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## STANDAR OPERASIONAL PROSEDUR ORAL HYGIENE

### Tujuan umum

Mahasiswa mampu membantu klien oral hygiene dengan benar

### Tujuan khusus

1. Menjelaskan tujuan oral hygiene
2. Menjelaskan tahapan prosedur oral hygiene
3. Menerapkan oral hygiene secara benar.

### Pengertian

Merupakan tindakan keperawatan yang dilakukan pada pasien yang tidak mampu memenuhi kebutuhan untuk merawat gigi dan mulut secara mandiri.

### Tujuan Melakukan Oral Hygiene

1. Mencegah infeksi gigi dan gusi
2. Mempertahankan kenyamanan rongga mulut

	ASPEK YANG DINILAI	Ya	Tdk	Ket.
Pengkajian				
	Kaji keadaan klien yang mempunyai risiko terhadap timbulnya masalah pada rongga mulut dan gigi seperti kelumpuhan, penurunan tingkat kesadaran, dehidrasi, puasa, penggunaan NGT, dan penggunaan kateter oksigen			
	Kaji adanya masalah pada rongga mulut seperti karies, adanya plague, stomatitis, periodontitis, glositis, halitosis, dan bibir atau mukosa mulut yang kering			
	Inspeksi keadaan bibir meliputi warna, kelembaban, dan adanya peradangan			
Diagnosa keperawatan yang sesuai:				
	Risiko infeksi			
Fase pre interaksi				
	Mencuci tangan			
	Mempersiapkan alat			

	<ul style="list-style-type: none"> <li>• Tongue spatel</li> <li>• Kom kecil</li> <li>• Alas perlak</li> <li>• Bengkok besar</li> <li>• Perlak</li> <li>• Gelas berisi air</li> <li>• kassa</li> <li>• Pinset anatomis</li> <li>• Tisu</li> <li>• Chlorhexidine 0.12%</li> </ul>			
Fase Orientasi				
	Memberi salam dan menyapa nama klien			
	Memperkenalkan diri			
	Melakukan kontrak			
	Menjelaskan Tujuan dan Prosedur pelaksanaan			
	Menanyakan kesediaan klien untuk dilakukan tindakan			
	Mendekatkan alat-alat			
Fase Kerja				
<b>Pada pasien dengan penurunan kesadaran</b>				
	Meletakkan perlak di bawah kepala pasien			
	Meletakkan handuk di atas dada dan sekitar leher klien klien			
	Membuka mulut pasien, tangan kiri menekan lidah pasien dengan tongue spatel/sudip lidah, kemudian tangan kanan menjepit kasa dengan pinset , lalu dicelupkan kedalam larutan chlorhexidine 0,12% dan diperas sedikit			
	Membersihkan rongga mulut seluruhnya sampai bersih mulai dari Langit-langit, gigi bagian dalam ke bagian luar, gusi, lidah			

	Membersihkan bibir dengan kassa yang telah dicelupkan kedalam chlorhexidine 0,12%			
	Mengangkat bengkok yang berisi, kassa, tisu dan pinset yang kotor			
	Membersihkan daerah sekitar mulut dengan tisu			
	Mengangkat perlak dan alasnya dan letakkan di rak			
	Merapikan pasien			
Fase Terminasi				
	Membaca hamdalah			
	Merapikan klien dan memberikan posisi yang nyaman			
24	Mengevaluasi respon klien			
25	Memberi reinforcement positif			
26	Membuat kontrak pertemuan selanjutnya			
27	Mengakhiri pertemuan dengan baik: bersama klien membaca doa  رَبِّ النَّاسِ أَذْهَبِ الْبَاسَ إِشْفِ أَنْتَ الشَّافِي إِلَّا شِفَاؤَكَ شِفَاءٌ لَا يَغَادِرُ سَقَمًا  Artinya (Ya Allah. Tuhan segala manusia, hilangkan segala klienannya, angkat penyakitnya, sembuhkan lah ia, engkau maha penyembuh, tiada yang menyembuhkan selain engkau, sembuhkanlah dengan kesembuhan yang tidak meninggalkan sakit lagi) dan berpamitan dengan mengucapkan salam pada pasien.			
28	Mengumpulkan dan membersihkan alat			
29	Melepaskan sarung tangan & mencuci tangan			
Evaluasi				

30	Status kesehatan rongga mulut klien			
31	Perawatan mulut tanpa adanya komplikasi			
32	Bakteri penyebab plak hilang			
Dokumentasi				
33	Tanggal dan waktu pelaksanaan perawatan mulut			
34	Catat kondisi yang tidak normal seperti perdarahan, edema, bau mulut, sekresi berlebihan, plak pada lidah			

**ORIGINAL RESEARCH**

# THE EFFECT OF ORAL CARE INTERVENTION ON ORAL HEALTH STATUS OF INTUBATED PATIENTS IN THE INTENSIVE CARE UNIT

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**Abstract**

**Background:** Oral infections can be a potential source of infection resulting in a variety of systemic diseases, especially in intubated patients in an Intensive Care Unit (ICU). Endotracheal tube (ETT) of the intubated patient's mouth can be an entry point and place of bacteria colonization that causes ventilator-associated pneumonia which is one of the causes of the patient's death in ICU. Nurses as caregivers have an important role in providing oral care intervention to maintain oral health and prevent the infection.

**Objective:** This study aimed to analyze the effect of oral care intervention on oral health status of intubated patients in the ICU.

**Methods:** This was a pre-experimental study with one group pre-test post-test design. A consecutive sampling was used to select 18 intubated patients in the ICU of Al Islam hospital in Bandung. Oral health status was evaluated by Beck Oral Assessment Scale (BOAS). Descriptive analysis was used for the univariate analysis and t-test was used for bivariate analysis.

**Results:** The results showed that oral health scores before and after intervention were 11.94 and 13.28 ( $p=.004$ ). The BOAS subscales had a significant worsening of the lips, gingiva, oral mucosa and saliva ( $p<.05$ ), while there was an improvement in teeth subscale after oral care intervention ( $p<.001$ ).

**Conclusion:** The results suggested that the oral health status of intubated patients had worsened, despite routinely oral care intervention using chlorhexidine gluconate. Mucosa care may become an essential part of the oral care intervention for intubated patients. Therefore, additional topical agent is needed to maintain the moisture of the mucosal membrane, so that the oral health status of intubated patients will be better.

**KEYWORDS**

intensive care units; chlorhexidine; pneumonia; ventilator associated; intubation; oral health

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## INTRODUCTION

Oral health is an integral part of human's health body. [Arigbede et al. \(2012\)](#) stated that chronic infections of the oral cavity can be a potential source of infection resulting in various systemic diseases. [Azarpazhooh and Leake \(2006\)](#) added that the aspiration of pathogenic bacteria in the oral cavity can cause pneumonia, especially in patients in the ICU. This pneumonia is a major cause of patient morbidity and mortality in the ICU ([Chastre & Fagon, 2002](#); [Hingston et al., 2010](#)).

Patients in the ICU are critical patients who experience acute failure of one or more vital organs that life-threatening ([University of California Davis Health System, 2009](#)). Various tools and monitoring are given to maintain the function of the patient's body, especially the mechanical ventilation through the endotracheal tube after intubated procedure ([Morton & Fontaine, 2013](#); [Musliha, 2010](#)). Endotracheal tube (ETT) in a patient's mouth can be an entry point and colonization of bacteria

that have the potential causing infection ([Chastre & Fagon, 2002](#); [Webb, 2011](#)). In addition, the use of drugs such as bronchodilators, anti-histamines, anti-hypertension, diuretics, atropine, and beta-blockers have side effects of dryness in the oral mucosa (xerostomia). These conditions can worsen the oral health status of intubated patients in the ICU which will increase the oral infections and Ventilator-associated pneumonia ([Dale et al., 2013](#); [Mcneill, 2000](#)).

Cohort studies showed that patients in the ICU have a risk of Ventilator-Associated Pneumonia (VAP) by 3% every day during the first week of ventilator use and 2% in the second week ([Luna et al., 2003](#)). [Ibrahim et al. \(2001\)](#) stated that the incidence of VAP was quite high between 10-65% with a mortality rate of 20-70%. Thus, VAP becomes a very important problem to be overcome ([Cason et al., 2007](#); [Coppadoro et al., 2012](#); [Perrie & Scribante, 2011](#)).

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ORIGINAL RESEARCH

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## VALUE OF CLINICAL PULMONARY INFECTION SCORE IN CRITICALLY ILL PATIENTS: BETWEEN THE USE OF CHLORHEXIDINE AND PIPER BETLE LINN MOUTHWASH

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### Abstract

**Background:** One of the complications of ventilator use in patients in Intensive Care Unit (ICU) is Ventilator-Associated Pneumonia (VAP). Oral hygiene is one of the methods to prevent VAP.

**Objective:** The objective of this study was to compare the value of clinical infection score (CPIS) in critically ill patients after given oral hygiene using chlorhexidine and Piper betle Linn mouthwash.

**Methods:** This was an observational study with cross-sectional study design, which consisted of two intervention groups. Thirty respondents were selected using total sampling, with 15 respondents randomly assigned in each group. Independent t-test was used for data analysis.

**Results:** Findings showed that the mean of CPIS in the Piper betle Linn group was 3.80 and the mean of CPIS in the chlorhexidine group was 4.07.

**Conclusion:** CPIS in the treatment group using Piper betle Linn mouthwash was lower than the mean of CPIS in the treatment group using chlorhexidine.

**Keywords:** chlorhexidine; CPIS; Piper betle Linn; mouthwash; oral hygiene

### INTRODUCTION

Airway infections associated with ventilator installations in patients in Intensive Care Unit (ICU) are known as ventilator-associated pneumonia (VAP), the most common nosocomial infection in ICU, which remains a health care problem worldwide ([Fartoukh et al., 2003](#)). Microorganisms that cause VAP is staphylococcus aureus, pseudomonas aeruginosa and enterobacteriaceae. Staphylococcus aureus is a normal flora in the oral cavity that can turn into a pathogen in case of trauma or abrasion on the mucosal surface ([Forbes, 2007](#)).

The incidence of VAP in the world is quite high, varying between 9-27% and the death

rate can be more than 50%. Incidence of pneumonia increased by 3-fold in patients with ventilator. Cases of nosocomial pneumonia range from 5-10 cases per 1000 clients, which its incidence increased 6-20 times in ventilator-installed patients, and mortality rates range from 20-50% ([Mangunrejo, Widjaja, Kusumo, & Sutoyo, 2004](#)). VAP numbers in Indonesia varied considerably. In General Hospital of Dr. Moh. Hoesin Palembang there are 31.69% of VAP cases in 2011-2012 ([Lestari, 2014](#)); and in Sanglah Denpasar Hospital there are 15.48% per 1000 days usage in 2012 ([Azis, 2013](#)).

## PERBANDINGAN EFEKTIFITAS ORAL HYGIENE MENGUNAKAN ENZYM LACTOPEROXIDASE DENGAN CHLORHEXIDINE DALAM PENCEGAHAN VAP DI ICU RS X

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### ABSTRAK

Berbagai macam infeksi dapat terjadi pada pasien yang mengalami perawatan di rumah sakit seperti infeksi nosokomial atau yang kini lebih sering dikenal dengan *Healthcare Assosiated Infections* (HAI's). Infeksi nosokomial adalah infeksi yang didapat pasien dari rumah sakit pada saat pasien menjalani proses asuhan keperawatan. Infeksi yang didapat dari rumah sakit yang terjadi pada pasien yang dirawat selama 72 jam dan pasien tersebut tidak menunjukkan tanda dan gejala infeksi pada saat masuk rumah sakit. VAP merupakan salah satu jenis infeksi nosokomial pada pasien yang terpasang ventilator umumnya setelah 48 jam sejak awal pemasangan ventilator mekanik. Dari data yang didapatkan dari unit Pencegahan dan Pengendalian Infeksi (PPI) didapatkan data pada bulan September 2018 Infeksi Daerah Operasi (IDO) 0,16%, *Hospital Aquired Pneumonia* (HAP) 1,4%, *Ventilator Aquired Pneumonia* (VAP) 2,8%. VAP terjadi karena infeksi mikroorganisme seperti *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, dan *Enterobacter* akibat dari pemasangan selang ETT yang menjadi jalan masuknya patogen ke dalam paru-paru. Sifat antibakteri obat kumur terutama ditentukan oleh bahan aktif yang terkandung didalamnya seperti *Chlorhexidine* dan *Enzym Lactoperoxidase*. Tujuan penelitian ini adalah membandingkan efektifitas oral hygiene menggunakan enzym lactoperoxidase dengan chlorhexidine dalam pencegahan vap di RS X. Jenis penelitian ini merupakan penelitian quasi eksperimen dengan rancangan penelitian *Control Group Pretest-Posttest*. Data yang digunakan dalam penelitian ini berupa data primer dengan teknik pengumpulan data menggunakan lembar observasi CPIS. Secara umum lembar CPIS berisi 6 parameter diagnosis VAP. Uji hipotesa menggunakan metode Independen *T-Test*. Hasil menunjukkan bahwa tidak ada perbedaan yang signifikan antara oral *Hygiene* dengan menggunakan Enzym Lactoperoxidase dan *Chlorhexidine* dalam pencegahan VAP di RS X nilai  $p = 0,290$  (nilai  $p > \alpha 0,05$ )

**Kata kunci :** *Ventilator Aquired Pneumonia*, Oral hygiene, Lactoperoxide



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ORIGINAL RESEARCH

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## THE COMPARISON OF THE EFFECT OF HONEY AND CHLORHEXIDINE IN PREVENTING VENTILATOR ASSOCIATED PNEUMONIA IN PATIENTS ON MECHANICAL VENTILATION

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### Abstract

**Background:** Ventilator Associated Pneumonia (VAP) is one of the causes of infection in the hospital and the main cause of death due to nosocomial infection. The strategy to prevent VAP is by oral hygiene. Honey may be a good solution for oral hygiene.

**Objective:** This study aims to compare the effect of the use of 20% honey solution and 0.2% chlorhexidine as oral hygiene on VAP prevention in patients on mechanical ventilation.

**Methods:** This was a quasi-experimental study with posttest only control group design in an incentive care unit of a general hospital in Indonesia. Thirty respondents were selected using consecutive sampling, which 15 respondents assigned in a 20% honey group and 0.2% chlorhexidine group. Clinical Pulmonary Infection Score (CPIS) was used to measure Ventilator Associated Pneumonia. Data were analyzed using Independent t-test.

**Results:** The mean of CPIS in the honey group was 3.33 and the chlorhexidine group was 3.53. Independent t-test showed p-value 0.618 (>0.05), which indicated that there was no significant difference of the effect of honey and chlorhexidine on VAP event.

**Conclusion:** The 20% honey solution has the same effect with 0.2% chlorhexidine in preventing VAP events in patients on mechanical ventilation.

**Keywords:** 0.2% chlorhexidine; CPIS; honey; oral hygiene; VAP; ventilator

### INTRODUCTION

The mechanical ventilator is a substitute for ventilation function for patients with indications of respiratory and other critical illnesses. However, the use of mechanical ventilators may lead to various complications in respiratory, cardiovascular, central nervous system, gastrointestinal, psychological and oral health. Endotracheal and oropharyngeal tubes of critical patients with intubation can be a vector for the migration of pathogenic germs to allow for infection ([Morton,](#)

[Fontaine, Hudak, & Gallo, 2013](#); [Sundana, 2014](#)).

Infection due to ventilator or known as Ventilator Associated Pneumonia (VAP) is the second cause of infection in the hospital and the main cause of death due to nosocomial infection. Patients suffering from high-risk critical disease may experience pneumonia due to ventilator, which is defined as nosocomial pneumonia in patients who

Original Article

# Impact of chlorhexidine mouthwash prophylaxis on probable ventilator-associated pneumonia in a surgical intensive care unit

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## ABSTRACT

**Background:** Prevention of ventilator-associated pneumonia is a healthcare goal. Although data is inconsistent, some studies suggest that oral chlorhexidine may decrease rates of pneumonia in mechanically-ventilated patients. We sought to assess the rate of pneumonia in the Surgical Intensive Care Unit (SICU) pre and post implementation of routine chlorhexidine mouthwash prophylaxis.

**Materials and Methods:** A retrospective cohort study was conducted, including patients between 1/1/2009 and 12/31/2009 who did not receive chlorhexidine mouthwash compared to patients that received prophylactic chlorhexidine mouthwash between 3/1/2010 and 2/28/2011. The primary outcome of the study was rate of probable ventilator-associated pneumonia (VAP) for the pre-chlorhexidine implementation cohort compared to post-implementation, using the 2013 Center for Disease Control definitions. Mechanically ventilated patients with respiratory cultures were screened for inclusion in the study. Secondary endpoints included duration of mechanical ventilation, in-hospital mortality, ICU and hospital length of stay. Statistical analysis was conducted by Fisher's exact test for nominal data and Mann-Whitney U test for continuous data.

**Results:** A total of 1780 mechanically ventilated patients in the pre-chlorhexidine group and 1854 in the post-chlorhexidine group were screened for inclusion. Of the 601 mechanically ventilated patients that were further evaluated for inclusion; 158 patients (26.3%) had positive cultures and were included in the study (94 pre-group and 64 post-group). The rate of probable VAP was significantly decreased in the post-group compared to the pre-group (1.85% pre vs 0.81% post,  $P = 0.0082$ ).

**Conclusion:** Use of chlorhexidine mouthwash prophylaxis may reduce rates of probable VAP. Further study is warranted.

**Key Words:** Chlorhexidine, ICU, prevention, ventilator-associated pneumonia

## INTRODUCTION

An estimated 300,000 patients in United States hospitals are mechanically ventilated each year, placing them at risk for ventilator-associated pneumonia (VAP).<sup>[1]</sup> Up to 20% of mechanically ventilated patients may develop VAP, resulting in prolonged hospital length of stay, increased healthcare costs, and risk of disability in those that survive hospitalization.<sup>[2-5]</sup> Overall, attributable mortality of VAP is approximately 9%. Efforts to reduce the development of VAP have primarily focused on

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## Research Paper:

## Effect of Chlorhexidine and Orthodontol Mouthwash on Oral Hygiene of Patients Who Underwent Mechanical Ventilation, Hospitalized in Intensive Care Unit

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## ABSTRACT

**Background:** Providing oral hygiene in patients with a tracheal tube in the mouth is one of the most important tasks of nurses. This study has been conducted with the aim of comparing the effects of two mouthwash solutions (chlorhexidine and orthodontol) on the oral hygiene of patients with respiratory ventilation device and hospitalized in intensive care units.

**Methods:** This is a clinical trial in which 90 patients with oral tracheal tube entered the study through simple sampling method. Inclusion criteria were being insensitive to herbal compounds and aged 15-85 years. They were divided randomly into two intervention (orthodontol) and control (chlorhexidine) groups. Each group had 45 subjects. The Beck Oral Hygiene Checklist was used to collect data (before and after intervention). Data were analyzed using SPSS software.

**Results:** Patients in intervention and control groups were similar in terms of demographic characteristics, oral hygiene, and other characteristics. Oral hygiene in patients in both orthodontol and chlorhexidine groups had a significant improvement after intervention.

**Conclusion:** The comparison of orthodontol and chlorhexidine oral mucosal effects showed that oral hygiene of patients hospitalized in intensive care units was improved to a certain extent. Considering the benefits of herbal compounds, orthodontol mouthwash can be mentioned as an appropriate alternative for chlorhexidine.

## Keywords:

Special care,  
Chlorhexidine rinse,  
Orthodontol, Oral  
hygiene, Intubated  
patients

## 1. Background

One of the basic cares provided by nurses in Intensive Care Units (ICU) is maintaining oral hygiene of the patients (Miranda et al. 2015; Safar Abadi &

Ghaznavirad 2012). These patients are often fitted with a tracheal tube in mouth and undergo mechanical ventilation. Caring programs for patients in ICU aim to make the patients feel relieved and comforted (Safar Abadi & Ghaznavirad 2012). In general, patients may have poor oral hygiene, but patients with mechanical ventilation

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## Original article

## Pre versus post application of a 0.12% chlorhexidine based oral hygiene protocol in an Egyptian pediatric intensive care unit: Practice and effects

Mohamed Mustafa Gomaa, Yahya Wahba <sup>†</sup>, Mohammed Attia El-Bayoumi

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## abstract

**Background:** The role of oral hygiene in the intensive care unit is indisputable. Several studies were carried out in different pediatric intensive care units using different oral hygiene regimes. Chlorhexidine preparations are widely used in oral care regimes.

**Aim:** This study was conducted in the pediatric intensive care unit of Children's Hospital of Mansoura University, Egypt to unravel the effect of adoption of an oral hygiene protocol using 0.12% chlorhexidine solution on the outcome of mechanically ventilated patients.

**Methods:** The study comprised 50 patients admitted in the period from January 2013 to August 2016. The sample was analyzed as follow: intervention group (28 patients) and control group (22 patients). The intervention group received a 0.12% chlorhexidine based oral hygiene protocol while the control group received usual oral care without chlorhexidine. Mann-Whitney and Chi-square tests were used.

**Results:** Duration of mechanical ventilation and length of stay were significantly reduced in the intervention group ( $p = .003$  and  $.007$  respectively). Statistically insignificant difference in development of ventilation-associated pneumonia and mortality between both groups was shown ( $p = .068$  and  $.208$  respectively).

**Conclusions:** Adoption of a 0.12% chlorhexidine based oral hygiene regime was associated with improved outcome in pediatric intensive care unit.

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## 1. Introduction

The role of oral care in maintaining well-being and health of patients in the intensive care unit (ICU) is indisputable [1]. The hypothesis of oral care regimes in ICU is to decrease infectious, inflammatory and painful symptoms that occur in critically ill patients both mechanically by removing the biofilm through

brushing the teeth and tongue and pharmacologically through using antiseptic agents [2–5].

Several studies were carried out in different pediatric intensive care units (PICUs) using different oral hygiene regimes. These studies concerned with the effect of application of these regimes on the prevalence of ventilator-associated pneumonia (VAP), mortality, duration of mechanical ventilation and length of ICU. Most studies evaluated chlorhexidine (CHX) based regimes. Some studies were based on using tooth brushing and compared manual versus powered tooth brushing. Also physiological saline alone was tried. Moreover, other antiseptic solutions were studied including bicarbonate, povidone iodine, triclosan, furacilin, listerine and oral biotene. Even topical antibiotics, probiotics and systemic antibiotics were tried for oral care [5].

Indeed, not all pediatric intensive care units (PICUs) have oral hygiene protocols. A Switzerland survey study on 25 ICUs revealed only 25% of the responder to the questionnaire (84%) had regimes for oral care. Ninety percent declared cleaning the teeth by a tooth-brush and 67% reported usage of CHX preparations (81% in liquid form). Even the intervals described in these regimes were different.

**Abbreviations:** CDC, Centers for Disease Control and Prevention; CG group, control group; CHX, chlorhexidine; CI, confidence interval; ICU, intensive care unit; IG group, intervention group; IQR, interquartile range; PICUs, pediatric intensive care units; PRISM, Pediatric Risk of Mortality; RCTs, randomized control trials; RR, risk ratio; VAP, ventilator-associated pneumonia.

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RESEARCH

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# Impact of a VAP bundle in Belgian intensive care units

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## Abstract

**Background:** In order to decrease the incidence of ventilator-associated pneumonia (VAP) in Belgium, a national campaign for implementing a VAP bundle involving assessment of sedation, cuff pressure control, oral care with chlorhexidine and semirecumbent position, was launched in 2011–2012. This report will document the impact of this campaign.

**Methods:** On 1 day, once a year from 2010 till 2016, except in 2012, Belgian ICUs were questioned about their ventilated patients. For each of these, data about the application of the bundle and the possible treatment for VAP were recorded.

**Results:** Between 36.6 and 54.8% of the 120 Belgian ICUs participated in the successive surveys. While the characteristics of ventilated patients remained similar throughout the years, the percentage of ventilated patients and especially the duration of ventilation significantly decreased before and after the national VAP bundle campaign. Ventilator care also profoundly changed: Controlling cuff pressure, head positioning above 30° were obtained in more than 90% of cases. Oral care was more frequently performed within a day, using more concentrated solutions of chlorhexidine. Subglottic suctioning also was used but in only 24.7% of the cases in the last years. Regarding the prevalence of VAP, it significantly decreased from 28% of ventilated patients in 2010 to 10.1% in 2016 ( $p \leq 0.0001$ ).

**Conclusion:** Although a causal relationship cannot be inferred from these data, the successive surveys revealed a potential impact of the VAP bundle campaign on both the respiratory care of ventilated patients and the prevalence of VAP in Belgian ICUs encouraging them to follow the guidelines.

**Keywords:** VAP, VAP bundle, Belgian ICUs, VAP survey

## Background

Ventilator-associated pneumonia (VAP) is among the most common type of intensive care unit (ICU)-acquired infection and is associated with significant morbidity and mortality [1]. In Europe, the incidence remains higher than in the USA despite the implementation of VAP bundles [2–4]. The need for the implementation of a multimodal approach to decrease the incidence of VAP

has been recently reemphasized by European guidelines [5] and especially by guidelines coming from the société française d'anesthésie-réanimation and the société de réanimation de langue française [6, 7]. Besides the use of selective digestive decontamination, these guidelines support the use of 6 procedures: avoiding intubation by the use of noninvasive ventilation, avoiding nasotracheal intubation, controlling cuff pressure, reducing the level of sedation, early enteral nutrition and subglottic suctioning.

In Belgium, after having observed high rate of VAP in ICUs from previous surveys, the federal service launched a promotional campaign to implement a national VAP

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## Original Research Article

# Conventional and comprehensive oral hygiene procedures using Chlorhexidine 0.2% in patients with mechanical ventilator

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### ABSTRACT

**Background:** Ventilator-Associated Pneumonia (VAP) in the intensive care unit patients is related to the oropharyngeal bacteria colonization. The purpose of this study was to compare the number of oropharyngeal bacterial colonies after conventional and comprehensive oral hygiene procedures in patients with mechanical ventilators.

**Methods:** This study uses an experimental design on 32 subjects with mechanical ventilators. Conventional group/K group (n=16) used 0.2% chlorhexidine gluconate antiseptic conventionally using a sterile gauze while the comprehensive group/L group (n=16) used 0.2% chlorhexidine gluconate antiseptic comprehensively using a toothbrush every 12 hours. Bacterial Isolation is done using swab technique. The number of bacterial colonies and bacterial identification before and after oral hygiene procedure was examined. The data were statistically analyzed using the Wilcoxon test and the Mann Whitney test using SPSS 19.0 software.

**Results:** There was a significant decrease in the number of oropharyngeal bacterial colonies before and after oral hygiene both in the conventional group (p=0.002) and comprehensive group (p=0.002). However, there was no significant difference between the number of bacterial colonies in the two groups before (p=0.269) and after the oral hygiene procedure (p=0.295). The most common bacterium in the conventional and comprehensive group are *Enterobacter gergoviae* and *Escherichia coli*, respectively. *Klebsiella pneumonia* have decreased the most after conventional oral hygiene while *Pseudomonas aeruginosa* has decreased the most after comprehensive oral hygiene.

**Conclusions:** Conventional and comprehensive oral hygiene significantly reduces the number of oropharyngeal bacterial colonies. Both techniques can be used as oral hygiene techniques with relatively similar results.

**Keywords:** Intensive care unit, Mechanical ventilators, Oral hygiene, Oropharyngeal bacteria

### INTRODUCTION

A mechanical ventilator helps the respiratory function of patients with hypoxemia, severe hypercapnia, and respiratory failure. A mechanical ventilator is important and widely used for a critical patient in the Intensive Care Unit (ICU), with the usage is reaching 1.5 million per year in the United States. A mechanical ventilator is one of the important aspects and is widely used for critical

patient care in the Intensive Care Unit (ICU), with the usage is reaching 1.5 million per year in the United States.<sup>1</sup>

The ICU patients potentially developing nosocomial Ventilator-Associated Pneumonia (VAP) infections. The VAP is associated with inappropriate use and maintenance of mechanical ventilators which causes bacterial colonization in the oropharynx.<sup>2</sup> Chen et al,

# Perbandingan *Oral Care* Menggunakan Povidone Iodine 1% dengan Chlorhexidine 0.2% terhadap Jumlah Bakteri di Mulut pada Pasien Penurunan Kesadaran

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## Abstrak

*Oral care* klien penurunan tingkat kesadaran tidak boleh diabaikan dan membutuhkan antiseptik oral yang mempunyai sifat antibakteri. Penelitian ini adalah penelitian kuantitatif dengan desain *quasi eksperimen* dengan kelompok kontrol, *pre* dan *post test* untuk mengidentifikasi perbandingan povidone iodine 1% dengan chlorhexidine 0.2% terhadap jumlah koloni bakteri di mulut klien penurunan kesadaran. Hasil penelitian pada 30 responden yang diambil secara *consecutive sampling* dibagi tiga kelompok. Ada perbedaan yang signifikan penurunan jumlah koloni bakteri sebelum dan setelah *oral care* pada povidone iodine ( $p=0.007$ ), chlorhexidine ( $p=0.001$ ) dan air ( $p=0.001$ ). Perbandingan selisih jumlah bakteri antara povidone iodine 1%, chlorhexidine 0.2% dan kontrol tidak signifikan ( $p=0,343$ ). Disimpulkan chlorhexidine 0.2% , povidone iodine 1% dan air minum masing-masing mempunyai kemampuan yang signifikan menurunkan koloni bakteri dan dapat digunakan sebagai pembilas *oral care*. Disarankan secara ekonomis air minum digunakan dalam *oral care* apabila klien penurunan kesadaran tidak mengalami infeksi mulut, dan chlorhexidine 0.2% atau povidone iodine 1% digunakan bila ada infeksi mulut.

**Kata kunci:** Chlorhexidine 0.2%, koloni bakteri mulut, *oral care*, penurunan kesadaran, povidone iodine 1%.

## The Comparison of Oral Care Using Povidone-iodine 1% and Chlorhexidine 0.2% to the Amount of Bacteria on the Patients with Altered State of Consciousness

### Abstract

The oral care of unconscious patients should not be ignored and requires oral antiseptics that have antibacterial properties. This research was a quasi-experimental design with control groups, using pre-post test design. The study was aimed to compare the amount of bacteria colonies after oral care using povidone iodine 1% and chlorhexidine 0.2% on the patients with altered state of consciousness. Using consecutive sampling technique, 30 eligible respondents were divided into three groups. The results of this study identified that there was a significant decreased of the amount of bacteria colonies after oral care using povidone iodine ( $p= 0.007$ ), chlorhexidine ( $p=0.001$ ) and water oral care ( $p=0.001$ ). The difference of the number of colonies for oral care using povidone iodine 1%, chlorhexidine 0.2%, and the control group was not significant ( $p=0.343$ ). It can be concluded that each of oral care using chlorhexidine 0.2%, povidone iodine 1% and water has a significant ability to reduce colonies of bacteria and can be used as an oral care. For economic reason, it was advised to use water for oral care if clients do not experience oral infections, and to use chlorhexidine 0.2% or povidone iodine 1% when there is infection of the mouth.

**Key words:** Chlorhexidine 0.2% , oral care, oral bacteria colonies, povidone iodine 1%, unconsciousness.

## Surat Pernyataan

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Judul KIAN : Pengaruh *Chlorhexidine* 0,12% sebagai *Oral Hygiene*  
Terhadap *Pencegahan Ventilator Associated Pneumonia (VAP)*  
pada Pasien Cidera Kepala Berat (CKB) di Ruang *Pediatric*  
*Intensive Care Unit*

Dengan surat pernyataan ini saya menyatakan bahwa saya menggunakan metode penelitian *literature review*. Demikian permohonan yang saya sampaikan atas ucapannya saya ucapkan terima kasih.

Samarinda, 13 Oktober 2020

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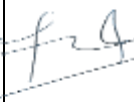
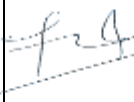
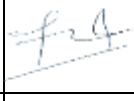
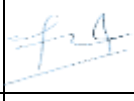
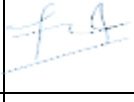
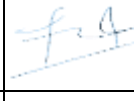

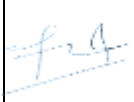

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## LEMBAR KONSULTASI

Judul KIA-N : Pengaruh *Chlorhexidine* 0.12% sebagai *Oral Hygiene* Terhadap Pencegahan *Ventilator Associated Pneumonia* (VAP) pada Pasien Cidera Kepala Berat (CKB) Di Ruang *Pediatric Intensive Care Unit*.

Pembimbing : Ns. Fatma Zulaikha., M.Kep

N O.	TANGGAL	KONSULTASI	HASIL KONSULTASI	PARAF
1	11 Juli 2020	Konsultasi judul KIAN	Judul dicari dahulu di perpustakaan dan mencari jurnal yang sesuai	
2	13 Juli 2020	Konsultasi Judul KIAN dan Tindakan yang akan diberikan	Mencari judul KIAN yang sesuai	
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7	18 Juli 2020	Konsultasi jurnal yang akan direview	Jurnal tidak dapat ditelaah bila model literature review, penelitian kualitatif, meta analysis	
8	21 Juli 2020	Konsultasi BAB 1	Ditambahkan dan dirangkum untuk setiap paragraph jangan terlalu banyak, ditambahkan penelitian terkait, diperbaiki di manfaat penelitian	
9	22 Juli 2020	Konsultasi bab 1 dan bab 2	Bab 1 tambahkan hasil penelitian terdahulu Bab 2 tambahkan teori mendukung sesuai dengan judul literature review yang dibuat	

10.	23 Juli 2020	Konsultasi bab 2 dan bab 3	Bab 2 ACC Bab 3 di tambahkan keyword Bahasa Inggris untuk jurnal internasional dan perbaikan bagan seleksi studi dan penilaian	<u>f.4</u>
11.	24 Juli 2020	Konsultasi SOP	SOP di perjelas di bagian tahap kerja step by step tindakan, lama tindakan, kapan tindakan dimulai	<u>f.4</u>
12.	26 Juli 2020	Konsultasi bab 3, 4 dan 5	Bab 4 di tambahkan asal publis jurnal, dimasukan jurnal yg masih kurang, di pembahasan di perjelas dari jurnal di dapat ada berapa dan ditambah penjelasan pembahasan	<u>f.4</u>
13	03 Agustus 2020	Konsultasi BAB 1-5 yang sudah diperbaiki	ACC maju sidang tanggal 5 Agustus 2020	<u>f.4</u>