

Disinfection and Decontamination - Core Subject

The Journey of an Instrument

Aims: To give an overview of the journey of a contaminated instrument through the process of decontamination using best practice recommendations.

Objectives: On completion of this verifiable CPD article the participant will be able to demonstrate, through the completion of a questionnaire, the ability to:

- Be able to distinguish between essential quality requirements and best practice recommendations relating to the decontamination of a dental instrument.
- Be able to identify the stages that an instrument passes through during the decontamination process.
- Be able to identify the methods of pre-cleaning and sterilisation used in general dental practice.
- Be able to identify the limitations of manual cleaning prior to sterilisation.
- Be able to demonstrate knowledge on the safe storage of instruments to prevent bacterial re-colonisation.
- Be able to identify where to access additional information on decontamination in primary dental care practice.

Introduction

Patients reserve the right to be treated in a surgery environment that is clean and sterile.¹ Decontamination is “the process by which reusable items are rendered safe for further use and for staff to handle.”¹ The decontamination of instruments is a necessary requirement to reduce the risk of cross-infection from patient to patient and also between patients and staff. As part of their registration, dental nurses have a responsibility to demonstrate competence in all aspects of their work² and take actions to protect patients.³ This includes ensuring that the decontamination of instruments is conducted to recommended standards.

Infection control within healthcare is the subject of continued debate.⁴ From April 2011, all dental practices were required to register with the Care Quality Commission (CQC). Part of the requirements for registration with the CQC is to ensure that there

is the provision of a “safe, clean environment and appropriate decontamination of dental equipment.”¹ In adhering to this, the aim is to achieve a re-processed dental instrument that is compliant with the Essential Requirements of the Medical Devices Regulations 2002.^{1,5}

This article will describe the difference in decontamination requirements of ‘essential quality requirements’ and ‘best practice recommendations’ and then outline the journey of an instrument from its use in the surgery through the decontamination process using best practice recommendations. More detailed information on each of stage of the decontamination process can be found in the non-verifiable section of the website. Details of this will be included at the end of this article.

Essential Quality Requirements

The Health Technical Memorandum (HTM) 01-05 statement for essential quality requirements is that :

“Regardless of the technology used, the cleaned instruments, prior to sterilisation, should be free of visible contaminants when inspected. Instruments should be reprocessed using a validated decontamination cycle including:

- Cleaning/washing.
- A validated steam steriliser.
- At the end of the process the instruments should be in a sterilised state.”¹

Best Practice

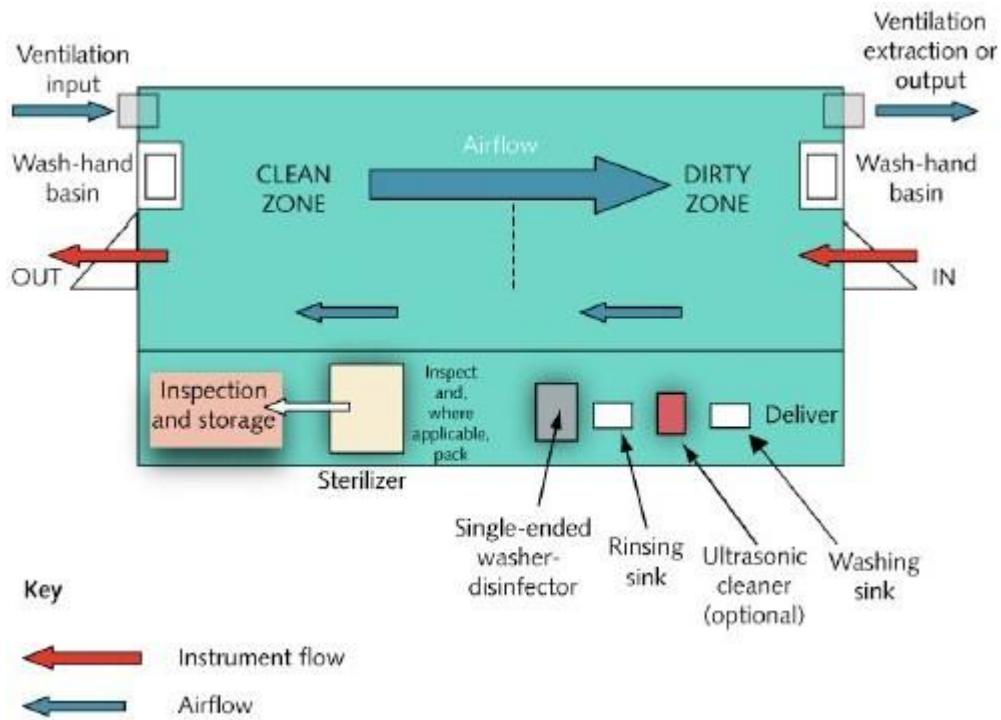
Although it is recognised that not all dental practices may be immediately in a position to adopt best practice recommendations, it is expected that each dental practice will assess the improvements required and demonstrate how they will move towards best practice recommendations. In addition to an infection control policy which will indicate compliance to essential quality requirements, dental practices must have a documented, clear plan as to how the dental practice is working towards best practice recommendations. This must be available for inspection by the CQC and local Primary Care Trust. Best practice recommendations include:

- The use of an automated washer-disinfector.
- Decontamination facilities should be separate from clinical areas. This is ideally carried out in a separate room which has restricted access to only those staff trained to carry out the decontamination process.
- Appropriate storage of reprocessed instruments to prevent microbiological re-colonisation. This includes ensuring that storage dates are logged.¹

Design of decontamination room

The image below shows a potential design for a single decontamination room. Ventilation should be considered as shown in the diagram.

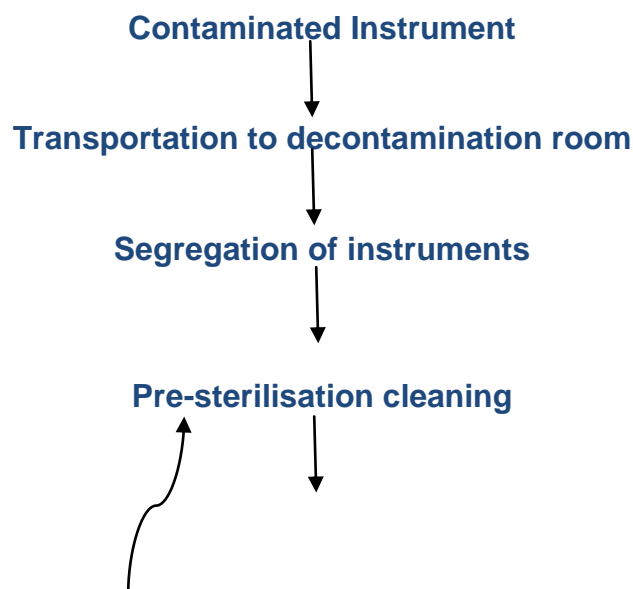
Example diagram of a single decontamination room¹

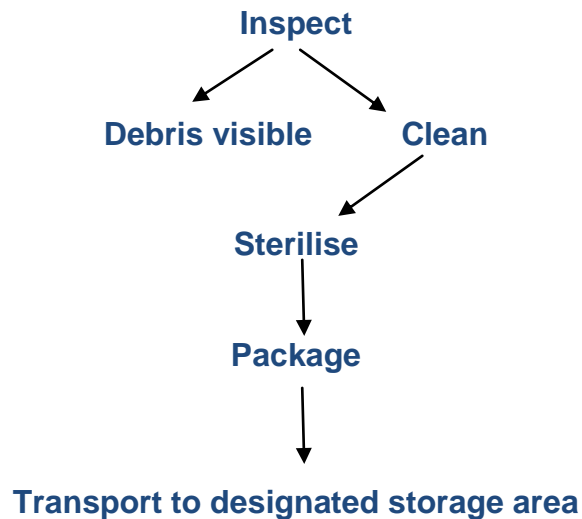


The Journey of an instrument through a designated decontamination room

Throughout the decontamination process, a systematic approach should be followed. The following flow diagram shows a possible approach that could be taken.⁴

Procedure for the decontamination of instruments





Transportation of instruments to the decontamination area

Instruments should be transported to the decontamination room as soon as possible as instruments are easier to clean if they are decontaminated soon after use. All instruments on the working tray should be decontaminated even if they are not used on the patient. The dental nurse should therefore consider carefully which instruments are placed on the instrument tray to reduce the amount of instruments that need to go through the contamination cycle.

The containers used to transport instruments should be designed in a way to protect both the instruments and the handler. Containers should be:

- Rigid.
- Easy to clean.
- Able to be closed securely.

The practice should have a policy for the safe transfer of instruments to the decontamination room.¹

Segregation of instruments

Care needs to be taken when segregating instruments and disposing of waste in an appropriate way. The safe disposal of waste has been covered in a previous Cpd4dentalnurses article. The Medicines and Healthcare products Regulatory Agency advise that items described by the manufacturer as 'single use' should not be re-processed. Single use items should be clear on the packaging of the product. The outer packaging may display the following symbol:⁶



If you are unsure as to whether the item is single use you should seek advice from the manufacturer.¹ (Further information on single use items can be found in the MHRA document on single use items from the non-verifiable section of website.)

Once the instruments have been segregated, the decontamination of the instruments involves the following process:

- Stage one- Pre-sterilisation cleaning.
- Stage two- Sterilisation.
- Stage three- Storage.

Stage one- Presterilisation Cleaning

Manufacturers are required to provide instructions on how to decontaminate their instrument and these instructions should be adhered to. Some instruments may need to be dismantled prior to cleaning.¹ Before purchasing instruments it is recommended that consideration should be given to the methods of decontamination that are applied within the practice.⁴

1) Manual cleaning

Although acceptable under the essential quality requirements, under best practice recommendations, manual cleaning alone is only acceptable for those instruments that cannot be initially cleaned using an automated process.¹ When manual cleaning is necessary, the instruments should be immersed in warm water and detergent and scrubbed with a long handled kitchen-type brush. Thick, waterproof household gloves and protective eye wear should be worn to protect against accidental injury and instruments should be inspected afterwards to validate the process.⁴ A disadvantage of the manual cleaning method is the increased risk of inoculation compared to other methods of cleaning. It is also difficult to validate this method as it is difficult to ensure that it is carried out effectively on every occasion.¹

2) Ultrasonic cleaning

Under best practice recommendations, ultrasonic baths may be used to enhance the removal of debris and may be utilised as an optional part of the cleaning process before the instruments are placed in the washer-disinfector.¹ It is important that the ultrasonic bath is tested to manufacturer's instructions and that the water and fluid is

maintained, cleaned and changed as recommended. Cleaning instructions relating to each instrument should be followed as some instruments may need to be disassembled before being immersed in the ultrasonic bath solution. The instrument basket should not be overloaded.

3) Washer-disinfector

If working under best practice recommendations, the designated decontamination room will contain a washer-disinfector which should be used on all instruments that are able to be cleaned in this way. This is the preferred method of cleaning as it offers the best method of being able to control, reproduce and validate the cleaning process. A typical disinfectant cycle includes the following stages:

- Flush.
- Wash.
- Rinse.
- Thermal disinfection.
- Drying.¹

Washer-disinfectors must not be used as a substitute for sterilisation and the manufacturer's instructions must be followed. Staff should be appropriately trained in its use and the records of this should be maintained. Washer-disinfectant log books and records should be kept by the operator and maintained for not less than two years.¹

Stage two- Sterilisation

Prior to sterilisation all instruments should be inspected to ensure that they are 'clean, functional and in good condition'. It is recommended that an illuminated magnifier is used to aid the process of inspection.¹

The following sterilisers are used within health care:

Type N- Non-vacuum sterilisers designed for unwrapped, non-hollow and non-air retentive instruments. With this method of sterilisation, instruments may be wrapped immediately after sterilisation after being dried with a disposable non-linting cloth.

Type B- Vacuum sterilisers used to process hollow, air-retentive and packaged loads, including handpieces. With this method instruments need to be dried with a disposable non-linting cloth prior to wrapping.

Type S- Sterilisers designed to reprocess specific load types, which may include handpieces.

The most frequently used sterilisers in dental practice are type N and type B.¹

In all cases, it is important that the manufacturer's instructions are followed for the use and servicing of the steriliser used. The process should be validated and records kept for not less than two years. The use of automated data-loggers or interfaced computer-based recording systems is acceptable but printouts should be photocopied as they may fade over time. If automatic records are not produced then manual record keeping is required.¹

Stage three- Storage

Once sterilised, instruments need to be transported to the storage area on sterilised, covered trays. The instruments need to be stored in such a way to protect against the risk of becoming contaminated by pathogens and it is therefore recommended that there is a barrier between the instruments and the general practice environment.¹

The storage of wrapped instruments requires a documented method of control. Instruments re-processed in a type N steriliser are wrapped following sterilisation and may be kept for up to 21 days before being re-processed. Instruments re-processed in a type B steriliser are wrapped prior to sterilisation and may be kept for up to 30 days before being re-processed. A clear method of recording the date of sterilisation and date that the instrument needs to be re-processed should be utilised. If instruments are decontaminated in a type N steriliser and are to be used in the current session they may be placed on covered trays. Any instruments that are then not used in the current session should be reprocessed and wrapped.

Conclusion

Patients reserve the right to be treated in a surgery environment that is clean and sterile.¹ Dental nurses need to ensure that instruments are decontaminated in a way that meets essential quality requirements as a minimum standard. As part of the registration with the CQC, dental practices need to demonstrate that they are working towards best practice recommendations contained within the HTM 01-05 document. This article has described the process of decontaminating instruments using best practice recommendations. The process is discussed in more detail in the HTM 01-05 document which is available from the non-verifiable CPD section of the website.¹

Portfolio tip

We recommend that you read further information on decontamination in primary dental care by accessing the following documents from the non-verifiable CPD section of the website:

- The Department of Health (2009) Health Technical Memorandum 01-05: Decontamination in primary dental care practice.
- British Dental Association (2003) Infection Control in Dentistry- Advice sheet A12.
- Medicines and Healthcare services Regulatory Agency (2011) Single-use medical devices. Implications and consequences of re-use.

Don't forget to log the hours you spend reading into your non-verifiable CPD log.

References

1. The Department of Health (2009) Health Technical Memorandum 01-05: Decontamination in primary dental care practice. Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Firecode/DH_097330 (Accessed 10th September 2011).
2. Wasp, B (2011) „Best Practice in purchasing and operating washer-disinfectors.“ *Dental Nursing*, 7 (4), pp. 208-213.
3. General Dental Council (2005) Standards for Dental Professionals. General Dental Council: London.
4. British Dental Association (2003) Infection Control in Dentistry- Advice sheet A12. Available at: <http://universitydental.co.uk/resources/bda-cross-infection.pdf> (Accessed 10th September 2011).
5. The Medical Devices Regulations (2002) Available at: <http://www.legislation.gov.uk/uksi/2002/618/contents/made> (Accessed 10th September 2011).
6. Medicines and Healthcare services Regulatory Agency (2011) Single-use medical devices. Implications and consequences of re-use. Available at: <http://www.mhra.gov.uk/home/groups/dts-iac/documents/publication/con2025021.pdf> (Accessed 10th September 2011).