IDENTIFICATION OF BACTERIA CAUSING PNEUMONIA IN AIR CONDITIONING UNITS IN TERTIARY HOSPITAL IN CAVITE

THESIS

ARIANNE ROSE A. LIM
CHARLES ANGELO P. VILLA

College of Nursing
CAVITE STATE UNIVERSITY
Indang, Cavite

April 2014

IDENTIFICATION OF BACTERIA CAUSING PNEUMONIA IN AIR CONDITIONING UNITS IN A TERTIARY HOSPITAL IN CAVITE

An Undergraduate Thesis
Submitted to the Faculty of the
Department of Medical Technology
College of Nursing
Cavite State University
Indang, Cavite

In partial fulfillment
of the requirements for the degree
Bachelor of Science in Medical Technology

ARIANNE ROSE A. LIM
CHARLES ANGELO P. VILLA
April 2014

ABSTRACT

LIM, ARIANNE ROSE A., AND VILLA, CHARLES ANGELO P., Identification of Bacteria Causing Pneumonia in Air Conditioning Units in a Tertiary Hospital in Cavite. Undergraduate Thesis. Bachelor of Science in Medical Technology, Cavite State University, Indang, Cavite, April 2014. Adviser: Fedelyn P. Estrella, RMT, MPH

This study was conducted from May to June 2013 at the Department of Medical Technology, College of Nursing, Cavite State University, Indang, Cavite. The study aimed to identify the bacteria causing pneumonia in air conditioning units in a tertiary hospital in Cavite.

The samples were cultured in 4 different culture media and subjected to different biochemical tests to identify the isolated organisms. Cetrimide test was done to identify *Pseudomonas aeruginosa.* Thirteen isolates were found out as *Pseudomonas aeruginosa.*

Haemophilus influenzae were identified by X and V factor requirement and satellitism test. In the X and V factor requirement, 100 % or 18 samples had a positive result indicating that these samples were *Haemophilus* species. On the second test, 15 samples were positive as *Haemophilus influenzae.*

Optochin susceptibility test was done to identify *Streptococcus pneumoniae.* Out of the 20 samples, only 2 had a zone of inhibition of $\geq$ 14 mm in diameter, this denotes susceptibility to optochin and was *Streptococcus pneumoniae.* The remaining samples were all resistant having a zone of inhibition lower than 14 mm.

Triple sugar iron (TSI) test was performed to identify *Klebsiella pneumoniae.* The results showed that of all the samples, there were no positive for *Klebsiella pneumoniae.*

Based on the results gathered, the isolated organism with the highest incidence was *Haemophilus influenzae* and was isolated and identified in 15 samples that were gathered in the private rooms and wards. It was followed by *Pseudomonas aeruginosa* which were identified among the 13 samples and *Streptococcus pneumoniae* were identified in 2 samples based on the results of the tests.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

LIST OF APPENDIX FIGURES

IDENTIFICATION OF BACTERIA CAUSING PNEUMONIA IN AIR CONDITIONING UNITS IN A TERTIARY HOSPITAL IN CAVITE

Arianne Rose A. Lim
Charles Angelo P. Villa

An undergraduate thesis manuscript submitted to the faculty of the Medical Technology Department, College of Nursing, Cavite State University in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Medical Technology with contribution No. SPCON-MT-2014-06 prepared under the supervision of Mrs. Fedelyn P. Estrella, RMT, MPH.

INTRODUCTION

Pneumonia is an inflammatory illness of the lung. It has 4.8 million cases recorded annually. It is a common illness in all parts of the world in all age groups. Majority of deaths occur in the newborn period in children, with over two million deaths a year worldwide (Nurses Labs, 2012). The World Health Organization [WHO] (2012) estimated that one out of three newborn infant's death is due to pneumonia.

Pneumonia is one of the top five leading causes of mortality in the Philippines. According to the National Statistical Coordination Board of the Philippines, there are 776, 562 of pneumonia in the country in 2004 alone. This could be an implication that pneumonia is one of the leading causes of morbidity and mortality in the country (Mateo, 2012).

According to the University of Maryland Medical Center [UMMC] (2011), bacteria are the most common cause of pneumonia. However, pneumonia can also be