

# British Orthopaedic Association Recommendation on Sterile Procedures in Operating Theatres

## Background

The consequences of deep infection following orthopaedic operations can be catastrophic. Infection following joint replacement leads to loss of the prosthesis and prolonged disability. Revision arthroplasty following infection is technically difficult and both the operating time and duration of hospital admission may be 2-3 times longer than for primary joint replacement. Revision for infection is time-consuming, costly and erodes resources available for primary joint replacement.

A low incidence of infection depends upon operating theatre design, meticulous surgical technique and rigid aseptic discipline within the operating theatre suite. In recent years the high standards maintained by orthopaedic surgeons have been questioned by some outside our specialty including managers, microbiologists, nurses and operating department assistants. Some of these individuals have refused to adhere to the exacting standards required for joint replacement.

The early infection rate following total hip replacement in standard operating theatres without modern aseptic precautions was as high as 11% (1) but a combination of prophylactic antibiotics and clean air can reduce the infection rate to 0.3%. (2) An infection rate of 0.38% has been reported for uncomplicated primary THR (3) but an infection rate of 1-2% may be more common (4).

Papers which show that omitting the use of face masks in general surgery where there is an infection rate approaching 5% (5) have no relevance to orthopaedic surgery. There is no published evidence to support a relaxation of sterile procedures for orthopaedic surgery.

## Published standards

1. Trusts are required to lay down operational policies for operating departments.
2. Purchasers lay down criteria for sterile procedures and many have inspectors to ensure that providers comply with their standards.
3. BOA Advisory Book on Consultant Trauma and Orthopaedic Services 1998 section 3.86. (6)
4. 'Principles of Safe Practice in the Operating Theatre; a teaching resource.' National Association of Theatre Nurses.

## **The British Orthopaedic Association holds the following views:-**

1. The level of sterile precautions required to perform orthopaedic surgery safely are higher than those for surgery involving the bowel, infected body cavities, contaminated wounds and other soft tissue surgery.
2. The following measures must be enforced when material is implanted in bone, major joints are opened or bone is exposed.
3. The use of clean air theatres, installed, maintained and checked according to NHS standards (7) is considered essential for orthopaedic surgery.
4. All staff in the operating theatre suite, including the anaesthetic room and corridor, must adhere to existing high standards of theatre discipline and follow established procedures which include:-
  - a. All hair to be kept covered at all times.
  - b. Masks to be worn at all times within the operating theatre and lay-up room.
  - c. Street clothes and clothes worn outside the operating theatre suite, including shoes, must not be worn within the theatre suite.
  - d. Staff may only enter or leave the operating theatre through clearly identified doors so that air within the operating theatre is not disturbed needlessly.
  - e. The number of people within the operating theatre must be kept to the minimum required to function safely.
  - f. Traffic from dirty areas and within the lay-up room must be rigidly controlled.
  - g. Drapes and gowns must be made of impervious material. Thin cotton drapes and gowns have no place in orthopaedic surgery.
5. Patients entering into litigation following infection of a joint prosthesis may have a strong case if established sterile procedures have not been followed.
6. Those suggesting that existing sterile precautions are redundant should conduct a controlled trial comparing deep infection rates following joint replacement using existing precautions with their own reduced precautions. The protocol must be approved by their local ethical committee and change should not be implemented until the outcome is available.
7. The BOA will support any member of the Association who is unwilling to operate when patient safety is compromised.

## **Advice on action to be taken when sterile precautions become dangerously lax**

1. Ensure that the operational policies of the local Trust and purchaser are being observed.
2. Draw attention to the BOA Advisory Book on Consultant Trauma and Orthopaedic Services 1998 section 3.86 and the recommendations of the NATN.
3. Draw attention to references 1-7 quoted in this statement and invite publications expressing a contrary view.
4. Invite those suggesting a relaxation of sterile precautions to complete a controlled trial approved by the Trust's ethical committee before implementing change.

## **References**

1. Wilson PD Jr, Amstutz HC, Czerniecki A, Salvati EA, Mendes DG. Total hip replacement with fixation by acrylic cement. A preliminary study of 100 consecutive McKee-Farrar prosthetic replacements. *J Bone Joint Surg [Am]*. 1972 Mar;54(2):207-36.
2. Lidwell OM. Clean air at operation and subsequent sepsis in the joint. *Clin Orthop*. 1986 Oct;(211):91-102.
3. Schutzer SF, Harris WH. Deep-wound infection after total hip replacement under contemporary aseptic conditions. *J Bone Joint Surg [Am]*. 1988 Jun;70(5):724-7.
4. Spangehl MJ, Younger AS, Masri BA, Duncan CP. Diagnosis of infection following total hip arthroplasty. *Instr Course Lect*. 1998;47:285-95.
5. Tunevall TG. Postoperative wound infections and surgical face masks: a controlled study. *World J Surg*. 1991 May-Jun;15(3):383-7; discussion 387-8.
6. BOA Advisory Book on Consultant Trauma and Orthopaedic Services. 1998; British Orthopaedic Association
7. Ventilation in health care premises. 1994 Health Tech. Memo 20.25