

**FACTORS AFFECTING INFECTION CONTROL
MEASURES IN OPHTHALMIC OPERATING
THEATER**

Thesis
Submitted for Partial Fulfillment of The
Requirements of Master Degree
In
Nursing Science
(Medical-Surgical Nursing)

By

Sohair Ragab Mohamed Fouad
(B.Sc. in Nursing, 2006)

Faculty of Nursing
Ain Shams University
2006

**FACTORS AFFECTING INFECTION CONTROL
MEASURES IN OPHTHALMIC OPERATING
THEATER**

Thesis
Submitted for Partial Fulfillment of The
Requirements of Master Degree
In
Nursing Science
(Medical-Surgical Nursing)

Supervised by

Prof. Dr. Ossama Shams Eldin Rasslan
Professor and Head of Microbiology & Immunology Dept.
Faculty of Medicine- Ain Shams University

Prof. Dr. Amany Tharwat Abd El Rahman
Professor of Microbiology & Immunology Dept.
Faculty of Medicine- Ain Shams University

Dr. Susan Mohamed Dessowky Abdel Ghany
Lecturer of Medical Surgical Nursing
Faculty of Nursing- Ain Shams University

Faculty of Nursing
Ain Shams University
2006

العوامل المؤثرة على مكافحة العدوى فى غرفة عمليات الرمد

رسالة مقدمة
توطئة للحصول على درجة الماجستير
فى علوم التمريض
(تمريض باطنى- جراحى)

من

سهير رجب محمد فؤاد

ماجستير تمريض جراحى - باطنى 2006

كلية التمريض
جامعة عين شمس
2006

العوامل المؤثرة على مكافحة العدوى فى غرفة عمليات الرمد

رسالة مقدمة
توطئة للحصول على درجة الماجستير
فى علوم التمريض
(تمريض باطنى- جراحى)

تحت إشراف

أ.د./ أسامة شمس الدين رسلان

أستاذ ورئيس قسم الميكروبيولوجيا والمناعه

كلية الطب - جامعة عين شمس

أ. د./ أمانى ثروت عبد الرحمن

أستاذ الميكروبيولوجيا والمناعه

كلية الطب - جامعة عين شمس

د./ سوزان محمد دسوقى عبد الغنى

مدرس بقسم تمريض جراحى - باطنى

كلية التمريض - جامعة عين شمس

كلية التمريض
جامعة عين شمس

2006

Acknowledgment

My sincere gratitude should be submitted for "ALLAH" who always helps and cares for me.

It is a great honor for me to take this chance to express my greatest indebtedness and gratitude to Prof. Ossama Shams Eldin Rasslan, Head of Microbiology and Immunology Department, Faculty of Medicine, Ain Shams University. I am indebted to his valuable guidance, constructive criticism, continuous unlimited help, and for giving me the privilege to work under his supervision.

My special gratitude, deep appreciation and profound respect to Prof. Amany Tharwat Abd El Rahman, Professor of Microbiology and Immunology, Faculty of Medicine, Ain Shams University, for her precious time, professional guidance, and valuable advice to complete this work in the best way. She gave me valuable instructions and support throughout this work. I would not have been to start and reach the perfection of this work without her.

I wish to express my deep appreciation and profound respect to Dr. Susan Mohamed Dessowky Abdel Ghany, Lecturer of Medical-Surgical Nursing, Faculty of Nursing, Ain Shams University, for meticulous care for me, tremendous efforts, fruitful guidance, valuable support and kind supervision, she always had time to share ideas and answer my questions.

Sohair Ragab

Contents

	Page
List of tables	iii
List of figures	v
List of abbreviations	vi
Abstract	vii
Introduction & Aim of Study	1
Review of Literature	4
▪ Nosocomial Infection	4
• Definition of Nosocomial Infection	4
• Chain of Infection	5
▪ Infection and Inflammation of the Eye	17
• Surgical Site Infection (SSI) in Ophthalmic surgeries	18
• Surgical Wound Classification	20
• Source of Pathogens Causing SSI in Ophthalmic Operating Theater	22
• Factor Affecting Rate of Surgical Wound Infection ...	24
▪ Infection Control in Ophthalmic Operating Theater	26
1. Cost Benefit of Infection Control	26
2. Organization of Infection Control	26
3. Operating Theatre Design	
4. Standard Precaution	30
A. Hand Washing and Hand Antisepsis	30
B. Use of Protective Barriers	33
C. Waste Management	37
D. Nursing Role in Cleaning, Disinfection and	47

	Page
Sterilization	
E. Linen Management	48
F. Maintaining Clean Hospital environment	49
G. Isolation Precautions	50
H. Prevention of Infection in HCWs	54
I. Antibiotic Policy in Hospitals	54
5. Operative Infection Control Practices	56
A. Preoperative preparation of the patient	56
B. Preoperative hand/ forearm antisepsis	56
C. Management of infected colonized surgical personnel	57
6. Surgical a sepsis	58
7. Intraoperative nursing	62
8. Anaesthesia care provider	64
9. Operating theater design	65
Subjects and Methods	69
Results	78
Discussion	106
Conclusion & Recommendations	122
Summary	125
References	130
Appendices	157
Arabic Summary	

Abstract

Infection in ophthalmic surgery is very dangerous, as it can lead to permanent loss of eye sight. It is therefore of utmost importance to enforce strict infection control measures. The aim of this study was to assess the operating room staff (health team personnel) knowledge, performance and attitude regarding infection control measures. The study setting was at the ophthalmic operating rooms in the Research Institute of Ophthalmology Hospital, Giza. Two tools were utilized including 1) Arabic questionnaire especially designed to assess staff (health team personnel) knowledge and attitude toward infection control measures in ophthalmic operating room 2). An observational checklist developed to assess the staff (health team personnel) performance regarding infection control practices during their work in the ophthalmic operating room. A pilot study was conducted to assess content validity and applicability of the tools and necessary modifications were done accordingly. The study result showed a high statistical significant difference between the two shifts regarding to infection control practices (mainly, washing hands, surgical scrub, wearing sterile gown and gloves). It was evident that performance in the morning shift was better than the afternoon shift. The nurses had a diploma degree with no training programs. In conclusion, health team personnel who accepted to participate in the study were not exposed before to any teaching learning experience, or infection control training course in ophthalmic operating theater. The study recommended regular educational programs and training programs to be designed for the staff to improve their knowledge, attitude and skills, regarding the applications of infection control measures in ophthalmic operating theater.

Appendix 2

Observational Checklist to Assess the Performance in Ophthalmic Operating Theater Health Personnel Regarding the IC Practices.

(1) Hand washing procedure

Steps	Done Correctly	Done Incorrectly	Not Done
1- Remove Jewelry. 2- Turn the water tap and regulate the water temperature. 3- Wet both hands under running water. 4- Apply soap solution over hands. 5- Rub all hand for 10-15 seconds. 6- Brush under finger nails, all surfaces of the hands and wrists. 7- Rinse the hand thoroughly 8- Hold the hands downwards. 9- Repeat hand washes for extra cleaning. 10-Use paper towel to dry hands. 11-Use paper towel to turning off the water tap.			

2- Checklist for surgical scrub.

Steps	Done Correctly	Done Incorrectly	Not Done
<p>(A) Before scrub</p> <ol style="list-style-type: none"> 1- A clean scrub suit, a cap covering all hair and a high –filtration mask are required. 2- Skin and nails clean, in good condition. 3- Finger nails short and polish free. 4- No Jewelry in hands or arms. 5- Scrub person, check skin integrity for lesions or abrasions. <p>(B) Procedure steps</p> <ol style="list-style-type: none"> 6- Turn on the water tap using elbow. 7- Adjust water to a comfortable temperature. 8- Dampen hands and forearms. 9- Soap hands and forearms. 10- Wash hands and forearms using the antimicrobial soap or detergent. 11- Keep hands above elbows level. 12- Remove a sterile brush from package. 13- Squeeze brush under the water and use the recommended soap or detergent. 14- Scrub the nails, all sides of each finger, including spaces in between. 15- Scrub the palm and back of the hand. 16- Scrub each side of the forearm with a circular motion up to the elbows. 17- Keep the brush away. 18- Rinse the hands and arms thoroughly. 19- Keep hands over elbow level. 20- Turn off the water tap. 21- Hold the hands up in front and away from the body. 			

3- Checklist for wearing sterile gown.

Steps	Correctly Done	Incorrectly Done	Not Done
<p>(A) Drying hands:</p> <ol style="list-style-type: none"> 1- Enter procedure room holding hands and arms away from the body. 2- Using one hand -pick up the sterile towel. 3- Lift towel up and away from sterile field . 4- Starting with one end of the towel, dry one hand and arm. 5- Inert the towel and with the other end dry the other hand. 6- Discard the towel. <p>(B)Donning Gown</p> <ol style="list-style-type: none"> 7- Grasp the sterile gown at the neckline with both hands. 8- Hold the gown away from the body and allow it to unfold. 9- Keep hands on the inside of the gown. 10-Slip both hands at shoulder level. 11-Push the hands and forearms into the sleeves of the gown. 12-Keep both hands covered and arms extended to the front. 			

(3) Checklist for wearing of sterile gown:

Steps	Correctly Done	Incorrectly Done	Not Done
<p>(C) Assisting with gowning * The circulating nurse will assist in closing or securing the gown. 13-Touching only the inner surfaces . 14- Pull the gown over the scrubbed person's shoulders. 15-Tie the neckline and tie the inner waist ties of the gown. 16-Strenghton and fasten the gown.</p>			

(4) Checklist for applying sterile gloves

Steps	Correctly Done	Incorrectly Done	Not Done
<p>(A) Closed-glove method: 1- Keeping the hands within the cuff 2- Open the inside wrappers of the glove package 3- With fingers of the covered left. Hand grasp the folded cuff of the right. glove 4- Lift glove straight up 5- Place fingers inside top of glove and hold securely. 6- With left hand still covered with gown grasp the free glove cuff edge. 7- Stretch the glove cuff up, completely covers stockinet cuff. 8- Pull the glove on over extended right. fingers. 9- Avoid contact of sterile glove with ungloved hand. 10- With the right gloved hand put the left glove on in the same manner.</p>			

(4) Checklist for Applying sterile Gloves

Steps	Correctly Done	Incorrectly Done	Not Done
<p>(B) Open- glove Method:</p> <ol style="list-style-type: none"> 1- Wash hands. 2- Open sterile glove package. 3- Open sterile glove folder. 4- Lift the left glove up using thumb and index of the right hand. 5- Slide the glove over the left hand holding the cuff. 6- Adjust each finger into its own slot. 7- Invert the gloved hand to lift off the sterile glove. 8- Slide ungloved hand into glove and adjust fingers. 9- Adjust both gloves for comfort and covering of wrists. 			

(5) Checklist for gowning and gloving another team member

Steps	Correctly	Done Incorrectly	Not Done
<p>(A) Gowning another person:</p> <ol style="list-style-type: none"> 1- Open the sterile towel and lay it across the palm of the team member being gowned 2- Unfold the gown, holding at the neckband. 3- Faces the wearer with the inside of the gown. 4- Keeping gloved hands inside the gown shoulders. 5- Place the gown on the wearer arms. 6- Push up toward the shoulders. 7- Release the gown at shoulders height 8- Adjust the sleeves for assisted open gloving. <p>(B) Gloving another person:</p> <ol style="list-style-type: none"> 1- Pick up the right glove. 2- Grasping it firmly with fingers under the averted cuff and present it. 3- Facing the wearer with the thumb and palm. 4- Announce the hand to be gloved. 5- Stretch the cuff to allow hand access. 6- Apply resistance while the wearer pushes hand into the glove. 7- Release the cuff. 8- Present the left glove in the same manner. 			

6-Checklist for pre-operative eye preparation

Steps	Correctly Done	Incorrectly Done	Not Done
<p>(A) Procedure for care the eye: 1- Prepare equipment. 2- Explain to patient. Watch it to be done. 3- Hand washing and wearing disposable glove. 4- Place disposable sheet under pads beneath the area to be shaved. 5- Examine the eye and operative site for breaks in integrity and signs of irritation. 6- Wash the area with soap solution. 7- Hold the eye with one hand. 8- Using the recommended method for hair removal, by disposable razor, the razor moved in the direction of the hair growth 9- Using clear water, rinse soap solution from eye. 10-By electric clippers, the skin cleans and dries. 11-Clip against the lie of the hair using short, gentle strokes. 12-Inspect eye area.....</p> <p>(B) Procedure for eye preparation 13-Using the recommended anti-microbial agents. 14-Check solution labels and pour into sterile prep cups. 15-Arrange supplies on a separate table. 16-Place disposable waterproof towel around the prep site. 17-Done sterile gloves. 18-Pickup the sponge and wet with cleansing agent. 19-Prep from clean areas to unclean areas. 20-Begin at incision site and use a circular motion.</p>			