

Test yourself

MCQ and extended matching

The MCQ and extended matching section in *Surgery* is designed to test your knowledge of selected topics in this issue of the journal.

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For questions 1–4, select the statements which are true and which are false. The correct answers are given below.

1 Antisepsis, asepsis and skin preparation

Regarding antisepsis, asepsis and skin preparation

- A Asepsis refers to a process of reducing the growth of microorganisms on the skin or mucous membranes
- B Alcohol hand rub is as effective as soap and water in ensuring hand hygiene in clinical situations
- C Hair should only be removed from an operative site if it would interfere with surgery
- D Current evidence does not support the use of laminar airflow systems for arthroplasty
- E Intra-operative wound irrigation and intra-cavity lavage reduces the bacterial load on the wound

2 Necrotising fasciitis

Regarding necrotising fasciitis

- A Necrotising fasciitis is associated with a mortality rate of 15–20%
- B Type II necrotising fasciitis is poly-microbial and usually associated with infection by multiple anaerobes
- C Multifocal necrotising fasciitis is associated with marine variety bacteria
- D MRI is the most sensitive imaging modality for identifying necrotising fasciitis
- E Owing to the multitude of possible organisms involved, antibiotics should only be administered after samples have been examined for initial Gram-staining

3 Prosthetic infections and high risk surgical populations

Regarding prosthetic infections and high risk surgical populations

- A Prosthetic infections present, by definition, within 30 days of an implantation procedure
- B *Candida* spp. are the most common organisms infecting vascular grafts and lead to bleeding and anastomotic disruption

- C Infection rates are relatively higher following elbow replacement compared to hip and shoulder
- D The judicious use of wound swabs is essential in diagnosing prosthetic infections
- E MRI is superior to CT in the assessment of possible infection of implanted cardiac devices

4 Surgical antibiotic prophylaxis

Regarding surgical antibiotic prophylaxis

- A Clean-contaminated operations involve breach of the GI tract with significant spillage of normal flora
- B The aim of surgical antibiotic prophylaxis is a reduction in short-term morbidity from surgical site infection
- C There is a 10% crossover of allergy between penicillins and cephalosporins
- D Antibiotics are the main culprits of peri-operative anaphylaxis
- E Heavy blood loss requires more frequent dosing of prophylactic antibiotics

5 Decontamination and sterilisation

Theme: microbiology

- A Steam
- B Chlorhexidine
- C Glutaraldehyde
- D Ozone
- E Hydrogen peroxide gas plasma
- F Alcohol hand rub
- G Povidine-iodine compound
- H Sodium hypochlorite

When considering decontamination and sterilisation, from the descriptions listed below, select the single most likely term from the list above. Each option may be used only once, more than once or not at all.

- 1 A solution whose mechanism of action involves binding free sulfur amino acids resulting in impaired protein synthesis, which – given enough time – kills all principal pathogens.

see next page

Questions cont.

- 2 A solution with good activity against bacteria and fungi, but not viruses, with microbial death resulting from protein coagulation and denaturing of membranes
- 3 A chemical antiseptic with bactericidal and bacteriostatic mechanisms available in various concentrations and used for both skin preparation and hand cleansing
- 4 Effective for dealing with blood spillages and is a strong oxidizer, with bacteria, fungi and viruses all highly susceptible, though tubercle bacilli less so
- 5 A relatively inexpensive solution suitable for immersion disinfection of equipment such as endoscopes. Inhalation of vapour can cause respiratory irritation
- 6 Produced in an autoclave in a chamber devoid of air
- 7 A low temperature sterilization technique suitable for heat and moisture sensitive equipment, which takes place in a vacuum chamber
- 8 The most non-toxic and environmentally friendly sterilization technique for sterilization of heat and moisture sensitive devices

Answers

1. C,D,E
2. A,C,D
3. C
4. D,E
5. 1G, 2F, 3B, 4H, 5C, 6A, 7E, 8D

Answers to incorrect statements

Question 1

- A** Antisepsis is the process of reducing the growth of microorganisms on the skin or mucous membranes. Asepsis is defined as a freedom from pathogenic microorganisms in sufficient dose to cause an infection

- B** Soap and water is recommended for visibly dirty or soiled hands and after exposure to blood or bodily fluids or after exposure to spore-forming pathogens. Alcohol hand rub can be used for other clinical situations.

Question 2

- B** Type II necrotising fasciitis is a mono-microbial infection by beta-haemolytic Group A Streptococci
- E** Empirical broad spectrum antibiotics should be administered as soon as necrotising fasciitis is suspected, with a combination of penicillin and clindamycin offering good initial coverage

Question 3

- A** While the definition of a surgical site infection is an infection that becomes apparent within 30 days of the operation, a prosthetic infection may present many months later
- B** Fungal infections are relatively more rare than bacterial infections
- D** Most prosthetic infections are caused by skin commensals and so wound swabs are of limited use
- E** MRI produces similar anatomic assessment to CT and can only be used in the presence of compatible devices

Question 4

- A** A clean-contaminated operation would involve breach of the GI tract with minimal spillage of normal flora, the presence of significant spillage would define a contaminated operation
- B** The aim of surgical antibiotic prophylaxis is a reduction in surgical site infection, which may include prosthetic infection and avoidance of long-term morbidity
- C** This is based on data collected before the 1980s and may be related to the relative impurity of antibiotics at that time. In practice, it is very rare to have cross sensitivity between penicillins and later-generation cephalosporins.