



**Editorial**

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## Anaesthesia and associated cross infection: An unrecognized source

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Hospital acquired infections (HAIs) are preventable diseases and a place of enormous socio-economic burden on an economy. It is well known that intensive care units (ICU) are epicenters of cross infections, but a little is known about the role of anaesthesia atmosphere in this process. Intraoperative environment due to several reasons serve risk factors for HAIs [1, 2]. Immune suppression associated with general anaesthesia, particulate matters and medical equipment used in anaesthesia may also be linked with the development of HAIs [3]. HAIs are more common in countries with poor socio-economic status where disposable or single use only items are re-used many times. Hospital acquired infections caused by various infectious organisms all of which flourish on suitable reservoirs, such as medical equipment.

### **Factor responsible for cross infection**

#### *Intravascular catheter*

Hub or port of intravascular catheter used for administration of intraoperative drugs and fluids, are the potential entry site for bacteria. Hub and stopcocks of intravascular catheter are usually contaminated with blood, which act as reservoir for microorganism. Infusions set having a side port for administration of drugs are preferred to prevent contamination. Use of needleless connectors or mechanical valves appears to be effective in reducing connector colonization as compared with standard stopcocks.

#### *Drug Contamination*

Sterile syringes and needles should be used for preparation of drugs, prepared syringes and needles are kept in a clean sterile container and capped. Syringes and needles should not be used for multiple patients once connected to a patient's vascular lines or infusions. Residual amount of single used drug should be discarded. Self-collapsible intravenous fluid bags should be used which prevents entry of air born infectious particles into the fluids. All syringes and needles should be discarded into an approved sharp container after its use.

#### *Movement within the theater complex*

Restricted movement in and out of operating theater reduces airborne contamination. Door should be closed and eatable items should not be allowed inside O.T complex. Patient's dress should be changed before transferring to O.T complex. Visitors should change into theater suits and wear designated footwear.

#### *Order of patients*

Patients which are infectious in nature (abscess, tubercular, wounds, and hepatitis B / HIV positive patients) should be scheduled last in operating list. Extra precautions should be taken for these patients and O.T should be cleaned and fumigated for a recommended period before next scheduled operation.

#### *Anesthetic equipment*

Either by direct contact with patients or indirectly via splashing, by secretion or from handling anaesthetics equipment may become contaminated. Oxygen mask and tubing should be single-patient use products. Airways and tubes readily contaminated with transmissible organism and blood and should be single-use type [4]. Supra-glottic airway devices should be properly cleaned and sterilized before use in next patient. Laryngoscope blades are heavily contaminated with microorganism due to contact with oral mucosa so the proper cleaning of laryngoscope blades is important before decontamination /sterilization particularly around light sources or articulated section [5-7].

Bacterial/viral filter is used between patient and circuit to prevent air born transmission of microorganism. Surfaces of anaesthesia machines should be cleaned on daily basis with an appropriate disinfectant.

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Unidirectional valves, carbon dioxide absorbers and bellows should be cleaned and disinfected periodically. Surfaces of anaesthesia machines should be cleaned on daily basis with an appropriate disinfectant.

### **Regional anaesthesia and risk of infection**

Infectious complication of regional anaesthesia includes abscess formation, necrotizing fasciitis, meningitis, arachnoiditis which can lead to paralysis and death. Potential routes might be contaminated syringes, catheter hubs, local anaesthetics or breaches in aseptic technique. The suggested mechanism of hematogenous infection of the central nervous system caused by subarachnoid or epidural puncture might be an accidental vessel puncture lead to the introduction of blood into the intrathecal space. *Staphylococcus aureus* is the organism most commonly associated epidural abscess and alpha-hemolytic streptococci causing meningitis after dural puncture<sup>[8]</sup>.

### **Current status and future need**

In many institution of our country, anesthesiologists are not adhering to the protocol for the prevention of infection due to lack of regular training and education programme. It has been observed that anaesthesiologist have poor compliance with cap and mask, have excessive movement and carry items like books, laptop, drug bag etc. in the operation theater complex. Medical equipment used are not properly cleaned or sterilized and reused in the next patients without giving emphasis on prevention of cross infection.

Stress should be given on preventive medicine in medical and nursing curriculum. Irrespective of specialty infection prevention should be a part of the teaching curriculum. Hospital must dedicate time for education and training of their staff in infection prevention. Various

studies shows that, in spite of increase in knowledge scores regarding infection prevention, doctors were least compliant in infection control practices<sup>[9]</sup>.

Aseptic practice, proper hand hygiene and appropriate barrier techniques are the three important steps to prevent infection transmission from provider to the patients, as recommended by Centre for Disease Control and Prevention.

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