Sterilization of equipment, Environmental Control in Theatre Standard precautions and HIV exposure

Dr. Nirmala Soundararajan
Primary Lecture course, Hull
23rd October 2013
CCT in Anaesthetics

Annex B – Basic Level Training
Control of infection (B 32-33)

**Learning Outcomes:**

- To understand the need for infection control processes
- To understand types of possible infections contractible by patients in the clinical setting
- To understand and apply most appropriate treatment for contracted infection
- To understand the risks of infection and be able to apply mitigation policies and strategies

**Core clinical learning outcome:**

- The acquisition of good working practices in the use of aseptic techniques
### FRCA Fellowship Examinations

#### Blueprint of the Primary FRCA examination mapped against the basic level units of training

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Objectives of the Session

Describe
• Sterilization of equipment and strategy if contaminated
• Infections from contaminated blood, Hepatitis and HIV infection
• Cross infection: modes and common agents
• Good working practices

Discuss
• Assessment and recognition of ‘at risk’ groups
• Prevention of self-infection and cross infection
• RELATED QUESTIONS
Question 1

What do these terms mean?

• Bioburden
• Cleaning
• Decontamination
• Disinfection
  • *Disinfectant vs Antiseptic*
• Sterilization
Definitions

- **Bioburden**: The population of viable infectious agents contaminating a medical device.

- **Cleaning**: The physical removal of foreign material including infectious agents and organic matter. This does not necessarily destroy infectious agents.

- **Decontamination**: A process that removes or destroys contamination so that contaminants cannot reach a susceptible site in sufficient quantities to initiate an infection or any other harmful response. It always involves cleaning followed by disinfection and/or sterilization.

- **Disinfection**: A process that eliminates many or all pathogenic organisms except bacterial spores. Chemicals used to disinfect inanimate objects are called *disinfectants*. Chemicals used to disinfect body surfaces are termed *antiseptics*.

- **Sterilization**: A process that renders an object completely free of all viral infectious agents by eliminating all forms of microbial life.
Question 2

• What is ‘The Spaulding Classification’?
• What are ‘critical’, ‘semi critical’ and ‘non critical’ items?
• Can you give examples of items in each category
The Spaulding Classification

*3 categories based on the degree of risk of infection involved with their use*

- Critical items
  - Items that enter sterile tissue or vascular system
  - High risk of infection if contaminated
- Semi critical items
  - Do not ordinarily break the blood barrier
  - Intermediate risk of infection
- Non critical items
  - Come into contact with healthy skin but not mucous membranes
Examples in the 3 categories

• Critical items
  • It is critical that they are sterile at the time of use
  • E.g. Surgical instruments, cardiac and urinary catheters, implants and needles

• Semi critical items
  • Present an intermediate risk of infection and require at least high level disinfection.
  • E.g. Breathing circuits, laryngoscopes, thermometers and endoscopes

• Non critical items
  • Low risk of transmitting infectious agents to patients
  • Pulse oximeters, BP cuffs
Question 3

How would you prevent infection transmission through the vectors listed below?

- Face masks, airways, tubes, catheter mounts
- Breathing system
- Fibreoptic bronchoscopes
- Bougies, surfaces, oxygen masks and tubing
- Resuscitation equipment
Vectors for nosocomial pathogens

• Face masks, airways, tubes, catheter mounts
  – Single use
• Breathing system
  – Weekly/daily
• Fibreoptic bronchoscopes
  – Decontamination with an automated system – Steris 20
• Bougies
  – Disinfect and use max 5 times/ single use
• Surfaces of machine, pulse-ox, NIBP cuff, cables
  – Cleaned with detergent
• Resuscitation equipment, oxygen masks and tubing
  – Single use
Methods of Cleaning and Disinfection

Cleaning
- Manual
- Automated
- Cavitation

Disinfection
- Pasteurization
  - Hot water
  - 77°C
  - 30 minutes
  - Spores not killed
- Chemical
  - Glutaraldehyde 2%
  - Hydrogen peroxide
  - Peracetic acid
  - Chlorine releasing compounds
Methods of sterilization

Steam
- 121 to 134°C
- Holding time 3,15 mins
- Denaturation of proteins

Ethylene Oxide
- Colourless
- Flammable gas
- 29 to 65°C
- Cycle 5 – 12h

Chemical

Glutaraldehyde 2%
- For cystoscopes, bronchoscopes
- Immerse for >10 hours

Gas plasma
- Highly ionised gas
- Particles penetrate through packaging
- Non toxic, low temperature
- Cycle time – 75 minutes
Quiz – Rapid Fire

1. What is ‘cavitation’?
2. What is ‘pasteurization’?
3. How is ‘sterility’ assured?
4. Name three processes which may be used to achieve sterilization and list their relative advantages and disadvantages.
Cavitiation, Pasteurization and Sterilization

- Ultrasonic cleaning removes material from crevices in instruments. The chamber is filled with water and detergent and transducers produce ultrasonic waves which create a negative pressure which pulls away debris. This process is called *Cavitation*.
- **Pasteurization**
  - A process that uses hot water at temperatures of 77°C for 30 minutes to achieve intermediate level disinfection. Bacterial spores are not killed but there is no risk of toxic chemical residues
- Complete destruction of all forms of microbial life which is usually achieved by steam, ethylene oxide, glutaraldehyde or gas plasma. ‘Sterility’ is measured as the probability of complete sterility for each item – also called the “Sterility Assurance Level (SAL)”. A SAL of $10^{-6}$ is deemed appropriate for sterile devices. This means that the probability of an organism surviving in this device is 1 in a million.
Ethylene oxide vs. Gas Plasma sterilization

**Ethylene Oxide**
- Colourless
- Flammable
- Potentially toxic
- Temp - 20 to 65°C
- Lengthy
- Cycle time is 5 – 12 hours
- Expensive

**Gas Plasma**
- Highly ionised gas
- Ions and free radicals
- Low temperature process
- Non toxic
- Dry
- Cycle time 75 minutes
True/False MCQ

Regarding 35% peroxyacetic acid (Steris):

• It is used to disinfect fibreoptic bronchoscopes
• It is a reducing agent
• It is corrosive
• It can cause severe burns
• It is non flammable
True/False MCQ - Answers

Regarding 35% peroxyacetic acid (Steris):

• It is used to disinfect fibreoptic bronchoscopes (T)
• It is a reducing agent (F)
• It is corrosive (T)
• It can cause severe burns (T)
• It is non flammable (F)
Hospital acquired infections

HSE releases investigation report into outbreaks of clostridium difficile at Stoke Mandeville Hospital

In July 2006, the Healthcare Commission published a report into two outbreaks of C. difficile infection at Stoke Mandeville Hospital between October 2003 and June 2005 when up to 33 patients had definitely or probably died as a result with another 334 infected.

After this publication, HSE was passed the report and conducted an investigation. HSE releases the findings of its investigation today and also announces it is not to prosecute the trust.
Rapid fire Round 2

How do the following infections spread?

1. HIV
2. C. Difficile
3. MRSA
4. Hepatitis B
5. Pulmonary TB
6. Influenza
7. VRE
8. ESBL
Communicable disease

• Blood borne
  – HIV, Hepatitis B and C
  – Immunization, communication and universal precautions

• Gas borne
  – Pulmonary TB and influenza
  – Filters reduce gas borne transmission of bacteria and viruses – pleated hydrophobic filters more effective

• Prion disease

• HCAI – direct mode of transmission
  – MRSA
  – VRE
  – C. difficile
  – ESBL
Prion disease - vCJD

- Transmissible Spongiform Encephalopathies (TSEs)
- Caused by prions – infectious proteins
- Resistant to disinfection and sterilization
- Found primarily in nervous and lymphatic tissue
- Also isolated from tonsillar tissue
- Single use laryngoscopes NOT mandatory for Ts and As
Features of C. Difficile

*Select true or false for each of the following statements.*

A. Clostridium difficile is an aerobic spore-forming coccus  
B. Between 3 and 5 % of the population is colonized with C. difficile  
C. Clostridium difficile spores are resistant to gastric acid  
D. C. difficile spores are able to secrete three toxins  
E. C. difficile spores germinate in the deep crypts of the colon
Features of C. Difficile

Select true or false for each of the following statements.

A. Clostridium difficile is an aerobic spore-forming coccus - **False.** The organism is an anaerobic spore-forming bacillus
B. Between 3 and 5 % of the population is colonized with C. difficile **True.**
C. Clostridium difficile spores are resistant to gastric acid - **False**
   The spores are capable of passing through the stomach, although the association between acid-suppressing drugs and CDAD risk suggests that spore load is reduced during gastric transit
D. C. difficile spores are able to secrete three toxins **True.** In addition to the traditional toxins A and B, the more recently discovered binary toxin is associated with the most virulent strains.
E. C. difficile spores germinate in the deep crypts of the colon - **False.** The spores germinate in the duodenum and jejunum before passing into the colon where they ‘settle’ and proliferate in the deep crypts and elaborate their toxins.
Indications for Antibiotic Prophylaxis

Select one option from the list below.

Mr. L is a 60 year old man with a history of aortic valve replacement three years ago. He is on your operating list for elective left hemicolecotomy.

Which of the following statements is most accurate?

a. He does not require additional antibiotic prophylaxis against endocarditis because he will be covered by the surgical prophylaxis drug

b. Antimicrobial prophylaxis against endocarditis is not routinely indicated for this surgery

c. He should receive amoxicillin and gentamicin at induction and at six hours following this

d. The need for prophylaxis against endocarditis depends on the type of prosthetic valve
Indications for Antibiotic Prophylaxis

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Indications for Antibiotic Prophylaxis

Recent guidance from NICE and other bodies suggests that the evidence in favour of endocarditis prophylaxis is weak for dental procedures and many non-dental procedures. So even in high risk patients, such prophylaxis is not routinely indicated based on cost-benefit and risk-benefit considerations. Rather, patients should be monitored for evidence of developing the condition and then treated appropriately.
Choose the single correct answer

Regarding MRSA bacteria:

A It is possible for people outside hospital to become infected with MRSA bacteria.
B MRSA bacteria cannot survive on objects or surfaces for long periods
C MRSA bacteria are sensitive to penicillin
D Spread of MRSA bacteria cannot be prevented by using alcohol rub.
E MRSA bacterial infection cannot be treated with antibiotics
Choose the single correct answer

Regarding MRSA bacteria:

A It is possible for people outside hospital to become infected with MRSA bacteria. - **True**
B MRSA bacteria cannot survive on objects or surfaces for long periods - **False**
C MRSA bacteria are sensitive to penicillin - **False**
D Spread of MRSA bacteria cannot be prevented by using alcohol rub. – **False** alcohol rub can prevent spread of MRSA but is not effective against C diff.
E MRSA bacterial infection cannot be treated with antibiotics – **False** It can be treated antibiotics but higher dose over longer period and has to be specific e.g vancomycin, tiecoplanin or linezolid
MRSA – follow on questions

• What is the difference between infection and colonisation?
• How is ‘colonisation’ treated?
• How is infection prevented?
• How is infection treated?
• Is there a policy for screening?
Death of nurse who contracted HIV at work

Juliet Young, a nurse, has died from pneumonia, as a result of contracting HIV while taking blood from an infected patient at Maudsley Mental Health Hospital in South-East London in 1999.

Juliet Young, 42, was wearing gloves but accidentally pricked her thumb when the needle slipped. Soon after the accident she was diagnosed with the African strain of HIV.
Choose the single correct answer

Hepatitis C

• Effective treatment is available
• There is a vaccine for prevention of Hepatitis C
• Clearing the virus by treatment renders one immune for life
• Interferon and ribavarin treatment clears the virus in 100% of patients with chronic infection.
• A positive antibody titre is indicative of current infection.
Choose the single correct answer

Hepatitis C

• Effective treatment is available - **True**
• There is a vaccine for prevention of Hepatitis C - **False**
• Clearing the virus by treatment renders one immune for life - **False**
• Interferon and ribavirin treatment clears the virus in 100% of patients with chronic infection. - **False** it is cleared only in 55% and does depend on the genotype
• A positive antibody titre is indicative of current infection. **False** - the only way of identifying current infection is to do a PCR)
Key facts about HCV

3% of the world’s population has been infected with HCV.

170 million are chronic carriers of HCV.

75% of people with HCV will develop chronic infection.

20% of those will chronic infection will develop severe liver damage (cirrhosis).
Key facts about HBV

33% of the world's population has been infected with HBV.

5% of the world's population are chronic carriers of HBV.

25% of carriers develop serious liver diseases such as chronic hepatitis, cirrhosis, and primary hepatocellular carcinoma.

1 million deaths from HBV infection every year.
Choose the single correct answer

Regarding the Human Immunodeficiency Virus (HIV),

- a. The terms HIV infection and AIDS are synonymous
- b. HIV infection is always characterised by a CD4 count below 200.
- c. Highly Active Anti Retroviral Therapy (HAART) is indicated if a person with HIV infection has hepatitis B and needs treatment for it.
- d. HIV infection can occur by sharing baths, towels or cutlery with an HIV infected person.
- e. HIV is 100 times more infectious when compared to hepatitis B
Choose the single correct answer

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HIV – follow on questions

• What is the causative organism for HIV?
• What are the implications of different CD4 counts?
• What is Post exposure prophylaxis (PEP)?
• What are the types of drugs used for the treatment of HIV?
Can we be vaccinated against blood borne viruses?

If yes, for which of them are effective vaccines available?
Vaccination

The hepatitis B vaccine - synthetic vaccine requiring at least three injections.
• Three doses for full protection.
• The second dose - 1 month after the first dose.
• The third dose - 5 months after the second dose.

Blood tests are taken to ensure a response; if you are a responder then you should be immune from contracting hepatitis B.

The vaccine is 95% effective in preventing chronic infections from developing.

Protection lasts for 20 years at least, no booster is recommended by WHO.
Question 1

What can we do to prevent infection transmission between patient and the anaesthetist and between patients?
Prevention of Infection Transmission

• Ensure hand hygiene
• Safe use and disposal of sharps
• Use decontamination practices for all reusable anaesthetic equipment. A sterile supplies department (SSD) should process reusable items.
• Single use equipment should be utilised where appropriate
• An effective, new bacterial/viral breathing circuit filter should be used for every patient
• Re-use of breathing circuits in line with manufacturer’s instructions. The AAGBI recommends changing anaesthetic circuits on a daily basis in line with daily cleaning protocols.
Select the best option from the answers below.

Why were standard precautions created?

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<tbody>
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<td>C.</td>
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Question 2a

Standard Precautions

• What are they?
• For which subset of patients would you use them?
• For which procedures would you use them?
Standard Precautions

• **What are they?**
  • single-use gloves,
  • Fluid resistant masks with a transparent face shield
  • gowns

• **For which subset of patients?**
  • all patients regardless of their diagnosis or presumed infectious status

• **For which procedures?**
  • when there is a possibility of contact with:
    • 1 Blood.
    • 2 All other body fluids.
    • 3 Non-intact skin.
    • 4 Mucous membranes.

*For every invasive procedure with additional risk, assessment of each patient to determine extra and specific precautions that may be appropriate*
Differentiate between ‘standard’ and ‘universal’ precautions

What are barrier precautions?
Universal vs. Standard

- **Universal precautions**
  Consider all **blood** and **body fluids** to be potentially **infected**

- **Standard precautions**
  Consider all **blood** and **body fluids** to be potentially **infected**. Take into account the risk of **contact** with a **patient's intact skin**. Consider the possibility that the **immediate environment** is **contaminated** with pathogenic micro-organisms

(Ref: eLA)
Barrier precautions

Designed to prevent infectious material coming into contact with healthcare workers.

• Covering patients' wounds with an appropriate dressing
• Using **personal protective equipment (PPE)**
  • Gloves
  • Body covering
  • Eyewear
Question 2c

What are the *nine* steps included in standard precautions?
Standard precautions - Nine steps

1. Assessing risk of accidental contamination
2. Handwashing
3. Barrier precautions
4. Patient placement
5. Safe handling and disposal of sharps
6. Safe handling and disposal of waste
7. Safe handling of linen
8. Equipment and the environment
9. Decontamination of spillages

*Bare Below Elbow Policy – Controversial – debate regarding effectiveness* (Ref: eLA)
Question 3

Hand hygiene

- How often should you decontaminate your hands?
- How would you decontaminate your hands?
  - When visibly soiled or potentially contaminated
  - When there is no soiling
- Pre-requisites for hand decontamination?
- According to the local guidelines, what are the 5 moments for hand hygiene at the point of care washing?
Hand hygiene

• How often should you decontaminate your hands?
  • Before every episode of direct patient contact

• How would you decontaminate your hands?
  • When visibly soiled or potentially contaminated – wash with liquid soap and water
  • When there is no soiling – antimicrobial hand rub

• Pre-requisites for hand decontamination?
  • Remove watches and jewellery
  • Cuts and abrasions must be covered with waterproof dressings
Local Guidelines

• The Trust advocates the 5 moments for hand hygiene at the point of care:
  • 1. Before patient contact
  • 2. Before an aseptic task
  • 3. After body fluid exposure risk
  • 4. After patient contact
  • 5. After contact with patient surroundings

• Rings, artificial nails and polish should not be worn whilst on duty
• Fingernails must be kept short
• Doctors are expected to wear short or rolled up sleeves whilst on duty - option of a polo shirt
Who is at a greater risk of exposure to BBF?

• Senior doctors
• Junior doctors
A study of the epidemiology and time trends of blood and body fluids (BBF) exposures among hospital doctors, by Dr. Seyed Hamid Reza Naghavi and and Dr. Kaveh A. Sanati

11 February 2009

**Aim** To study the epidemiology and time trends of blood and body fluids (BBF) exposures among hospital doctors.

**Methods** A 3-year study was carried out using data from the Exposure Prevention Information Network of four teaching hospitals in the UK.

**Results** One hundred and seventy-five cases of BBF exposures in doctors were reported over the 3-year study period. Eighty-one (46%) occurred in senior doctors and 94 (54%) in junior doctors. Junior doctors had a higher rate of BBF exposures compared to senior doctors: 13 versus 4 incidents per 100 person-years, respectively (relative risk 3, 95% confidence interval 2-4). The most frequent setting for BBF exposures among senior doctors was the operating theatre/recovery (59%). Among junior doctors, it was the patient room (48%). The commonest original reason for use of sharps by junior doctors was the taking of blood samples (42%). Among senior doctors, it was suturing (41%).

**Conclusion** While ongoing training efforts need to be directed towards both junior and senior doctors, our data suggest that junior doctors are at higher risk of BBF exposures and may need particular attention in prevention strategies. An improvement in the safety culture in teaching hospitals can be expected to reduce the number of BBF exposures.
## Risk associated with body fluids

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<tr>
<th>High-risk body fluids</th>
<th>Low-risk body fluids</th>
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<tbody>
<tr>
<td>Blood</td>
<td>Urine</td>
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<tr>
<td>Breast milk</td>
<td>Vomit</td>
</tr>
<tr>
<td>Semen</td>
<td>Saliva</td>
</tr>
<tr>
<td>Saliva in association with dentistry</td>
<td>Faeces with no visible blood staining</td>
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<tr>
<td>Vaginal secretions</td>
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</tbody>
</table>

**Other high-risk body fluids include:**
- Peritoneal fluid
- Cerebrospinal fluid
- Amniotic fluid
- Synovial fluid
- Any fluids that are visibly blood stained
Question 4

• Gloves
  • When are they to be worn?
  • What kind
    • sterile or non sterile?
  • How often should they be changed?
  • How should they be disposed off?
Gloves

• When are they to be worn? What kind?
  • Sterile Gloves for invasive procedures and contact with sterile sites.
  • Non-sterile examination gloves for contact with mucous membranes, non-intact skin and all activities that carry a risk of exposure to blood, body fluids, secretions and excretions.

• How often should they be changed?
  • between patients and between different procedures on the same patient.

• How should they be disposed off?
  • as clinical waste

Gloves must be worn as single-use items - put on immediately before an episode of patient contact and removed as soon as the activity is completed, i.e before contact with fomites, including curtains, pens, clinical notes, keyboards and telephones.
Question 5

• How often should operating room floors be cleaned?
• How should blood or other body materials be disinfected?
• What are ‘dirty cases’?
  • When should they be listed?
  • What should be the minimum time interval between the ‘dirty case’ and the next case?
Theatre Environment

- How often should operating room floors be cleaned?
  - At the end of each case

- How should blood or other body materials be disinfected?
  - With sodium hypochlorite and then cleaned with detergent and water.

- What are ‘dirty cases’? When should they be listed?
  - Patients likely to disperse microbes of particular risk to other patients should be listed last on the list

- What should be the minimum time interval between the ‘dirty case’ and the next case?
  - 15 minutes in a plenum-ventilated theatre
Hospital fined after health worker infected with Hepatitis C

Date:
Wednesday, October 6, 2010 – 5:21 pm

A healthcare worker at a Worcestershire hospital contracted the Hepatitis C virus after injuring herself on a needle used to take blood from an infected patient.

During the HSE prosecution of Worcestershire Acute Hospitals NHS Trust over the February 2007 incident, City Magistrates heard the worker, who had been training at the Trust for three weeks, was instructed to take blood from a patient known to be infected with the virus.

View press release 'Hospital fined after health worker infected with Hepatitis C'

Category:
COSHH, HSE, Health and safety, Health services, Press release, Prosecution
Which of the following are contamination injuries?

Select one or more options from the answers below.
A. Cutting finger on an ampule
B. Human bite
C. Blood spill onto visor
D. Needlestick
E. Body fluid into the eye

(A contamination injury is one that causes exposure to blood or high-risk body fluids)
Which of the following are contamination injuries?

Select one or more options from the answers below.

A. Cutting finger on an ampule
B. Human bite
C. Blood spill onto visor
D. Needlestick
E. Body fluid into the eye
Which of the following contamination injuries should be reported to Occupational Health?

Select one or more options from the answers below.

A. Splashes to mouth
B. Human Bites
C. Cuts to skin
D. Needlestick injuries
E. Splashes to eye
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<tr>
<th>Injury</th>
<th>Treatment protocol</th>
<th>Reporting procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wounds</td>
<td>1. Encourage bleeding by gently squeezing the site (do not suck)</td>
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<tr>
<td></td>
<td>2. Wash it in warm running water with soap, then dry it</td>
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<td></td>
<td>3. Apply a waterproof dressing</td>
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<tr>
<td>Splashes to the mouth</td>
<td>1. Irrigate thoroughly for at least 5 minutes with drinking water</td>
<td>All exposure incidents must be reported to Occupational Health</td>
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<tr>
<td></td>
<td>2. Do not swallow the water</td>
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<tr>
<td>Splashes to the eye</td>
<td>1. Irrigate thoroughly for at least 5 minutes with eyewash solution or sterile water (use tap water if these are not available)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Remove contact lenses</td>
<td></td>
</tr>
<tr>
<td>Needlestick injuries</td>
<td>See Module 02/Infection Control: Health and Safety/Needlestick (Sharps) Injuries (001-0241)</td>
<td></td>
</tr>
</tbody>
</table>
Question 6

In the UK, 16% of occupational injuries occurring in hospitals are attributed to sharps injuries. How can we prevent these injuries?
National guidelines for the prevention of sharps’ injuries

- Sharps must not be transferred between personnel and handling should be kept to a minimum.
- Needles must not be bent or broken prior to use or disposal.
- Needles and syringes must not be disassembled by hand prior to disposal.
- Needles should not be recapped or resheathed.
- Used sharps must be discarded into an approved sharps container at the point of use.
- The sharps container should be sealed and disposed of safely by incineration when about two-thirds full or in use for more than four weeks, whichever is sooner.
- Sharps containers must comply with BS 7320:1990 –‘Specification for sharps’.
- Blunt aspirating needles should be used for drawing up drugs.
- Needle protection devices may reduce needlestick injuries
Question 7

- How can we prevent the contamination of drugs? Describe how will you use needles, syringes, infusions and administration sets in order to achieve this?
Preventing drug contamination

- Syringes and needles are sterile, single-use items
- Store prepared syringes in a clean container and cap them
- After use or at the end of the anaesthetic, all used syringes with needles should be discarded into an approved sharps container.
- When drawing up drugs, single use ampoules should be used. Multiple-use ampoules are not recommended.
- All infusions and administration sets are for single-patient use.
- An aseptic technique should be used when preparing infusions and breaks/taps in lines should be kept to a minimum.
- Injection ports should be maintained with a sterile technique, kept free of blood and covered with a cap
- Connections and injection ports should be kept to a minimum. Avoid Three-way taps and use bionectars
Can doctors infect patients?
Which of the following are contagious illnesses that you are at risk of transmitting to a patient?

*Select one or more options from the answers below.*

A. Gonorrhoea  
B. Tuberculosis  
C. Pneumonia  
D. Blood Borne viral diseases  
E. Diarrhoea
Which of the following are contagious illnesses that you are at risk of transmitting to a patient?

*Select one or more options from the answers below.*

A. Gonorrhoea  
B. Tuberculosis  
C. Pneumonia  
D. Blood Borne viral diseases  
E. Diarrhoea
Can doctors infect patients?

Contagious illnesses
If you have one of the following illnesses there is a genuine risk of your transmitting infection to a patient:

- Scabies
- Blood-borne viral disease
- Tuberculosis
- Diarrohea and vomiting
- Chickenpox
What if you test positive for BBV?

<table>
<thead>
<tr>
<th>Blood-borne virus status</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B e-antigen positive</td>
<td>Must not perform exposure-prone procedures</td>
</tr>
<tr>
<td>HIV positive</td>
<td>Must not perform exposure-prone procedures</td>
</tr>
<tr>
<td>Hepatitis B carrier status unknown</td>
<td>Should not perform exposure-prone procedures</td>
</tr>
<tr>
<td>HBsAg positive</td>
<td>Must not perform exposure-prone procedures until e-antigen status has been established</td>
</tr>
</tbody>
</table>
Prevention of cross infection

• Exposure prone procedure:
  • one where there is a risk that injury to the health worker may result in the exposure of the patient’s open tissues to the blood of the worker.

• Can health care workers infected with a blood borne virus continue to work?
  • Yes, provided they do not carry out exposure prone procedures.
Slips and Trips

- Preventable
- Happen when spills aren't cleared up or clutter tidied away.
- Last year, there were four fatalities and more than 10,000 employees were seriously injured when they had a slip or trip at work.
- Don't take things for granted, cut corners or wait for someone else to do it. Clear up!
Latex Allergy

a. What is latex?
b. What are the manifestations of latex allergy?
c. Who is at high risk?
d. What peri-operative precautions must be taken?

*Latex allergy is COSHH reportable*
What is COSHH?

COSHH is the law that requires employers to control substances that are hazardous to health. You can prevent or reduce workers' exposure to hazardous substances by:

- finding out what the health hazards are;
- deciding how to prevent harm to health (risk assessment);
- providing control measures to reduce harm to health;
- making sure they are used;
- keeping all control measures in good working order;
- providing information, instruction and training for employees and others;
- providing monitoring and health surveillance in appropriate cases;
- planning for emergencies.

Most businesses use substances, or products that are mixtures of substances. Some processes create substances. These could cause harm to employees, contractors and other people.

Sometimes substances are easily recognised as harmful. Common substances such as paint, bleach or dust from natural materials may also be harmful.
Control of theatre environment

• Maximum recommended levels for anaesthetic agents in the working atmosphere (in p.p.m)
  – Nitrous oxide – 100
  – Halothane -10
  – Enflurane – 50
  – Isoflurane – 50

• Scavenging installations reduce pollution

• Relative humidity in theatre
  – 50-60%
  – Higher is too uncomfortable
  – Lower values increase risk of sparks
Questions
Summary

- Safety issues in theatre
  - For patients
  - For staff
- Infection control measures
  - Equipment related
  - Environment related
  - Personnel related

*We are what we repeatedly do. Excellence then is not an act, but a habit.* Aristotle
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  - J. Prout, B. Agarwal, CEACCP, vol. 5, no. 5, 2005
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