

**A REPORT RECEIVED BY
COUNCIL OF THE ASSOCIATION OF ANAESTHETISTS
ON BLOOD BORNE VIRUSES AND ANAESTHESIA**

AN UPDATE (January 1996)

MEMBERSHIP OF THE BLOOD BORNE VIRUSES ADVISORY PANEL

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1. INTRODUCTION

In 1988, the Association published guidelines to its members on the occupational hazards posed to anaesthetists by the human immunodeficiency virus (HIV) and hepatitis B virus (HBV).[1] The guidance reviewed the circumstances in which anaesthetists could become infected with these viruses during the course of their clinical work and made recommendations about the routine precautions which should be adopted to prevent such infection occurring. It also set out the duties of anaesthetists infected with HIV and/or HBV towards patients.

Revised guidance was issued in December 1992.[2] This summarised the epidemiology of HIV and HBV and the risks of occupational transmission of these viruses to anaesthetists. The Group was presented with evidence that the precautions against occupational transmission recommended in 1988 had by no means been universally implemented by anaesthetists in the United Kingdom (UK). These precautions and the importance of taking them were re-emphasised.

Detailed consideration was given to the question, 'should an anaesthetist infected with HIV or HBV be allowed to continue in clinical practice, including intensive therapy work?' In the light of the Department of Health's (DH) definition of invasive procedures the Group concluded that anaesthetists did not routinely carry out invasive procedures and that an anaesthetist infected with a blood borne virus did not pose a risk to patients. Such an anaesthetist could therefore continue in clinical practice.

This view was supported by the UK Health Departments' Advisory Panel on Health Care Workers Infected with Blood Borne Viruses (UKAP) with the exception of those procedures which involved skin tunnelling. As a result of the Association's Guidance anaesthetists in the UK infected with blood borne viruses who are clinically well have continued in practice.

In 1994 two new issues arose:

- (i) The DH, with the support of the UKAP, adopted the term 'exposure prone procedures' instead of 'invasive procedures' and revised its definition in line with that in North America.
- (ii) A report from Australia suggested that hepatitis C virus (HCV) could be transmitted between patients via the anaesthetic breathing system.

The Association's advice on both these matters has been sought by the DH, clinical directors and lead clinicians in anaesthesia and individual anaesthetists. The Blood Borne Viruses Working Group has therefore considered both matters in detail. This paper summarises the present evidence and offers advice to Council.

2. ANAESTHESIA AND EXPOSURE PRONE PROCEDURES

In 1991 the DH defined an invasive procedure as 'surgical entry into tissues, cavities or organs or repair of major traumatic injuries, cardiac catheterisation and angiography, vaginal or caesarean deliveries and other obstetric procedures during which bleeding may occur; the manipulation, cutting or removal of any oral or perioral tissues, including tooth structure during which bleeding may occur. The risk of injury to a health care worker depends on a variety of factors which include the type of procedure, skill of the operator, circumstances of the operation and the physical condition of the patient. Examples of procedures where infection might be transmitted are those in which hands may be in contact with sharp instruments or sharp tissues (spicules of bone or teeth) inside a patient's body cavity or open

wound, particularly where the hands are not completely visible. Such procedures must not be performed by infected health care workers.’[3]

In March 1994 this was revised, the term ‘invasive procedure’ being replaced by ‘exposure prone procedure’ which was defined as follows, ‘those procedures 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. These procedures include those where the worker’s gloved hand may be in contact with sharp instruments, needle tips or sharp tissues (spicules of bone or teeth) inside a patient’s open body cavity, wound or confined anatomical space where the hands or finger tips may not be completely visible at all times’.[4]

This new definition is considerably tighter than the previous one in that it refers to the gloved hand, includes confined anatomical spaces such as the mouth and pharynx and requires the hands and the fingers tips to be completely visible at all times.

Anaesthetists do put their fingers into patients’ mouths. Concern has therefore been expressed about the possibility of an infected anaesthetist infecting patients, particularly during the insertion of the laryngeal mask airway (LMA) according to the manufacturer’s instructions. These require the anaesthetist to put the index finger into the mouth and the pharynx.[5,6]

The Group reviewed current practice and had detailed discussions with Dr Archie Brain about methods of inserting the LMA. The Group concluded that:

- (i) while it is possible to insert the LMA without putting the index finger in the mouth, in order to ensure that the device is properly positioned it is necessary to follow Dr Brain’s technique as set out in the manufacturer’s instructions. However, it is essential that the LMA should not be inserted until an adequate depth of anaesthesia had been achieved,
- (ii) anaesthetists necessarily put their fingers into patients’ mouths in order to perform a number of other procedures. However, the Group could find no evidence either in the literature or from the experience of its members and their colleagues that anaesthetists sustain soft tissue injuries during these procedures. Furthermore, it was noted that if the anaesthetist’s index finger were injured during the insertion of the LMA it would be by the lower, anterior teeth of the patient. Such an injury would be visible to the anaesthetist and the likelihood of the anaesthetist’s blood contaminating the patient’s blood is extremely remote.

The Group therefore RECOMMENDS to Council that:

A: although anaesthetists put their fingers into patient’s mouths during the course of their clinical work anaesthesia should not be regarded as an exposure prone specialty.

B: it should be mandatory for anaesthetists to wear proper surgical gloves (non sterile) when carrying out procedures which involve putting their fingers into the patients' mouths. These gloves should be discarded once the procedure(s) has been carried out.

3. POSSIBLE TRANSMISSION OF HEPATITIS C VIRUS (HCV) VIA THE ANAESTHETIC BREATHING SYSTEM

In May 1994 a report was published in the New South Wales Public Health Bulletin of an investigation of possible patient to patient transmission of HCV in a hospital.[7]

In December 1993, 2 patients who had been operated on in a private hospital in Sydney developed hepatitis C infection. They had been patients 6 and 8 on a list of 13 patients seven weeks before. Investigation revealed that patients 5, 9 and 10 on the same list were also infected with HCV. Patient 5 had significant risk factors for HCV, the others had none. It was considered therefore that patient 5 was the source of infection for patients 6, 8, 9 and 10. This was supported by the virus from each patient having the same genotype (although the DNA typing was not complete at the time of the Report and at the present time, July 1995, is not available).

The authors put forward the hypothesis that patient 5 contaminated the reusable part of the breathing system, the virus being transmitted to patients 6, 8, 9 and 10 via areas of the upper airway which had been traumatised during the insertion of the LMA. Other possible routes of infection such as surgical instruments or staff, were excluded. An LMA was not used in patient. [7]

Correspondence with Dr Ross Kerridge, the anaesthetist on the investigating team shows that a standard circle system was used in each case. The index patient was an intravenous drug abuser and had mild asthma. He was turned on to his side for the operation and it is thought that it was at this point that the breathing system may have been contaminated.

In assessing this Report, the Group first reviewed the literature on trauma caused by the insertion of the LMA. Although 22% of LMAs are seen to be contaminated with blood on removal from patients there are to date only 2 published reports in the English literature in the last 5 years of trauma occurring during the insertion of the LMA.[8,9,10]

Secondly the Group asked Dr Jonathan Purday (Senior Registrar on the South West Training Scheme) to carry out a review of the literature on the use of microbiological filters in anaesthetic breathing systems. In summary this review shows that:

- anaesthetic breathing systems can become contaminated with organisms from the respiratory tract.[11,12,13] This contamination is increased by coughing.[14]
- while circle systems with an absorber have a bactericidal effect on non-spore forming organisms, this does not prevent contamination of the system.[15]
- both anaesthetic and intensive therapy ventilators have been shown to be the cause of cross infection.[16,17,18]

- of the filters currently available, only those which use a pleated, hydrophobic membrane reliably prevent contamination of the breathing system. Such filters also meet International Standards for humidification and resistance to gas flow.[19,20,21,22]

In considering this general evidence and the specific cases from Australia the Group concluded that:

- (i) although transmission of organisms via the anaesthetic breathing system does occur, the extent to which this happens in clinical practice sufficient to cause cross infection is not known.
- (ii) nevertheless the problem is likely to increase as the incidence of multiple resistant tuberculosis rises as does the number of immunocompromised patients presenting for surgery, particularly in some areas. There are therefore reasonable grounds for using effective filters between the patient and the breathing system which should be changed between each case.
- (iii) although transmission of HCV did occur from patient 5 to patients 6, 8, 9 and 10 in Sydney, the evidence that the breathing system and the LMA were the vehicles for the transmission is not conclusive.

The Group RECOMMENDS to Council that:

- C: either an appropriate filter should be placed between the patient and the breathing system, a new filter being used for each patient or that a new breathing system be used for each patient.**
- D: where expired gas sampling is used the sample should be taken from the breathing system side of the filter.**
- E: in paediatric practice where the use of a filter would increase dead space and/or resistance unacceptably, filters should not be used but the breathing system should be changed between patients.**

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