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## DOES RADIOGRAPHER AWARE OF HOSPITAL ACQUIRE INFECTION IN RADIOLOGY DEPARTMENT— A CASE REPORT

Suresh Sukumar, SushilYadav

Department of Medical Imaging Technology, Manipal College of Allied Health Sciences, Manipal University, Manipal

E-mail of corresponding author: suresh.medicalimaging@gmail.com

### ABSTRACT

**Aim:** This study was carried out in order to establish whether infection control measures we're being undertaken sufficiently in Radiology department and to create awareness among the Radiographer and Staff Nurse working in the Department regarding spread of infection through Radiology Equipment's.

**Outcome of the study:** From this study we concluded that Radiographer and Staff Nurse should be oriented and create awareness about the radiology equipment spreading the infection and hygiene to follow for personal protection from infection and for the patient care. Proper qualified radiographer has to employ to work in the department. Staff nurse posted in radiology department has to get specialised training to work in radiology department. **Conclusion:** Healthcare Associated Infections are a major public health concern. Department of radio diagnosis and Imaging and staff need to understand these important issues, and actively participate in solutions to reduce the risk to our patients as well as personal protection.

**Keyword:** - Infection control; Hospital acquired infections; Radiology Department; methicillin resistant staphylococcus aureus

### INTRODUCTION

#### Case details of an patient come to our Radiology Department:

Patient came to the Radiology Department for the Imaging study prescribed by the consultant for the inpatient department. In the case history of imaging request form, patient has the previous history of hospital-acquired Methicillin Resistant Staphylococcus aureus Infection. Based on the case record and lab report of our hospital we concluded that patient had hospital-acquired Methicillin Resistant Staphylococcus aureus (MRSA) from the previous hospital and got admitted to our hospital for the treatment. During the radiology examination none of our Junior Radiographer working in the department were not aware of hospital-acquired Methicillin Resistant Staphylococcus aureus and the infection spread by the Radiology Department.

#### Do radiology equipment's spread infection?:-

Hospital acquired Infection control in hospitals is concerned with prevention of microorganisms reaching a susceptible to cause to patients<sup>6</sup>. Hospitals can become contaminated with potentially infectious organisms and a safe environment can only be achieved by decontamination in the form of disinfection, cleaning and sterilization<sup>7</sup>. A major reason for the importance of infection control is to prevent the occurrence of Nosocomial or Hospital Acquired Infections (HAI). These are infections that occur during a patient's stay in hospital which were not present or during the time of admission<sup>2</sup>. In contrast to community acquired infections these infections usually occur as a result of pathogens taking advantage of patients whose normal defences against infection are contravened<sup>2</sup> We can

remove the organism completely from the hospital, but our aim should be to reduce the number of microorganisms present and dispose of the material that supports microorganism growth<sup>7</sup>. Pathogenic organisms which cause the infection are bacteria, viruses and fungi<sup>7</sup>. Bacteria are the largest cause of hospital acquired infection, and pathogenic bacteria usually grow rapidly under environmental conditions found in the human body. Department of Radio diagnosis and imaging (RDI) within the hospital deals with a wide variety of patient groups including the very young, elderly and immunosuppressed. Risk of infection to the patient who are coming to the RDI is more<sup>7</sup>. Patients who are being examined in the RDI will come into contact with various types of equipment's which are used to RDI for imaging purpose. Fox<sup>8</sup> carried out a study based on imaging receptors in portable mobile x-ray equipment's over the course of 7 days. From his conclusion he found that during examinations the imaging receptor came into contact with the patient 68.8%, 25% of the time this contact was directly with the patient's skin. Out of 40 imaging receptors he found 38 imaging receptors their study were contaminated with bacteria, the most common being *Staphylococcus aureus* and found that that imaging receptors were acting as reservoirs for cross infection, this is compounded by the fact that mobile radiography is commonly undertaken in areas where patients are likely to be immunosuppressed or vulnerable to infection risks<sup>8</sup>. Swain and Flinton<sup>9</sup> from their study, 20 swabbed cassettes were found to have Coagulase-Negative *Staphylococci* present; six were contaminated with *Staphylococcus aureus* and one with MRSA. Smith and Lodge argued that the RDI is one of the only departments in the hospital where different patient types wait together and that this increases the potential for microorganisms to be transmitted between patients and through personnel and equipment. In this study cultures were taken of 44 potential fomites within the RDI. It was found that 50.7% of these

grew no microorganisms, with 49.3% growing a range and number of organisms.

### **OBJECTIVE**

This study is to create the awareness and knowledge of the hospital acquired infection and equipment's which spreads infection in Radiology department.

### **Study designed**

Case study

### **How to create awareness?**

Awareness created based on orientation, lectures and questionnaires to evaluate for radiographer and radiology staff nurse

### **DISCUSSION**

This case study highlights the issue of Healthcare Associated Infections and the Medical Imaging department<sup>3,4,5</sup>. Hospital acquired infection is one of the major causes of patient death and increased morbidity for hospital patients worldwide. Multinational point prevalence studies demonstrate a HAI rate of around 8-10%<sup>4</sup>. Radiographer and nursing staff who are working in the radiology department are not aware of infection which spreads through the radiology equipment's. Even though there are less studies in the area of radiology department infection control, based on their study, provide the vast knowledge of the equipment's which spread the infection and method to prevent the infection to staff working in the radiology department and to the patient.<sup>8,9,11,12</sup> Equipment's which spread infection as follows: 1. x-ray cassette, 2. Aprons, 3. Markers, 4. X-ray machine, 5. X-ray tables, 6. computer radiographic and 7. x-ray plates<sup>8,9,11,12</sup>

### **Role of Radiographer and staff nurse in radiology department infection control:-**

#### **1. Hand hygiene**

Improving hand hygiene among healthcare workers is currently the single most effective intervention to reduce the risk of healthcare associated infections<sup>1,12</sup>. The Medical Imaging department is characterized by very frequent patient interactions and contact involving multiple

staff groups. Some of these patients or patient groups seen in Medical Imaging are at high risk for HAI. There is a real potential for breakdown of hand hygiene involving such a high-density, high-acuity patient population in frequent contact with health-care workers. Additionally, some imaging is performed outside of the Medical Imaging department in high-risk environments such as ICU<sup>13</sup>.

## **2. Policies and procedures:-**

The Medical Imaging environment is a highly relevant one in relation to these issues. Patient procedures are performed routinely and frequently, ranging from peripheral intravenous access and drug/contrast administrations, through to highly complex and invasive interventional and therapeutic interventions. Body fluids are often involved. Nuclear Medicine imaging techniques can involve in vitro laboratory blood product radio-labelling and patient reinjection of blood products, and serious adverse events have been reported in both processes<sup>14,15</sup>

## **3. Cleaning**

Clean and decontaminate equipment and your environment appropriately. Sterilise equipment as appropriate. Medical Imaging equipment may harbour potential pathogens, e.g. MRI scanners and ultrasound equipment<sup>16</sup>

## **4. Consider your patients**

Consider the “risk” your patients pose to others in respect to infection control, and manage those patients appropriately. Also consider whether any of your patients are at risk of HAI.

## **5. Personal protective equipment**

Wear personal protective equipment appropriately and correctly always perform hand hygiene after removing personal protective equipment get informed and promote action

Understand the issues of HAI and promote a culture of awareness, patient safety and action.

## **6. Immunisation**

Ensure you are up to date with your immunisations and receive yearly influenza vaccinations.

## **SUGGESTION**

Radiographer and staff nurse should be oriented and create awareness about the radiology equipment spreading the infection and hygiene to follow for personal and patient care. Proper qualified radiographer has to employ to work in the department. Staff nurse posted in radiology department has to get specialised training to work in radiology department.

## **Consultation**

Healthcare Associated Infections are a major public health concern. Department of radio diagnosis and imaging and staff need to understand these important issues, and actively participate in solutions to reduce the risk to our patients as well as personal protection.

## **Conflict of interest statement**

We (the authors) confirm that there are no conflicts of interest associated with the submission of this article

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## **REFERENCES**

1. ACSQH National Hand Hygiene Initiative (accessed Feb 13, 2009).
2. Wilson J. In: Infection control in clinical practice. 3rd ed. Edinburgh: Elsevier Limited; 2006.

3. ACSQH Healthcare Associated Infection (HAI) (accessed Feb 13, 2009).
4. Tasmanian Infection Prevention & Control Unit "Healthcare Associated Infections Information for health professionals" (accessed Feb 13, 2009).
5. ACSQH "Reducing harm to patients from healthcare associated infection: the role of surveillance" (accessed Feb 13, 2009)
6. Horton R, Parker L. In: Informed infection control practice. 2nd ed. Edinburgh: Churchill Livingstone; 2002.
7. Fox M, Harvey J. An investigation of infection control for X-ray cassettes in a Diagnostic Imaging Department. *Radiography* 2008;14:306-11.
8. Swain JA, Flinton DM. X-ray cassettes: a potential crossinfection risk? *Journal of Diagnostic Radiography and Imaging* 2000; 3:121-5.
9. Smith A, Lodge T. Can radiographic equipment be contaminated by micro-organisms to become a reservoir for cross infection? *Synergy* 2004; Dec:12-7.
10. "Do lead rubber aprons pose an infection risk?" Helen Boyle a, Ruth M. Strudwick b,\* *Radiography* (2010) 16, 297-303
11. Radiographic markers e A reservoir for bacteria? Jenna Tugwell a,\*, Adele Maddison b *Radiography* 17 (2011) 115e120.
12. Hand Hygiene Australia <http://www.hha.org.au/> (accessed Feb 13, 2009).
13. HAI and medical imaging - infection prevention is everybody's business: A Case Report 1 QUDI eNews, February 2009 © RANZCR – 2009.
14. Rojas-Burke J. 'Health Officials Reacting to Infection Mishaps'. *J Nucl Med* 1992 33: 13N-27N.
15. Fowler, C, McCracken D, 'US Probes: Risk of Cross Infection and Ways to Reduce It- Comparison of Cleaning Methods'. *Radiology* 1999; 213: 299-300.
16. Diagnostic Imaging 'Irish radiologists take urgent action to eradicate superbug'. Nov 28, 2006. (accessed Feb 15, 2009)