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Assessment of Nurses' Role in The Prevention of Ventilator-Associated Pneumonia

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Submitted for Rartial Sulfillment of The Master Degree

 $\mathfrak{D}n$

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Ву

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List of Abbreviations

AARC American Association of Respiratory Care.

ABGs Arterial blood gases.

AC Assisted-control

AIDs Acquired immunodeficiency syndrome.

BAL Bronchoalveolar lavage.
CDC Center for disease control.

CMV Controlled mechanical ventilation.

COPD Chronic obstructive pulmonary disease.
CPAP Continuous positive airway pressure.

CR Critical ratio

CTSS Closed tracheal suction system.

ETT Endotracheal tube.

H₂ Histamine-2.

HME Heat moisture exchangers.

IgA Immunoglobulin A
IgG Immunoglobulin G
IgM Immunoglobulin M.

IMV Intermittent mandatory ventilation.

IRV Inverse ratio ventilation. MV Mechanical ventilation.

NGT Nasogastric tube.

PEEP Positive end expiratory pressure.

PSB Protected specimen brush.
PSV Pressure support ventilation.

SDD Selective decontamination of the digestive tract
SIMV Synchronized intermittent mandatory ventila-

tion.

VAP Ventilator associated pneumonia.

X² Chi-square.



Introduction

Ventilator-associated pneumonia (VAP) is a bacterial pneumonia occurring 24 hours or more after the initiation of mechanical ventilation (*Estes and Meduri, 1995*). Not all ventilated patients are at equal risk for this problem. The presence of chronic obstructive pulmonary disease, multisystem organ failure, prolonged period of mechanical ventilation, extremes of age, head trauma or intracranial pressure monitoring, immunosuppression, thoraco-abdominal surgery, depressed sensorium and/or underlying disease, all have been associated with an increased risk of VAP (*Skerrett, 1994*).

Numerous mechanisms associated with endotracheal intubation are thought to play a role in the development of pneumonia, the prevention of cough due to inability to close the glottis, epithelial damage due to trauma from the endotracheal cuff, and interruption of the mucociliary escalator by the cuff. In addition, bacteria may colonize the surface of the endotracheal tube (ETT). Also pathogenic organisms may have been carried on and transmitted by health care workers' hand (Lemone and Burke 1996 & Shekleton and Nield, 1987).

It was reported that case rates may be as low as 8% and as high as 54% among mechanically ventilated ICU patients. It was found that VAP prolong the ICU stay for a mean of 13 days, the annual costs associated with nosocomial pneumonia in the USA probably exceed \$ 2 billion, and VAP accounts for a large part of this figure because of the expense of ICU care (Metersky and Skiest, 1995). Patients who develop VAP are