Dental Nursing
THE ONLY MONTHLY THAT PUTS NURSES FIRST

GUIDE TO...

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Cross-infection control and inhalation sedation

Learning outcomes

After reading this 'Guide to Cross-Infection Control and Inhalation Sedation', you should be able to:

- Understand the importance of cross-infection control and relative analgesia equipment
- Explain the equipment used when giving relative analgesia: nasal hood or mask, connecting tubing from the mask, the fresh gas hose, the waste gas/exhaust hose, the mixing head or flowmeter
- List examples of disposable and autoclavable items of equipment
- Draw up and complete a checklist to show that decontamination of the inhalation unit has been carried out correctly

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GUIDE TO… Cross-infection control and inhalation sedation

This guide looks at how to prevent cross-infection while using inhalation sedation equipment, including disposal and care of equipment and practical techniques

As dental care professionals, we are aware of the importance of cross-infection prevention and control and the need to adopt systems to ensure this in a methodical and thorough manner.

The equipment used for inhalation sedation (IS) must be prevented from causing cross-infections.

During use, various parts of the equipment will be contaminated to some extent. The nasal hood/masks (*Figures 1–6*) are in direct contact with the patient's skin around the nose and upper lip which will be carrying a variety of microorganisms (many pathogenic). The tubing attached to the masks (*Figures 4*, *5* and *6*) could easily be contaminated with aerosol from airotors, 3-in-1 syringes or ultrasonic instruments, for example, as well as by direct contact with the contaminated

Figures 1 and 2. Single use nasal hoods

Figure 3. Matrx Autoclavable Single Nasal Hood

hands of the operator-sedationist or the assisting dental nurse. The fresh gas hose (*Figure 8*) could also be contaminated externally by the same aerosol.

To clarify this, the equipment used when giving IS is examined, then the options for prevention of contamination of the equipment used and cross-infection control are explained.

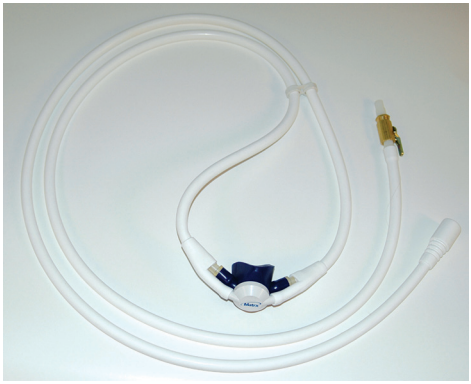


Figure 4. Matrx Active ANS Scavenger Breathing System

Examples of disposable and autoclavable items of equipment

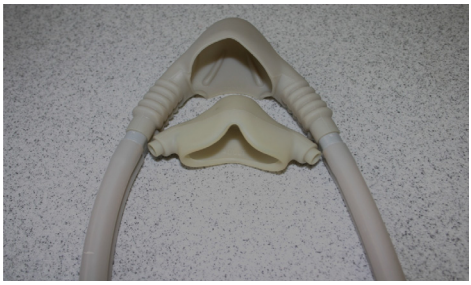
One-piece nasal hoods/masks

These include single-use, disposable, one-piece nasal masks/hoods; they are sometimes scented and aimed at children (*Figures 1* and *2*). They may be adaptable for active scavenging.

Figure 3 shows another type of disposable autoclavable one-piece nasal mask/hood. The Matrx Active ANS Scavenger Breathing System (*Figure 4*) is an autoclavable nitrous scavenger system. Made by Parker, it is latex-free and its nasal hood can be detached and autoclaved up to 134°C. Before the mask is autoclaved, the tubing has to be separated from the mask and the connectors. The scavenger hub, which is the circular white plastic piece which attaches to the blue mask/hood, then has to be disassembled into its various components.

Two-piece nasal hoods/masks

Autoclavable two-part nasal masks/hoods include the Porter-Brown Active Scavenging



Figures 5. Porter-Brown Active Scavenging System

System. This has been in use in the authors' practice for some years (*Figure 5*). The external hood, which captures exhaled gases to pass to the active scavenging circuit, can be autoclaved. The internal part, which contacts the nose and upper lip, can be disposed of or autoclaved. If they are going to be reused, these items should be washed free of visible debris, saliva or blood, then autoclaved and stored ready for use. The disposable inner part is colour coded green (cover image) or white.

The revised *HTM 01-05* (Department of Health, 2013) guidelines, which reflect the consensus on patient safety in the area of storage of dental instruments, now permit bagged instruments or equipment such as this to be stored for 12 months; in particular, see paragraphs 2.4k, 4.22 and 4.26–4.27 of its review of the guidance on storage times.

An example of a two-part nasal hood design for single use is the Accutron ClearView (*Figure 6*).

Connecting tubing or hoses

There may be one or two sections of hosing—single or double (coaxial) to the nasal mask. In the case of the Porter-Brown system, one part of the coaxial hose connects the mask to a push-fit connector; this connector leads, via a corrugated fresh-gas hose (corrugated in *Figure 8*), to the gas-delivery machine. It is not considered by the manufacturer to be autoclavable, just washable.

Disposable tubing is a good option (*Figure 7*) but it has implications for waste disposal and purchasing costs, which depends on the number of patients seen; disposable coaxial hose for the Porter-Brown sytem, for example,

Figure 6. Disposable two-part nasal hood by Accutron ClearView

currently costs £3.00 + VAT. On a personal note, the authors have found this disposable tubing a little more stiff and so a little less easy to use than re-usable hose.

The waste gas tubing (*Figure 10*) may be wiped down with disinfectant wipes or washed in antiseptic solution. They could

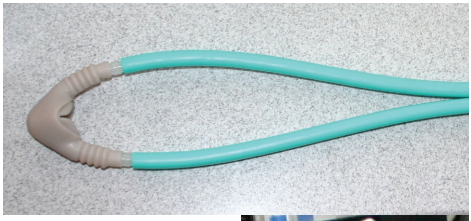


Figure 7. Disposable tubing is colour-coded green

Figure 8. Corrugated fresh gas hose

also be covered in lengths of protective sleeving.

Relative analgesia machines (IS flowmeters)

RA machines are also called mixing heads or flowmeters (*Figures 9 and 11*).

The main infection control issue with all machines is the need to touch the controls to alter the gas mixture or the flow rate while

Figure 9. Flat-control panel of the Digital Matrx MDM

Figures 10. Grey waste gas tubing

treating the patient. There are a number of options to prevent cross infection.

First, the dental nurse, under the dentist's instruction and observation, can adjust the gas flow knob or the mixture dial with an ungloved hand, then re-glove. Alternatively, the dentist or dental care profession, acting as an operator-sedationist, can remove their gloves, adjust the settings, then re-glove. This method has the advantage of protecting the flowmeter from aerosol contamination too.

Figure 11 (above). 35-year-old RA Quantiflex (now Matrx) MDM head used in the authors' practice, which is regularly serviced
Figure 12 (below left). Turning a glove inside out when touching controls
Figure 13 (below). A loose bag over controls

Figure 14. Porter mixing head

Another method is to turn the glove inside-out, so the controls are only touched with the inside of the glove (*Figure 12*). A less elegant solution is to place a loose plastic bag over the entire machine (*Figure 13*).

If a digital mixing head (*Figure 9*) is used, an adhesive film can be applied over the front surface and peeled off after use. This is not possible with standard machines such as the Porter mixing head (*Figure 14*), as it would prevent the controls from being moved.

The two adjuster knobs on the Porter machine (*Figure 14*) can be removed and autoclaved. However, during a procedure, it may be difficult to make an adjustment using a contaminated gloved hand without touching any other part of the mixing machine. These have to be treated like a work surface and disinfected with a suitable wipe.

The food-bag technique (*Figure 15*). If the dials need adjusting, the operator can place a hand in

Figure 15. The food bag technique

the bag, move the dial then remove the bag. This technique can also be can be useful when you need to get medication, instruments or materials when treating any patient. You can place a gloved hand in a bag, open a drawer, remove what is required, close the drawer, then remove the bag.

At the end of the treatment session, the RA head should be wiped down with an alcohol-free wipe. The RA head at the authors' practice is fitted into a unit under the worktop and the cylinders stored in a separate room away from the clinical area. If a mobile stand has been used (*Figure 16*), the stand and the cylinders will need to be wiped down, again with alcohol-free wipes.

Conclusion

Although preventing cross-contamination when using IS equipment will add to the dental nurse's workload, it is not onerous and the benefits to the patient, dentist and dental care professional in using IS are worth the effort.

A checklist can be drawn up and completed to show that decontamination of the inhalation unit has been carried out correctly.

Finally, if in any doubt, check with the manufacturers or distributors if an item is autoclavable or disposable.

Figure 16. Accutron machine

Department of Health (2013) *Decontamination. Health Technical Memorandum 01-05: Decontamination in Primary Care Dental Practices.* DH, London. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/170689/HTM_01-05_2013.pdf

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