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**Efficacy Of Chlorhexidine Gluconate Oral Rinse In Reducing The Occurrence Of Ventilator Associated Pneumonia In Intensive Care Units At KMCH Coimbatore.**

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**ABSTRACT**

**Objectives:** The aim of the study was to compare the efficacy of chlorhexidine gluconate oral rinse with Povidine Iodine oral rinse in reducing the occurrence of ventilator associated pneumonia.

**Methods:** The investigator used Randomized Control Trial design and Non probability convenient sampling Technique.

**Result:** The data was analyzed with the independent 't' test in that there was a significant reduction in the occurrence of Ventilator Associated Pneumonia among patients in intervention group than the control group ( $P < 0.01$ ). **Conclusions:** the result implied that the chlorhexidine gluconate oral rinse is effective in reducing the occurrence of Ventilator Associated Pneumonia among intubated patients than conventional group.

**Key words:** Ventilator Associated Pneumonia, Chlorhexidine Gluconate & Intensive Care Units

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**Introduction**

Ventilator Associated Pneumonia (VAP) is one of the common Nosocomial infections in ICU .VAP develops in patients those who require prolonged mechanically ventilation. VAP is the second leading cause of morbidity and mortality in the intensive care unit. VAP is associated with increased morbidity, mortality, duration of hospitalization and cost of treatment. In 2012 the International Nosocomial Infection Control Consortium (INICC) reported that VAP rate was from 10% to 41.7% per 1000 ventilator days, Crude mortality attributable to VAP ranged from 16% to 94%.Extra Length of ICU stay was more than 7 days. Eighty percentage of

Nosocomial pneumonia was associated with intubation and mechanical ventilation<sup>1</sup>.

**Need For The Study:**

Oral intubation increases the salivation, difficulty in swallowing, pooling of secretions and subsequently leads to Aspiration. Hence frequent oral suctioning, proper oral hygiene is very essential to prevent oral colonization of microorganisms and their transduction to lung tissue. So the investigator felt the definite need for chlorhexidine gluconate oral rinse for intubated patients.Effectiveness of Oral care with

chlorhexidine has been studied in 16 randomized controlled trials and 9 Meta analyses to date.<sup>4,7</sup>. The benefits of oral care with chlorhexidine appear to be most pronounced in preventing postoperative respiratory tract infections in cardiac-surgery patients. Meta-analyses suggest that oral care with chlorhexidine can reduce pneumonia rates by 10%–30%

**MATERIALS & METHODS**

A **Randomized Clinical Trial** was adopted in this study. The Patients, who were intubated orally and mechanically ventilated in Medical and Surgical ICU, Were included for this study. This was conducted in Kovai Medical Center and Hospital at Coimbatore, Tamilnadu, India. The final sample (n=80) 40 in experimental and 40 in control group was selected by Non Probability convenient sampling technique .

**Inclusion criteria:**

- 1) Patients who need mechanical ventilation for more than 48 hours.
- 2) Critically ill patients.
- 3) Both male and female patients, aged 18-65 years.

**Exclusion criteria:**

- 1) Patients having CPIS  $\geq 6$  with in 48 hrs of intubation.
- 2) Patients intubated in hospitals other than KMCH.
- 3) Patients for whom oral care is contraindicated.

**DESCRIPTION OF THE INTERVENTION**

The patients in experimental group were given oral care given with 0.12% Chlorhexidine gluconate thrice a day at 6am, 2pm and 10pm and in control group the patient were given oral care with 2% Povidine Iodine thrice a day at 6am, 2pm and 10pm.

**DEVELOPMENT AND DESCRIPTION OF THE TOOL**

**PART-I:** It consists of patient’s Age, Gender, Diagnosis of patient, Indication for intubation.

**PART-II: Clinical Pulmonary Infection Score (CPIS):**

Clinical Pulmonary Infection Score is a standardized tool, developed by Pugin et al. (1991). It is widely used in clinical research and in infection control audits. The maximum score is 12. A score  $\geq 6$  indicates the presence of VAP.

S. No	CPIS Points	0	1	2
1.	Tracheal secretions	Rare	Abundant	Abundant + purulent
2.	Chest X-ray infiltrates	No infiltrate	Diffused	Localized
3.	Temperature <sup>0</sup> c	$\geq 36.5$ and $\leq 38.4$	$\geq 38.5$ and $\leq 38.9$	$\geq 39$ or $\leq 36$
4.	Leucocytes count per mm <sup>3</sup>	$\geq 4,000$ to $\leq 11,000$	$< 4,000$ or $> 11,000$	$< 4,000$ or $> 11,000$ + band forms $> 500$
5.	PaO <sub>2</sub> /FiO <sub>2</sub> , mmHg	$> 240$ or ARDS		$\leq 240$ and no evidence of ARDS
6.	Microbiology	Negative		Positive

**VALIDITY AND RELIABILITY OF THE TOOL**

The Reliability of this CPIS was,  $r = 0.96$  (Metheney et al, 2010). The CPIS had a sensitivity of 93%, a specificity and positive predictive value of 100% (Davis 2006).

**PROCEDURE FOR DATA COLLECTION**

Prior to the data collection, necessary permission was obtained from concerned authorities. The main study was conducted for a period of 6 weeks.

Subjects were allocated to intervention and control groups by Randomizations. On the day of intubation the patients were assessed with CPIS less than 6 were selected for this study. The Chlorhexidine gluconate oral care has been implemented to interventional group and control group received the Povidine Iodine oral care. During the mechanically ventilation any spike of temperature greater than 102° F, the CPIS was assessed. With the results the occurrence of Ventilator Associated Pneumonia in both experimental and control group was determined.

**RESULTS:**

**Distribution of subjects according to Background Variables:**

According to age 60% were 18-25yrs, 20% were 46-60yrs, 20% were 61-80yrs in interventional group and 50% were 18-25yrs, 30% were 46-60yrs, 20% were 61-80yrs in control group. According to sex 60% are males, 40% were females in interventional group and 70% were males, 20% were females in control group.

**Distribution of subjects according to Clinical Variables:**

The intervention group diagnosis was trauma (30%), poisoning (30%), neurologic disorders (20%) and others conditions (20%). There was no patient admitted with respiratory or cardiovascular diseases in intervention group. In control group 30% were trauma, 20% are neurologic disorders, 20% were poisoning, 10% were cardiovascular disease and 20% are other conditions. Assessing the reason for intubation it was found that majority of the subjects in intervention 60% and control group 40% were intubated for airway protection.

**Table 1: Comparison of occurrence of VAP using CPIS in Pre and Post test among intubated subjects in Intervention and Control group  
N = 80**

VAP	Pre test		Post test	
	Intervention group	Control group	Intervention group	Control group
N	40	40	40	40
Mean	2.4	2.5	4.1	7.2
S.D	0.89	1.76	1.84	2.19
Independent 't' value	0.25 (NS)		4.99*	

P < 0.01 NS – Not Significant \* significant at 0.01 level.

Table 1 indicates the pretest CPIS of intervention and control group, which has a mean of 2.4 and 2.5 respectively. The obtained 't' value was 0.25, which is not significant. Thus homogeneity exists between the intervention and control group before starting the intervention. The control group has a higher mean (7.2) than intervention group (4.1). The obtained 't' value is 4.99 which was significant at 0.01 level. Thus the chlorhexidine gluconate oral rinse was effective in reducing the occurrence of VAP among intubated subjects in the intervention group than the control group.

**CONCLUSION**

The results of the study showed that there was a significant difference in the occurrence of Ventilator Associated Pneumonia between the patients who received chlorhexidine gluconate oral rinse and those who received conventional oral care. These interventions seemed to reduce the VAP rate effectively.

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**MULTIPLE MYELOMA**  
MNEMONIC: OLD CRAB

**MULTIPLE MYELOMA** N<sup>+</sup>

- OLD** - Old Age
- C** - Calcium Elevated (Hypercalcemia)
- R** - Renal Failure
- A** - Anemia
- B** - Bone Lytic Lesions