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Original Research Article.

Evaluation of Knowledge of Anaesthesiologists About Infection Control Practices and to Detect the Pattern of Anaesthetic Devices Contamination: An Institutional Based Study

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ABSTRACT

Background: Bacterial contamination in the operating room has been linked to notable morbidity and mortality among patients. Hospital-acquired infections are becoming frequently resistant to antibiotics. Hence, the present study was conducted to evaluate knowledge of anaesthesiologists about infection control practices and to detect the pattern of anaesthetic devices contamination.

Materials and Methods: This cross-sectional study was carried out to evaluate knowledge of anaesthesiologists about infection control practices and to detect the pattern of anaesthetic devices contamination. Validated self-administered questionnaires were distributed to 110 anaesthesiologists. Questionnaire includes the demographic data, general infection control practices and the laryngoscope reprocessing procedures. Bacteriological work was done. Data were coded, entered, and analyzed using the Statistical Package for the Social Sciences (SPSS).

Results: In present study total anaesthesiologists were 110 in which 70 were males and 40 were females. The mean age of anaesthesiologists was 35 years. Gloves were worn by all anaesthesiologists. Goggles were not worn by 20 anaesthesiologists and mask was not worn by 25 anaesthesiologists. 26 anaesthesiologists does not wash their hands and wear a cap, mask, sterile gown and gloves for central venous access. All anaesthesiologists wash their hands between cases, before neuraxial blocks and after removing their gloves. 87 try to maintain the laryngoscope sterile, 27 clean, disinfect, store laryngoscope in between patients, 24 wipe laryngoscope handle with ethyl alcohol 70% for in between patients reprocessing. Isolated organisms from laryngoscope samples shows no growth in 31.81% samples. Fungal growth was absent in samples. Gram positive bacilli was present in 12.72%, Gram negative bacilli was present in 25.45%, Gram positive cocci was present in 25.45% samples.

Conclusion: This study concluded that isolated organisms from laryngoscope samples shows no growth in 31.81% samples, remaining samples shows bacterial growth. Therefore, the knowledge of anaesthesiologists about infection control practices is not satisfactory and that there is contamination of ready to use laryngoscopes.

Keywords: Anaesthesiologists, Infection Control Practices, Contamination.

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INTRODUCTION

Hospital-acquired (nosocomial) infections now affect 10% of patients admitted, and the amplification of bacterial resistance is an evolving problem worldwide.[1,2] As a result, community and hospital outbreaks of infections secondary to resistant organisms are occurring at increasing frequency.[3] Despite the adequate knowledge of nosocomial infections, hand hygiene, decontamination, and sterilization of equipment, these processes are often overlooked.[4] Contamination is influenced by many factors.[5] This most commonly occurs during extubation when the patient transitions from deep to light anesthesia. Equipment that becomes soiled is frequently placed in contact with the anesthesia machine. Laryngoscope blades are regularly contaminated with blood, which indicates infiltration of mucosal membranes. This frequently exposes the patient as well as clinician to harmful pathogens. In addition, the knurled handles of the laryngoscope have been proven to not be reliably cleaned by hands after being covered in bodily fluids or blood.[6]

Hygiene practices of professionals, adequate cleaning of equipment, and adequate execution of invasive procedures are among important aspects for the reduction of the risk of transmission of infections.[7] Anaesthesiologist should show great care when handling laryngoscopes; wear gloves during intubation and place used instruments in a designated receptacle to prevent contamination of surfaces and drapes.[8] The present study was conducted to evaluate knowledge of anaesthesiologists about infection control practices and to detect the pattern of anaesthetic devices contamination.

MATERIALS AND METHODS

This cross-sectional study was carried out to evaluate knowledge of anaesthesiologists about infection control practices and to detect the pattern of anaesthetic devices contamination. Before the commencement of the study ethical approval was taken from the ethical committee of the institute. Validated self-administered questionnaires were distributed to 110 anaesthesiologists. Questionnaire includes the demographic data, general infection control practices and the laryngoscope reprocessing procedures. Both operative suites and intensive care units (ICUs) were included in the study. Bacteriological work was done. Bacteriological sampling was done as described by Williams et al.[9] New sterile gloves were used for each sample. Sterile paper templates with a circular hole of 2 cm diameter were used to define a consistent area from which sampling occurred. The area within the template on the handle was swabbed by sterile saline moistened swab. The swab was immersed in a bottle containing 3 mL of brain–heart infusion (BHI) broth to be transported to laboratory for culture and identification. A sterile 1-mL Pasteur pipette was used to remove about 0.25 mL from the broth to be inoculated to the surface of the prepared culture media. Sampling was carried out from "ready-to-use" laryngoscopes on the resuscitation trolleys at ICUs. Data were coded, entered, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.

RESULTS

In the present study total anaesthesiologists were 110 in which 70 were males and 40 were females. The mean age of anaesthesiologists was 35 years. Gloves were worn by all anaesthesiologists. Goggles were not worn by 20 anaesthesiologists and mask was not worn by 25 anaesthesiologists. 26 anaesthesiologists does not wash their hands and wear a cap, mask, sterile gown and gloves for central venous access.

All anaesthesiologists wash their hands between cases, before neuraxial blocks and after removing their gloves. 87 try to maintain the laryngoscope sterile, 27 clean, disinfect, store laryngoscope in between patients, 24 wipe laryngoscope handles with ethyl alcohol 70% for in between patients reprocessing. Isolated organisms from laryngoscope samples shows no growth in 31.81% samples. Fungal growth was absent in samples. Gram positive bacilli was present in 12.72%, Gram negative bacilli was present in 25.45%, Gram positive cocci was present in 25.45% samples.

Table 1: Demographic data

Variable	(N=110)
Gender	
Male	70
Females	40
Mean age(years)	35±2.14

Table 2: Participant's responses to questionnaire addressing their knowledge of infection prevention practices

Questions	Right answer	Wrong answer
▪ **Do you wear gloves?**	110	0
▪ **Do you wear goggles?**	90	20
▪ **Do you wear a mask in the operating room?**	85	25
▪ **Do you wash your hands and wear a cap, mask, sterile gown and gloves for central venous access?**	84	26
▪ **Do you wash your hands between cases?**	110	0
▪ **Do you wash your hands before neuraxial blocks?**	110	0
▪ **Do you wash your hands after removing your gloves?**	110	0
▪ **Do you try to maintain the laryngoscope sterile?**	87	23
▪ **Do you clean, disinfect, store laryngoscope in between patients?**	27	83
▪ **Do you wipe laryngoscope handle with ethyl alcohol 70% for in between patients reprocessing**	24	86

Table 3: Frequency of the isolated organisms from laryngoscope samples

Isolated organisms from laryngoscope samples	N(%)
No growth	35(31.81%)
Fungal growth	0(0%)
Gram positive bacilli	14(12.72%)
Gram negative bacilli	33(30%)
Gram positive cocci	28(25.45%)
Total	110(100%)

DISCUSSION

Current guidelines recommend that equipment that will be in contact with and body area that is normally sterile must be sterile at the time of use, and aseptic techniques must be enforced to maintain sterility. Common equipment includes needles, catheters, intravenous tubing, connectors and syringes. Reusable equipment should be thoroughly cleaned and subjected to a proper sterilization prior to reuse. If an item's sterility is in doubt, it should not be used. Aseptic techniques should be followed during handling of sterile equipment. Equipment that does not ordinarily come in contact, or touches intact skin should be cleaned at the end of the day or when visibly contaminated. This would include blood pressure cuffs, pulse oximeter probes and cables, stethoscopes, electrocardiogram cables, head straps, fluid warmers, surfaces of the anesthesia machine, exterior of monitoring equipment.[10]

In the present study total anaesthesiologists were 110 in which 70 were males and 40 were females. The mean age of anaesthesiologists was 35 years. Gloves were worn by all anaesthesiologists. Goggles were not worn by 20 anaesthesiologists and mask was not worn by 25 anaesthesiologists. 26 anaesthesiologists does not wash their hands and wear a cap, mask, sterile gown and gloves for central venous access. All anaesthesiologists wash their hands between cases, before neuraxial blocks and after removing their gloves. 87 try to maintain the laryngoscope sterile, 27 clean, disinfect, store laryngoscope in between patients, 24 wipe laryngoscope handles with ethyl alcohol 70% for in between patients reprocessing. Isolated organisms from laryngoscope samples shows no growth in 31.81% samples. Fungal growth was absent in samples. Gram positive bacilli was present in 12.72%, Gram negative bacilli was present in 25.45%, Gram positive cocci was present in 25.45% samples. Ryan et al. reported that only 37% of their participant routinely use goggles.[11]

In Taiwan, more than 90% of the responding anaesthesiologists and nurses reported that they frequently or always wear a mask during anaesthesia.[12]

Regarding the mask, the American study of Tait et al.[13] (94.9%) and higher than that of the United Kingdom (68.3%)[14] and New Zealand (59.5%).[11]

Adhesion to the sterile technique, with sterile cap, mask, gloves, and gown for central venous access was reported by El Mikatti et al.[12] (UK) and Ryan et al.[11] (NZ), with 70.4% and 70%, respectively. Kishi and Videira got 98.8% yes response for wearing sterile gloves for the neuraxial block.[15]

The presence of the microorganisms on the surface of ready-to-use rigid laryngoscopes could have serious health hazards. In the current study, no fungal growth was found – the finding also reported by previous study;[16] Williams et al. found only 14% of the handles negative for bacterial growth.[16]

CONCLUSION

This study concluded that isolated organisms from laryngoscope samples shows no growth in 31.81% samples, remaining samples shows bacterial growth. Therefore, the knowledge of anaesthesiologists about infection control practices is not satisfactory and that there is contamination of ready to use laryngoscopes.

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