

**MICROBIOLOGICAL EXAMINATION OF AIR IN MEDICAL DEPARTMENT
AND INCIDENCE OF NOSOCOMIAL INFECTION IN SELECTED
SECONDARY PRIVATE HOSPITALS IN CAVITE**

THESIS

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ABSTRACT

COLADA, ERIKA LEI D. JIMENEZ, ALISA L. MICROBIOLOGICAL EXAMINATION OF AIR IN MEDICAL DEPARTMENT AND INCIDENCE OF NOSOCOMIAL INFECTION IN SELECTED SECONDARY PRIVATE HOSPITALS IN CAVITE. Undergraduate Thesis. Bachelor of Science in Medical Technology. Cavite State University Indang, Cavite. October 2016. Adviser: Karen Krista M. Escobar, RMT, MSMT.

The collected samples for different medical department of selected secondary hospitals were processed at the microbiology laboratory of De La Salle Health Sciences Institute-Research Division Center for Basic Biomedical Research, City of Dasmariñas, Cavite. This study was conducted from July to September 2016. Generally, this study aimed to verify the microbiological examination of air in medical department and incidence of nosocomial infection in selected secondary private hospitals in Cavite. Specifically, it aimed to: (1) determine the demographic profile of each hospital in terms of: the year the hospital was established, the classification of medical department room – private or ward, the presence of air conditioning unit and the number of bed capacity; (2) determine the incidence of nosocomial infection from December 2015 to May 2016; (3) identify the isolated bacteria present in each medical ward and private room of secondary private hospitals in Cavite; (4) determine if there is a significant difference between the CFU result and the standard CFU for each hospital in each trial; and (5) determine the association between the bacteria isolated in each hospital and the incidence of nosocomial infection.

This study used descriptive design. There were two trials in each hospital, one in the medical ward and the other in a private room. Settle plate method was a passive air sampling used for testing quality of air in surgical operation theaters and hospital ward.

Based on the outcome of the study, the following conclusions were made: The morphological characteristics of *Staphylococcus aureus* exhibited small to large mucoid with creamy white, yellow and creamy white with β -hemolysis colonies. The *Staphylococcus epidermidis* exhibited small to large creamy white and yellow colonies. *Pseudomonas aeruginosa* showed rhizoid, irregular and rough colonies with indole negative (-), methyl red negative (-), voges proskauer (-), citrate (+) and TSI K/K. The isolated organisms showed positive results in Catalase test. Isolated nosocomial pathogens were *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Pseudomonas aeruginosa*. The most frequent isolate was *Staphylococcus aureus* and *Staphylococcus epidermidis*. Based on the CFU result, there was no significant difference between the CFU result of the isolated bacteria and the standard CFU. There was no record of nosocomial infection in each hospital, therefore, the bacteria isolated in each hospital and the incidence of nosocomial infection had no association.

This study indicated that the nosocomial pathogens were frequently present in air of medical department. But the nosocomial pathogens were needed to exceed the acceptable level of index of microbial contamination in order to cause infection. In order to reduce the risk of nosocomial infections, this study recommended the following: Reorientation of the utility workers about alternative ways of cleaning procedures in medical departments specifically the proper ventilation of the rooms. The hospital should observe separating admitted infectious patients with non-infectious patients to avoid the

spread of disease to others. Patients and health care personnel should be more aware, cautious and careful of their surroundings specifically when there are possible pathogenic organisms present. It was also recommended to wear face mask; and hand washing must be implemented to avoid the spread of nosocomial infections. Further research study related to isolation of nosocomial bacterial pathogens in air of medical departments or other special areas of hospital should be conducted. The use of selective media in order to isolate different organisms and to easily identify different nosocomial pathogens present and isolation of nosocomial pathogens in air from different rooms and facilities (i.e, surgical rooms, emergency rooms, ICUs).

TABLE OF CONTENTS

	Page
BIOGRAPHICAL DATA	iii
ACKNOWLEDGMENT	iv
ABSTRACT	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF APPENDIX TABLES	xiii
LIST OF APPENDIX FIGURES	xiv
LIST OF APPENDICES	xv
INTRODUCTION	1
Objectives of the Study	3
Significance of the Study	3
Time and Place of the Study	4
Scope and Limitation of the Study	4
Operational Definition of Terms	5
Conceptual Framework	7
REVIEW OF RELATED LITERATURE	9
METHODOLOGY	22
Research Design	22
Sampling Technique for the Hospitals	22
Permission from the Hospital	23
Procurement of Materials	23
Demographic Profile of the Hospitals	24

Collecting of Incidence Report of Nosocomial Infection	24
The Culture Media	24
Microbiological Examination of Air	24
Data to be Gathered	26
Statistical Analysis	38
RESULTS AND DISCUSSION	40
Demographic Profile of each Hospital and Classification of Medical Department	40
Incidence of Nosocomial Infection	43
Identified bacteria in each private room and medical ward in each hospital	44
Aerobic Colony Count	50
Association between the bacteria isolated in each hospital and the incidence of nosocomial infection	53
SUMMARY, CONCLUSION AND RECOMMENDATION	57
Summary	57
Conclusion	59
Recommendation	60
REFERENCES	61
APPENDICES	67

LIST OF TABLES

Table	Page
1 Demographic profile of each hospital	40
2 Reported record of nosocomial infection from December 2015 to May 2016	43
3 Identified bacteria in each private room per hospital.	45
4 Identified bacteria in each medical ward per hospital	45
5 Aerobic Colony Count	51
6 Association between the bacteria isolated in each hospital and the incidence of nosocomial infection	54

LIST OF FIGURES

Figure	Page
1 Conceptual framework of the study	8
2 Identification of bacteria based on colony morphology	30
3 Identification of gram positive and gram negative bacteria	31
4 Identification of bacteria using biochemical tests	37
5 Step-by-step method of microbiological examination of air and incidence of nosocomial infection in medical department of selected private secondary hospitals in Cavite	39

LIST OF APPENDIX TABLES

Appendix Table	Page
1 Identification of bacteria isolated in the private room of hospital A	68
2 Identification of bacteria isolated in the ward of hospital A	69
3 Identification of bacteria isolated in the private room of hospital B	70
4 Identification of bacteria isolated in the ward of hospital B	71
5 Identification of bacteria isolated in the private room of hospital C	73
6 Identification of bacteria isolated in the ward of hospital C	75
7 Identification of bacteria isolated in the private room of hospital D	77
8 Identification of bacteria isolated in the ward of hospital D	79
9 Identification of bacteria isolated in the private room of hospital E	80
10 Identification of bacteria isolated in the ward of hospital E	81
11 Identification of bacteria isolated in the private room of hospital F	83
12 Identification of bacteria isolated in the ward of hospital F	84

LIST OF APPENDIX FIGURES

Appendix Figure	Page
1 Collection of bacteria from the air of medical department using settle plate method	87
2 Incubation of blood agar plates at 37°C for 24 hours	88
3 Determination of temperature of each private room and medical ward .	89
4 Colony count	90
5 Colony morphology and use of Bio Safety Cabinet	90
6 Smearing of bacteria on slides	91
7 Gram staining	91
8 Viewing of gram stained specimen under the microscope	92
9 Specimen under oil immersion objective	92
10 Gram negative bacilli that has growth on MacConkey Agar	93
11 Bacteria on Eosin Methylene Blue Agar	93
12 Growth of bacteria on Mannitol Salt Agar	94
13 Inoculating of bacteria on Triple Sugar Iron (TSI) agar slant	95
14 Catalase test	96
15 IMViC test	96

LIST OF APPENDICES

Appendix		Page
1	Letter to the administrator of hospital A	98
2	Letter to the administrator of hospital B	99
3	Letter to the administrator of hospital C	100
4	Letter to the administrator of hospital D	101
5	Letter to the administrator of hospital E	102
6	Letter to the administrator of hospital F	103

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INTRODUCTION

Hospital-acquired infection (HAI) is an important public health issue with unacceptable levels of morbidity and mortality, over the last five years. Disease can be transmitted by air, by direct or indirect contact or both. Contact transmission of disease forms the majority of HAI cases; transmission through the air is more difficult to control (Tang *et al.*, 2006).

The hospital is a place for treatment and recovery from illnesses, but this is also a place where one can acquire diseases. Instead of recovering from illness the condition of a patient may worsen. Airborne transmission is one of the routes of spreading diseases responsible for a number of nosocomial infections (Claudete *et al.*, 2006).

The rate of this infection varies from 5 to 10 percent in the developed countries to 25 percent or more in developing countries. These infections are mostly caused by