Disinfection Decontamination Core Subject
Defining Roles and Testing of Ultrasonic Cleaners

**Aims:** To provide a definition of the different roles that can be designated to individuals within the dental team. To provide an overview of the testing protocol for ultrasonic cleaners.

**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 identify a variety of suggested roles for individuals in the dental team.
- Be able to identify some of the responsibilities associated with each role.
- Be able to identify weekly tests required for ultrasonic cleaners.
- Be able to identify quarterly tests required for ultrasonic cleaners.
- Be able to identify yearly tests required for ultrasonic cleaners.

**Introduction**

In general dental practice it is necessary maintain an environment and equipment that is clean and free from contamination. As dental professionals it is our aim to facilitate the prevention and control of healthcare associated infections to protect our patients. 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.”\(^1\) To assist us in reaching these standards we aim to meet the guidelines set out for us in the Health Technical Memorandum (HTM) 01-05.

This article will explore the protocols and record keeping that are required to meet best standards in testing and validating Ultrasonic Cleaners.

**Whose role is it?**

Guidelines are set out for the dental team in HTM01-05 and it states “It is essential that all staff involved in decontamination are suitably trained and have their roles and responsibilities defined and that everyone is aware of each other’s responsibilities.”\(^2\)

The following roles are suggested to be designated to individuals within the team. One person may be responsible for more than one role. These roles are set out as guidance only and the overall aim of the practice should be to implement a system whereby team members can work together to implement competent decontamination
procedures. The practice should be able to demonstrate that staff are trained and have the qualifications to do this. Whichever system is implemented evidence that the system works efficiently should be maintained.

**Registered Manager**

This is the individual with ultimate responsibility for decontamination in the dental practice. They are also responsible for the whole team. This will often be the practice owner, but in group practices or within the National Health System the role may be taken on by someone else.¹

They should be able to demonstrate the following:

- An understanding of the whole decontamination process
- An understanding of their roles and those of others
- Knowledge of all relevant infection control policies and procedures
- Knowledge and the ability to perform periodic testing where appropriate
- Maintain accurate staff training records for infection control
- They should be able to provide evidence of the performance of all relevant maintenance and testing duties
- They should be able to demonstrate compliance with the Pressure Systems Safety Regulations 2000.¹

**Decontamination Lead**

One individual is given the responsibility for infection control and decontamination. This person should have the experience and authority to perform this task and should be accountable to the Registered Manager. They should be responsible for monitoring service, maintenance and testing of all the equipment.¹

**Authorising Engineer**

This role is normally provided by someone outside of the practice and they provide guidance and advice on the compliance issues of decontamination.¹

**Authorised Person** (Decontamination)

The Authorised Person provides technical support to the Competent Person and liaises with the Authorising Engineer.¹

**Competent Person** (Decontamination)

The Competent Person is responsible for the servicing, testing and maintaining of the decontamination equipment within the practice.¹
**Competent Person (Pressure Vessels)**

Each practice will have legal responsibility for the safety of its decontamination equipment, particularly the sterilisers that are pressure vessels. The need for insurance and a Written Scheme of Examination is a legal liability and can be provided by the Competent Person (Pressure Vessels). This is likely to be provided by an insurance company.¹

**Service engineer**

A person provided under a service level agreement or contract who is certified by the service agent or equipment manufacturer to be competent to both service and test specified decontamination equipment. They may provide an opinion on validation testing and may provide data to the authorised engineer and authorised person for validation approval.¹

**User**

This is anyone who has daily responsibilities to decontaminate equipment, so most dental care professionals will come under this title. They are responsible for ensuring they are trained and competent to complete this task and that the appropriate testing of equipment is completed as required. They may need to liaise with any person who has any of the above roles to complete this task¹.

**Testing Procedures for Ultrasonic Cleaners**

Ultrasonic cleaners should be maintained and tested in accordance with the manufacturer’s instructions. They should be validated by the service engineer when they are installed and then once a year. If any major repairs are carried out they should be validated again at this time.

Some machines will require specific products to validate and test them and the manufacturer will be able to provide this information.

All tests manual or visual need to be logged and records need to be maintained for inspection.

**Log Books**

Each ultrasonic should have a dedicated log book for all results to be recorded. There are standardised log books available that contain generic information for all required tests. The practice can devise its own log book, but with the suitability of any in-house or standardised log book should be consulted and approved by the decontamination equipment manufacturer and competent person or decontamination/service engineer.²
Daily Tests:

**Equipment Condition**

General appraisal of the equipment checking the door locking system, that the equipment drains freely and that seals are intact should be undertaken. Any filters and strainers should be cleaned and checked. Contaminated water should not be stored in the tank overnight; it should be drained at the end of the day. ¹

**Visual Test**

A visual examination of the cleaning efficacy should be carried out. ¹

Weekly Tests:

**Equipment Condition**

Repeat the general appraisal of the equipment.

**Protein Residue Test**

This test confirms that the cleaning process is removing all the protein (surgical soiling – example blood) that cannot be seen on a visual inspection. There are a variety of protein tests available.

Some incorporate a swab-click-read format and simple colour change technology and are very easy to use. The results are semi-quantitative with four possible colours. The faster the test turns purple the higher the level of contamination on a surface. These tests are timed and inaccurate timing can result in a false reading.³

Example of test

Quarterly Tests:

**Equipment Condition**

Repeat the general appraisal of the equipment.

**Automatic Control Test**

An automatic control test should be carried out to show that the operating cycle functions correctly. The values of cycle time and temperature are noted at relevant stages of the cycle, in a log book. If the equipment produces a printout the relevant values are recorded directly onto it and this can be used.
To carry out the test:

- Place the test load in the chamber
- Select and start the cycle
- If a printout is not recorded by the machine, the following should be recorded:
  - The elapsed time
  - Chamber temperatures
  - Chamber pressures
  - These stages should be observed and noted.\(^4\)

The test is considered satisfactory if the following are met:

- At the mid-point of the hold time (note the time)
- A visual display of cycle complete occurs
- The cycle parameters are within the limits set out as satisfactory by the manufacturer or validation tests
- During the hold period the disinfection/cleaning/sterilization are within an appropriate temperature band
- That the times meet those set out by the manufacturer or validation tests
- The door cannot be opened until the cycle is complete
- No mechanical faults are observed.\(^5\)

**Cleaning Efficacy Test**

This involves completing initially a soil test followed by a protein test as described before.

**Soil Test and Protein Test**

This test checks the ability of the machine to clean a heavily soiled load. Place the test soil into the machine and run a cycle. When the cycle is complete visually check the test soil for any signs of soiling or staining and record the result.

There are two types of Soil Test. You can either use a liquid soil that you coat on an instrument yourself and allow to dry before processing, or you can use a pre applied soil in the form of a test strip with red staining dried on the surface.

The Cleaning Efficacy Test is then completed by chemically testing either the coated instrument or test strip with the same product you use for the weekly Protein Residue Test.\(^6\)
Ultrasonic Activity Test

This is designed to ensure that the cavitation effect of the ultrasonic is working effectively and evenly.

The following equipment is required to carry out this test:

- Aluminium foil for ultrasonic testing (this is more reliable than normal foil)
- Adhesive tape
- Watch or clock with a second hand
- A rule or tape measure

To carry out this test:

- Cut strips of foil in lengths that are longer than the bath is deep
- Roll up one end of the foil so that it is not as long as the bath
- Make sure the water in the tank is at the correct level
- Add the chemical disinfectant to the bath
- Check the water temperature is correct
- Start up the ultrasonic according to the manufacturer’s instructions
- Use strips of adhesive tape across the top of the bath to produce a grid
- Suspend nine strips of foil making sure the rolled bottom does not touch the bottom of the bath
- Operate the cycle
- Remove the strips from the bath and blot dry
- Examine and record your findings
- File the strips by sticking them with adhesive tape to a sheet of paper
- Drain and clean the bath

Results of the test:

1. Each foil strip should show similar areas and extent of erosion on all nine foils.
2. Poor uniformity could demonstrate the failure of one or more of the transducers that produce ultrasonic vibration in the base of the bath.
3. A change in between results in foil erosion with previous tests could show a deterioration or failure of the transducers. No erosion would indicate a complete failure of the machine.

Wand Meters

This automated meter provides an alternative way of testing the activity of the ultrasonic, without contaminating the bath with foil. However, although it is easy to use and convenient it is an expensive option and some manufacturers do not recommend their use.
**Yearly Tests:**

The competent person (Decontamination) and service engineer should verify that the equipment is working within the parameters that are set out in the manufacturer’s guidelines. Yearly safety checks should be carried out and advice about these can be gained from the authorised engineer.

All Quarterly tests should be completed.

**Conclusion**

This article provides an outline of the different roles that may need to be designated within the dental team to enable the practice to put into place a system whereby team members can work together to implement competent decontamination procedures. Often more than one role is assigned to the same team member. An overview has been provided of the tests outlined in the HTM01 05 for ultrasonic cleaners to enable practices to work to best practice guidelines.

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**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:

- An article which discusses the different methods of decontamination and common cleaning agents/disinfectants and their appropriate uses.
- Example of ultrasonic cleaner log sheets from Manchester Health Authority.
- Northern Ireland members will be able to find the amendments to HTM 01-05 in the non-verifiable reading section.

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

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References