Impact of An Infection Control Program Based on Enteral Feeding on Rates of Ventilator Associated Pneumonia

Thesis

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Arabic Summary

List of Abbreviations

A. baumannii : Acinetobacter baumannii

ARDS : Acute respiratory distress syndrome

ARF : Acute renal failure

ATS: American Thoracic Society

BAL : Bronchoalveolar lavage.

C freundii : Citrobacter freundii

CAUTI: catheter-associated urinary tract infection

CBC: complete blood count

CDC : Centers for Disease Control and Prevention

CFU : Colony forming unit

CMV : Cytomegalovirus

COPD : Chronic obstructive pulmonary disease

CPIS : Clinical Pulmonary Infections Care

CRBSI: catheter related blood stream infections

E. Coli : Escherichia coli

EA:Endotracheal aspirates

EPIC : The European prevalence of infection in intensive care.

ESBL : Extended spectrum beta lactamase

ETA : Endotracheal aspirate

ETT:endotracheal tube

FDA: Food and Drug Administration

F_{IO_2}: fraction of inspired oxygen

GBS : Gullain Barre syndrome

GIT:gastrointestinal tract

H. influenza: Haemophilus influenza

HAI: healthcare-associated infection

HAP : Hospital associated pneumonia

HCAP : Health care associated pneumonia

HME: heat-and-moisture exchangers

ICP: infection control practicener

ICU : Intensive care unit

IHI: healthcare improvement's

IVACs: infection-related ventilator-associated complications

LRTI : Lower respiratory tract infection

MDR:multi–drug resistant

MICU : Medical Intensive Care Unit

MRSA : Methicillin resistant staphylococcus aureus

MSSA : Methicillin sensitive staphylococcus aureus

NHSN: National Healthcare Safety Network

Nis: Nosocomial Infections

NIV : Non invasive ventilation

NNIS : National nosocomial infections surveillance

Nosocomial Infections Surveillance (NNIS)

OGT: orogastric tube

P. aeruginora : Pseudomonas aeruginosa

PEEP:positive end expiratory pressure

PGE2 : Prostaglandin E2

PPE: personal protective equipment

PSB : Protected specimen brush

PSB:protected specimen brush

Q:quantitative methods

RICU: respiratory intensive care unit

S. aureus : Staphylococcus aureus

SD: Standard deviation

SQ:semiquantitative

SSD : Selective decontamination of digestive tract

SSI: surgical site of infections (SSI)

TA: tracheal aspirates

UTI : Urinary tract infection

VACs:ventilator-associated conditions

VAEs:ventilator-associated events

VAP : Ventilator associated pneumonia

VARI: Ventilator-associated respiratory infection

VAT: tracheobronchitis

WHAP : weaning, hand hygiene, aspiration precautions, and prevention of contamination for VAP prevention.

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Abstract

Introduction: Ventilator-associated pneumonia (VAP), a subset of HAP that occurs in mechanically ventilated patients more than 48 hours after tracheal intubation, is the most frequent ventilator-associated complication. Outside the ICU, highest rates are observed in the elderly, immunocompromised hosts, surgical patients and those receiving enteral feeding through a nasogastric tube

Aim of the work: This works was aimed to assess the impact of an infection control program focusing on enteral feeding on VAP rates.

Material and methods: Baseline surveillance for VAP was done to detect the size of VAP as a problem and its relation to other device associated infection. Baseline assessment for infection control practices was performed. Also samples from Ryle and BAL were collected and cultured for microbiological diagnosis of VAP

Results: The patient days were 970 ICU bed days for mechanical ventilation. In this study, the incidence of patient infection was 41.2 per 1000 ventilator days. Cultured samples from Ryle and BAL reveled 65% of BAL specimens have uncountable growth while 92.5% of rayle sample have uncountable growth. Candida and Pseudomonas were the most frequent organisms that occur in BAL (23.1%) each while Klebsiella was the most frequent microorganism found in the Ryle Tube (27.0%), followed by Pseudomonas & Ecoli (16.2% & 13.5%) respectively.

Conclusion: Poor compliance of ventilator bundle application and poor adherence to standard precautions for infection prevention and control is an important factor in non decline in VAP rates which is a complex process that requires multiple performance measures and interventions.

Key Words: Ventilator-associated pneumonia (VAP), enteral feeding, infection control practices

INTRODUCTION

The term nosocomial infection (NIs) is synonymous with hospital acquired infections. An infection is considered nosocomial if it develops in a patient who has been hospitalized for 48 to 72 hours and was not incubating the infection at the time of admission. The Centers for Disease Control and Prevention (CDC) estimates that NIs contribute to 0.7 to 10.1% of deaths and cause 0.1 to 4.4% of all deaths occurring in hospitals ***(Mehta et al.,2007).***

Nosocomial Infections constitute an important world wide health problem with high morbidity and mortality rates as well as economic consequences. NIs can lead to complications in 25% to 33% of those patients admitted to intensive care units (ICUs) ***(Meric et al.,2005).***

Hospital-acquired pneumonia (HAP) is a pulmonary infection that develops in patients hospitalized for more than 48 hours, either in the ICU or in other wards. Ventilator-associated pneumonia (VAP), a subset of HAP that occurs in mechanically ventilated patients more than 48 hours after tracheal intubation, is the most frequent ventilator-associated complication **(Anand and Kollef,*2009)* .**

The clinical diagnosis of VAP has traditionally been made by the association of a new or progressive consolidation on chest radiology and at least two of the following variables: fever greater than 38ºC, leukocytosis, leukopenia and purulent secretions ***(Rea-Neto et al., 2008).***

HAP/VAP represents a major cause of deaths, morbidity and resources utilization in hospitalized patients, most notably in those with severe underlying conditions ***(Agrafiotis et al.,2011)***.

The incidence of HAP ranges from 5 to more than 20 cases per 1000 hospital admissions ***(Chawla,2008)***. Outside the ICU, highest rates are observed in the elderly, immunocompromised hosts, surgical patients and those receiving enteral feeding through a nasogastric tube ***(American Thoracic Society (ATS) ,2005)***.

The bacterial epidemiology of VAP depends on a panel of factors including mechanical ventilation duration, length of hospital and ICU stays, previous exposure to antimicrobials, local epidemiology and potential epidemic phenomenon in a given ICU ***(ATS ,2005)***.