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HOSPITAL ACQUIRED INFECTIONS;
KNOWLEDGE ABOUT IT AND ITS PREVENTION

DR. SHAZIA QAYYUM, MBBS, MPH
Assistant Professor Community Medicine,
Independent Medical College, Faisalabad.

DR. BUSHRA WAQAS, MBBS
Deputy Manager Green Star
Social Marketing, Faisalabad.

DR. ABDUL SATTAR, MBBS, DPH
Assistant Professor Community Medicine,
Independent Medical College, Faisalabad.

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ABSTRACT... Nosocomial infections may be defined as the infections which develop within hospital. There are different types of microorganisms which are involved along with other agents for the spread of these infections. Knowledge about the spread and prevention of these infections is the basic step for control. Hospital staff especially the doctors should be aware about the precautions to control the spread of there infections. **Objectives:** To assess the knowledge of doctors about hospital acquired infections and its prevention. **Study designs:** descriptive study **Settings and period:** In surgical unit of Allied Hospital Faisalabad from 15th June 2006 15th July 2006. **Materials and methods:** Study population was consisted on 71 doctors including Consultants, Medical Officers and House Officers. Data was collected with the help of questionnaires. **Results:** Results showed that majority of doctors were aware about nosocomial infections (N.I) but have weak knowledge about their routes of transmission and common types of N.I. **Conclusions:** The study revealed that doctors have sufficient knowledge regarding N.I and its prevention but certain weakness were observed.

Key words: Nosocomial infections, knowledge, transmission, prevention.

INTRODUCTION

Nosocomial infections according to centre for the disease control (CDC), may be defined as the infections that develop within a hospital. It is neither present nor incubating at the time of hospital admission. If the incubation period is not known the signs and symptoms of infections that develop 48 hours or more after admission are arbitrarily considered the nosocomial infections[1].

Nosocomial infections are caused by viral, bacterial, and fungal pathogens. Many patients during their hospital stay acquire viral respiratory infections in the winter (e.g. influenza, para-influenza, respiratory syncytial viruses), rotaviral and other enteroviral infections in the summer. Bacterial and fungal infections are less common. However they are significantly associated with more morbidity and mortality. Most patients who are infected with nosocomial bacterial and fungal pathogens have a predisposition caused by invasive supportive measures such as intubations and the placement of intravascular lines and urinary catheters.

Nosocomial infections may involve not only patients, but also anyone else who has contact with a hospital, including member of the staff, volunteers, visitors, workers, salespersons, and delivery personnel.

The majority of nosocomial infections become clinically apparent while the patients are still hospitalized; however the onset of disease can occur after a patient has been discharged[8].

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Correspondence Address:
Dr. Shazia Qayyum, MBBS, MPH,
Assistant Professor Community Medicine,
Independent Medical College,
Faisalabad.

(I) Nosocomial infections result from interaction of several factors:

I. Microorganisms in hospital environment,
ii. The compromised (weakened) status of the host
iii. Transmission in the hospital.

Microorganisms in hospital environment: In the past, most nosocomial infections were caused by gram positive microbes. At one time, gram positive Staphylococcus aureus was the primary cause of nosocomial infection. The major cause today are gram negative bacteria, such as E. coli and Pseudomonas aeruginosa that has the ability to cause opportunistic skin infections, especially in surgical and burn patients.

(II) The compromised (or weakened) status of the host

A compromised host is one whose resistance to infection is impaired by disease, therapy, or burns. Three principal conditions can compromise the host:

1. Broken skin or mucous membranes
2. A suppressed immune system, and
3. Impaired cell activity.

(III) Transmission in the hospital

Microorganisms are transmitted by various routes and the same microorganism may be transmitted by more than one route. For example, varicella-zoster virus can spread either by the airborne route (droplet nuclei) or by direct contact. There are 4 main routes of transmission -- contact, vehicle, airborne, and vector borne.

It is important to reduce the numbers of the pathogens to which patients are exposed by using Standard Precautions. Standard Precautions are designed to reduce the risk of transmission of microorganisms from both recognized and unrecognized sources of infection in hospitals.

Nosocomial infections are important health problem and the knowledge and practices of the medical staff about nosocomial infection and their prevention play an important role in decreasing the rate of these infections.

METHODOLOGY

Study Type:	Descriptive study
Study Universe:	Surgical unit of Allied Hospital Faisalabad.
Study Population:	Staff of surgical unit comprising Doctors
Sampling Unit	One staff member i.e. a doctor

Sampling Frame

There are total 71 doctors in the surgical unit of Allied Hospital Faisalabad consisting of following:

1.	Consultants	=	17
2.	Medical officers	=	30
3.	House officers	=	24
4.	Total	=	71

Sampling Technique

Purposive type of non-probability sampling was used in this study.

Method of Data Collection

Data was collected with the help of questionnaire. Formal administrative permission was obtained wherever required. Informal verbal consent was obtained before

DISCUSSION

Hospital acquired infections are common problem all over the world. Proper knowledge and practices of doctors regarding nosocomial infection can play an important role in preventing these infections as they have the opportunity to practice infection control as an integral part of patient care on a day-to-day basis. So the purpose of this study was to assess the knowledge of staff in surgical unit regarding these infections and their prevention and in case of any short fall to take measures.

During this study it was found that majority of doctors were aware of definition of nosocomial infections as described by CDC[1]. Only few members having poor knowledge regarding nosocomial infection.

It was observed during the study that the doctors have weak knowledge about the common types of nosocomial infections and their routes of spread which is very important for the doctors to know because there are different precautions depending on the route of spread and type of nosocomial infection e.g. airborne precautions, droplet precautions and contact precautions as described in CDC guideline for isolation precaution[13].

The good point noted during the study was that the

Table-I. Knowledge of doctors about nosocomial infections (N.I).

Questions Asked	No of doctors= 71	
	%age correct answer	%age wrong answer
Knowledge regarding N.I	64%	26%
Knowledge about common types of N.I	73%	27%
Knowledge regarding routes of N.I	69.8%	30.2%
Knowledge regarding commonly occurring blood born N.I	51.4%	48.6%
Knowledge regarding spread of N.I	73.2%	26.8%

Table-II. Knowledge of doctors regarding Causative agents for nosocomial infections (N.I).

Questions asked	No of doctors= 71	
	%age correct answer	%age wrong answer
Knowledge regarding microorganisms commonly cause N.I	69.6%	30.4%
Knowledge regarding micro-organisms commonly cause lower respiratory tract infections	65%	35%
Knowledge regarding microorganisms commonly cause surgical wound infections	71%	29%

Table-III. Knowledge of doctors regarding Prevention of nosocomial infections (N.I).

Questions asked	No. of doctors= 71	
	%age correct answer	%age wrong answer
Knowledge regarding prevention of urinary tract infections	68%	32%
Knowledge regarding prevention of lower respiratory tract infections	82%	18%
Knowledge regarding prevention of surgical wound infections	83%	17%
Knowledge regarding prevention of cannula associated infections	92%	08%
Knowledge regarding prevention of blood born N.I.	30%	70%
Knowledge regarding most effective for sterilization of surgical instruments.	84%	16%
Knowledge regarding hand washing for surgical care.	84%	16%

majority of doctors know that how these infections can be prevented. They know that what measures as per standard should be taken for prevention of catheter associated urinary tract infections i.e. by the use of intermittent catheterization (44% doctors), by closed drainage system (54% doctors) and by decreasing the duration of catheterization (89% doctors)[7].

Almost all of them were aware of microorganisms which cause respiratory tract infections, surgical wound infections and blood born infections and they also know that how these infections can be prevented. Most of them knows that respiratory tract infections can be prevented by proper disinfection and sterilization of ventilators (91% doctors), by hands washing after contact with respiratory secretions (71% doctors) as described in CDC guideline[10].

Most of them know that how surgical wound infection can be prevented as per standard i.e. by proper sterilization of surgical instruments (93% doctors) and dressing of wounds under aseptic conditions (87% doctors)[7].
Almost all of doctors know about prevention of cannula associated infections i.e. by use of aseptic cannula insertion technique(100% doctors) and regular examination for redness, pain, tenderness or purulence (96% doctors)[7].

During the study it was observed that 82% doctors know that blood born infections can be prevented by proper blood screening.

During the study it was noted that 32% doctors do not know that the hands should be washed in between patient contact. This weak knowledge can increase the rate of nosocomial infections because in CDC guideline it is mentioned that hand should be washed in between patient contacts [10]. In this study total of 74 HCWs were evaluated for hand contamination. During the 4-month study, it was found that a significant reduction in colony-forming unit counts and ATP levels compared with baseline values. The results showed a positive correlation between the microbial counts detected by standard culture and ATP levels measured with the commercial kit. Plain soap was more effective than CHG in reducing colony-forming unit counts among HCWs in the vascular surgery ward[11].

Results of the study show that 11% doctors suggested that the cleaning of ward should be by sweeping which is wrong because the sweeping can increase the number of suspended microorganisms and thus can increase the rate of hospital acquired infections as described by G.A.G. Ayliffe[12].

The study revealed that the doctors had sufficient knowledge regarding hospital acquired infections and its prevention but certain weaknesses were observed.

CONCLUSION

The study revealed that the doctors had sufficient knowledge regarding hospital acquired infections and its prevention but certain weaknesses were observed. In view of the results obtained from this study, several recommendations are made, the implementation of which can be helpful in improving the knowledge of staff regarding hospital acquired infections and their prevention.

The education of hospital personnel is an essential element in the prevention and control of hospital-associated (nosocomial) infections. Hospital staff must be educated about basic principles of infection control in order to be able to apply them to various hospital policies and procedures.

There should be guidelines for infection control precautions which should be standardized and based on a medical care. Infection control is also perceived as 'rules and routines' that are grafted onto care plans. In reality, infection prevention and control should be the basis of all care.

The infection control education program should include all grades of staff from all disciplines. Teaching may be formal or informal and supplemented by policies and guidelines. All aspects of infection control should be taught on a continuing basis. Attending infection control

lectures or seminars will not only improve the knowledge and practice and assist in the appropriate use of resources but will also contribute towards nurses' professional profiles.

Initial job orientation and ongoing in-service education should include the infection control aspects of personnel health.

Finally, doctors in clinical areas should be monitored for compliance with required clinical nursing practices and standards, including universal precautions. This should be done by direct observation and conducted by the infection control departments.

REFERENCES

1. Bhutta, A. Z. et al. Study of nosocomial infection in surgical ward of services hospital, Lahore. Pakistan J. Health, vol.31 no 3-4, 1994 July-December, p33-34.
2. Nguyen Q. V. (2006) Hospital acquired infection [Online]. Availablefrom:http://www.emedicine.com/ped/topic1619.html.[Accessed 5 July 2006].
3. Bennet, J. V. and Brachman, P. S. (eds) Hospital infection.2nd ed. Boston/Toronto, Little, Brown and company. 1986; P4-10.
4. Tabish, S.A. Hospitals and nursing home planning, organization and management. New Dehli, Jaypee brother medical (p) Ltd. 2003;P817-825.
5. Williams Walter W. (1983) Guideline for Infection Control in Hospital Personnel [Online]. Available from: http://wonder.cdc.gov/wonder/prevguid/p0000446/p0000446.asp. [Accessed 10 June 2006].
6. Bourn John. (2000) the management and control of hospital acquired infection in Acute NHS Trust in England [Online]. Available from:(http://www.nao.org.uk publication/nao_report/9900230es.pdf) [Accessed 15 may 2006].
7. Spelman Denis W. (2002) Hospital-acquired infections The Medical Journal of Australia [Online]. Available from: http://www.mja.com.au/public/issues/176_06_180302/spe10243.html 46 Kb Cached [Accessed 10 April 2006].
8. Weinstein Robert A. (1998) Nosocomial Infection Update emerging infectious disease [Online]. Available from: http://www.cdc.gov/ncidod/eid/vol4no3/weinstein.html [Accessed 5 June 2006].
9. American international health alliance. (1993 Moscow, Russia / Boston, Massachusetts Partnership Data [Online]. Available from: http://www.aiha.com/index.jsp?sid=1&id=1012&pid=10 [Accessed 20 April 2006].
10. Centers for disease control and prevention. (1996) Standard Precautions [Online]. Available from: http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html [Accessed 1july 2006].
11. Carlo Marena .et al. (2002) Assessment of hand washing practices with chemical and microbiologic methods: Preliminary results from a prospective crossover study. American Journal of Infection Control [Online]. Available from: http://pt.wkhealth.com/pt/re/ajic/searchplusresults.htm;jsessionid=GzYLhppvt28cpGqCj53M9Yy7wtpJvdVMVLcPdDFhZxS37QGBPVNw!-1734750035!-949856144!8091!-1?startIndex=1#top [Accessed 15 May 2006].
12. Ayliffe, G.A.G., Collin, B.J. and Taylor, L.T. Hospital acquired infection; Principal and prevention.2nd ed.Great Britain, Butterworth and co.(publisher)Ltd. 1990; p1-6:89-93.
13. Centers for disease control and prevention. (1996) Guideline for Isolation Precautions in Hospitals [Online]. Available from:http://www.cdc.gov/ncidod/dhqp/gl_isolation_tableI.html [Accessed 1july 2006].
14. Mokabel F, Hamer S, Collings L (1998) Infection control activities in six hospitals: a comparison [Online]. Available from: www.nursing-standard.co.uk/archives/ns/vol12-19/research.html [Accessed 12 April 2006].
15. Centers for disease control and prevention. (1992) Public health focus; Surveillance, prevention and control of nosocomal infection [Online]. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/00017800.htm [Accessed 20 June 2006].
16. Water quality and health. (2004) Hospital-Acquired Infections a Menacing Trend in Health Care Settings, Guidance for Hospital Personnel and Patients Offered [Online]. Available from: www.waterandhealth.org/newsletter/new/winter_2003/hospital.html [Accessed 25 June 2006].

CORRECTION

The amendment of the Professional Vol:16, No.01 (Prof-1381) titled: "Central venous pressure line; Complications in the surgical cases" page no. 44-47 is as under;

INCORRECT

DR. SAYED ALI AKBAR, FCPS
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.

DR. JOHAR ALI, FCPS
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.

DR. NAZIR AHMED, FCPS
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.

Dr. Mohammad Qasim, FCPS
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.

CORRECT

DR. SAYED ALI AKBAR, FC PS
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.

DR. JOHAR ALI, FCPS
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.

DR. NAZIR AHMED, FCPS
Assistant Professor of Medicine
Frontier Medical College, Abbottabad.

Dr. Mohammad Qasim
Assistant Professor of Surgery
Frontier Medical College, Abbottabad.