Original Research Article

Assessment Of Infection Control Practices In Bolan Medical Complex And Sandeman Provincial Hospital Of Quetta, Balochistan, Pakistan

Ethical approval
The University Institute of Public Health Committee and the Research Ethics group of the University of Lahore gave ethical approval.

Abstract

Background and Objective: Pakistan is a country with double burden of disease, in which the burden of infectious diseases is more than 40%. Failure to prevent or control nosocomial infections can limit the benefits of expenditures on treatment and further stress hospital budgets. Therefore, a good hospital infection control programs are essential from both an economic and a clinical perspective in order to reduce the risk of serious, preventable infections of patients and health care workers.

Method: This cross-sectional study was done in the two teaching hospitals Bolan Medical Complex and Sandeman Provincial Hospital, Quetta to identify the gaps in infection control and prevention practice. Data was collected through data sheets and questionnaires and analyzed using Statistical Package for Social Sciences (SPSS) version 16.0.

Results: The results showed the over all Infection Control Committee (ICC) member's perception about health associated infection (HAI) was found insignificant (P 0.6) and their perception was insignificant (p 0.1) that level of staff education could be reason for HAIs. The outcome score of the assessment of operation theater, labor room, Lab & blood bank, OPD and wards at BMC regarding the measures taken there for infection control and prevention, were observed 30,25,15,14,15 respectively and resulted in good at OT and Labor room where as it was poor at Lab/Blood bank, OPD and wards.

Conclusion: It was concluded that the poor perception of ICC on infection control and prevention is the basic cause of poor outcome. Therefore, it is needed to change the perception of ICC.

Key words: Infection Control, Practices, Bolan Medical Complex, Sandeman Provincial Hospital, Quetta, Balochistan, Pakistan

Introduction

Pakistan is a country with double burden of disease, in which the burden of infectious diseases is more than 40%. Rest is accounted for the Non-communicable diseases. As the hospitals are places where maximum interaction of the sick and healthy clients and providers occur the probability of the "breakup of chain of infection: increases there. Hospitals generate infectious and non-infectious waste in the process of service delivery to the population. Approximately 25% of the waste generated is infectious and toxic while 75% is non-infectious and comes under the category of municipal waste. However the 25% infectious waste poses a threat to the hospital staff and community at large[1].

Health Care Associated Infection (HCAI) is a major problem for patient safety and its prevention must be a first priority for settings and institutions committed to making health care safer. Although the risk of acquiring HCAI is universal and pervades every health-care facility and system around the world, the global burden is unknown because of the difficulty of gathering reliable diagnostic data. This is mainly due to the complexity and lack of uniformity of criteria used in diagnosing HCAI and to the fact that surveillance systems for HCAI are virtually nonexistent in most countries[2].

The Centers for Disease Control and Prevention estimates that 5%-10% of hospitalized patients develop a healthcare-associated infection (HAI), one corresponding to approximately two million HAIs associated with nearly 100,000 deaths each year in US hospitals. The risk of serious complications due to HAIs is particularly high for patients requiring intensive care[3].

Hospital-based infection surveillance, prevention, and control programs have been in place for many decades to monitor the occurrence of HAIs and to control the spread of hospital acquired infections through internal quality improvement efforts[4]. Multiple studies in many countries have documented lack of compliance with established guidelines for disinfection and sterilization. Failure to comply with scientifically-based guidelines has led to numerous outbreaks[5].

The Infection Control Assessment Tool (ICAT) is designed to facilitate the identification, control, and prevention of nosocomial infections through an easily-administered and scored instrument that highlights areas of concern and suggests economical improvements within hospitals. The ICAT may be applied across the hospital as a whole or for specific clinical and administrative areas. The ICAT differs from most approaches to hospital infection control in that it offers a simple and practical approach for assessing the adequacy of existing infection control practices, and gives specific recommendations for improving them and monitoring their ongoing effectiveness[6].

The Centers for Disease Control and Prevention (CDC) developed baseline definitions for HAIs that were republished in 2004. HAIs were defined as those that develop during hospitalization but are neither present nor incubating upon the patient's admission to the hospital; generally for those infections that occur more than 48 to 72 hours after admission and within 10 days after hospital discharge[9].

A cross-sectional survey in Pakistan to determine the infection control practices of Anesthesiologist was conducted from January 2002 to December 2002 in Combined Military Hospital Lahore. A questionnaire was distributed to 170 consultant

anesthesiologist randomly selected from all over Pakistan. Results showed 34% of the respondents used masks, 9% used gloves, Only 18% washed and 54% reported that they used aseptic technique. Most respondents had a good knowledge of universal precautions for prevention of occupational transmission of infection. 5% of the anesthetists reported frequently reusing syringes for more than one patient. The practice of reusing syringes was significantly greater with same consultants in private clinics rather than in their primary institutions ($p < 0.01$) and they rated their 58% of cases potential for contributing to transmission of infection as>5[1].

In Turkey, there is a considerable diversity in infection control (IC) activities and practical issues and perceptions of physicians regarding IC. A 11-item questionnaire developed. A national infection control meeting's 285 Physicians attendees participated. A greater need of IC training required for university hospital's Physicians. IC is particularly concerned with Academic hospitals for certain domains such as surveillance of endemic hospital infections, specific preventive protocols, antibiotics policy, and staff education should be addressed by IC committees. IC is well established in Turkey, but, still it requires a long way to reach the developed countries's standards[18]. Multiple studies in many countries have documented lack of compliance with established guidelines for disinfection and sterilization. Failure to comply with scientifically-based guidelines has led to numerous outbreaks[20].

Many developing nations spend more than 50% of their health care budgets in hospitals, including substantial expenditures for advanced diagnosis and treatment equipment and for care of high-risk patients such as newborns, surgical patients, or patients in intensive care units. Failure to prevent or control nosocomial infections can limit the benefits of these expenditures and further stress hospital budgets. Therefore, sound hospital infection control programs are essential from both an economic and a clinical perspective in order to reduce the risk of serious, preventable, costly infections for patients and health care workers. The principles of infection control extend from a simple vaccine delivery to a child in remote field conditions to the complex interventional techniques in the hospital. The breakup of chain of infections poses great threat to the community and service providers at all levels. In the wake of recent constitutional reforms in the country, a need arises to assess every aspect of health system with a view of making recommendations to the provincial health department of Balochistan.

Aim:

To inform the Standard Infection Control Precautions (SICP) section on routine cleaning of the environment in the hospital setting in the National Infection Prevention and Control Manual in order to facilitate the prevention and control of healthcare associated infections in teaching hospital settings.

The aim of the study is to analyze the situation of infection control practices in the teaching hospitals of Lahore.

Objectives:

1. To assess the inflection control practices in the two teaching hospitals of Lahore
2. To record the perceptions of the hospital managers on the working of institutional infection control committees.

Research Question

What are the perception on infection control and prevention practices among professionals included in Infection Control Committee at BMC/SPH, Lahore?

What is the infection control and prevention situation at BMC/SPH, Lahore?

Methodology

Study Site: Sandeman Provincial Hospital Lahore and Bolan Medical Complex Hospital Lahore

Study Duration: 03 months

Study Type: Cross-sectional descriptive study

Sample Size:

There are two teaching hospitals in the universe and both were taken for assessing the infection control practices. For recording perception the members of infection control committee were interviewed.

Data Collection Technique: The practices regarding the infection control were observed at the (1) Outpatient Departments (2) Operation Theatres (3) Labor Rooms (4) Laboratory and Blood Banks of the hospitals.

Inclusion Criteria: -.

- Teaching hospitals of Lahore
- Members of infection control committee.

Exclusion Criteria:

Hospital managers who were on leave at the time of survey

Data Collection Instruments: There are multiple tools available for the data collection and Centers for Disease Control Atlanta Georgia tools were adapted for assessing hospital practices for infection control.

A field guide was used to assess perception of members of infection control committee.

Data will be collected by the principal investigator.

Data Analysis Plan:

The completed questionnaires were checked for errors, edited, cleaned, coded and data was entered into SPSS for statistical analysis. The descriptive analyses included proportions of the categorical variables and were expressed as percentages whereas means and standard deviations of Continuous variables were calculated. Cross

tabulation will be done to see the relationship between two variables by applying chi-square. A p-value of less than 5% was considered as statistically significant.

Ethical Consideration:

Ethical approval was taken from the Ethical committee of University Institute of Public Health, University of Lahore. Informed consent (written/verbal) was taken. Confidentiality of all information of subjects was maintained. Institutional approval from head of both the hospitals will be obtained for this study.

Result

The infection control committee at Bolan Medical Complex **(**BMC) comprised on Administrator, ICP Specialist (Head), Representative of Medicine dept, Representative from Surgery dept, Pathologist, Pharmacist and Nursing Head. The maximum 3 members in ICC possessed the experience of 16-20 years, 2 members have had experience of 11-15 years, while one each member gained experience of 6-10 and 21-25 years, respectively**.**

Infection Control Committee Bolan Medical Complex (BMC)

Table No 1. Perception of ICC members on Infection control and prevention

Regarding the perception of members of ICC on infection control and prevention at BMC, out 161, they collectively obtained 64 score, 39.7% which is poor.

Yes = 64

Total =161

Score=39.7%

Graph No 1. Experience

Table No 2. Factors of HAIs on Pts care

There were majority 71.4% of the ICC members who believed that the patients care factors for causing HAI was invasive medical device. Only 14.3 % thought of improper antibiotic use and others may be lower immunity level of the patients.

Graph No 3. Labor room

The outcome score of the assessment of labor room regarding the measures taken there for infection control and prevention, was 25 which is good

Graph No 3. Laboratory/Blood Bank

The outcome score of the assessment of laboratory/Blood bank regarding the measures taken there for infection control and prevention, was resulted in 15 which is Poor

Graph No 3. OT

The outcome score of the assessment of Operation Theater regarding the measures taken there for infection control and prevention, was 30 which is good

Graph No 3. OPD

The outcome score of the assessment of OPD regarding the measures taken there for infection control and prevention, was calculated 14 which is Poor

Graph No 3. Ward

The outcome score of the assessment of ward regarding the measures taken there for infection control and prevention was 15 which is poor.

Infection Control Committee Sandeman Medical Complex/College Hospital (SMCH)

Table No 3. Factors of Hospital Acquired Infections due to Administrative reason

There were 28.6% of the ICC members who believed that the administrative factors for causing HAI, 42.9% were Nurse patient ratio and level of staff education on infection control and prevention. Only 28.6 % thought of lack of equipments for ICP.

Table No 4. Factors of HAIs on Pts care There were 42.6 % of the ICC members who believed that the patients care factors for causing HAI was invasive medical device. Only 14.3 % thought of improper antibiotic use and others may be lower immunity level of the patients.

Graph No 2. Experience

Table No 5. Perception on infection control and Prevention

Regarding the perception of members of ICC on infection control and prevention at SMCH, out 161, they collectively obtained 61 score, 37.8% which is poor

Yes = 61

Total =161

Score=37.8%

Graph No 4. Labor rooms

The outcome score of the assessment of Labor room regarding the measures taken there for infection control and prevention, was calculated 28 which is Good assessment

Graph No 4. Laboratory/Blood Bank

The outcome score of the assessment of Laboratory/Blood bank regarding the measures taken there for infection control and prevention, was calculated 17 which is Poor

Graph No 4. OT

The outcome score of the assessment of Operation Theater regarding the measures taken there for infection control and prevention was calculated 26 which are good.

Graph No 4.OPD

The outcome score of the assessment of OPD regarding the measures taken there for infection control and prevention was calculated 16 which is Poor.

Graph No 4. Ward

The outcome score of the assessment of Operation Theater regarding the measures taken there for infection control and prevention was calculated 18 which is poor.

Discussion

Infection Control Services' highest goal is to ensure that the clinical community has the information to protect patients and personnel from adverse events. The department provides expertise in the epidemiological method through education, research, consultation, surveillance and investigation of disease clusters, environmental laboratory services, quality improvement and policy formation. These services exist to meet the needs of all persons associated with the BMC/SPH Lahore, particularly the patient, for the prevention of infectious complications. The department is a responsible and contributing member of its hospital community. The infection control committee at BMC comprised on Administrator, ICP Specialist (Head), Representative of Medicine dept, Representative from Surgery dept, Pathologist, Pharmacist and Nursing Head. The Infection Control Services department (ICS) is an administrative department at the University of Michigan Medical Center (UMMC).

There are six staff members: a manager, four staff specialists, and a medical secretary. The manager is accountable to an administrator and a medical director (the hospital epidemiologist) [21]. In our study, BMC/SPH is in public sector, so there is administrator (MS) rather than Manager that was at UMMC. The composition is different in our study area because of public sector organization. The Infection Control Services department used total quality techniques to develop its mission statement, identify customers, identify customer requirements, and develop quality improvement objectives to meet the requirements. ICPs should use the continuous quality improvement tools and techniques to enhance their activities within their institutions, to better meet their customer needs, and to make sure that they are complementing their institution's mission[21]. Establishing a system for identifying infections or suspected sources of infections by means of departmental rounds, review of clinical reports and also identifying at-risk patients and taking appropriate actions. Assessing on an ongoing basis whether recommended precautions are being adhered to, i.e., hand hygiene, waste management, disinfection and sterilization.

In Brazilian hospitals, a cross-sectional survey conducted to assess the perceptions and attitudes of the health care workers (HCW) concerning ICP by using a self-administered online questionnaire.1998 ICC answered the survey. Eight hundred six (40.4%) respondents said that an ICP was established for more than 10 years in their institutions.survey highlights important information about the perceptions and attitudes of ICC members that may be used to tailor key interventions for implementing effective ICP[17]. In our study area, the professionals (ICC members), 14% thought that HAIs might be due to improper use of antibiotic. Academic hospitals are particularly concerned with IC. Domains such as surveillance of endemic hospital infections, specific preventive protocols, antibiotics policy, and staff education should be addressed by IC committees. IC is well established in Turkey, but there is still a long way to go to reach the standards found in developed countries[18]. The outcome score of the assessment of Operation Theater at BMC regarding the measures taken there for infection control and prevention, was 30 which is good.

Conclusion

Academic hospitals are particularly concerned with IC. Domains such as surveillance of endemic hospital infections, specific preventive protocols, antibiotics policy, and staff education should be addressed by IC committees.

The evolving responsibility for operating and maintaining a facility-wide effective infection control program lies within many domains. Both hospital administrators and health care workers are tasked to demonstrate effectiveness of infection control programs, assure adequate staff training in infection control, assure that surveillance results are linked to performance measurement improvements, evaluate changing priorities based on ongoing risk assessments, ensure adequate numbers of competent infection control practitioners, and perform program evaluations using quality improvement tools as indicated. The results of our study showed an overall low level of perception of members of ICC in both hospitals.

Limitation:

The pilot inspections and our analysis were subject to the following limitations.

First, surveyors evaluated facilities at a single point in time and observed a limited number of procedures and health care professionals. Therefore, it is not known if the observations made at the time of inspection accurately reflect the routine infection control practices of the BMC and SPH, Lahore: the number of infection control lapses identified is potentially an underestimate.

Second, the audit tool does not call for surveyors to document the frequency of lapses identified in each infection control category (e.g., total number of lapses in hand hygiene observed during the inspection). Thus, for the purposes of this analysis, it is not possible to distinguish facilities that had multiple lapses in any category of infection control from those that only had a single lapse in the category.

Third, the inspection focused primarily on evaluation of process measures at the facility. Data related to outcomes or numbers of HAIs linked to facilities were not collected.

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Table No 1. Perception of ICC members on Infection control and prevention

Table No 2. Factors of HAIs on Pts care

Factors of HAIs on Pts care	Frequency	Percent
Antibiotic Use	1	14.3
Invasive Medical Device	5	71.4
Other	1	14.3
Total	7	100.0

Table No 3. Factors of Hospital Acquired Infections due to Administrative reasons

Question asked	**Response**		**Total**
	Yes	**No**	
Factors of HAIs on	Frequency	Percent	
Thinks ICP inconvenient	4	3	7
Presumption that Pt was not infected	4	3	7
Measurable SOPs	4	3	7
SOPs for IPC in Hospital	3	4	7
Easy Applicable SOP	3	4	7
Daily monitoring ICP	2	5	7
Check List ICP available	3	4	7
Frequent Meeting ICP Weekly	7	0	7
CME on HAI/IPC for Staff	1	6	7
Regular Hand washing practice of staff	4	3	7
Necessity of SOP for ICP	4	3	7
Satisfaction on ICP in Hospital	2	5	7
Conduct survey for evaluation of ICP	0	7	7
Hazards of HAIs due to Drug resistant microorganism	3	4	7
Stewardship in antimicrobial Use	3	4	7
Existing Surveillance system for Outbreak control	0	7	7
Posters of Hand washing (ICP)	1	6	7
Availability of Disposable PPE	1	6	7
Use of sterile barrier (mask, cap, gloves etc)	3	4	7
Remove PPE after use	2	5	7
Hospital waste management	7	0	7
Disinfection and sterilization system	1	6	7
Total Responded Q	**64**	**97**	

Administration		
Nurse patient ratio	2	28.6
Level of staff education	3	42.9
Lack of instruments/equipments for ICP	2	28.9%
Total	7	100.0

Table No 4. Factors of HAIs on Pts care

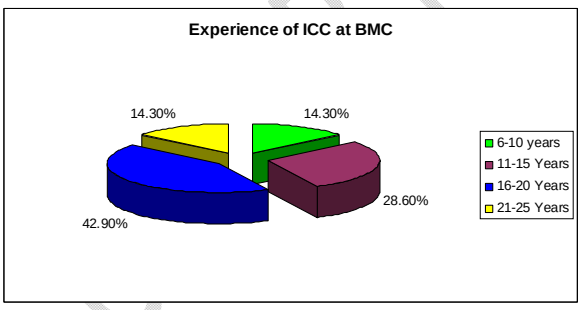
Factors of HAIs on Pts care	Frequency	Percent
antibiotic use	3	42.9
invasive medical device	3	42.9
Others	1	14.3
Total	7	100.0

Table No 5. Perception on infection control and Prevention

Question asked	Response		Total
	Yes	No	
Perceived time constrain	**2**	**5**	**7**
Thinks ICP inconvenient	**3**	**4**	
Presumption that Pt was not infected	**3**	**4**	
Measurable SOPs	**4**	**3**	
SOPs for IPC in Hospital	**2**	**3**	
Easy Applicable SOP	**3**	**4**	
Daily monitoring ICP	**2**	**5**	
Check List ICP available	**3**	**4**	
Frequent Meeting ICP Weekly	**7**	**0**	
CME on HAI/IPC for Staff	**1**	**6**	
Regular Hand washing practice of staff	**4**	**3**	
Necessity of SOP for ICP	**4**	**3**	
Satisfaction on ICP in Hospital	**2**	**5**	
Conduct survey for evaluation of ICP	**0**	**7**	
Hazards of HAIs due to Drug resistant microorganism	**3**	**4**	

Stewardship in antimicrobial Use	**3**	**4**	
Existing Surveillance system for Outbreak control	**0**	**7**	
Posters of Hand washing (ICP)	**1**	**6**	
Availability of Disposable PPE	**1**	**6**	
Use of sterile barrier (mask, cap, gloves etc)	**3**	**4**	
Remove PPE after use	**2**	**5**	
Hospital waste management	**7**	**0**	
Disinfection and sterilization system	**1**	**6**	
Total Responded Q	**64**	**97**	

Graph No 1



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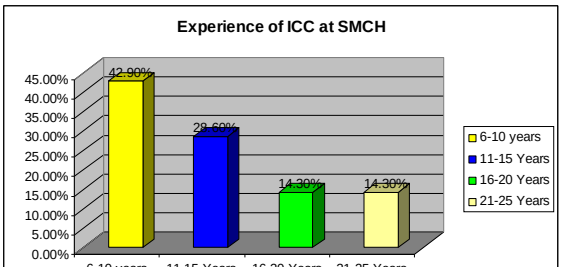

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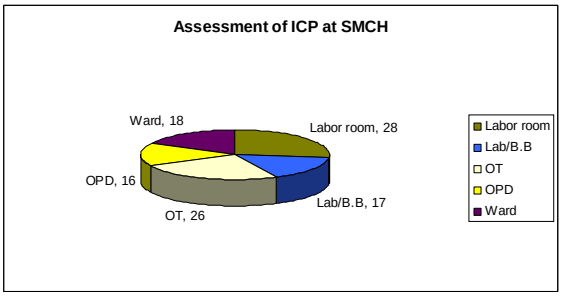
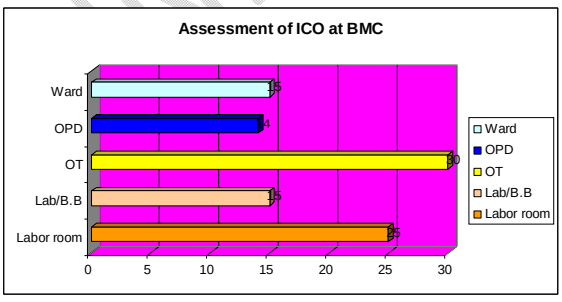


Scoring:

28= Good, 26 = Good, 16 = Poor, 17 = Poor, 18 = Poor

Graph No 4



Scoring:

Labor Room: 25= Good, Lab/ Blood Bank: 15 = Good, O.T: 30 = Poor

OPD: 14 = Poor, Ward: 15 = Poor