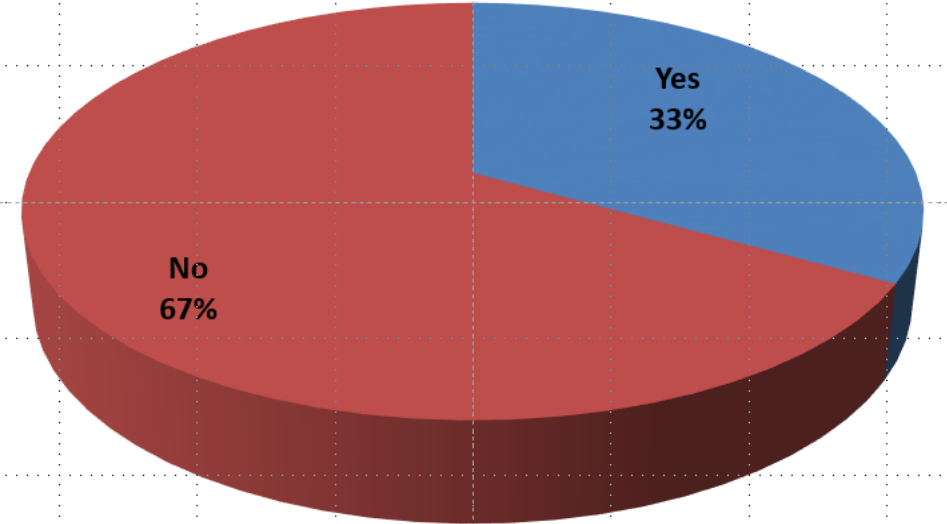
Public Hospitals

9. Do you routinely use narrow spectrum antibiotics to treat early-onset VAP ? (N=15)



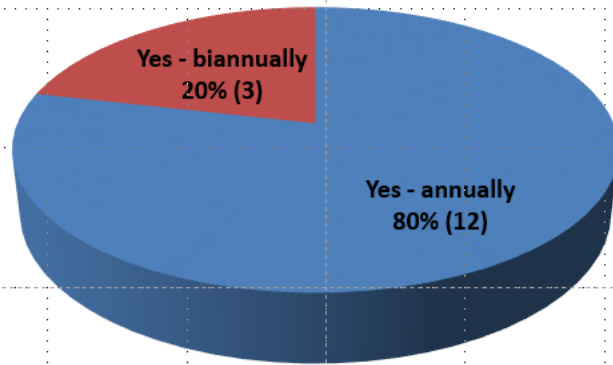
Private Hospitals

9. Do you routinely use narrow spectrum antibiotics to treat early onset VAP ? (N=3)

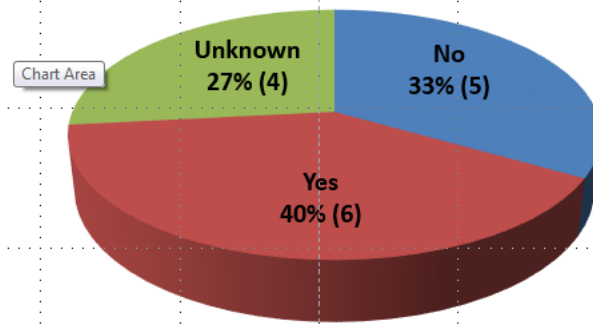


Public Hospitals

10. Are antibiograms published regularly in your hospital? (N=15)

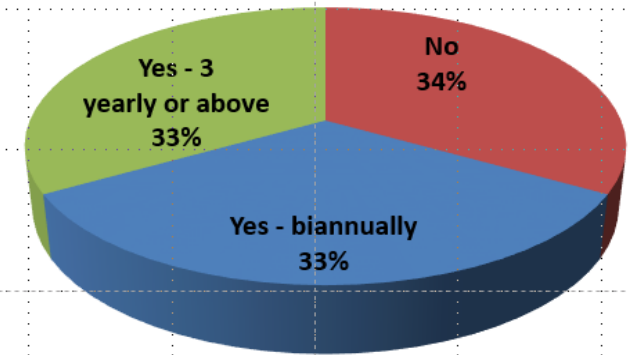


Is it specific to the ICU setting?

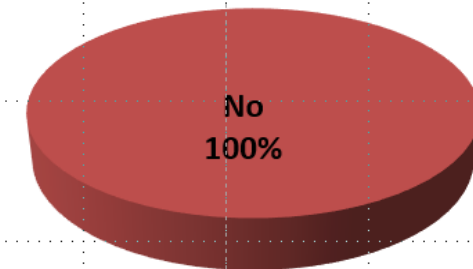


Private Hospitals

10. Are antibiograms published regularly in your hospital? (N=3)



Is it specific to the ICU setting?
(N=2)

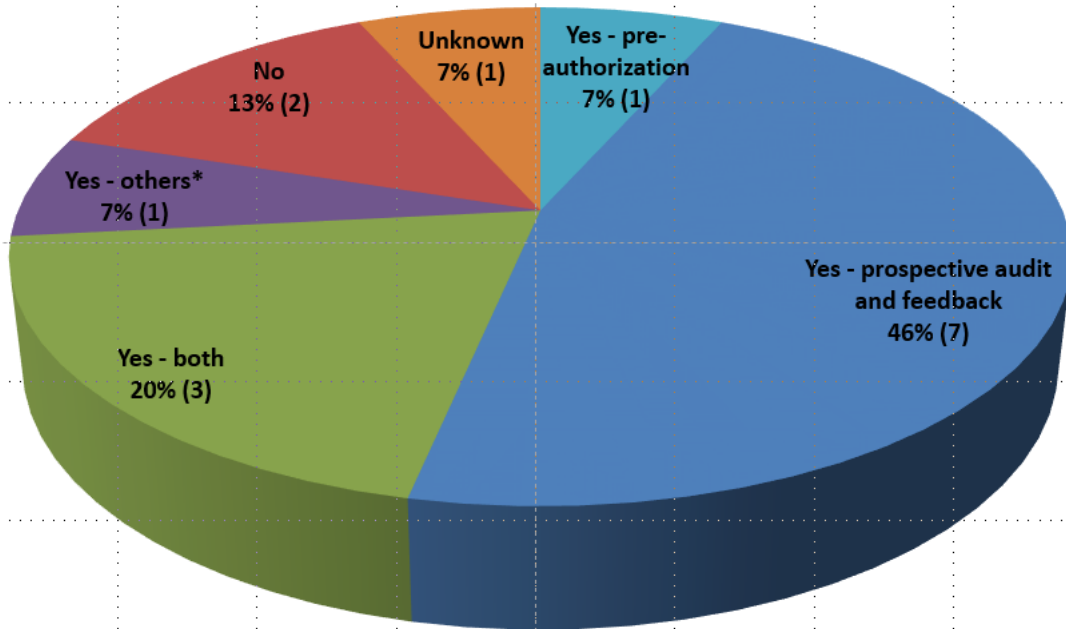


Recommendation: Hospitals regularly generate and disseminate a local antibiogram, ideally one that is specific to their intensive care population(s) if possible to guide selection of an empiric antibiotic regimen

Public Hospitals

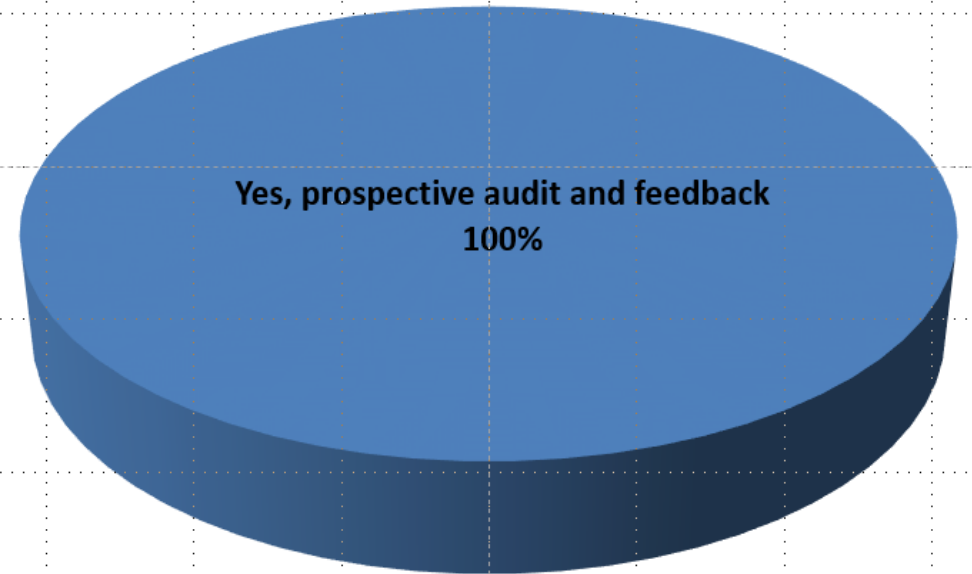
Private Hospitals

12. Is Antibiotic Stewardship Programme (ASP) available in your hospital? (N=15)



* Regular microbiologist consults

12. Is Antibiotic Stewardship Programme (ASP) available in your hospital? (N=3)



Recommendation : Preauthorization and/or prospective audit and feedback improve antibiotic use. ASP should include one or a combination of both strategies

Gaps in VAP Prevention Practices

- 24% no surveillance of VAP and not preventing condensate entering patients
- All ICUs use CHG for oral care while some use concentration of 2%, 0.2%
- 35% using clean gloves for open suction
- 13% of PUH & 50% of PH change close suction system daily
- 20-30% routinely suctioning patient at 2-4 hours interval
- 14% of PH and 20% of PUH are using saline instillation to loosen sputum for suction before tracheal suctioning
- 66% of PUH and 100% of PH regularly 1-2 weekly change of ventilator tubing
- 60% of PUH and 80% of PH change the HME daily
- 27% of PUH and 29% of PH do not perform surveillance on VAP
- Only one hospital using NHSN 2013 definition of VAE, VAC, IVAC & PVAP

Antibiotic Stewardship Program

Strength:

- Not using Selective Digestive Tract Decontamination (SDD)
- Not using prophylactic antibiotic for prevention of VAP

Gaps

- Procalcitonin is used diagnosis, checking treatment
- 60% of PUH and PH are treating VAP for 10 days.
- First line antibiotics are used in 70% of patients in PUH while PH is only 30%
- PUH published antibiogram annually or biannually and 40% with stratification of ICU. In PH only 2/3 hospital publish antibiogram but no ICU stratification
- All PUH & PH reported some form of on-going ASP



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Pneumonia**

2nd Edition

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Centre for Health Protection,
Department of Health**

Nov 2018



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轄下執行疾病預防
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