HEALTH TECHNICAL MEMORANDUM 01-05

Decontamination in primary care dental practices - Update 1

2011

Wales edition

STATUS IN WALES

ARCHIVED

This document was superseded by
Welsh Health Technical Memorandum 01-05
Decontamination in primary care dental practices and
community dental services
2014
Decontamination

Health Technical Memorandum 01-05: Decontamination in primary care dental practices

Welsh edition 2011
Update One
Decontamination
Health Technical Memorandum 01-05:
Decontamination in primary care
dental practices

Welsh edition 2011
Update One
Executive summary

Preamble
This document forms part of the Health Technical Memorandum 01 Decontamination series. Other parts include:

- Health Technical Memorandum 01-01: Decontamination of reusable medical devices
- Health Technical Memorandum 01-02: Decontamination in laboratories
- Health Technical Memorandum 01-03: Decontamination in pharmacies
- Health Technical Memorandum 01-04: Decontamination of laundry and infected linen
- Health Technical Memorandum 01-06: Decontamination of flexible endoscopes
- Health Technical Memorandum 01-07: Decontamination in primary care NHS trusts.

Structure
This document includes the following three sections:

- Section 1: Decontamination policy and foreword
- Section 2: Advice to dentists and practice staff (local decontamination)
- Section 3: Engineering, technology and standards.

Aim of the guidance
Health Technical Memorandum 01-05 (Welsh edition) is intended to progressively raise the quality of decontamination work in primary care dental services by covering the decontamination of reusable instruments within dental facilities.

Who should use this guidance?
Health Technical Memorandum 01-05 (Welsh edition) will be of interest to all staff involved in decontamination in primary care dental services in Wales.

It is intended to be used, or referred to, by all members of a dental team providing primary care dental services (that is, dentists and support staff as well as engineering staff providing services in key areas). In addition, Local Health Boards (LHBs) will find the contents of value.

Reference to other parts of the Health Technical Memorandum 01 series may be necessary (on a limited basis only).

This Welsh edition is designed to follow the same structure and format as its Department of Health ‘parent’ document thus providing consistency between the two documents while acknowledging Welsh-specific policies and structures.
Acknowledgements

Listed below are the contributors to the original Department of Health Publication on which this Welsh Edition is based.

Allan Hidderley Medicines & Healthcare products Regulatory Agency
Christine Arnold British Dental Association
Daniel McAlonan British Dental Association
Esther Dias Infection Prevention Officer and Decontamination Lead, NHS Bromley
Geoff Ridgway Clinical microbiologist
Hugh Bennett Deputy Chief Dental Officer for Wales
Jimmy Walker Health Protection Agency
Ken Toal Health Estates, Northern Ireland
Lesley Derry British Dental Association
Lester Ellman General Dental Practitioner
Margie Taylor Chief Dental Officer for Scotland
Martin Jones Infection Prevention Society
Murray Devine Safety Strategy Lead, Healthcare Commission
Paul Gray NHS Business Services Authority, Dental Services Division
Paul Langmaid Chief Dental Officer for Wales
Stuart Johnston British Dental Association
DH Working Group on Water Quality in Use and Decontamination of Surgical Instruments. Chairman Nigel Tomlinson
Engineering and Science Advisory Committee on the decontamination of surgical instruments. Chairman Mike Painter

Ian Rowlan Senior Engineer, Department of Health
Philip Ashcroft Principal Buildings and Facilities Management Services Engineer, Department of Health
Nigel Tomlinson Principal Scientific Adviser, Department of Health

Listed below are the contributors to this Welsh edition publication who sit on the HTM Guidance Peer Group as directed by the Welsh Assembly Government’s All Wales Decontamination Group.

Stephen Thomas Welsh Assembly Government
Tracey Gauci Welsh Assembly Government
David Thomas Welsh Assembly Government
Peter Phillips Director, SMTL
Bruce Fisher SMTL
John King Health Solutions Wales
Phillip Flear Sterile Services Manager (Hywel Dda Health Board)
Eric Thomas Assistant Director, Environmental Management and Engineering, Welsh Health Estates
Graham Stanton Senior Decontamination Engineer, Welsh Health Estates
John Prendergast Decontamination Engineer, Welsh Health Estates
Christopher Lewis Environmental Management Advisor, Welsh Health Estates
Peter Wiles Deputy Director, Welsh Health Estates

Internal consulting group

Barry Cockcroft Chief Dental Officer for England
Jerry Read Section Head, Dental and Eye Care Division
Serbijt Kaur Head of Quality and Standards, Dental and Eye Care Services
Ruth Gasser Department of Health
Small sterilizers
  Use and testing of small sterilizers
  Daily testing and housekeeping tasks
  Packaging and related decontamination strategy
  Storage of sterilized instruments/devices

Chapter 5  Setting up a decontamination area  28
  Physical segregation

Chapter 6  General hygiene principles  32
  Hand hygiene
    Drying of hands
    Skin care
    Facilities and procedures for hand-washing
  Personal protective equipment for decontamination processes
    Gloves
    Disposable plastic aprons
    Face and eye protection for decontamination procedures
    Clothing, uniforms and laundry
    Removal of PPE
  Surface and equipment decontamination
    General
    Environmental conditions
    Surfaces and equipment – key design issues
    Decontamination equipment
    Cleaning protocols and techniques
  Decontamination of treatment areas
    Dental unit water lines (DUWLs)
    General
    DUWLs

Chapter 7  Impressions, prostheses and orthodontic appliances  40

Section 3: Engineering, technology and standards

Chapter 8  Regulatory framework and compliance  42
  BS/EN/ISO Standards
  DH guidelines

Chapter 9  Staff roles and responsibilities in decontamination  43

Chapter 10  Procurement of decontamination equipment and instruments  45
  Determining the load to be processed
  Decontamination equipment: washer-disinfectors and sterilizers
  Decontamination equipment: ultrasonic cleaners
    Specifications
    Selecting instruments
    Policy on new reusable instruments

Chapter 11  Decontamination equipment: general guidance on maintenance and testing  49
  Maintenance and servicing
  Validation and testing
  Documentation
Chapter 12  Installation, validation, maintenance and testing of sterilizers  
Maintenance and servicing  
Validation and testing  
Periodic tests

Chapter 13  Installation, validation, maintenance and testing of washer-disinfectors  
Maintenance and servicing  
Validation and testing  
Periodic tests

Chapter 14  Installation, validation, maintenance and testing of ultrasonic cleaners  
Maintenance and servicing  
Validation and testing  
Periodic tests

Chapter 15  Additional information on test procedures (in addition to those provided in the Standards)  
Automatic control test  
Method  
Ultrasonic activity test  
Method  
Safety checks  
Weekly checks  
Yearly checks

Chapter 16  Approach and protocol for manual cleaning  
Cleaning procedure for dental instruments

Chapter 17  Steam and water quality  
Steam  
Quality of input water  
Conditions of storage and frequency of change  
Water  
Cleaning  
Final rinsing  
Detergents

Chapter 18  The use of lubricants

Chapter 19  Hot and cold water systems and dental unit water lines  
Safe hot water temperature  
Utilisation  
Flushing dental unit water lines (DUWLs)  
Decommissioning of DUWLs  
Recommissioning of DUWLs  
Maintenance policy  
Contract maintenance  
Emergency action  
Documentation  
As-fitted drawings  
Record-keeping  
Water supply hygiene  
Water treatment  
Purging the systems  
Ozone and ultraviolet treatment  
Water storage
Cold water distribution system
Drinking water
Instantaneous water heaters for single or multi-point outlets
Safe hot water delivery devices
Materials of construction
Temperature control regimen
Point-of-use filtration
Summary checklist
Microbiological monitoring

Appendix 1 Waste disposal
What are the responsibilities of the dental practice?
Waste segregation, packaging, classification and labelling
Waste transfer and documentation
What is a consignment note?
Who completes the consignment note, and when?
What is a multiple consignment note?
Waste transfer notes
Registrations, records and returns
Registrations
Why register as a hazardous waste producer?
How to register as a hazardous waste producer
Why register for an exemption from an environmental permit?
Hazardous waste – records and returns
Consignee returns to the waste producer or holder
Where should the register be kept?
How long should the register be kept?
Non-hazardous waste records
Electronic and electrical wastes
Chemicals
Waste audit and duty-of-care checks
Waste audit
Pre-acceptance audits
Waste carriers
Waste disposal

Appendix 2 Hand-hygiene policy

Appendix 3 Examples of logbook pages

Appendix 4 Periodic test: small steam sterilizers

References
Acts and regulations
Codes of Practice
British, European and International Standards
Department of Health publications
Other publications
Section 1: Decontamination policy and foreword
Patients deserve consistent standards of care every time they receive treatment. It is essential that they are treated in a safe and clean environment with minimal risk of person-to-person transmission of infections. This document has been produced after wide consultation and reflects our commitment to improving standards in dental practices.

We believe that, by building on existing good practice, this guidance can help us to deliver the standard of decontamination that our patients have a right to expect.

The policy and guidance provided in this Health Technical Memorandum are aimed at establishing a programme of continuous improvement in decontamination performance at a local level. The guidance suggests options to dental practices within which choices may be made and a simple progressive improvement programme established. It is expected that by the end of the first year of the implementation of this guidance, all primary care dental practices will be working at or above the essential quality requirements described in this guidance.

This guidance is intended to support and advance good practice throughout primary care dentistry including that delivered by general dental practices, community dental services and where primary care is delivered in acute settings.

Registration

The registration of dentists providing dental treatment privately has recently been introduced. Health Inspectorate Wales (HIW) will continue to oversee this process and have regulatory responsibility to ensure that the requirements for registration are met. This includes the provision of a safe, clean environment and appropriate decontamination of dental equipment. The registration scheme will place strong emphasis on effective management and self-audit. (For further information, see the Note after paragraph 8.11.)

Introduction

1.1 This document is a guide for those conducting decontamination at a local level – that is, within the dental practice itself. However, this policy statement respects the option to transfer instruments/medical devices to other organisations for reprocessing under the Medical Devices Regulations 2002.

1.2 To help dental practices to improve their decontamination procedures, this document introduces specific benchmarks by which compliance with

• Essential quality requirements and
• Best practice

can be achieved and demonstrated.

1.3 The requirements described in this guidance are intended as a clear indication of good practice and designed to exert upward pressure on the performance of dental practices. They will help to demonstrate to patients and those observing quality standards in dentistry that the local provider of a dental service is capable of operating in a safe and responsible manner with respect to decontamination of instruments and dental equipment. Where new practices are commissioned or new premises contemplated, it is advised that the full best practice provisions of this guidance be utilised wherever reasonably practicable.

1.4 The guidance provided here follows the essential principles given in the “Healthcare Associated Infections – A Community Strategy for Wales” (published 2007). This requires that effective prevention and control of healthcare-associated infection be embedded in everyday practice. For this reason, the guidance is written with emphasis on practical and readily implemented measures.

The strategy for Wales does not specifically mention HTM 01-05, however, the two should be seen as complementary.

1.5 Part 1 of the HCAI Community Strategy lists the strategic objectives that are required to ensure a clean and safe environment and facilities, which
includes, therefore, the appropriate decontamination of instruments and other equipment. This guidance is designed to assist all primary care dental providers (including salaried dental services) in meeting these requirements, and will extend to wholly private practices in due course.

1.6 ‘Clean, safe care – reducing infections and saving lives’ refers to the need for high-quality environmental cleaning and decontamination as vital components in reducing rates of infection.

The need for guidance

1.7 As our knowledge of disease transmission has improved – particularly in relation to the transmission of variant Creutzfeldt-Jakob disease (vCJD) – it has become timely to review decontamination processes in dental practices.

1.8 A survey of decontamination in general practices in Scotland (NHS Scotland, 2004) identified how important it is to follow procedures correctly in order to achieve safe standards of infection control. This report found that – even where the correct equipment was available – decontamination standards were not always being met satisfactorily. The evidence base for further development in this guidance will evolve over future years.

“Essential quality requirements” and “best practice”

1.9 Every practice should be capable of meeting the essential quality requirements, that is:

- Regardless of the technology used, the cleaned instruments, prior to sterilization, should be free of visible contaminants when inspected. Instruments should be reprocessed using a validated decontamination cycle including: cleaning/washing (in terms of manual cleaning, this includes having a written protocol – see Chapter 16); a validated steam sterilizer, and at the end of the reprocessing cycle they should be in a sterilized state.
- Reprocessed dental instruments should be stored in such a way as to ensure restraint of microbiological recolonisation. These measures should be backed by careful controls on the storage times to which instruments that are less frequently used are subject.
- Practices should audit their decontamination processes quarterly. An audit tool produced by the Infection Prevention Society and DH is strongly recommended).
- Practices should have in place a detailed plan on how the provision of decontamination services will move towards best practice.

An expanded list of essential quality requirements is given in paragraph 2.6.

1.10 To demonstrate best practice, further improvements are required in three main areas:

- A cleaning process that should be carried out using a validated automated washer-disinfector.
- The environment in which decontamination is carried out should be such as to minimise the risk of recontamination of instruments and the possibility of generating aerosols, which may reach patients or unprotected staff. For best practice, the decontamination facilities should be clearly separate from the clinical treatment area. This implies the use of a separate room or rooms for the accommodation of clean (output) and dirty (input) work. In these facilities, the room(s) should be used for this purpose only and access should be restricted to those staff performing decontamination duties. However, plant and equipment not necessarily used for decontamination may be located in these rooms (but preferably in the dirty room) provided it can reasonably be shown that the devices do not conflict with the requirement for a clean environment.
- The storage of reprocessed dental instruments in a simple but carefully designed facility clearly separate from the clinical treatment area is an important best practice improvement. The facility should take account of the need to reduce recolonisation of sterilized instruments and also make the identification/selection of instruments easy. This storage facility will ordinarily be part of the clean area within the decontamination room(s).

1.11 The overall aim is to achieve a reprocessed medical device (dental instrument) that is fully compliant with the “essential requirements” of the Medical Devices Regulations 2002. This implies that the instrument should be:

- clean and sterilized at the end of the decontamination process; and
- maintained in a clinically satisfactory condition up to the point of use.

1.12 Following the guidance in this document will help to achieve a satisfactory level of risk control together with equivalent compliance with the “essential requirements” of the regulations.
As the environment in which dental instruments are used is not sterile, it follows that dental instruments will not be sterile at the point of use. (They should, however, be in a sterile state at the end of the decontamination process when the sterilizer door is opened.) Accordingly, this guidance accepts that dental instruments may be defined as “sterilized” rather than “sterile” at the point and time of use (a somewhat different approach from that in invasive surgical procedures).

In some instances, the decontamination process may not generate full sterilization, for example, in the reprocessing of dental handpieces; however, the guidance will nevertheless seek to raise standards and minimise infection risk.

### Progression towards best practice

1.13 Not all practices will, at present, be in a position to adopt best practice recommendations. However, every practice will need to assess the improvements they need to undertake to move towards these and prepare a plan to implement the changes.

1.14 While a period of 12 months is seen as appropriate for the attainment of essential quality requirements, no schedule for attainment of best practice is provided in this guidance for the present. Findings from the 2009 National Survey of Dental Decontamination will be used to guide the Department of Health (DH) and the dental community in terms of reasonable timescales. Wales will review the findings and assess their application to Wales. It is recognised that not only are improvements in premises and equipment required to achieve higher standards, but also changes in practice management and the culture in which patients are treated by the dental team are necessary.

1.15 This guidance is based upon a principle of continuous improvement in the quality of decontamination practices and the environment used. Where dental practices use the same room for patient treatment and decontamination (essential quality requirements), they need to develop a plan that facilitates a move towards a separate and controlled decontamination room. This plan will normally also contain statements on staff training and development to suit work in a dedicated decontamination room or suite.

1.16 In addition, the plan should realistically outline the way forward in relation to best practice requirements, for example:

- measures to purchase and incorporate a washer-disinfector;
- the separation of decontamination processes from the patient treatment area.

### Prion decontamination

1.17 Recent research has indicated that a low level of prion contamination may theoretically be present on some instruments following contact with dental tissues. This applies if these instruments have previously been used in the care of a prion disease carrier who may exhibit no symptoms and may indeed not go on to develop the disease. For those tissues where evidence suggests this risk is most pronounced, the Chief Dental Officer for Wales has published requirements for endodontic files.
and reamers to be single-use instruments in all cases. Other instrument or device types for which a reliable cleaning regime is not available should also be considered for replacement by single-use types or by the single use of re-processible instruments e.g. matrix bands. Information regarding risk in this important area is contained in ‘Potential vCJD transmission risks via dentistry: an interim review’ (December 2007).

Note
Where patients indicate that they are in a high-risk group, guidance provided by the Advisory Committee on Dangerous Pathogens – Transmissible Spongiform Encephalopathy Working Group (ACDP-TSE WG) should be followed (www.dh.gov.uk/ab/ACDP/TSE guidance/index.htm). The guidance suggests that special precautions beyond full instrument decontamination will not be necessary. However, specific advice is available by contact with the committee secretariat.

1.18 For all other instruments used in dentistry, the risk of prion transmission will be usefully reduced by compliance with the decontamination procedures described in this Health Technical Memorandum. This statement is based on various studies (conducted on behalf of DH) that examined the effect of steam sterilization on prion infectivity. These studies showed that the steam sterilization methods described in this guidance provide a useful level of deactivation of prion infectivity. While this would not be significant in high-risk tissue surgery, the effect is large enough to be of significance in dentistry (excluding, that is, endodontic procedures as mentioned in paragraph 1.17). In addition, there is a risk of prion transmission through protein contamination of instruments, hence the measures outlined in this guidance to improve washing and disinfection of dental instruments.

1.19 Currently there is no recognised process that can fully deactivate prion protein in the sense of removing any foreseeable level of contamination. In this Health Technical Memorandum, the cleaning process and its ability to remove protein in tandem with a validated steam sterilization procedure is emphasized, as this is known to at least reduce the risk of prion transmission through dental instruments.

Infection control policy

1.20 All dental practices should have an infection control policy in place and available for external inspection. The Welsh Healthcare Associated Infection Subgroup has work underway to help produce model guidelines that may be adapted as appropriate. A number of relevant guidelines have been published by Public Health Wales. These include:
- Control of the Environment
- Hand hygiene policy
- Personal Protective equipment policy
- Occupational Exposure Management including needlestick (sharps injuries)
- Management of Spillages of Body fluids
- Management of Linen

1.21 The infection control policy statement for each practice should indicate full compliance with the essential quality requirements (as outlined in paragraphs 2.6–2.7). In addition, a written assessment of the improvements the practice needs to make in order to progress towards meeting the requirements for best practice should be available together with an implementation plan (as outlined in paragraph 2.25).

Note
This statement is subject to staged implementation and to local constraints (for example, the physical inability to provide a separate room).

1.22 Infection control needs to include all aspects of the running of a dental practice: from attention to personal hygiene – hand-washing, masks, protective clothing – to the cleaning and sterilization of instruments and the maintenance of the equipment.

1.23 Selective record-keeping on decontamination for infrequently used instruments is required as a key means of avoiding excessively long periods of storage for sterilized instruments, during which micro-organism recolonisation may occur. While local implementation may vary, this will ordinarily involve creating a written or computer-based record, which clearly identifies the instruments concerned either directly or by association with their container. The record should show the date of decontamination and also an expiry date (a maximum of one calendar month) after which the process should be repeated before the instrument is used.

1.24 For instruments that are wrapped prior to sterilization in a vacuum sterilizer, the storage period may be extended to two calendar months.
The Welsh Assembly Government (WAG) recognises that recolonisation of instruments – particularly those that are wrapped following sterilization – is likely. Accordingly, while recommendations are made in respect of maximum storage times, dental staff should visually check all instruments prior to use for any obvious deterioration in their quality.

The Department of Health (England) has commissioned new research with regard to contamination rates. Initial findings support an extended time for storage for instruments that are wrapped prior to sterilization; they do not at present, support longer periods of storage for post-sterilization wrapping.

Training and education

1.25 Training and education in the processes of pathogen control, decontamination, cleaning and hygiene (including hand hygiene), exposure to blood-borne viruses, and infection risk reduction, including waste disposal, should be part of staff induction programmes. They are key aspects of patient safety and service quality. Accordingly, the provision of training and competency records is a key requirement. As part of verifiable continuous professional development (CPD), professionals working in this area will receive not less than five hours’ training in this area over a period of five years.

Scope, status and structure of Health Technical Memorandum 01-05

1.26 Health Technical Memorandum 01-05 (Welsh Edition) relates to locally conducted decontamination procedures, which are the most common method of decontamination in primary dental care. As such, this includes all work where the end-user and the persons conducting decontamination are employees of the same organisation working in the same or related premises. Ordinarily this will be a general dental practice or salaried primary care dental services functioning as part of the local health community.

1.27 Where practices choose to make use of an external service – such as a central sterile services department – which is fully compliant with the Medical Devices Regulations 2002 and is registered with the Medicines and Healthcare products Regulatory Agency (MHRA), the guidance contained in Health Technical Memorandum 01-01 will be appropriate to that service.

1.28 The CDO (Wales) letter 2006 (‘Decontamination/Sterilisation of Re-usable Instruments in General Dental Practice) states The Medical Device Regulations 2002 require the manufacturer of medical devices to supply information on the appropriate processes to allow reuse, including cleaning, disinfection, packaging and, where appropriate, the method of sterilization. If correctly followed, these instructions will ensure that the device will be safe for another episode of use. This implies that dental practices ensure that their local policies give rise to the production and use of sterilized instruments for use with patients.

1.29 This document is divided into three sections:

- **Section 1: Decontamination policy and foreword**
  This section outlines the policy and principles of decontamination in dental practices, and explains the essential quality requirements and best practice requirements.

- **Section 2: Advice to dentists and practice staff**
  This section gives plain advice to dentists and practice staff on how to meet essential quality requirements and achieve best practice; how to clean and sterilize instruments; and how to set up a decontamination area within the practice.

- **Section 3: Engineering, technology and standards**
  This section gives technical advice to engineering and technical staff, including Authorised Persons (Decontamination) and Competent Persons (Decontamination).

1.30 Reference to guidance and standards provided by WAG and MHRA is provided and explained throughout this document.

1.31 Where engineering and technical information is provided (Section 3), references to source standards and evidence are given. However, such references are omitted in Section 2 to aid clarity of presentation and explanation.

1.32 It is important to remember that this is a working document; changes to it may be necessary as new evidence around the methodology of decontamination becomes available.

Exclusions

1.33 This Health Technical Memorandum does not cover the following:

- Decontamination in sterile services departments (SSDs). This is covered in Health Building Note 13.
Further guidance

1.35 Professional advice has previously been available within 'A12: Infection control in dentistry' (2003). As with the content of the earlier Health Technical Memoranda 2010, 2030 and 2031, A12 (2003) has been superseded in part by this document. However, the BDA have published a revised A12 (2010) which takes into account the guidance contained in HTM 01-05 published by DH for use in England and which also takes full account of recently published EN/ISO Standards.

1.36 The continued improvement of decontamination services for reusable medical devices follows on from the successful accreditation of all hospital sterilization and decontamination services in Wales and the work now underway by the Decontamination Subgroup of the WAG Health Protection Committee.
Section 2: Advice to dentists and practice staff
2 Essential quality requirements and best practice

Decontamination of instruments – an overview

2.1 Decontamination is the process by which reusable items are rendered safe for further use and for staff to handle. Decontamination is required to minimise the risk of cross-infection between patients and between patients and staff.

2.2 Decontamination of instruments (also known as reprocessing) is a complex process that involves several stages, including cleaning, disinfection, inspection and a sterilization step. The diagram below summarises how the individual stages ideally link together to complete the process of instrument decontamination.

Notes:
1. As an alternative to storing instruments immediately after sterilization, instruments that are anticipated to have a rapid turnover may be put out on sets of individual covered trays. The number of trays should correspond to the expected number of treatment episodes for that particular working session. This will negate the need to keep packing and unpacking instruments throughout the day. Each tray should be for use on a single patient.

2. Any instruments on unused trays at the end of the clinical session – even though they have not been used – should be reprocessed before further use.

3. Instruments that have remained unused for more than the maximum storage times indicated (that is, 1 calendar month for instruments sterilized in a type N sterilizer, and 2 calendar months for instruments sterilized in a type B or S sterilizer) should be subjected to a further cycle of decontamination before being used.
Compliance

Compliance definitions

Compliance – Essential quality requirements
This terminology is used within this Health Technical Memorandum to define a level of compliance expected as a result of its implementation. Guidance contained within this document will assist dental practices in maintaining these requirements and developing towards higher levels of achievement in this area over time. The use of an audit tool will assist dental practices in reaching the necessary standards (see paragraph 2.23).

In order to demonstrate compliance with essential quality requirements to external bodies (for example, the HIW, LHBs and WAG practices will be expected to provide a statement on plans for future improvement. Details on registration requirements are given in Chapter 8.

Compliance – Best practice
Best practice refers to the full level of compliance that may be achieved immediately or via a documented improvement from essential quality requirements.

Essential quality requirements

2.3 Instruments should be reprocessed using a validated decontamination process, including a washing process and a steam sterilizer, and at the end of the reprocessing cycle they should be sterilized.

2.4 In maintaining and developing dental decontamination practices, all the following should be included:

a. A local infection control policy subject to regular update, with reference to the all-Wales model policies.

b. The above policy should have detailed requirements/procedures for the decontamination of instruments.

c. The practice should have a nominated lead member of staff responsible for infection control and decontamination.

d. The storage, preparation and use of materials should take full account of the requirements of the Control of Substances Hazardous to Health (COSHH) Regulations 2002. Particular care should be taken in the storage and preparation for use of decontamination chemical products.

e. Practices should have a procedure for ensuring appropriate management of single-use and reusable instruments, which safeguards their status. (Section 3 contains detailed guidance on instrument purchase and disposal.)

f. Reprocessing of dental instruments should be undertaken using dedicated equipment (see Section 3).

g. Dedicated hand-washing facilities should be provided.

h. Cleaning and inspection are key parts of satisfactory dental instrument reprocessing. Instruments may be cleaned using an ultrasonic bath, but this should be covered during use to restrict the release of aerosols. Manual cleaning may also be used. Practices should plan for the introduction of washer-disinfectors. Inspection processes should ensure that the standards of cleaning achieved are visually satisfactory – that is, that instruments are free from particulate contamination, salt deposits or marked discoloration. The use of a simple magnifying device with task lighting will improve the value of this part of the process.

j. The separation of instrument reprocessing procedures from other activities, including clinical work, should be maintained by physical or temporal means. Decontamination equipment including sterilizers should accordingly be located in a designated area. The layout within this area should reflect the progression from the receipt of dirty, used instruments towards clean instruments sterilized in a specific controlled clean area. In the first instance, where practices are meeting the essential quality requirements defined by this guidance, the designated area for decontamination may be in, or adjacent to, a clinical room. At a later stage of development, more complete separation involving the use of a designated room or rooms will become appropriate (see Figures 1–3 in Chapter 5).

k. Instrument storage and wrapping recommendations:
(i) Where packaging is not applied, instruments may be stored on covered trays and used within that treatment session (usually defined as approximately 3.5 hours). Instruments will need to be reprocessed if not used within that treatment session;

(ii) alternatively, if instruments are wrapped either before or immediately after decontamination, storage in accordance with (m) below should be applied.

m. Develop a quality system approach so that the storage of wrapped instruments does not exceed 1 calendar month for instruments sterilized in a non-vacuum (type N) sterilizer or 2 calendar months if sterilized in a vacuum (type B or S) sterilizer (see paragraph 4.31):

(i) Where non-vacuum sterilizers (type N – see paragraph 4.5) are used, post-sterilization drying using disposable non-linting cloths should be supplemented by the packaging of instruments – this will improve resistance to contamination and recolonisation in storage.

(ii) For vacuum sterilizers (type B or S – see paragraph 4.24), pre-wrapping will extend storage life to 2 calendar months.

(iii) Subject to local policy choice, these measures will help to ensure stock rotation and will tend to limit recontamination of stored instruments. Simple but clear record-keeping will be required to make these measures effective.

n. Equipment used to decontaminate dental instruments should be fit for purpose and validated. This means that the device should be commissioned, maintained and periodically tested by a Competent Person (Decontamination) or service engineer, that records of maintenance should be kept, and that correct functioning should be monitored and recorded (see Section 3).

p. The appropriate and controlled disposal of waste is a key aspect of risk control in local dental practices (see Section 3).

q. A documented training protocol should be in operation with individual training records for all staff engaged in decontamination (see Section 3 for details). Until such time as formal training schemes are fully developed, it is recommended that protocol-specific training is given and, where required, the advice of equipment manufacturers/suppliers and Health Board staff should be sought.

r. The practice should carry out an assessment of the changes needed to move from compliance with essential quality requirements to compliance with best practice requirements.

s. Staff involved in decontamination should demonstrate current immunisation for hepatitis B and, subject to local policy, tetanus. Staff must be informed of the benefits (for example, protection against serious illness, protection against spreading illness) and drawbacks (for example, reactions to the vaccine) of vaccination.

Note

Vaccination is considered additional to, and not a substitute for, other control measures.

t. The effective cleaning of handpieces in accordance with manufacturers’ guidance. Dedicated cleaning equipment is available and may be of value. However, validation in this area is difficult, and the advice of manufacturers/suppliers should be sought.

u. Separate wash-hand basins for use by staff conducting decontamination should be provided. In addition, two dedicated sinks should be available for decontamination work – including where an automated washer-disinfector is in use. These sinks should not be used for hand-washing.

Note

Two sinks or two bowls incorporated into a single unit are recommended because, after cleaning instruments in the first sink, the operator can efficiently rinse the cleaned instruments in the second sink at a greatly reduced risk of recontaminating the instruments with cleansing agents/detergents or previously removed biofilm.

Essential infection-control policies and procedures

2.5 This guidance is primarily focused on medical devices and instruments used in dentistry. However, local policies must be broad-based and consider a comprehensive view of hygiene and cleanliness across all aspects of dental practice and associated facilities.

2.6 All dental practices should have an infection control policy together with guidelines and procedures that contain the following information:
• a written policy with regard to minimising the risk of blood-borne virus transmission, with particular attention to the possibility of sharps injuries. The policy should include arrangements for access to occupational health advice for all staff thought to be at risk of blood-borne virus exposure. (This is related to risk reduction in blood-borne virus transmission and general infection.) In addition, a record of all sharps injuries must be maintained in accordance with current health and safety legislation;

• a policy on decontamination and storage of dental instruments (decontamination guidelines);

• procedures for cleaning, disinfection and sterilization of dental instruments. This should outline the approach used locally in sufficient detail as to allow the ready identification of areas and equipment used;

• a policy for the management and disposal of clinical waste (waste disposal policy) (for further details see Appendix 1);

• a policy for hand hygiene (see Appendix 2);

• a policy for decontamination of new reusable instruments (see paragraphs 10.24–10.30);

• local policies and procedures for the use of personal protective equipment (PPE);

• procedures for the management of dental instruments and associated equipment in the context of infection control;

• the recommended disinfectants to be used within the practice, their application, storage and disposal (disinfectant guidelines);

• spillage procedure as part of local COSHH arrangements;

• local policies and procedures for environmental cleaning and maintenance. This should include, at a minimum, the methods used, the frequency of each procedure and appropriate record-keeping practices.

2.7 Dental practices should be aware that model policy documents are being developed for Wales by the Welsh Healthcare Associated Infection Subgroup which will assist the writing of local policies, within the framework provided here, and the design of local procedures together with guidance implementation planning (see also Chapter 6, which gives general guidance on cleaning and disinfection protocols within the practice).

Use of dental instruments during and after treatment on a patient

2.8 The number of instruments provided for each treatment should be kept to a minimum – only those instruments that are needed should be put out on trays.

2.9 Care over the process of putting out instruments into trays in relation to the procedures being performed will reduce decontamination workload.

2.10 Regard all instruments set out for each patient as contaminated after the treatment whether or not they have been used.

Note
Dental handpieces should be cleaned and sterilized after each patient treatment.

Movement of instruments to and from adjacent decontamination areas

2.11 The object of the measures outlined below is to reduce the risk of cross-contamination between instruments.

2.12 The practice should have safe procedures for the transfer of contaminated items from the treatment to the decontamination area.

2.13 Sterilized instruments and single-use instruments should be clearly separated from those that have been used and are awaiting decontamination.

2.14 A clean sterilized instrument tray should be used to transfer sterilized instruments to the treatment area. These trays should be of a suitable size to enable them to be placed in the sterilizer. Alternatively, single-use disposable instrument trays may be used, provided these have been stored in a clean and dry environment.

2.15 Instruments for decontamination should be transferred as soon as possible after use to the decontamination area in order to avoid the risk of drying. Prompt decontamination is appropriate. Water immersion or the use of commercial gels or sprays may be considered. These measures reduce the adsorption of proteins to the instrument surfaces and makes cleaning easier.

Segregating instruments

2.16 Prior to cleaning, reusable instruments to be cleaned should be segregated from items for disposal.

2.17 A single-use device should only be used during a single treatment episode and then disposed of. It is not intended to be reprocessed and used again – even on the same patient at a later session.
2.18 The re-use of a single-use device has implications under the Medical Devices Regulations. Anyone who reprocesses or re-uses a device CE-marked for use on a single occasion bears the responsibilities normally carried by the manufacturer for the safety and effectiveness of the instrument.

2.19 Shown below is the symbol that identifies single-use items. This will appear on packaging but might not be present on individual items. If in doubt, further advice should be sought from the manufacturer.

2.20 Where instruments are difficult to clean, consideration should be given to replacing them with single-use instruments where possible. In dentistry this will include, but is not limited to, instruments such as matrix bands, saliva ejectors, aspirator tips and three-in-one tips.

2.21 Dentists should ensure that all endodontic reamers and files are treated as single-use – regardless of the manufacturer’s designation – in order to reduce the risk of prion transmission in dentistry.

Quality assurance system and audit

2.22 Dental practices are required to establish and operate a quality assurance system that covers the use of effective measures of decontamination and infection control. This may best be demonstrated by undertaking audits and assessments of their infection control and decontamination practices. These audits should be filed for inspection as part of their risk management system.

2.23 Compliance with this Health Technical Memorandum will be seen as indicative of the presence of valid quality assurance systems. Audits should be carried out in compliance with individual Local Health Board (LHB) policies. At a minimum, practices should audit their decontamination processes quarterly, with an appropriate review dependent on audit outcomes.

Note

The Infection Prevention Society/DH audit tool parallels the guidance provided in this document. In addition, a number of other safety-related topics are included in the tool. The audit tool is included on the CD-ROM that accompanies this document.

2.24 It is important that the audits are made available to the auditing body on request and should form part of the LHB’s own risk assessment for inspection when required.

2.25 Audit documents should be stored for at least two years. They should not be removed from the premises or destroyed.

Taking instruments to other locations

2.26 The practice should have safe procedures for the transfer of contaminated items from the treatment area to the decontamination facility.

2.27 Transport containers should be such as to protect both the product during transit and the handler from inadvertent contamination, and therefore should be:

- leak-proof;
- easy to clean;
- rigid, to contain instruments, preventing them becoming a sharps hazard to anyone handling the goods and to protect them against accidental damage;
- capable of being closed securely;
- robust enough to prevent instruments being damaged in transit.

Subject to local policy, the containers may be labelled to identify the user and/or the contents.

2.28 Without exception after each use, transport containers should be cleaned, disinfected and dried, ideally using a washer-disinfector, or discarded (as appropriate). If this is not possible, containers should be cleaned with a fresh detergent solution, then rinsed and dried. Bleach including hypochlorite solutions should not be used, as residues may damage instruments.

2.29 Where contaminated instruments are to be transported outside of the healthcare premises on a public highway, those responsible for such transportation should refer to the requirements of the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007 and the Health and Safety at Work etc Act 1974.
A protocol for transportation that ensures the segregation of contaminated product from clean/sterilized instruments should be followed.

Contaminated instruments will be regarded as low biohazard materials and must be part of a noted consignment. This means recording details of the group of items transported (that is, dental instruments), the time of dispatch and the intended recipient. Records should be such as to allow each movement to be traced and audited if necessary. The note should be positioned prominently within any vehicle used for transportation and should carry a contact telephone number.

Where instruments travel in a vehicle with a dentist or other expert person, record-keeping may be simplified to cover the date and vehicle used only. This rule is applicable to, for example, school and domiciliary visits.

**Best practice**

Progress towards achieving **best practice** should include the following:

- Install a modern validated washer-disinfector of adequate capacity to remove the need for manual washing.
- Improve separation of decontamination processes from other activities and enhance the distinction between clean and dirty workflows.
- Provide suitable storage for instruments, which reduces exposure to air and a possible risk of microorganism contamination. **Best practice** will include the development of a local quality system focused on safe and orderly storage of instruments. This will ensure that instrument storage is well protected in the appropriate clean room against the possibility of exposure of stored instruments to contaminated aerosols. In addition, the management approach will ensure that commonly-used instruments are dealt with on a first-in first-out principle and less frequently used instruments are stored for clear identification and reprocessed if not used within the designated storage periods.
3 Cleaning instruments

Guidance on the installation, validation, maintenance and testing of ultrasonic cleaners and washer-disinfectors can be found in Section 3.

Introduction
3.1 The principal methods of cleaning reusable dental instruments currently available are:
- cleaning using a washer-disinfector;
- manual combined with ultrasonic cleaning;
- manual.

3.2 Effective cleaning of instruments is an essential prerequisite before sterilization and will reduce the risk of transmission of infectious agents. Wherever possible, cleaning should be undertaken using an automated and validated washer-disinfector in preference to manual cleaning, as a washer-disinfector includes a disinfection stage that renders instruments safe for handling and inspection.

3.3 Manual cleaning, governed by an appropriate protocol, is acceptable within the essential-quality-requirements framework. Within the best-practice framework, however, manual cleaning should be considered only where the manufacturer specifies that the device is not compatible with automated processes (including ultrasonic cleaning) or when the washer-disinfector is temporarily unavailable (for example, for repair or validation). Exceptionally, where local experience indicates that pre-washing may be helpful (for example, in the removal of tenacious dental materials), such action may be appropriate before automated cleaning.

3.4 New instruments should be cleaned and sterilized before using for the first time, unless supplied as sterile.

3.5 Instruments cleaned as soon as possible after use may be more easily cleaned than those left for a number of hours before reprocessing. Where this is not possible, water immersion or the use of a foam spray intended to maintain a moist or humid environment are thought useful in aiding subsequent decontamination.

3.6 When working with substances that can harden on instruments (for example, cements), the instruments should be cleaned immediately. Instruments that cannot be cleaned should be discarded.

3.7 Where recommended by the manufacturer, instruments and equipment that consist of more than one component should be dismantled to allow each part to be adequately cleaned. Members of the dental team should be appropriately trained to ensure competence in dismantling, cleaning, sterilizing and reassembling of instruments. Amalgam carriers are an example of instrumentation requiring this approach.

General requirements for cleaning methods
3.8 Where possible, refer to manufacturers’ instructions relating to instruments, dental equipment, cleaning devices and cleaning solutions.

3.9 Whenever possible, cleaning should be undertaken using an automated and validated process in preference to manual cleaning. Manual cleaning should be considered where manufacturer’s instructions specify that the device is not compatible with automated processes.

3.10 Ensure that instruments can be cleaned using a method available to the practice.

3.11 Validation is the means by which an entire process is verified, tested and documented, with the ability to be consistently reproducible. Ensure that ultrasonic and washer-disinfector cleaning procedures used in the practice are validated. This is to demonstrate that all instruments and equipment cleaned by these methods are reliably and consistently cleaned using predetermined and reproducible conditions.

3.12 Technical details for validation standards and procedures are provided in Section 3. The assistance of decontamination specialists will be necessary from time to time in order to ensure that equipment and procedures remain valid in
engineering terms. These services may be available through the local LHB, Welsh Health Estates or as part of a commercial package.

**Automated cleaning:**

**washer-disinfectors**

3.13 Each stage of the decontamination process should contribute to the reduction of bioburden on the device being reprocessed. Using a washer-disinfector is the preferred method for cleaning dental instruments because it offers the best option for the control and reproducibility of cleaning; in addition, the cleaning process can be validated under European Norms (ENs).

3.14 Washer-disinfectors are used to carry out the processes of cleaning and disinfection consecutively in an automated cycle. A typical washer-disinfector cycle for instruments includes the following five stages:

- **Flush** – removes “difficult” gross contamination, including blood, tissue debris, bone fragments and other fluid and solid debris. Latest standards indicate that a water temperature of less than 45°C is used to prevent protein coagulation and fixing of soil to the instrument.

- **Wash** – removes any remaining soil. Mechanical and chemical processes loosen and break up contamination adhering to the instrument surface. Detergents used in this process must be specified by the manufacturer as suitable for use in a washer-disinfector. They should also be compatible with the instruments being processed and supplied so as to perform correctly and avoid instrument degradation including discoloration, staining, corrosion and pitting.

- **Rinse** – removes detergent used during the cleaning process. This stage can contain several sub-stages. The quality of the water used for this stage is an important consideration of ensuring a clean, unmarked product after sterilization. Good quality potable water direct from the mains supply exhibits satisfactory low endotoxin levels which are unlikely to harm health in this application. However, where the local potable water is unsatisfactory, or spotting is observed on instruments, then final stage RO water can be used for the process. Note: Advice on potable water supplied can be sought from local supplier (e.g. Welsh Water).
Some systems with a water capacity and delivery rate specially suited to use in this and other dental applications are available. The supply arrangements will frequently include a comprehensive package such that water is supplied as a service.

- **Thermal disinfection** – the temperature of the load is raised and held at the pre-set disinfection temperature for the required disinfection holding time: for example, 80°C for 10 minutes; or for 90°C for 1 minute.
- **Drying** – Purges the load and chamber with heated air to remove residual moisture.

**Using a washer-disinfector**

3.15 For details of all operational aspects of using a washer-disinfector, follow the manufacturer’s instructions. This will include details of both the water quality/type to be used and directions on the detergents and/or disinfectants recommended for use with the device. These instructions form part of the European norm (EN) requirements for CE (Conformité Européenne) marking and are considered to be part of the regulated product.

3.16 Ensure that staff are trained in the correct operation of a washer-disinfector, including how to perform daily tests and housekeeping tasks. Records of training and the achievements of staff should be maintained (see Section 3).

3.17 It is crucial to load a washer-disinfector correctly, as incorrectly loaded instruments will not be cleaned effectively. Therefore, follow an instrument-loading procedure that has been shown to achieve effective cleaning in the washer-disinfector used in the practice. To do this:

- do not overload instrument carriers or overlap instruments;
- open instrument hinges and joints fully;
- attach instruments that require irrigation to the irrigation system correctly, ensuring filters are in place if required (for example, for handpieces, if specified by the manufacturer).

3.18 After cleaning, inspect instruments for cleanliness and check for any wear or damage before sterilization. (The use of a simple magnifying device with task lighting will improve the value of this part of the process.) The satisfactory completion of this step means that these instruments may be clearly designated as ready for sterilization.

**Records**

3.19 Washer-disinfector logbooks and records should be kept by the designated “user” – an identified member of the practice staff. Cycle parameters should be recorded together with details of routine testing and maintenance of the equipment used. The use of automated data-loggers or interfaced small computer-based recording systems is acceptable, provided the records are kept securely and replicated. It is recommended that records be maintained for not less than two years.

**Considerations for cleaning handpieces**

3.20 Check with the handpiece manufacturer that a washer-disinfector can be used to clean the handpieces.

3.21 Certain types of washer-disinfector can be adapted to clean handpieces, and these can be validated independently as being effective.

3.22 Where a handpiece manufacturer does not recommend a washer-disinfector for cleaning the handpiece, use of a dedicated handpiece-cleaning machine may be considered. This uses a pressurised system to clean and lubricate handpieces. However, unlike a washer-disinfector, it does not disinfect.

3.23 Always consult the washer-disinfector manufacturer for operating details (for example, whether filters are required) and running costs before purchase.

3.24 Washer-disinfectors might remove all lubricants during the cleaning cycle; therefore, handpieces might require further lubrication after cleaning. Follow the handpiece manufacturer’s recommendations for lubrication (see also paragraphs 3.55–3.57 and Chapter 18 in Section 3).

**Note**

1. Some washer-disinfectors that have a handpiece irrigation system require that a special filter be fitted to protect the internal mechanism of the handpiece from extraneous debris during the operating cycle. These filters need to be replaced at regular intervals in accordance with the manufacturer’s instructions.

2. There are certain commercial products that claim to be able to sterilize as well as wash and disinfect dental handpieces. Please seek advice from Welsh Health Estates or your local infection control team.
Automated cleaning:
ultrasonic cleaning

3.25 Evidence on the effectiveness of ultrasonic cleaning gives support to its use in dentistry. However, it is important to ensure that the water/fluid is maintained, cleaned and changed at suitable intervals (see paragraph 3.30(k)). The bath should also be kept free of dirt released in the cleaning process. Good maintenance is also essential. The appearance of instruments following ultrasonic cleaning should be checked to ensure that the process is operating effectively (see also Section 3).

3.26 Ultrasonic cleaning in a well-maintained machine enhances removal of debris. Thus, although a washer-disinfector is preferred and should be incorporated into new plans or upgrades, an ultrasonic cleaner can be used as a cleaning method – including being used as an extra cleaning stage prior to an automated washer-disinfector process. This may be particularly helpful for instruments with hinges and/or intricate parts.

3.27 To enable consistent cleaning of instruments, follow the manufacturer’s operating instructions and ensure that all staff use a specified and documented operating procedure. Details on validating ultrasonic cleaners are supplied in Section 3.

3.28 The use of ultrasonic cleaners to clean dental handpieces should not be undertaken without confirmation from the manufacturer that the devices are compatible.

3.29 The ultrasonic cleaner should be tested quarterly to ensure that it is fully functional (see Section 3).

Ultrasonic cleaning procedure

3.30 The following procedures should be followed:

a. Instruments should be briefly immersed in cold water (with detergent) to remove some of the blood and other visible soil before ultrasonic cleaning. Care should be taken to minimise aerosol production in this process and to safeguard against inoculation injury. The use of a purpose-designed container with sealing lid is recommended.

b. Follow the manufacturer’s recommendations for the safe operating procedure of the ultrasonic cleaner and follow the points outlined below regarding loading and unloading the cleaner.

c. Ensure that joints or hinges are opened fully and instruments that need taking apart are fully disassembled before they are immersed in the solution.

d. Place instruments in a suspended basket and fully immerse in the cleaning solution, ensuring that all surfaces are in contact with the solution. The solution should be made up in accordance with the manufacturers’ instructions.

e. Do not overload the basket or overlap instruments, because this results in poor cleaning and can cause wear to the instruments.

f. Do not place instruments on the floor of the ultrasonic cleaner, because this results in poor cleaning and excessive instrument movement, which can damage the instruments.

g. To avoid damage to delicate instruments, a modified basket or tray system might also be necessary depending on operational requirements.

h. Set the timer to the correct setting as per the ultrasonic cleaner manufacturer’s instructions. Close the lid and do not open until the cycle is complete.

j. After the cycle is complete, drain the basket of instruments before rinsing.

k. Change the solution when it becomes heavily contaminated or otherwise at the end of every clinical session, because the build-up of debris will reduce the effectiveness of cleaning. Ensure that staff are aware of the need to assess when a change of solution is necessary as advised in the operational requirements.

m. After ultrasonic cleaning, rinse and inspect instruments for cleanliness, and, where possible, check for any wear or damage before sterilization.

3.31 Instruments cleaned in an ultrasonic cleaner (or by hand) should be rinsed thoroughly to remove residual soil and detergents. A dedicated sink or bowl (separate from the one used for the original wash) should be used, and the instruments immersed in satisfactory potable water or, where this is not available, in RO or freshly distilled water. Wash-hand basins should not be used. (This step may be omitted if the local policy and procedure involves the use of a washer-disinfector as the next stage in the decontamination process.) Note: Advice on potable water supplied can be sought from local supplier.
Note
Hard-water contamination of wet instruments, which then go on to sterilization, can compromise the proper function of a small steam sterilizer. Rinsing satisfactory (soft) potable water, RO or freshly distilled water will be necessary as a precaution. When potable water is used, a water softener maybe needed. Consult the local water advisor at not less than annual intervals.

3.32 Instruments should be sterilized as soon as possible after cleaning to avoid air-drying (which can result in corrosion and/or microbial growth). For instruments processed in a vacuum sterilizer, before being wrapped, instruments should be dried using a disposable non-linting cloth.

Manual cleaning
3.33 In principle, manual cleaning is the simplest method to set up, but it is difficult to validate because it is difficult to ensure that it is carried out effectively on each occasion.

3.34 Compared with other cleaning methods, manual cleaning presents a greater risk of inoculation injury to staff. However, despite the limitations of manual cleaning, it is important for each practice to have the facilities, documented procedures and trained staff to carry out manual cleaning as a backup for when other methods are not appropriate.

3.35 For dental services that are working to the best practice requirements outlined in this document, manual cleaning (acceptable under the essential quality requirements) should only be used for equipment that cannot be cleaned by automated methods.

3.36 This method should have systems in place to avoid recontamination of clean instruments.

3.37 An effective system for manual cleaning should be put in place, as outlined in Section 3, and all staff should follow an agreed written procedure. A visual inspection for cleanliness, wear and damage should be carried out.

3.38 Consider routinely using an automated method (for example a washer-disinfector). Aim to phase in instruments that can be cleaned in a washer-disinfector.

Avoiding instrument damage
3.39 Most dental instruments are made of high-quality materials designed to minimise corrosion if reprocessed correctly. The corrosion resistance is based on their alloy composition and structure, which forms a protective passivation layer on the surface. The ability of the instruments to resist corrosion depends on the quality and thickness of this layer.

3.40 It is important to avoid damage to the passivation layer during cleaning. Accordingly, methods such as the use of wire brushes, which may give rise to surface abrasion, should be avoided.

3.41 Any instruments that have rust spots should be removed.

Cleaning procedure summary
3.42 Effective cleaning of dental instruments before sterilization is of the utmost importance to reduce the risk of transmission of infectious agents.

3.43 Research suggests that instruments cleaned as soon as possible after use are more easily cleaned than those left for a number of hours before reprocessing.

3.44 Instruments should be transferred from the point of use to the decontamination areas as soon as is practical to ensure that processing takes place as soon as possible after use. Gathering evidence indicates that keeping instruments moist after use and prior to decontamination improves protein removal and overall decontamination outcomes.

3.45 It should be noted that certain solutions are corrosive to stainless steel instruments and will cause pitting and then rusting if allowed to remain on instruments for any length of time. Dental professionals should consult with the suppliers/manufacturers of decontamination agents to ensure that the products used are appropriate and unlikely to cause significant long-term corrosion (refer to COSHH for further advice).

3.46 Always check packaging for the single-use symbol before use, and note that it might be difficult to see (see also paragraphs 2.16–2.21).

Rinsing of instruments after cleaning and/or disinfection
3.47 Instruments cleaned in an ultrasonic cleaner (or in addition by hand) should be rinsed thoroughly in a dedicated sink or bowl (separate from the one used for the original wash) using satisfactory potable water RO or distilled water in order to remove residual soil and detergents with minimum risk of salt deposition.

Note
This step may be omitted if the local policy and procedure involves the use of a washer-disinfector as the next stage in the decontamination process.
3.48 Instruments should be sterilized as soon as possible after cleaning to avoid air-drying (which can result in corrosion and/or microbial growth). However, where instruments are to be wrapped prior to vacuum sterilization, the instruments should be dried.

**Inspection and care of instruments before sterilizing**

3.49 All instruments that have been through any cleaning procedure, including processing by a washer-disinfector, should be inspected to ensure they are clean, functional and in good condition.

3.50 Any instruments that are blunt, bent or damaged or show any signs of pitting or other corrosion should be discarded. An illuminated magnifier is recommended because it makes it much easier to see residual contamination, debris or damage.

3.51 Dental staff should ensure that:

- there is free movement of all parts and that joints do not stick;
- the edges of clamping instruments meet with no overlap and that teeth mesh together;
- scissor edges meet to the tip and move freely across each other with no overlap or burrs (rough edges);
- all screws on jointed instruments are tight and have not become loose during use.

3.52 Instruments should be inspected for any visible soiling such as blood or dental materials. It is especially important to check joints, hinges or the serrated surfaces of jaws, which are difficult to clean. If there is any residual contamination, the instrument should be rejected and should undergo another cycle of the cleaning process.

3.53 Occasional use of a lubricant may be required where hinged instruments are found to be stiff. A non-oil-based lubricant should be used to avoid it interfering (that is, preventing the steam coming into contact with the instrument surface) with the sterilization process.

3.54 Instruments may become damaged during use or suffer from general wear and tear over their lifespan. If devices are found to be faulty or damaged during inspection and function-testing, or if users identify that they are faulty, they should be taken out of use and either repaired or replaced. Instruments for repair should be decontaminated, labelled to identify they have been through the decontamination process, and then returned to either the manufacturer or a reputable repair company.

**Handpiece care**

3.55 Handpieces should be lubricated according to the manufacturer's instructions. Those that have been processed in a washer-disinfector might have had the lubricant removed and require lubrication again before going into the sterilizer.

3.56 A separate canister of lubricant should be used for cleaned instruments. The canisters should be labelled so that it is clear which canister is used for unclean instruments and which is used for instruments that have been cleaned in a washer-disinfector. Another canister for use with handpieces after sterilization might be required if the manufacturer recommends it.

3.57 Inadequate lubrication can lead to unnecessary damage to the internal mechanism.
Guidance on the installation, validation, maintenance and testing of sterilizers can be found in Section 3.

4.1 This chapter should be read in conjunction with Section 1.

**Types of sterilizer**

4.2 Saturated steam under pressure delivered at the highest temperature compatible with the product is the preferred method for the sterilization of most instruments used in the clinical setting.

4.3 To facilitate sterilization, load items should first be thoroughly cleaned and disinfected (where a washer-disinfector has been used). Sterilization, when properly validated, is effective in reducing prion infectivity. In the case of newer machines, the parameters monitored for each cycle of use will be stored and/or available as a print-out to provide a short-term record. The use of automated data-loggers or interfaced small computer-based recording systems is acceptable provided the records are kept securely and replicated. These records should be photocopied, as the quality of the print-out fades over time. Manual recording using a logbook is also acceptable and, in any case, will be a necessity if a machine does not have any automatic print-out function (see paragraph 4.16 for further details on manual recording). The record should, at minimum, document the absence of a failure warning or the temperature/pressure achieved as appropriate to the indications provided. It is recommended that records be maintained for not less than two years.

4.4 It is likely that steam sterilizers used in dental practices will have a chamber volume of less than 60 L and thus be considered to be small devices within the standards applied by national and international bodies.

4.5 Standards describe three types of small sterilizer used within the healthcare setting:

**Note**

For the decontamination of handpieces, advice should be sought from the manufacturer as to which of the following sterilization cycle types is most suitable.

- Type N: air removal in type N sterilizers is achieved by passive displacement with steam. They are non-vacuum sterilizers designed for non-wrapped solid instruments.
- Type B (vacuum): type B sterilizers incorporate a vacuum stage and are designed to reprocess load types such as hollow, air-retentive and packaged loads. A number of different cycles may be provided. Each cycle should be fully validated and used in accordance with instructions provided by both the sterilizer manufacturer and the instrument manufacturer(s). Users should be aware that
Type B Benchtop sterilizers can incur financial implications. These units require maintenance and also require a full validation regime in accordance with current guidance.

- Type S: these sterilizers are specially designed to reprocess specific load types. The manufacturer of the sterilizer will define exactly which load, or instrument, types are compatible. These sterilizers should be used strictly in accordance with these instructions. Types B and N are most frequently used in dental practices.

Where a sterilizer is installed with multiple cycle options it is important to note that all the cycles configured within the control memory requires periodic validation to current guidance. If there are cycle options that are configured and not used, they should be deleted or disabled to prevent unauthorized use. Single cycle options are preferred where bench top sterilizers are used.

4.6 In each case, practice staff should consult with the manufacturer/supplier of the sterilizer(s) to ascertain the status of the machine in respect of validation/verification and the recording of parameters achieved during sterilization cycles.

Dental handpieces

4.7 Dental handpieces are constructed with a number of internal channels and pathways. These features are often difficult to clean, although the use of a validated automated washer-disinfector may be successful provided that handpiece and washer-disinfector are of known compatibility. Where this is established, sterilization using a type B or type S sterilizer is likely to be useful, although it should be accepted that it is unlikely that sterility will be achieved – whatever sterilizer is used – due to the presence of lubricating materials.

4.8 If no validated and compatible washer-disinfector is available, steam sterilization will still be of value in generating a reduction in contamination levels and
bioburden. Accordingly, progress towards best practice may be seen as a further risk reduction measure in this context.

Note
This guidance document recognises the uncertainties regarding current dental-handpiece decontamination techniques in terms of both reproducibly achieving sterility and also generating prion contamination reduction, should prions be present. Particularly within the essential-quality-requirements framework, the emphasis is on risk reduction rather than elimination. As new knowledge and technologies that are aimed at further risk reduction become available, so amendments will be made to this guidance (see Section 3).

Small sterilizers

4.9 Small sterilizers should be operated to ensure that:

- they are compliant with the safety requirements stated in this guidance and in the manufacturer’s notes;
- they are installed, commissioned, validated and maintained appropriately in compliance with the manufacturer’s instructions (see Section 3);
- they are operated in accordance with the equipment manufacturer’s instructions.

4.10 Where sterilization equipment has been used for significant periods, water quality can influence calcification build up. Under these circumstances, the machine should be inspected by an engineer or returned to the supplier/manufacturer for refurbishment.

4.11 Users should be aware of this cautionary note relating to the improper use of small sterilizers:

Pre-wrap instruments only where this is recommended by the manufacturer and where the sterilizer is vacuum-assisted. The sterilizer should be validated for the intended load and is likely to be of type B or S. The use of a type N sterilizer is not appropriate for wrapped instruments.

4.12 All steam sterilizers are subject to the Pressure Systems Safety Regulations 2000 and must be examined periodically by a Competent Person (Pressure Vessels).

Use and testing of small sterilizers

4.13 To ensure the safety of this device, the following points should be adhered to:

1. Each sterilizer will have a reservoir chamber from which the water is delivered for steam generation; this should be filled daily using water of a suitable quality. A practical approach should be adopted using good operational practice as with previous healthcare guidance (e.g HTM 2031). The use of ‘water for irrigation’ is used to meet the requirements for ‘clean steam’. Sterile water for irrigation is non-pyrogenic distilled water that has been sterilized. It has an Endotoxin level less than 0.25Eu/ml and is readily available from pharmacies for bulk supply. Alternative water supplies can be RO if there is a problem sourcing water of the required standard (see Chapter 17 for further guidance). (The use of water for irrigation is preferable to distilled water as the quality of distilled water cannot be guaranteed).

At the end of the day or whenever the sterilizer is to be unused for several hours, the chamber should be drained after the water has cooled and all internal surfaces that are accessible should be rinsed with suitable quality water, dried and left empty with the door kept open. For single-shot types, which do not store water between cycles of use, these rules still apply in terms of the water quality to be used. When the sterilizer reservoir is to be replenished, it should be refilled with suitable water quality to the level recommended by the manufacturer.

2. Validation is necessary to demonstrate that the physical conditions required for sterilization (temperature, pressure, time) are achieved. Consultation with appropriately qualified engineers through the Local Health Board or commercial arrangements will be necessary in this area.

A Competent Person (Decontamination) or service engineer will be able to ensure that validation is achieved and that the instrumentation used for parametric release is functioning and calibrated appropriately. The Competent Person (Decontamination) or service engineer will be needed to validate or revalidate the equipment (see Section 3).

Parametric release is defined as the release of a batch of sterilized items based on data from the sterilization process. All parameters within the process have to be met before the batch can be released for use.

3. Testing is an integral part of ensuring that a small sterilizer consistently performs to operating parameters set during the machine’s commissioning. Failure to carry out routine periodic tests and maintenance tasks could compromise safety and have legal and insurance-related implications for the Registered Manager (see paragraph 9.3).
4. A schedule for periodic testing should therefore be planned and performed in accordance with Section 3. The schedule should provide details of daily, quarterly and yearly testing or be in accordance with manufacturers’ guidelines. Each sterilizer should have a logbook (file) in which details of the following are recorded:

- maintenance;
- validation;
- faults;
- modifications;
- routine tests (see Appendix 3).

4.14 Welsh Health Circular 2000 (071) provides guidance on the length of time for which records should be retained. Reference should be made to the time period of legal rights of patients, and all relevant documentation should be retained for the practice to meet any request within these rights. The code requires that these records be maintained for not less than two years, although longer periods may be applicable subject to local policy-making at Health Board level.

4.15 The logbook should contain all information pertaining to the lifecycle of the equipment (from purchasing through to disposal).

4.16 If the sterilizer has an automatic printer, the print-out should be retained or copied to a permanent record. If the sterilizer does not have a printer, the user will have to manually record the following information in the process log:

- date;
- satisfactory completion of the cycle (absence of failure light);
- temperature/pressure achieved;
- signature of the operator.

**Daily testing and housekeeping tasks**

4.17 Some small sterilizers require a warm-up cycle before instruments can be processed. The manufacturer’s instruction manual should be consulted to find out whether this is the case.

4.18 The daily tests should be performed by the operator or user and will normally consist of:

The outcomes of daily tests should be recorded in the logbook.
• a steam penetration test – Helix or Bowie-Dick tests (vacuum sterilizers only);
• an automatic control test (all small sterilizers) in line with manufacturers’ instructions.

4.19 These outcomes should be recorded in the logbook together with the date and signature of the operator.

4.20 The tests may be carried out at the same time.

4.21 Sterilizers should not be used until the daily tests and housekeeping tasks have been carried out and the results found to be satisfactory.

4.22 Before carrying out the daily tests, the user should:
• clean the rubber door seal with a clean, damp, non-linting cloth;
• check the chamber and shelves for cleanliness and debris;
• fill the reservoir with water of a suitable quality (e.g. water for irrigation) or RO if no alternative is available (see paragraph 4.13).
• d power source on.

4.23 If the sterilizer fails to meet any of the test requirements, it should be withdrawn from service and advice should be sought from the manufacturer and/or maintenance contractor.

Packaging and related decontamination strategy

4.24 There are three combinations of steam-sterilization and instrument-wrapping strategies that can be used within dental practices:

a. With a type B vacuum steam sterilizer, instruments will be pre-wrapped using purpose-designed materials that are compatible with the sterilizer. With a type S sterilizer, instruments may be placed in purpose-designed cassettes. In both cases, instruments should be dry before they are placed in the purpose-designed packaging. Wrapping should take place with a dry product shortly after washing and disinfection. Once the wrapped instruments have been sterilized satisfactorily, the product may be stored for up to 2 calendar months (see paragraph 1.24). Note: instruments need to be dry before they are packaged.

b. With a displacement steam sterilizer (type N), the instruments will not be wrapped prior to sterilization. Immediately after removal from the sterilizer, instruments may be wrapped using suitable sealed view-packs. Instruments should be dry before being packed. In addition, the entire tray may be placed within a sealed pack for storage purposes. In both of these instances, storage for up to 1 calendar month is recommended.

c. Products from a type N sterilizer may also be transferred for use within the current session. In this instance, while covering the instruments is essential to protect against dust and aerosols, wrapping is not required. However, the instruments are not regarded as “stored” and should therefore be used or streamed for a further decontamination process within one session. Instruments should be dry before being transferred for clinical use.

Note

BS EN ISO 11607-1:2006 Annex A provides a useful summary of “sterile barrier systems”. In practice, these are sealable trays or wrappings, which may be of value in dental practices. In summary, the systems referred to are:

a. Flexible peel pouch (sealed view pack). This is typically supplied sealed on three sides with the remaining side open for the insertion of dental instruments. This packaging, subject to manufacturers’ advice, may be used to post-wrap instruments after steam sterilization in order to protect against recontamination.

b. Pre-formed rigid tray with die-cut lid. The lid may be permeable or impermeable. These trays are potentially suitable for use with displacement or vacuum sterilizers. Subject to manufacturers’ instructions, the trays may be used to contain dental instruments during the sterilization process and in subsequent storage.

c. Sterilization bag. This is constructed from porous medical paper and sealed before sterilization of the contents. The bag is essentially designed for use with vacuum sterilizers.

d. Header bag. This is manufactured as a sealed bag with a heat-sealed permeable closure, which can be peeled off. This type is suitable for storage of larger items.

e. In larger-scale operations, automated systems such as form/fill/seal (FFS) or four-side-sealing products may also be used.

The choice of system used will depend on the decontamination, sterilization and storage options chosen by the practice. The manufacturers of each of the products should be consulted on the standards applied and compatibility with the other products employed.
4.25 In all three cases, if the instruments are damp, they should be dried using disposable non-linting cloths and be appropriately handled. It is essential to ensure that the cloth is adequately dry and free from contamination. Accordingly, the cloth should be disposed of after each sterilizer load.

4.26 Regardless of the packaging used, where instruments are to be stored, the date by which they should be used or by which they are subject to a further decontamination cycle should be clearly indicated on the packaging.

### Storage of sterilized instruments/devices

4.27 Regardless of the approach described above, it is essential that stored instruments are protected against the possibility of recontamination by pathogens. A barrier(s) should therefore be maintained between the instruments and the general practice environment. This may be achieved by ensuring that instruments are stored in an environment where they are protected against excessive heat and where conditions remain dry.

4.28 With a view to minimising recolonisation (infection risk), the storage of wrapped instruments requires thorough control. This implies the rigorous maintenance of records, clear identification of instrument packs in terms of their content, and controls (storage times) on when instruments are used. For the majority of commonly-used instruments, a first-in first-out principle will be helpful.

Where packs are non-transparent, it may be useful to use a simple coded label to indicate the contents.

4.29 As a general rule:

- The storage of reprocessed surgical instruments should ensure restraint of recolonisation. This will often mean protection against aerosols and sundry contact with other equipment. The area in which the packaging of sterilized instruments (that is, those reprocessed in a type N sterilizer) takes place should be an open bench area. It should be kept free of clutter and wiped clean by the use of detergent and and/or antimicrobial wipes at sessional intervals.

- The storage area should be dedicated for the purpose. It is recognised that some practice arrangements will involve storage of instruments within rooms that are also used for clinical work. In meeting the essential quality requirements, this will require that the instruments be as far from the dental chair as reasonably practicable. Best practice requires that instruments not scheduled for use with the current patients be stored in a separate environment, ideally in the clean area of the separate decontamination room. Where instruments need to be stored within the clinical area, the use of a purpose-designed storage cabinet that can be easily cleaned will be useful.

- The storage area should be appropriately designed to prevent damage to instruments and to allow for the strict rotation of stocks.

- Cupboards should be capable of being easily cleaned and used in conjunction with sealed view-packs or covered/scaled trays.

- Products should be stored above floor level away from direct sunlight and water in a secure, dry and cool environment.

- Although air movement is often difficult to control in non-purpose-designed premises, whenever possible, airflow should be from the clean to dirty areas.

4.30 Before being used, the instruments should be checked to ensure that:

- if packed, including the use of view-packs, the packaging is intact;
- the sterilization indicator confirms the pack has been subjected to an appropriate sterilization process (if a type B sterilizer is used);
- if a covered container is used, the instruments have remained covered;
- visible contamination is absent (this is to comply with EN Standards).

4.31 As part of essential quality requirements, instruments that have remained unused for more than 1 calendar month and are not in a validated sterile pack (processed by a vacuum sterilizer) should be subjected to a further cycle of decontamination before being used. Where vacuum sterilizer packs are in use, the limitation on storage may be extended to 2 calendar months.

**Note**

The storage criteria outlined in paragraph 4.31 (and throughout this guidance) will be the subject of further research which will be designed to provide evidence that either substantiates, or will ultimately lead to a revision of, the specified storage times. The main aims of stipulating such storage times in this document are to ensure stock rotation and improve on current practice.
5 Setting up a decontamination area

5.1 There is a clear need to maximise the separation of decontamination work from clinical activity within the constraints of space and room availability. Where instruments are reprocessed in the same room as the patient treatment area, the reprocessing area should be as far from the dental chair as practicality allows. As dental practices progress towards higher standards, removing the decontamination process from the treatment room should be a priority. For example layouts, see Figures 1–3.

5.2 If decontamination has to be carried out in a patient treatment room, to minimise the risks both to the patient and of cross-contamination of instruments, appropriate controls should be in place. Uncontrolled procedures that generate the risk of exposure to aerosol dispersion or splashes (such as manual washing, the use of an ultrasonic cleaner without a sealed chamber (or lid) or the opening of decontamination equipment) should NOT take place while the patient is present.

5.3 Regardless of the choice of location used for the reprocessing facilities, a dirty-to-clean workflow should be maintained so that used instruments are at a lower risk of coming into contact with decontaminated instruments. This requires a well-developed routine for surface cleaning/decontamination within the facilities:

![Diagram](image_url)

**Figure 1: Example layout for essential quality requirements**

**Notes**
1. The use of an ultrasonic cleaner is optional. Where such a cleaner is not provided, handling difficulties will be reduced by siting the washing sink near to the rinsing sink or by combining both sinks through the installation of a double-bowl sink assembly.

2. Practices may increase the number of sterilizers if capacity and service continuity dictates.
the decontamination area should be wiped down carefully after each decontamination cycle is completed;

for clinical areas, a similar wipe-clean is required after each patient procedure and before the next patient is admitted. Procedures for the wipe-down processes are described in Chapter 6.

Where a dedicated decontamination area has been developed, separated from the patient treatment area in another room or rooms, enhanced dirty–clean separation should be a priority in design and operation.

When setting up new premises or planning significant modification to existing premises, the separation of the decontamination area from the clinical area is recommended. The provision of two separate rooms is the preferred option as it provides for a higher degree of separation between dirty instruments awaiting decontamination and cleaned/sterilized instruments that are to be placed in trays, packs or containers for use:

- one room for dirty activity (cleaning and preliminary inspection of instruments); and
- one room for clean activity (inspection, sterilization and wrapping instruments).

The clear intention is to reduce the risk and extent of recontamination as well as providing for a very clear operation distinction between clean and dirty.

Irrespective of the specific layout, a tidy working environment makes carrying out decontamination easier. Therefore, the working environment should be decluttered. The decontamination process should be carried out by ensuring that a dirty-to-clean workflow is maintained (as outlined in paragraph 5.7). This is a one-way process that can be achieved by physical segregation or temporal separation (see paragraph 5.2).
Physical segregation

5.7 Physical segregation within essential quality requirements means using different areas for different activities. A decontamination area should be set up which preferably comprises a single run of sealed, easily cleaned worktops. The following key design points should be observed:

- The dirty zone will be used to receive contaminated instruments. An area of benching should be clearly designated for this purpose and used for no other activity.
- The washer-disinfector (where available) and/or washing and rinsing sinks or separate bowls within a single sink unit should be installed adjacent to the receiving area. Where necessary,
usually owing to space constraints, it is acceptable to use a single sink unit (incorporating two bowls with common supply and taps) for the functions described here.

- The ultrasonic cleaner (where used) should be separated from the receiving area and adjacent to the rinsing sink/bowl.
- Where a washer-disinfector is used, this may be located adjacent to an ultrasonic cleaner and/or a rinsing sink/bowl but well away from the receiving area.
- After washing and disinfection (where applicable), the instruments and devices require inspection. A dedicated clean area of benching with good task lighting should be provided.
- The sterilizer should be situated well away from the other activities/facilities in order to promote staff safety and good decontamination practice.
- After sterilization, the sterilizer will need to be unloaded into another clean, well-lit area. Ensure that this area is kept clean – particularly just before the sterilizer is emptied.
- Where possible, air movement should be from clean to dirty areas (see paragraphs 6.41–6.42).

- A wash-hand basin should be provided for use by staff at the completion of each stage in the decontamination process. Where this work is conducted adjacent to the treatment area, it is acceptable for a single wash-hand basin to be used for this and clinical hand-washing. However, this basin should be distinctly separate from the sinks used in decontamination.
- Where a double-ended washer-disinfector is used, the input door in the dirty area and that used to empty the clean instruments should be separated by a barrier. Alternatively, the washer-disinfector should be built directly into the separating wall between the dirty and clean areas.

5.8 This guidance recognises that, because of physical limitations on space, it may take longer for some practices to meet the best practice requirements. In areas where building alterations to existing premises are restricted and/or purpose-built premises may be difficult or impossible to acquire, best practice may not be achievable.
Hand hygiene

6.1 The term hand hygiene covers not only hand-washing, but also alternative and additional measures such as hand disinfection using antibacterial-based hand-rubs/gels.

6.2 Hand hygiene is crucial in preventing the spread of infection and the recontamination of surgical instruments and devices. Clean hands are an essential counterpart to the use of gloves. Neither measure is a substitute for the other.

6.3 As part of essential quality requirements, training in hand hygiene should be part of staff induction and be provided to all relevant staff within dental practices periodically throughout the year. Advice is available from the National Patient Safety Agency’s (NPSA) website (www.npsa.nhs.uk/cleanyourhands).

6.4 There are three different levels of hand hygiene (see Appendix 2). The level required depends on the potential for contamination of the hands and the risk factors related to the process to be undertaken. For the decontamination of devices, as described here, good levels of social hand hygiene will be sufficient. Accordingly, the aim is to render the hands physically clean and to remove transient microorganisms encountered in the performance of normal duties.

6.5 Hand hygiene should be practised at the following key stages in the decontamination process so as to minimise the risk of contamination:

- before and after each treatment session;
- before donning and after the removal of PPE;
- following the washing of dental instruments;
- before contact with instruments that have been steam-sterilized (whether or not these instruments are wrapped);
- after cleaning or maintaining decontamination devices used on dental instruments;
- at the completion of decontamination work.

6.6 Mild soap should be used when washing hands. Bar soap should not be used. Apply the liquid soap to wet hands to reduce the risk of irritation, and perform hand-washing under running water. Ordinarily, the hand-wash rubbing action should be maintained for about 15 seconds. After the exercise, the hands should be visibly clean. Where this is not the case, the hand hygiene procedure should be repeated.

Drying of hands

6.7 Effective drying of hands after washing is important because wet surfaces transfer microorganisms more easily than when they are dry, and inadequately dried hands are prone to skin damage. To prevent recontamination of washed hands, disposable paper towels should be used.

Skin care

6.8 Hand cream, preferably water-based, should be used to avoid chapped or cracking skin. Communal jars of hand cream are not desirable as the contents may become contaminated and subsequently become an infection risk. Ideally, wall-mounted hand-cream dispensers with disposable cartridges should be used. Any staff that develop eczema, dermatitis or any other skin condition should seek advice from their occupational health department or general practitioner (GP) as soon as possible.

6.9 Fingernails should be kept clean, short and smooth. When viewed from the palm side, no nail should be visible beyond the fingertip. Staff undertaking dental procedures should not wear nail varnish and false fingernails.

6.10 Rings, bracelets and wristwatches should not be worn by staff undertaking clinical procedures. Staff should remove rings, bracelets and wristwatches prior to carrying out hand hygiene. A wedding ring is permitted but the skin beneath it should be washed and dried thoroughly, and it is preferable to remove the ring prior to carrying out dental procedures.

Facilities and procedures for hand-washing

6.11 In accordance with the advice above, a separate wash-hand basin should be provided. Practices are
encouraged to replace existing wash basins that do not comply with the following:

- The basin should not have a plug or an overflow and be fitted with a remote running trap (that is, the U-bend is not directly under the plughole).
- It should have a sensor-operated or lever-operated mixer tap.
- Taps should not discharge directly into the drain aperture as this might generate aerosols.

6.12 Wall-mounted liquid hand-wash dispensers with disposable cartridges should be used. It should be ensured that the nozzle is kept clean. Refillable hand-wash containers should not be used as bacteria can multiply within many of these products and are therefore a potential source of contamination.

6.13 Hand hygiene is an essential part of preventing infection in the practice. A cleanable poster depicting a six- or eight-step method should be displayed above every clinical wash-hand basin in the practice (see Section 3).

6.14 The local infection control policy should specify when personal protective equipment (PPE) is to be worn and changed. PPE training should be incorporated into staff induction programmes.

6.15 Appropriate PPE should be worn during decontamination procedures. PPE includes disposable clinical gloves, household gloves, plastic disposable aprons, face masks, eye protection and adequate footwear. PPE should be stored in accordance with manufacturers’ instructions.

6.16 When used appropriately, and in conjunction with other infection control measures, PPE forms an effective barrier against transmission of infection.

6.17 Gloves are needed:

- to protect hands from becoming contaminated with organic matter and microorganisms;
- to protect hands from certain chemicals that will adversely affect the condition of the skin. Particular care should be taken when handling caustic chemical agents, particularly those used in disinfection and for washer-disinfectors;
- to minimise the risks of cross-infection by preventing the transfer of organisms from staff to patients and vice-versa.

6.18 Used gloves should be replaced before performing activities that require strict aseptic precautions or when touching equipment that is difficult to clean.

6.19 It is important that gloves fit properly if they are to produce the level of protection against the expected contaminants. The use of latex gloves is subject to a Health & Safety Executive recommendation, which calls for local risk assessment. This is partly attributable to reports of long-term allergy development in some users. The use of vinyl or nitrile gloves may be a satisfactory substitute and should be made available to staff within the practice.

6.20 Powdered gloves should not be used. Individuals who are sensitised to natural rubber latex proteins and/or other chemicals in gloves should take advice from their GP or occupational health department for an alternative to latex gloves.

6.21 All disposable clinical gloves used in the practice should be CE-marked and should be:

- low in extractable proteins (<50 µg/g);
- low in residual chemicals;
- powder-free.

6.22 Gloves other than domestic household types are single-use only. They should be discarded as clinical waste.

6.23 Jewellery (for example, watches, dress rings, bracelets etc.) may damage the integrity of the glove and may pose an infection risk.

6.24 The following additional guidance is provided:

- Long or false nails may also damage the glove, so keep nails short and clean.
- Glove integrity can be damaged if in contact with substances such as isopropanol or ethanol; therefore, alcohol rubs/gels should not be used to decontaminate gloves.
- Gloves (except household gloves) should not be washed as liquids may be absorbed into the glove and compromise the efficacy of the barrier.
- Storage of gloves should follow manufacturers’ recommendations.
- Domestic household gloves, if used, should be washed with detergent and hot water and left to dry after each use to remove visible soil. Replace these gloves weekly or more frequently if worn or torn or if there is any difficulty in removing soil.
Disposable plastic aprons

6.25 These should be worn during all decontamination processes.

6.26 Aprons should be used as a single-use item and disposed of as clinical waste (see Appendix 1). Plastic aprons should be changed at the completion of each procedure.

Face and eye protection for decontamination procedures

6.27 During cleaning procedures, there is a risk of contaminated fluids splashing onto the face and into the eyes. Therefore, the dental team should ensure protection of their mucosa from splashes and other contaminated fragments that may escape during these procedures.

6.28 Face masks are single-use items and should be disposed of as clinical waste.

6.29 Spectacles do not provide sufficient eye protection unless specifically designed for the purpose. It is advisable to wear a visor or face shield over spectacles; this gives added protection for prescription glasses.

6.30 Eye protection may be reusable but is often difficult to clean. It may be reused if cleaned according to manufacturers' instructions. This should take place when it becomes visibly dirty and/or at the end of each session. Disposable visors are available and may be used.

6.31 Footwear should be fully enclosed, in good order and comply with health and safety guidance. Particular care should be taken concerning the risk of chemical or hot water spillage onto feet.

Clothing, uniforms and laundry

6.32 A wide variety of clothing is worn in dental surgeries and in many practices is used to reinforce the corporate image. Overall guidance is provided in DH’s (2010) ‘Uniforms and workwear: Guidance on uniform and workwear policies for NHS employers’.

6.33 Clothing worn to undertake decontamination should not be worn outside the practice; adequate changing and storage facilities that are accessible from the decontamination area should be provided. A similar approach is recommended for clinical clothing.

6.34 Short sleeves allow the forearms to be washed as part of the hand hygiene routine. Dental staff need to be aware of the hazards that may be encountered in the decontamination process and may wish to wear long-cuffed gloves or disposal long-sleeved gowns to protect their arms.

6.35 Clothing/uniforms can become contaminated with microorganisms during procedures. It is important that freshly laundered uniforms are worn everyday. Sufficient uniforms for the recommended laundry practice should be provided, as staff who have too few uniforms may be tempted to reduce the frequency of laundering.

6.36 Machine-washing clothing for ten minutes with a suitable detergent at a minimum temperature of 60°C will reduce any potential microbial contamination. For guidance relating to contact with chemical substances, see the Health & Safety Executive’s guidance on COSHH – www.hse.gov.uk/coshh.

Removal of PPE

6.37 Depending on the type of PPE worn, items of PPE should be removed in the following order:

a. Gloves should be removed first (so that the gloves end up inside-out). Make sure hands do not get contaminated when removing gloves. Wash hands thoroughly, if visibly contaminated, before removing the rest of the PPE.

b. Plastic disposable apron. The plastic apron is removed by breaking the neck straps and carefully gathering the apron together by touching the inside of the apron only. Avoid touching the outer contaminated area.

c. Face mask. Remove the mask by breaking the straps or lifting over the ears and dispose of into a clinical waste receptacle (see Appendix 1). Avoid touching the outer surface of the mask and do not crush the mask before disposal. Masks should never be left to hang around the neck and should be disposed of immediately after use.

d. Face and eye protection. Take care not to touch the outer surfaces. Single-use eye protection should be disposed of into the clinical waste receptacle.

e. Wash hands thoroughly again.

Surface and equipment decontamination

General

6.38 Surfaces and equipment used in the decontamination of dental instruments should be cleaned carefully before and after each decontamination process cycle. The procedure used should comply with written local policies.

6.39 All surfaces should be such as to aid successful cleaning and hygiene. Wherever possible, surfaces (including walls) should be continuous and free
from damage and abrasion. They should be free from dust and visible dirt.

Environmental conditions

6.40 The environmental conditions in decontamination facilities should be controlled to minimise the likelihood of recontamination of sterilized instruments. Key considerations include the cleanability of surfaces, fittings and equipment.

6.41 Ventilation and air quality are important considerations. In non-purpose-built facilities, the control of airflow is a challenging issue. Responsible persons (see Section 3) will need to consider how good standards can be achieved without resorting to unreasonably complex or expensive ventilation systems. Through-wall fan-based ventilation and extraction units will often be useful in this context. In particular, cassette-based systems can be simple to install and produce a balanced airflow at low cost. The use of free-standing or ceiling-mounted fan units, however, is not recommended.

6.42 Mechanical ventilation systems may be advantageous, particularly where best practice requirements are being pursued. However, these systems can be expensive in terms of both capital and running costs. Accordingly, designs that make best use of natural ventilation in clinical areas may be advantageous, while the use of simple fan-based systems in decontamination areas will be helpful. It should be remembered that protecting against recontamination of instruments is always a key aim.

Surfaces and equipment – key design issues

6.46 All surfaces and equipment should be impervious and easily cleanable. Work surfaces and floor coverings should be continuous, non-slip and where possible jointless. Health Facilities Note 30 – ‘Infection control in the built environment’ states that the use of carpets is not advised within any clinical or associated (decontamination) area. Attractive vinyl flooring materials are available which can provide aesthetic appeal.

6.47 There should be coving between the floor and the wall to prevent accumulation of dust and dirt in corners and crevices.

6.48 Any joints should be welded or sealed where they are unavoidable. Sealing prevents damage due to water ingress under the flooring.

6.49 It should be ensured that surfaces:
- can be easily accessed;
- will dry quickly.

6.50 Manufacturers’ advice should be sought in terms of the compatibility of detergents and disinfectants with the surface materials used.

Decontamination equipment

6.51 Specialist items of equipment (for example, ultrasonic baths, washer-disinfectors, sterilizers and RO machines) may require cleaning and decontamination processes that are purpose-designed. Although information will be provided by manufacturers, it is recommended that, when writing local protocols, assistance is sought from a qualified decontamination engineer or other trained person. This may be a Competent Person (Decontamination) employed by the equipment provider or local sterile services department (SSD). In the latter case, it should be possible to contact the local Competent Person (Decontamination) via the Health Board.

6.52 Planned cleaning programmes will have links to preventive maintenance and the validation process. Local policies should reflect these requirements and clearly state the intervals at which actions are to be taken and a procedure for the keeping of records.

6.53 It is often during cleaning work that minor defects, wear or damage to equipment will be detected. Local policies should ensure that such defects are reported to the responsible person.

Detailed guidance can be found in HTM 03-01 (Specialised ventilation for healthcare premises)

6.43 The ventilation system in the decontamination area or room(s) should be designed to supply reasonable quantities of fresh air to the positions where persons work and to remove excess heat from equipment and processes.

6.44 Where used, mechanical extract units should be ceiling- or wall-mounted. Care should be taken to ensure that airflow is from clean to dirty.

6.45 Where full mechanical ventilation solutions are used, the extract system should be located and sized to draw about one-third of the air across the decontamination benches in the clean-to-dirty direction. Mechanical ventilation equipment should include coarse air filtration on the input side. This will require periodic maintenance. Practices are advised to consult a heating and ventilation engineer if choosing to install a mechanical ventilation system.

For floor and general surface cleaning, the NPSA has published a guidance package backed by a colour-coding system for use with materials and equipment.
This system should also be useful for dental practices (visit http://www.nrls.npsa.nhs.uk/resources/?entryid45=59810).

The colour codes used in primary care are:
- red – for wash-rooms;
- blue – for offices;
- green – for kitchens;
- yellow – for clinical and decontamination areas.

**Cleaning protocols and techniques**

6.54 The dental practice should have a local protocol clearly outlining surface- and room-cleaning schedules. The cleaning process will be most effective if the more contaminated areas are cleaned first. Materials and equipment used to clean clinical areas and other higher-risk areas should be stored separately from those used for general and non-clinical areas. Simple records should be maintained.

6.55 Cleaning staff should be briefed on the special measures to be observed in cleaning of patient care areas or room(s) used for decontamination. In some instances, full training of personnel will be needed.

6.56 If instruments become contaminated (through, for example, being dropped or being placed in a dirty area), they should be sent for further reprocessing.

6.57 Evidence suggests that the use of commercial bactericidal cleaning agents and wipes is helpful in maintaining cleanliness and may also reduce viral contamination of surfaces. Care should be taken in the use of alcohol wipes, which – though effective against viruses on clean surfaces – may fix protein and biofilm. However, the careful use of water with suitable detergents, including those CE-marked for clinical use, is satisfactory provided the surface is dried after such cleaning.

**Note**

Alcohol has been shown to bind blood and protein to stainless steel. The use of alcohol with dental instruments should therefore be avoided.

6.58 The Department of Health (England) has sponsored research on the use of both microfibre cloth and steam-cleaning technology in clinical and support-service areas. This work suggests that, provided deep cleaning is performed as an initial exercise, the subsequent use of microfibre-based techniques, essentially involving dry or wet wiping with microfibre cloth, can be helpful in achieving satisfactory removal of infectious agents from surfaces. Essentially the special fibre is capable of entangling and thus removing a wide range of pathogenic particles from surfaces to which they are otherwise adherent. However, as infective material is efficiently transferred to the microfibre, its reprocessing or disposal must take account of the infection risk. Reprocessing takes the form of washing through a conventional laundry process. This should take place at the end of each session or when obviously contaminated. The life of the cloth is likely to allow for repeated use on many occasions. The materials are available at relatively modest cost from infection control companies.

**Detailed information is provided in ‘An integrated approach to hospital cleaning: microfibre cloth and steam cleaning technology’** (available from Space for Health at www.spaceforhealth.nhs.uk)

6.59 Local provision of steam cleaning from practice resources is unlikely to be economic. Instead the use of a contractor may be advantageous.

6.60 Cleaning equipment should be stored outside patient care areas.

**Decontamination of treatment areas**

6.61 The patient treatment area should be cleaned after every session using disposable cloths or clean microfibre materials – even if the area appears uncontaminated.

6.62 Areas and items of equipment local to the dental chair that need to be cleaned between each patient include:
- local work surfaces;
- dental chairs;
- curing lamps;
- inspection lights and handles;
- hand controls including replacement of covers;
- trolleys/delivery units;
- spittoons;
- aspirators;
- X-ray units.

**Note**

Dental chairs should be free from visible damage (for example, rips and tears).
Areas and items of equipment that need to be cleaned after each session include:

- taps;
- drainage points;
- splashbacks;
- sinks.

In addition, cupboard doors, other exposed surfaces (such as dental inspection light fittings) and floor surfaces, including those distant from the dental chair, should be cleaned daily.

Note

Spittoons and aspirating units need to be washed through at the end of a session according to manufacturers’ instructions.

Items of furniture that need to be cleaned at weekly intervals include:

- window blinds;
- accessible ventilation fittings;
- other accessible surfaces such as shelving;
- radiators and shelves in cupboards.

Purpose-made disposable single-use covers are available for many of the devices mentioned above, including inspection light handles and headrests. The use of these is encouraged but should not be taken as a substitute for regular cleaning. Covers should be removed and surfaces should be cleaned after each patient contact.

Computer equipment in clinical areas can readily become contaminated. Solutions are available to minimize risks e.g.

- purpose designed covers over computer keyboards.
- “easy-clean” waterproof keyboards.

Where covers for conventional keyboards are provided, care should be taken to ensure that covers are changed or that washing is performed at frequent intervals. This should be regarded as a useful priority.

Cleaning centres on simple techniques using disposable cloths wetted with clean water and a detergent.

Damp dusting is preferable to dry dusting, which should be avoided wherever possible as this may result in dust suspension.

Care should be taken to keep water well away from electrical devices, even though many of those provided in dentistry will have water-resistant housings.

After some clinical procedures, it is necessary to start cleaning as soon as care of the individual patient is complete. In these cases, staff should not wait until the end of the session to start cleaning the area.

Portable aspirators with reservoir bottles are not recommended. They are not fitted with filters and pose a considerable hazard when disposing of the contents.

Intra-oral radiology film and devices used in digital radiology imaging are potential sources of cross-infection. Accordingly, where reusable devices are used, they should be decontaminated in accordance with the manufacturer’s instructions. For intra-oral holders, this will require the use of steam sterilization following washing and disinfection.

Soft toys are often difficult to clean and should accordingly not be provided within practices.

For blood spillages, care should be taken to observe a protocol that ensures protection against infection. The use of 1% sodium hypochlorite is recommended with a yield of at least 1000 ppm free chlorine (unless Health Board policy suggests otherwise). Contact times should be reasonably prolonged (not less than five minutes). A higher free chlorine yield of up to 10,000 ppm is useful, particularly for splash contamination. The process should be initiated quickly and care should be taken to avoid corrosive damage to metal fittings etc. The use of alcohol within the same decontamination process is not advised.

Dental unit water lines (DUWLs)

In view of the expertise required in this specialised field, practices (through the Registered Manager) should engage with an external specialist to assist in meeting the recommendations given in Section 3 of this guidance. This may be a locally-based engineering consultant with specialist knowledge of Legionella and other water-borne organisms.

It is likely that Health Boards and representatives from professional organisations (such as the Legionella Control Association) will be able to recommend a suitable contractor.

Best practice guidelines on the control of Legionella are provided in the Health & Safety Commission’s ‘Legionnaires’ disease – the control of legionella bacteria in water systems. Approved
Code of Practice & Guidance’ (also known as L8) and Health Technical Memorandum 04-01 – ‘The control of Legionella, hygiene, “safe” hot water, cold water and drinking water systems’.

**Note**

The Health & Safety Commission’s Approved Code of Practice L8 gives practical advice on how to comply with UK health and safety law with respect to the control of Legionella bacteria. This Code is important in that it has a special legal status. If a healthcare organisation is prosecuted for a breach of health and safety law, and it is held that it did not follow the relevant provisions of the Code, that organisation would need to demonstrate that it had complied with the law in some other way, or a court would find it at fault.

6.76 The use of water in dentistry must comply with a series of regulations which are designed to ensure the safety of patients, staff and the public. The application of these regulations and codes is covered in detail in Chapter 19 of this guidance.

6.77 The Registered Manager (see paragraph 9.3) should ensure that arrangements are made such that the practice can continuously achieve compliance with the requirements of these regulations. Registration with the Legionella Control Association or other recognised body is recommended.

**Microbiological monitoring**

6.78 Apart from situations where there are indications from taste or odour, microbiological monitoring using dip slides for total viable counts (TVCs) is not considered essential. However, some companies and other institutions offer comprehensive water-purification services that include periodic microbiological sample monitoring. Such services, provided they are quality-controlled, may contribute usefully to risk reduction in this area.

6.79 Where taste or odour problems are encountered, advice may be sought from the local authority environmental health department. They can arrange for testing, if necessary, as part of their service level agreement with the Public Health Wales NHS Trust (PHW) or Health Protection Agency (HPA).

**Note**

This is a complex procedure and the use of in-house test kits is not recommended.

**DUWLs**

6.80 No currently available single method or device will completely eliminate biocontamination of DUWLs or exclude the risk of cross-infection. To reduce contamination risk, a combination of methods is applicable (see also Section 3).

6.81 With regard to Legionella and other water-borne pathogenic agents, the HCAI Code of Practice (2009) states:

“Premises should be regularly reviewed for potential sources of infection and a programme should be prepared to minimise any risks. Priority should be given to patient areas although the exact priority will depend on local circumstances”.

6.82 Guidance from L8 advises that at-risk systems, particularly those used with the patient, be drained down at least at the end of each working day. Where manufacturers provide protocols for daily cleaning, these should be applied.

6.83 Self-contained water bottles (bottled water system) should be removed, flushed with distilled or RO water and left open to the air for drying overnight. They should be stored inverted.

6.84 Where visual contamination is present, flushing with a suitable disinfectant followed by thorough washing is necessary. The manufacturer’s instructions will specify the disinfectant to be used and may also require the continuous presence of antimicrobial agents to prevent the build-up of biofilms.

**Note**

The self-contained water supplies used with dental care systems should be freshly distilled or RO water (see Section 3). Certain systems recycle water back to a storage facility. Where this is done, repurification will be necessary at each cycle.

If self-contained water bottles are not used, a Type A air gap should separate the DUWLs from the mains water supply. Such arrangements should be subject to consideration of local water quality, particularly where hard water is used.

6.85 DUWLs should be flushed for at least two minutes at the beginning and end of the day and after any significant period when they have not been used (for example, after lunch breaks). In addition, they should also be flushed for at least 20–30 seconds between patients. Whilst these actions have been shown to have only a small effect on biofilm build-up within the DUWL system, they do usefully reduce microbiological counts in the water delivery.
tube during the period when patients are likely to be exposed. Some water-purification systems are capable of supplying DUWLs and may be able to reduce microbiological risks.

Note
Care should be taken to minimise the occurrence of splashing and aerosol formation.

6.86 Disinfection of DUWLs should be carried out periodically. In all cases, the manufacturer’s instructions should be consulted. Sodium hypochlorite and isopropanol and a number of other agents have been shown to be effective in the removal of biofilm as well as the reduction of microbacterial contamination. However, these agents should only be used where recommended by manufacturers. If they are used, care should be taken to ensure that DUWLs are thoroughly flushed after disinfection and before being returned to clinical use.

Notes
(1) There is disagreement within the scientific literature concerning the effectiveness of water-based flushing of DUWLs, particularly in respect of biofilm control. For systems making use of potable water (that is, where the water supply is drawn from a mains water system), the nature of the building’s water-supply arrangements may be an important consideration. This is particularly so where storage tanks are used. Where delivered water quality is in doubt, dental practices should consider adopting continuous dosing systems if permitted by the DUWL manufacturer’s recommendations. If dosing is used, it is important to ensure that the dose rates delivered are within the recommended safe limits for the product used. Dental practices that use a potable water option – through air-gap supply or the use of bottles – should consult with their appointed Competent Person in respect of local water quality and suitability.

(2) For those using purified water, such as freshly distilled or RO, possibly with UV treatment, the rate of biofilm build-up is likely to be low, provided that water lines are regularly disinfected and maintained.

(3) Particular caution should be taken with regard to dental handpieces where dosing is applied, as a number of instances of damage have been reported.

6.87 Dental equipment requiring protection against backflow should have anti-retraction valves incorporated on all handpieces, ultrasonic scalers and/or water lines (see Section 3). Responsible persons should ensure these are fitted where required. They must be regularly monitored and maintained.

6.88 Examples of dental equipment requiring backflow protection are:
- dental spittoons;
- three-in-one syringes;
- wet-line suction apparatus; and
- self-filling automatic radiographic processors (where still used).

Adherence to the equipment manufacturer’s recommended cleaning procedures, including the use of the manufacturer’s recommended chemicals, is a requirement for medical devices such as those listed above.

6.89 Where in-line filters are used, these will require treatment using an appropriate cleansing solution at intervals recommended by the manufacturer – but always at the end of each session. This step should be performed after first flushing the DUWL.

6.90 If the DUWL has disposable filters, they should be replaced daily.

See Section 3 for further guidance on DUWLs.

6.91 For dental surgical procedures, surgical flaps or other access into body cavities involving irrigation, the use of sterile water or sterile isotonic saline provided from a separate single-use source is recommended.
7 Impressions, prostheses and orthodontic appliances

7.1 Decontamination of these devices is a multi-step process to be conducted in accord with the device or material manufacturer’s instructions. In general terms, the procedure will be as follows:

a. Immediately after removal from the mouth, any device should be rinsed under clean running water. This process should continue until the device is visibly clean.

b. All devices should receive disinfection according to the manufacturer’s instructions. This will involve the use of specific cleaning materials noted in the CE-marking instructions. After disinfection, the device should again be thoroughly washed. This process should occur before and after any device is placed in a patient’s mouth.

c. If the device is to be returned to a supplier/laboratory or in some other fashion sent out of the practice, a label to indicate that a decontamination process has been used should be affixed to the package.
Section 3: Engineering, technology and standards
8 Regulatory framework and compliance

BS/EN/ISO Standards

8.1 BS EN Standards for sterilization were first published in 1994. They included:
• BS EN 285 on larger steam sterilizers;
• BS EN ISO 17665 on the monitoring of steam sterilization; and
• BS EN 556 on the definition of sterilization.

8.2 Subsequent standards covered small sterilizers (BS EN 13060).

8.3 Reviews and rewrites of the above Standards coupled with the production of new Standards has led to a revision of the content of Health Technical Memoranda – including this document – in order to bring their content in line with that of the BS/EN/ISO Standard portfolio.

8.4 A list of these Standards is provided in the References. It is in the light of these changes that this Health Technical Memorandum is published. Reference to the content of a relevant Standard is made where necessary but the content of that Standard is not included in this document.

DH guidelines

8.5 Guidance produced by the Welsh Assembly Government for decontamination has evolved in recent years.

8.6 Advice on decontamination of medical devices was issued in HSC 2000/032 and in ‘Decontamination of reusable medical devices in primary, secondary and tertiary care sectors (NHS and Independent providers)’ 2007.

8.7 The Chief Dental Officer’s letter (April 2007) advised the single-use of all endodontic files and reamers, as well as any other instruments for which effective decontamination was difficult. This was reinforced by the release of ‘Potential vCJD transmission risks via dentistry. An interim review’ (December 2007).

8.8 Health Technical Memorandum 01-05 Welsh edition has drawn upon all guidance issued previously, including HSG (93)40 ‘Protecting health care workers and patients from hepatitis B’.

8.9 It is issued specifically to improve standards in decontamination for primary care dental practices, where decontamination is carried out locally within the practice.

8.10 For secondary care, the Welsh Assembly Government commissioned the decontamination project which successfully saw all hospital sterilization and decontamination units in Wales achieve accreditation to the standards required by the Medical Device Regulations. Accreditation status allows HSDUs to undertake decontamination for third parties, including primary care. This allows primary care in Wales to consider:
• In-house decontamination;
• Use of single-use devices;
• Outsource decontamination to an accredited HSDU;
• A combination of the above.

8.11 Health Technical Memorandum 01-05 sets out the requirements for the first of the above options.

Healthcare regulation and standards

The new Local Health Boards must ensure that the provision of health services meets Wales’ healthcare standards. Infection prevention and control, including decontamination, is a requirement that will apply to all NHS healthcare providers.

All private primary care dental services have been regulated in Wales since 1 January 2009. All providers of private dental services activities will continue to register with HIW in accordance with regulatory requirements.

For 2010, the registration requirements for infection control and prevention, including decontamination, are supported by the Private Dentistry (Wales) Regulations 2008. This Health Technical Memorandum will be referenced in revised national minimum standards and enforced through the above regulations. Adherence to the Health Technical Memorandum will, with regard to decontamination, contribute towards evidence of compliance with registration requirements.
9 Staff roles and responsibilities in decontamination

9.1 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.

9.2 Health Technical Memorandum 01-01 Part A provides general advice – for the acute sector – on these responsibilities along with the experience, qualifications and training required. However, that advice is based on a universal application to decontamination in complex systems which are probably inappropriate to primary care dental practices.

9.3 Each practice can, therefore, establish its own system concerning staff responsibilities but will be expected to demonstrate the same degree of understanding, competency and management as required by Health Technical Memorandum 01-01 Part A. The following may be used as a guide to these roles. The terminology of Part A is used for clarity but it is likely that local personnel may have differing titles.

It should be borne in mind that it is likely that one individual may carry out two, or possibly more, of the following roles.

Registered Manager (Executive Management): this will be the individual with ultimate responsibility for decontamination equipment ownership and the definition and appointment of the following staff. In a dental practice, this could be the NHS provider, practice owner or a person of similar authority.

Decontamination Lead: Healthcare Associated Infections – A Community Strategy for Wales makes it a requirement that an 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. The Decontamination Lead may be either directly employed by the practice or provided as a service by the Health Board.

Designated Person: this role acts as the interface between the practice and support services supplied externally, including service, maintenance and testing. This could be the Dental Practice Manager. The Decontamination Lead could also act as the Designated Person.

Authorising Engineer (Decontamination): this is an external role that provides guidance and advice on the compliance issues of decontamination, including the implementation of this Health Technical Memorandum and associated guidance documentation. A list of suitable persons is available from the voluntary register held by the Institute of Healthcare Engineering and Estate Management (IHEEM) (www.iheem.org.uk/Decontamination).

Authorised Person (Decontamination): The Authorised Person provides technical support to the Competent Person and liaises with the Authorising Engineer. The Authorised Person may be either directly employed by the practice, or provided as a service by the Health Board or by a third party.

Competent Person (Decontamination): The Competent Person is responsible for the servicing, testing and maintaining of the decontamination equipment within the practice. The Competent Person may be either directly employed by the practice, or provided as a service by the Health Board or by a third party.

Competent Person (Pressure Vessels): each practice will have a legal responsibility for the safety of its decontamination equipment, particularly the sterilizers 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.

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. This person may, among other duties, perform validation tests in accordance with the EN standards cited in this
document. The service engineer may give an opinion on the outcomes of validation testing as well as providing data to an Authorising Engineer (Decontamination) or Authorised Person (Decontamination) for validation approval.

User: This person has day-to-day responsibility for the management of the decontamination equipment and processes. A likely overlap may mean that this role is duplicated, but the responsibility must be demonstrated. An important function of the User is to ensure that anyone operating and testing decontamination equipment (that is, an Operator) is suitably trained and competent.

The User should seek advice from manufacturers or the service engineer on how to carry out the testing of equipment and daily tasks.

Operator: This is the person with authority to operate decontamination equipment. This person will also carry out daily and weekly periodic tests.

Manufacturer: the manufacturer, supplier or agent of any decontamination equipment.

Purchaser: the purchaser of any decontamination equipment – likely to be the practice.

9.4 In addition to these roles the practice may require specialist clinical advice and guidance and should possess the ability to source the following responsibilities, either within the practice or externally.

Control of Infection Officer: advice regarding infection prevention and control and the ability to audit and implement relevant advice.

Microbiologist (Decontamination): while most decontamination processes are a matter of parametric management and control (that is, ensuring that values of key measurements or indicators are within a specified range for decontamination), advice from a Microbiologist (Decontamination) may be required for certain procedures and practices. This advice should be sought where the practice is in doubt about its relevance. Access to a Microbiologist can be made via the local Health Board. Institutions that employ such professionals would include NHS Trusts and Health Boards, pathology departments and Public Health Wales laboratories.

9.5 The Registered Manager should ensure that all personnel fulfilling the roles defined above should receive appropriate training, that they can demonstrate competency in their duties and that individual training records for all staff are retained. Training should always be supported by defined learning outcomes and competencies and may include, where appropriate, the following:

- an understanding of the whole decontamination process;
- an understanding of their roles and those of others;
- an understanding of the need for infection control and all relevant infection control policies and procedures;
- an understanding of, and an ability to perform, periodic testing where appropriate.

9.6 It is likely that small practices will be unable to appoint all these responsible posts and a local decision regarding them will need to be made. Essentially, a practice should be able to demonstrate the following responsibilities:

- an owner understanding of legal liabilities and current best practice;
- it has obtained professional advice, where necessary, in equipment purchase, maintenance, testing and operation;
- it can evidence the performance of all relevant maintenance and testing duties;
- it can demonstrate compliance with the Pressure Systems Safety Regulations 2000.

9.7 Full identification of the individuals fulfilling these roles should be documented. It may be acceptable if staff of other titles fulfil the responsibilities as long as the post-holder’s authority and experience is sufficient for their full implementation.

9.8 It is likely in a dental facility that the roles above will be provided by a number of entities/organisations. All roles should thus be identified and all individuals aware of each other. The systematic approach to these roles should ensure that they function correctly and that they are not individual-based but can withstand changes of personnel without affecting the systematic approach. Advice on relevant training programmes is available from the Authorising Engineer (Decontamination). In addition, the local Health Board may also be able to provide advice.
10 Procurement of decontamination equipment and instruments

Note
In addition to the guidance given in this chapter, readers may also find Scottish Dental’s website useful. On its decontamination page, it has included a list of decontamination equipment that has been tested and approved for use in dental practices, and which is used in the national contract in Scotland (www.scottishdental.org/?o=2403).

Determining the load to be processed

10.1 In order to ensure full compatibility of the equipment with the decontamination process, the need for packaging and storage should be considered, as this will affect the type of air-removal process and therefore the type of sterilizer chosen (vacuum or displacement).

10.2 For the cleaning process, instrument design will also affect the choice of cleaning process, particularly regarding loading carriages for thermal washer-disinfectors.

10.3 If cannulated devices are to be cleaned, ultrasonic irrigators (that is, ultrasonic cleaners with the additional ability to clean and flush internal channels of cannulated devices) or loading carriages with lumen connections may be required.

10.4 In addition to the types of load items:
- their quantities should also be assessed. This will enable the number of equipment items to be determined;
- realistic cycle times should be assumed when capacity planning is calculated;
- it should be remembered that all decontamination equipment will require maintenance, servicing and testing – reasonable time during the normal working day should be set aside for these procedures;
- all capacity planning should be documented.

Decontamination equipment: washer-disinfectors and sterilizers

10.5 Decontamination equipment should be procured against the relevant Health Technical Specification (formerly, Model Engineering Specification). These are currently available for washer-disinfectors and sterilizers. Advice on completing the specifications for sterilizers and washer-disinfectors and on the production of a specification for ultrasonic cleaners/irrigators is available from the Authorising Engineer (Decontamination).

Note
All Model Engineering Specifications are being progressively revised and retitled as Health Technical Specifications (HTS).

10.6 New decontamination equipment should display a CE mark (see below) to demonstrate compliance with the Medical Devices Regulations 2002.
10.7 When selecting new equipment, the size, model and type should be considered against workload and throughput requirements, together with the availability of space and the service infrastructure available.

10.8 Further consideration should also be given to the following:

- What are the delivery and acceptance requirements?
- Will the equipment selected be fit for purpose and is it compatible with other equipment in use?
- What are the manufacturer’s recommendations for staff/operator training and cleaning, and will they be achievable in practice?
- Does it have an automated cleaning process?
- What cleaning agents are recommended and will they comply with COSHH and health and safety requirements?
- What are the manufacturer’s recommendations for staff/operator training and cleaning, and will they comply with COSHH and health and safety requirements?
- What commissioning and validation is required for the equipment? What are the ongoing costs?

10.9 The following will also need consideration:

- testing: there will be a need to identify who is to perform the testing, and where and when testing is to be performed;
- service response: there is a need to be clear about service-response times in the event of breakdown;
- process data capture (that is, chart recorder/data recorder/printer): this information is needed to clarify the audit process on product release – manual recording of displayed parameters at the end of a cycle should be recorded to an appropriate log.

Note

In general terms, as primary-care dentists may not have in-house engineering staff, robust contractual arrangements to ensure breakdown cover, routine maintenance and continuity of validation will be needed.

10.10 The equipment should come with an easily-readable operating, maintenance and technical manual that includes:

- optimum working temperatures;
- cleaning instructions (stipulating suitable detergents) for the user;
- safety instructions, including lifting and handling, PPE requirements etc;
- an explanation of warning indications (cycle failure etc. and fault-finding (diagnostic) procedures;
- all maintenance requirements (easily copied so that it can be displayed and undertaken by an operator) including frequencies etc;
- monthly maintenance requirements;
- yearly testing and validation requirements/procedures;
- consumable parts list and spares components list incorporating identification numbers.

10.11 Information on periodic testing protocols can be found in Chapters 12–14. These chapters also provide advice on the required actions if tests indicate unacceptable results.

Decontamination equipment: ultrasonic cleaners

10.12 The following are more specific considerations when procuring ultrasonic cleaners.

10.13 Ultrasonic cleaners can be freestanding or integral to the washer-disinfector.

10.14 They should comply with the electrical safety specifications given in BS EN 61010-1.

10.15 Consideration should be given to the:

- voltage (V) supply of the equipment (single 230 V or three-phase 400 V) to help establish whether the electrical infrastructure needs modification;
- power (kW/h) consumption of the equipment (this will help to establish running costs).

10.16 Ultrasonic cleaners may be designed to operate at a single frequency, across a frequency range, and/or with a controlling system to adjust the frequency in response to the loading conditions.

10.17 An active ultrasonic sensor indicator should be provided to show the power consumption (in Watts) or electrical demand (in Amperes) of the ultrasonic transducers.

10.18 Siting of the ultrasonic cleaner within the workplace should be in a defined area, following a strict dirty-to-clean workflow.

10.19 It should be easy to wipe down and disinfect the ultrasonic cleaner.
10.20 An ultrasonic cleaner needs to be maintained by a Competent Person (Decontamination) or a suitably qualified person.

Specifications

10.21 When procurement of ultrasonic cleaners is pursued, the following specification points should be considered:

- a reservoir (or tank) large enough to accommodate the required throughput;
- a reservoir that should be of a polished stainless-steel construction with internal rounded edges/corners to aid in the cleaning process;
- the maximum and minimum fluid levels clearly visible to the user marked on the reservoir;
- a reservoir drainage facility that does not affect performance and does not leave pools of fluid in the reservoir, which allows the tank to be emptied without the need for operatives to put their hands in the fluid;
- an integral purpose-built holding basket, which enables all equipment to be held within the ultrasonic bath in the optimum position so that micro-dental instruments or instruments with fine points are not blunted by the impacts resulting from fine mechanical shaking;
- a hinged auto-locking lid that prevents interaction with the load once the ultrasonic equipment is in use, also reducing the risk of aerosols and noise – if not interlocked, the equipment should be clearly labelled, warning users not to put their hands in the device when it is activated;
- a means to control the detergent’s concentration;
- an automatic printer and data-logger (this can be integrated) that records:
  - time and date,
  - elapsed cycle time,
  - maximum/minimum temperatures,
  - ultrasonic activity,
  - cycle failure indication,
  - lamp warning indicators;
- lower-level fluid sensor/auto cut-off;
- thermostatic control;
- over-temperature sensor, with automatic cut-off and warning indication;
- a cleaning cycle ideally identified by a unique cycle number.

10.22 Ultrasonic equipment should come with an easily-readable operating, maintenance and technical manual that includes:

- installation requirements;
- suitable chemicals, for use;
- degas requirements (prior to use);
- optimum working temperatures;
- cleaning instructions (stipulating suitable detergent) for the user;
- safety instructions;
- explanation of warning indication (cycle failure etc.);
- all maintenance requirements;
- monthly maintenance requirements or as per manufacturers’ recommendations;
- yearly testing and validation requirements/procedures;
- consumable parts list;
- spares components list incorporating identification numbers;
- make, model and serial number;
- lifting and handling requirements;
- staff training;
- appropriate PPE.

Selecting instruments

10.23 When selecting new instruments, the following should be considered:

- For what purposes will the instruments be used – will the instruments selected be fit for this purpose?
- Is it compatible with other instruments in use?
- Is there an appropriate single-use device that would meet the requirements?
If reusable, how easy will it be maintained?
Does the instrument need dismantling before cleaning?
Are there instructions from the manufacturer describing how this can be done?
Does the instrument have a limited lifecycle specified by the manufacturer?
What are the manufacturer’s recommendations for cleaning and will they be achievable in practice?
Will the instrument withstand automated washer-disinfector processes?
What cleaning agents are recommended – do they comply with COSHH and health and safety requirements? Are these cleaning agents compatible with the washer-disinfector, ultrasonic cleaner and instruments already used in the practice?
Is steam sterilization (134–138°C for a minimum of three minutes) appropriate for the instruments?
If another time/temperature range is recommended, can this be undertaken?
Is training required? Will the manufacturer provide it?
What commissioning and validation is required for the equipment? What are the ongoing costs?

Note
Difficult-to-clean serrated handles should be avoided; it should also be ensured that hinges are easy to clean.

Policy on new reusable instruments

10.24 Before being put into use, new dental instruments should be inspected carefully to ensure there is no evidence of manufacturing defects. They should be fully decontaminated before their first use. The manufacturer should provide instructions for decontamination.

10.25 Reusable dental instruments should be separated into:
- those that can withstand either processing in a washer-disinfector or ultrasonic cleaning; and
- those that will require manual cleaning (although practices should aim to phase in instruments that can be cleaned via automated processes).

10.26 Some instruments consisting of more than one component will need to be dismantled for cleaning. The manufacturer’s instructions should always be followed.

10.27 Personal training records should show that:
- staff have been appropriately trained;
- staff are competent to decontaminate the reusable dental instruments presently in use; and
- training is updated for any new instruments introduced into the dental environment.

10.28 Items that cannot be immersed in water (for example, electrical and electronic equipment) should be cleaned in accordance with the manufacturer’s instructions.

10.29 If recommendations include wiping with a detergent solution, then a clean non-linting cloth plus the recommended detergent solution (to wipe the instrument) should be used. This should be followed by wiping with a clean damp non-linting cloth to remove residues. The instrument should be dried thoroughly using a clean non-linting cloth.

10.30 If disinfection with alcohol is advised, the advice given in paragraph 10.29 should be followed. While this procedure may be advised, it should be understood that alcohol may have the property of fixing certain contamination.
11 Decontamination equipment: general guidance on maintenance and testing

Maintenance and servicing

11.1 All decontamination equipment should be subjected to validation, maintenance and servicing as recommended by the manufacturer/supplier. All records of these procedures should be retained for audit/inspection.

11.2 All equipment should also be periodically tested as advised in Chapters 12–14. An unsatisfactory test result indicates that the decontamination equipment should not be used until the fault has been rectified.

11.3 Failure to perform these tasks or retain evidence of their performance may indicate non-compliance of the decontamination process. Alternative protocols of maintenance should be equal to, or exceed, the manufacturer’s specification and must be justified.

Validation and testing

11.4 All pieces of decontamination equipment will need a protocol for validation at installation.

11.5 For steam sterilizers, the preferred protocol (option A) is as follows:
   a. The Competent Person (Decontamination) or service engineer should test or validate the equipment.
   b. The Competent Person (Decontamination) or service engineer should then submit the validation/service report to the Registered Manager in order to bring the equipment into service.
   c. The Registered Manager should retain a copy of the report and make it available to the Health Board on request.
   d. Welsh Health Estates undertakes the roles of Authorising Engineers for the NHS in Wales and provides advice and guidance on periodic validation regimes.
   e. Periodic audit of the reports will be carried out using the online QAS system and RDS function.

11.6 The second option (option B) for steam sterilizers – and the standard approach for washer-disinfectors and ultrasonic cleaners – is as follows:
   a. The service engineer produces a service report containing a validation statement declaring that the equipment manufacturer can demonstrate that the product complies with the CE-marking process under the terms of the Medical Devices Regulations.
   b. By this process, the contract between the Registered Manager, the equipment manufacturer and the service engineer acts as a form of validation.

11.7 This should be performed in full prior to equipment use, then periodically as advised in Chapters 12–14.

11.8 The validation report provides auditable evidence of testing (see paragraph 11.5).

11.9 These protocols will require full implementation and all results need recording in a logbook dedicated to individual equipment. Standard logbooks summarising all required tests are available for most types of decontamination equipment. Manufacturers should be consulted on the contents of the logbook (see also Appendix 3).

11.10 If local or in-house documentation is used, its suitability should be discussed and agreed with the decontamination equipment manufacturer. Consultation with the responsible officers of the local Health Board would also be useful. In addition, where available, an Authorising Engineer (Decontamination) will also be able to advise.

11.11 Periodic inspections/testing logs will need to be signed by the Competent Person (Decontamination) or service engineer and be countersigned by the Registered Manager.

11.12 Daily and weekly records should be signed by the User before equipment is returned for use. This signature acts as a “certification of fitness for use” based on information and advice from the manufacturer (often represented by the Competent Person (Decontamination) or service engineer).
Lack of a User signature may well indicate non-compliance.

**Note**
The User is defined as the person designated by the Registered Manager to be responsible for the management of the decontamination equipment and process. For a dental practice, this would normally be dentists themselves.

11.13 The validation schedules for sterilizers outlined in paragraph 11.5 and Chapter 12 are part of the essential quality requirements. However, in terms of testing schedules for washer-disinfectors and ultrasonic cleaners, manufacturers' guidance should be sought. In the absence of manufacturers' guidelines, the testing schedules in Chapters 13 and 14 should be followed.

**Documentation**

11.14 Documentation provides the only evidence of completed work. Absence of documentation for any work item will indicate omission of that item. It is important that all documentation relating to decontamination equipment is up-to-date and is retained locally for audit/inspection purposes.

11.15 The following documentation should be retained for the equipment and be readily/freely available at any time:

- specification;
- validation report, where the preferred option (option A) is selected – independently monitored by the Authorising Engineer (Decontamination). Where option B is followed, a service report (validation) signed by the service engineer or Competent Person (Decontamination) on behalf of the manufacturer's agent;
- performance qualification details – loading patterns and required parameter values;
- logbook of periodic testing;
- logbook of plant history, component replacement etc;
- process log;
- training and competency records;
- documentation for Pressure Systems Safety Regulations 2000 including written scheme of examination and examination reports;
- list of all named designated responsible persons;
- other relevant documentation.
12 Installation, validation, maintenance and testing of sterilizers

Maintenance and servicing

12.1 The sterilizer should be maintained and serviced in accordance with the manufacturer's instructions. However, in the absence of these instructions, the schedules outlined in this chapter should be followed.

Validation and testing

12.2 The specification will include a protocol for validation. Validation is needed for new equipment at installation and annually thereafter. It will also be necessary to validate equipment after any major repairs have been carried out. The following protocol is suggested (see paragraph 4.13 (2)).

12.3 The following test results from type-tests or works tests will be required.

<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Performed by</th>
<th>European Norm (EN) reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic chamber pressure</td>
<td>B S N</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Air leakage</td>
<td>B S</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Empty chamber</td>
<td>B S N</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Solid load</td>
<td>Non-wrapped</td>
<td>S</td>
<td>B S</td>
</tr>
<tr>
<td>Single-wrapped</td>
<td>S</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Double-wrapped</td>
<td>B S</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Small porous items</td>
<td>Single-wrapped</td>
<td>S</td>
<td>Manufacturer</td>
</tr>
<tr>
<td>Double-wrapped</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small porous load</td>
<td>Single-wrapped</td>
<td>S</td>
<td>Manufacturer</td>
</tr>
<tr>
<td>Double-wrapped</td>
<td>B S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full porous load</td>
<td>Single-wrapped</td>
<td>S</td>
<td>Manufacturer</td>
</tr>
<tr>
<td>Double-wrapped</td>
<td>B S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hollow load</td>
<td>B S</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Solid load dryness</td>
<td>Non-wrapped</td>
<td>S</td>
<td>B S</td>
</tr>
<tr>
<td>Single-wrapped</td>
<td>S</td>
<td>Manufacturer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Double-wrapped</td>
<td>B S</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Immediately after installation, the air leakage and empty chamber tests should be undertaken by the Competent Person (Decontamination) or service engineer.

12.4 Tests not defined in the referred Standards are further defined in Chapter 15.

Periodic tests

12.5 The following testing protocol is recommended. Additional tests as defined by the manufacturer should also be performed.

**Note**

Users and operators (when delegated) should receive the appropriate training before carrying out any of these tests. This training should be documented on personal training records.

The Registered Manager should liaise with the equipment manufacturer with regard to training.
<table>
<thead>
<tr>
<th>Test</th>
<th>Type</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAILY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steam penetration</td>
<td>BS</td>
<td>User or, by delegation, Operator</td>
<td>MDA DB 2002(06)</td>
</tr>
<tr>
<td>Automatic control test</td>
<td>BS</td>
<td>User or, by delegation, Operator</td>
<td>Paragraphs 15.3–15.5</td>
</tr>
<tr>
<td><strong>WEEKLY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including daily tests plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air leakage</td>
<td>BS</td>
<td>User or, by delegation, Operator</td>
<td>MDA DB 2002(06)</td>
</tr>
<tr>
<td><strong>QUARTERLY (or to manufacturers’ recommendations)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including weekly tests plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermometric tests</td>
<td>BS</td>
<td>CP(D)/service engineer</td>
<td>MDA DB 9804*</td>
</tr>
<tr>
<td><strong>ANNUALLY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including quarterly tests plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steam generator overheat cut-out test</td>
<td>BS</td>
<td>CP(D)/service engineer</td>
<td>MDA DB 9804*</td>
</tr>
<tr>
<td>Thermometric tests</td>
<td>BS</td>
<td>CP(D)/service engineer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Small load</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large load</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dryness tests</td>
<td>BS</td>
<td>CP(D)/service engineer</td>
<td>EN 13060</td>
</tr>
<tr>
<td>Small load</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large load</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The Device Bulletin MDA DB 9804 has been withdrawn from circulation. However, for the purposes of the Thermometric tests and the Steam generator overheat cut-out tests this document is still considered to be ‘best practice’ until the proposed HTM 01-07 Decontamination in primary care document is published.

(See table included in Appendix 4)

For further information refer to the Medical and Healthcare Products Regulatory Agency publications accessible through the current decontamination document page of the Welsh Health Estates website.
## 13 Installation, validation, maintenance and testing of washer-disinfectors

### Maintenance and servicing

13.1 The washer-disinfector should be maintained and serviced in accordance with the manufacturer’s instructions. However, in the absence of these instructions, the schedules outlined in this chapter should be followed.

### Validation and testing

13.2 Validation is needed for new equipment at installation and annually thereafter. It will also be necessary to validate equipment after any major repairs have been carried out. The following protocol is suggested in the table shown below.

13.3 Tests not defined in the referred Standards are further defined in Chapter 16.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verification of calibration</td>
<td>The accuracy of indicating and recording instruments is checked against certificated source instruments</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Automatic control test</td>
<td>The values of cycle time and temperature are noted at relevant stages of the cycle so that a fingerprint of the automatic cycle can be made</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Rinse-water quality test</td>
<td>Indicates acceptable values for all critical chemical purity parameters</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Pipework</td>
<td>Ensures free-flowing drainage</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Doors and door interlocks</td>
<td>Confirms safety to operator and exposure to complete cycle only</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Fluid emission</td>
<td>Confirms door-seal prevents contamination to surroundings</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Detergent dosing test</td>
<td>Confirms repeatable detergent addition</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Cleaning efficacy test</td>
<td>Using an artificial soil to clean a worst-case load, chamber walls and load carriers to confirm the exposure to cleaning parameters is sufficient to remove soil</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Thermometric test</td>
<td>Thermocouples are attached to worst-case load, chamber walls and load carriers to confirm that disinfection parameters are acceptable</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Load carriers</td>
<td>Confirms mechanical alignment of all load carriers</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
</tbody>
</table>
## Periodic tests

13.4 The following testing protocol is recommended. Additionally, any additional tests defined by the manufacturer should also be performed.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAILY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove and clean strainers and filters</td>
<td>Ensures filters and strainers are clean</td>
<td>User or, by delegation, Operator</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Cleaning efficacy</td>
<td>Visual examination of all load items</td>
<td>User or, by delegation, Operator</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td><strong>WEEKLY</strong> including daily tests plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein residue test</td>
<td>Confirms that cleaning process retains the capability of removing protein</td>
<td>User or, by delegation, Operator</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Safety checks</td>
<td>Check condition of door seal</td>
<td>User or, by delegation, Operator</td>
<td>Manufacturer</td>
</tr>
<tr>
<td><strong>QUARTERLY</strong> (or to manufacturers’ recommendations) including weekly tests plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety checks</td>
<td>Check safe operation of doors and door interlocks</td>
<td>CP(D)/service engineer</td>
<td>Paragraphs 15.14–15.18</td>
</tr>
<tr>
<td>Automatic control test</td>
<td></td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Cleaning efficacy test</td>
<td></td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Chemical dosing</td>
<td>Confirm delivery of detergent (and any other additives) is repeatable and the machine reacts correctly to low levels of any additive</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Thermometric disinfection test</td>
<td>Use of thermocouples on worst-case load to confirm disinfection parameters are acceptable</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td><strong>ANNUALLY</strong> including quarterly tests plus:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion of all validation tests above</td>
<td></td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
</tbody>
</table>
14 Installation, validation, maintenance and testing of ultrasonic cleaners

Maintenance and servicing

14.1 The ultrasonic cleaner/irrigator should be maintained and serviced in accordance with the manufacturer’s instructions. However, in the absence of these instructions, the schedules outlined in this chapter should be followed.

Validation and testing

14.2 The specification should include a protocol for validation. The following protocol is suggested.

14.3 Tests not defined in the referred Standards are further defined in Chapter 15.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verification of calibration</td>
<td>The accuracy of indicating and recording instruments is checked against certificated source instruments</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Automatic control test</td>
<td>The values of cycle time and temperature are noted at relevant stages of the cycle so that a fingerprint of the automatic cycle can be made</td>
<td>CP(D)/service engineer</td>
<td>Paragraphs 15.3–15.5</td>
</tr>
<tr>
<td>Drainage test (where applicable)</td>
<td>Ensures free-flowing drainage</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Lid (i.e. door) interlock</td>
<td>Confirms safety to operator and exposure to complete cycle only</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Fluid emission</td>
<td>Confirms door-seal prevents contamination to surroundings</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Chemical dosing test (where automated)</td>
<td>Confirms repeatable detergent addition</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Cleaning efficacy test</td>
<td>Using an artificial soil to clean a worst-case load, the exposure to ultrasonic activity for a sufficient time period is confirmed</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Thermometric test (where machine also disinfects)</td>
<td>Thermocouples are attached to worst-case load to confirm that disinfection parameters are acceptable</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1 and BS EN ISO 15883:2</td>
</tr>
<tr>
<td>Ultrasonic activity test</td>
<td>The use of aluminium foil within the cleaner tank indicates a uniform distribution of ultrasonic activity. A wand meter may be used as long as points of measurement are compatible with the foil test and are fully recorded</td>
<td>CP(D)/service engineer</td>
<td>Paragraphs 15.6–15.13</td>
</tr>
</tbody>
</table>
### Periodic tests

14.4 The following testing protocol is recommended. Additionally, any additional tests defined by the manufacturer should also be performed.

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DAILY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove and clean strainers and filters</td>
<td>Ensures filters and strainers are clean</td>
<td>User or, by delegation, Operator</td>
</tr>
<tr>
<td>Drain machine at end of day/session</td>
<td>Ensures contaminated water is not stored in tank</td>
<td>User or, by delegation, Operator</td>
</tr>
<tr>
<td>Cleaning efficacy</td>
<td>Visual examination of all load items</td>
<td>User or, by delegation, Operator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WEEKLY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety checks</td>
<td>Check condition of door seal</td>
<td>User or, by delegation, Operator</td>
</tr>
<tr>
<td>Protein residue test</td>
<td>Confirms that cleaning process retains the capability of removing protein</td>
<td>User or, by delegation, Operator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QUARTERLY (or to manufacturers’ recommendations)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUTOMATICALLY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic control test</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1</td>
</tr>
<tr>
<td>Verification of calibration</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1</td>
</tr>
<tr>
<td>Cleaning efficacy test</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1</td>
</tr>
<tr>
<td>Ultrasonic activity test</td>
<td>CP(D)/service engineer</td>
<td>BS EN ISO 15883:1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Performed by</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANNUALLY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completion of all validation tests above</td>
<td>CP(D)/service engineer</td>
<td>As above</td>
</tr>
</tbody>
</table>

**Note**

For cleaning efficacy tests and protein residue tests, where the cycle does not have a rinse stage, items should be rinsed as a normal procedure before these tests are carried out, otherwise the tests could return false positives.
15 Additional information on test procedures (in addition to those provided in the Standards)

15.1 Most test procedures are defined in the referenced Standards shown in the testing protocols in Chapters 12–14. Unless these tests are to be performed by suitably-qualified and certificated practice staff (see Chapter 5 in Health Technical Memorandum 01-01 Part A for further guidance on training and certification), it will not be necessary for the practice to possess copies of these Standards. It will, however, be necessary that any contracted test performance include reference to the requirements of these Standards.

15.2 The following tests are additional to those shown in the referred Standards. These additional test procedures are compliant with EN Standards and should be applied where necessary and if relevant to the type of decontamination equipment being used.

Automatic control test

15.3 This test (see list of tests in Chapters 12–14) is designed to show that the operating cycle functions correctly as shown by the values of the cycle variables indicated and/or recorded by the instruments fitted to the decontamination equipment.

Method

15.4 Place the test load (as defined in BS EN 13060) appropriate to the cycle to be tested and the load to be processed in the chamber. Select and start the cycle to be tested. If a process-data recording is not made by the machine, the elapsed time, chamber temperatures and pressures – at all significant stages of the cycle – should be observed and noted.

15.5 At the approximate mid-point of the hold time (disinfection, cleaning, sterilizing), note the elapsed time and indicated critical parameters. The test will be considered satisfactory if the following requirements are met:

• a visual display of “cycle complete” occurs;
• during the whole of the cycle the values of the cycle parameters as indicated or shown on the process-data record are within the limits established as giving satisfactory results either by the manufacturer or the validation tests;
• during the hold period, the disinfection/cleaning/sterilizing temperatures are within an appropriate temperature band;
• the time for which the temperatures above are maintained is not less than that previously established either by the manufacturer or validation tests as necessary;
• the door cannot be opened until the cycle is complete (it is not advisable to attempt to open the door in case the safety devices are malfunctioning – this test should only be performed by someone fully trained to do so);
• the person conducting the test does not observe any mechanical or other anomaly.

Ultrasonic activity test

15.6 The ultrasonic activity can be investigated by the erosion pattern created on aluminium foil exposed in the tank for a short period. This activity may not be uniform throughout the tank. Validation tests will determine the pattern variation at defined positions and the time required to produce this pattern.

15.7 The exposure time will depend upon the type of foil used. (Standard test foil is now available to maximise repeatability.)

15.8 The following equipment will be required:

• aluminium foil provided for ultrasonic cleaner testing;
• adhesive tape (for example, autoclave indicator tape or masking tape);
• a watch or clock with a second hand;
• a rule or tape measure.

Method

15.9 The following method should be used:

• Cut strips of aluminium foil in lengths 120 mm longer than the bath is deep. Roll up one end of the foil so that the foil is now as long as the bath is deep.
• Ensure that:
  – the water in the tank is at the required level;
  – the required amount of any chemical additive specified by the manufacturer has been added; and
  – the water in the tank is at the specified operating temperature.

• Carry out the manufacturer's recommended start-up procedure. This will normally include a period of operation to eliminate dissolved gases from the solution in the bath (the degassing procedure).

• Using strips of adhesive tape across the top of the bath, suspend nine strips of the prepared foil in the bath in a 3 x 3 grid. Ensure that the rolled bottom end of each foil strip is no more than 10 mm above, but not touching, the bottom of the bath.

• Operate the bath for the predetermined exposure time. This varies typically between 30 seconds and 10 minutes depending on the power rating of the ultrasonic transducers.

• Remove the strips from the bath, blot-dry and examine. The strips can be filed conveniently by sticking them to a sheet of plain paper using a transparent adhesive tape.

• Drain the bath and clean to remove debris of eroded aluminium foil.

Results and interpretation

15.10 When the foil strips are inspected, the areas that show maximum erosion should be at similar positions on all nine foils and each should be eroded to a similar extent.

15.11 On re-testing the extent of erosion, the erosion pattern should remain consistent. If the zones of erosion are markedly different on the nine foils, it indicates poor uniformity of cleaning. Poor uniformity of cleaning might be due to failure of one or more of the transducers that produce the ultrasonic vibration in the base of the bath.

15.12 A significant change between tests indicates a deterioration or failure in the transducers. If there is no erosion, this indicates complete failure. In the event of any of these findings, withdraw the ultrasonic cleaner from use and send it for repair or replace it.

Wand meters

15.13 Ultrasonic energy meters are now available to monitor efficiency and operating frequency of ultrasonic baths. They are much quicker and more convenient than the classic foil ablation test but should be used with care. Precise positioning of the wand will need to be noted in order to make the test repeatable.

Safety checks

Weekly checks

15.14 The User should check the following before proceeding:
  • Examine the door seals.
  • Check the security and performance of the door safety devices.

15.15 Where the equipment possesses a pressure vessel, the following checks should be performed:
  • Ensure safety valves and other pressure-limiting devices are free to operate.
  • Carry out any other checks required by the Competent Person (Pressure Systems) or the written scheme of examination.

Yearly checks

15.16 The Competent Person (Decontamination) or service engineer should conduct a series of safety checks before proceeding. Advice on the yearly programme of safety checks may be sought from the Authorising Engineer (Decontamination).

15.17 The validation checks and tests may be used as a basis for yearly safety checks, paying particular attention to those factors affecting safety and particularly those which may have changed since the previous annual safety check or validation test.

15.18 The Competent Person (Decontamination)/service engineer should ensure verification of the adequacy and safe connection of engineering services.
16 Approach and protocol for manual cleaning

Note
The use of manual cleaning presents particular problems. Because the process is not automatic, it is not possible to fully validate the process. Manual cleaning is thus not the preferred method of cleaning. Where possible, manual cleaning should be replaced with automated cleaning. However, where manual cleaning is necessary (for example, as advised by the manufacturer) and where the practice is operating under the essential quality requirements, the critical parameters should be controlled as much as possible to reduce the variability in cleaning performance. The following advice aims to enable this control as much as possible.

16.1 A dirty-to-clean workflow should be maintained throughout the cleaning procedure. Two sinks or bowls should be provided – one for manual cleaning and one for rinsing. In addition, separate setting-down areas should be used for dirty instruments and for clean instruments.

16.2 If lack of space means that a setting-down area has to be used for both dirty and clean instruments at different times during the decontamination process, the surface should be thoroughly cleaned between stages using a water–detergent solution to minimise the risks of cross-contamination.

16.3 Always use detergents specifically formulated for manual cleaning of instruments.

Cleaning procedure for dental instruments

a. Measure the volume of water and detergent to achieve the concentration specified by the detergent manufacturer. A line painted on the sink is useful to indicate the required volume of water. The detergent should be designed for the manual cleaning of dental instruments.

b. Using a mercury-free thermometer, monitor the temperature of the water throughout the cleaning procedure to ensure the temperature of the water is 45°C or lower (a higher temperature will coagulate protein and inhibit its removal). The temperature of the fluid should be as recommended by the detergent manufacturer.

c. Where manufacturers’ instructions permit, fully submerge items to be cleaned in the detergent solution.

d. Scrub instruments using long-handled brushes with soft plastic bristles. To minimise aerosol risk, fully immerse the instruments in the solution and keep under water during the cleaning process.

e. Following cleaning, drain the water, avoiding splashing. If the water is heavily soiled, repeat the cleaning procedure.

f. Brushes should be single use. Where they are reusable, after each use, the brushes should be washed in hot water using the manufacturer’s recommended detergent, in order to remove visible soil, and be stored dry and head up. Or dispose of brushes if they are single-use. Reusable brushes should be replaced at the manufacturer’s recommended interval or more frequently if the brush is seen to have significantly deteriorated.

g. Carry out a final rinse in the clean sink using satisfactory potable water, RO or freshly distilled water.

h. After rinsing, drain and dry if instruments are to be wrapped.
# Protocol for the manual cleaning of dental instruments

**Immersion method**

All personnel involved in the decontamination of dental instruments should be trained in the content and application of this protocol and associated guidance.

To minimise the risk to personnel undertaking manual cleaning, the splashing and creation of aerosols should be avoided at all times.

**Remember:** Maintaining a dirty-to-clean workflow procedure will assist in the cleaning process.

- Wash hands.
- Wear personal protective clothing (PPE).
- Prepare sinks, equipment and setting-down areas.
- Dismantle and open the instruments, as applicable, ready for immersion.
- Fill the clean sink (NOT wash-hand basin) with the appropriate amount of water and detergent (specified for the purpose). Note: ensure correct temperature as recommended by the detergent manufacturer is maintained.
- Fully immerse the instruments in the solution and keep under water during the cleaning process to prevent aerosols.
- Agitate/scrub the instruments using long-handled brushes with soft plastic bristles.
- Drain any excess cleaning solution prior to rinsing.
- Rinse in a second sink with freshly distilled or RO water.
- After rinsing, drain and dry if instruments are to be wrapped.
- Visually inspect all items under an illuminated magnifier ensuring they are clean, functional and in good condition.
- Lubricate any relevant items prior to sterilization with a non-oil-based lubricant.
- Dispose of cleaning materials safely in accordance with local policy.
- Replace cleaning solution and the rinse-water after each use.
- Complete any relevant documentation.
17 Steam and water quality

17.1 For the purposes of this document, either one of
the following types of water is considered suitable:
• suitable potable water (see paragraph 3.14)
• sterile water for irrigation; (Sterile water for
irrigation is a sterile, non-pyrogenic preparation
of water for injections BP, containing no
antimicrobial agent or other substance);
• freshly distilled water;
• Reverse osmosis water.

Steam
17.2 The quality of steam – for example, dryness and
purity – is important for large-scale
decontamination in SSDs.
17.3 Decontamination within a dental decontamination
facility should ensure that the quality and safety of
the instruments are not affected by the
decontamination process itself.
17.4 While an SSD utilises steam from an external
source, most dental facilities generate steam within
the sterilizer chamber. Factors affecting the quality
of the steam, and thus the safety of the
instruments, include the following:
• material of chamber construction;
• quality of feed-water;
• conditions of storage of feed-water;
• period between changes of feed-water.

Quality of input water
17.5 The quality of input water for small sterilizers is
defined in Annex C of BS EN 13060.
17.6 Care should be taken to observe use-by dates. Any
water unused or left in opened containers at the
end of the day should be discarded.

Conditions of storage and frequency of change
17.7 Feed-water may be stored in a reservoir on the
machine and can be either reused or used once only.
While both are acceptable, there is some advantage
in using the water once only in that there is no
build-up of contamination within the reservoir.
17.8 However, even high-quality water is subject to
microbial contamination. For this reason –
irrespective of whether the water is used once only
– the reservoir should be emptied at such a
frequency as to eliminate microbiological build-up.
17.9 Current recommendations are for the reservoir to
be drained down and cleaned at the end of each
working day or daily shift. The machine should
not be left for any lengthy period, especially
overnight, with water in the reservoir.
The possibility of pyrogens accumulating in the
reservoir is of particular concern. Some pyrogens
will be washed down from load items, while others
may arise from bacterial growth, especially where
the sterilizer is unused for long periods between
refills. Even if such bacteria are subsequently killed
by the sterilization process, pyrogens will not be
inactivated and will be deposited on the next load.
The levels of pyrogens in the steam may exceed
the permitted maximum even though sterilized
water for irrigation was used as the original
feedwater.

Water Cleaning
17.10 Cleaning and rinsing (either manual or
automated) can be performed with potable water
as long as the water hardness is low enough and
other aspects of the water quality are satisfactory.
It is recommended that water for cleaning should
have a suitable hardness level. This is part of the
consideration for defining satisfactory potable
water. The local water advisor should be consulted
on endotoxins, hardness, silicates, ammonia
concentrations at not less than annual intervals.
17.11 If the input water has a hardness higher than
recommended, water softening should be a
considered option. An ongoing knowledge of the
hardness of the incoming water feed is therefore
necessary and the hardness values themselves
should be documented at intervals recommended
by the local water advisor.
Final rinsing
17.12 The final rinsing of instruments – those washed manually, in an ultrasonic bath or in a washer-disinfector – should be carried out using satisfactory potable water, RO or freshly distilled water.

Detergents
17.13 The efficacy of cleaning will depend on the relationship between potable water quality and detergent performance. The detergent should be chosen not only for its cleaning efficacy but also for its compatibility with the potable water quality and parameters of its use.
18 The use of lubricants

18.1 Lubricants, usually in aerosol form, are often used during the decontamination and preparation process. This is often required by the manufacturer in order to lengthen the working life of some instruments. Such instructions should be followed. Any doubts about the relevance of these instructions should be checked and confirmed in writing by the manufacturer.

18.2 It should be noted that using lubricants will inevitably introduce oils into a process designed to remove contamination. Where water is reused in the sterilizer, this contamination may build up within the reservoir and the sterilizer chamber. However, this effect will be limited if guidance given in this document requiring that water be changed at least once per day is carefully applied.

18.3 There is a limited conflict between decontamination and the use of lubricant. If lubrication is practised in accordance with manufacturer’s instructions, the consequence of this recontamination should be assessed. This assessment will require consultation with the equipment manufacturer or service agent who should be asked to approve the choice of lubricant used.
19 Hot and cold water systems and dental unit water lines

19.1 Registered Managers of dental practices have an overriding general duty of care under the Health and Safety at Work etc Act 1974. Therefore, they should ensure that the water supply, storage and distribution services should comply with the best practice guidance given in:

- the Health & Safety Commission’s ‘Legionnaires’ disease – the control of legionella bacteria in water systems. Approved Code of Practice & Guidance’ (also known as L8); and
- Health Technical Memorandum 04-01 – ‘The control of Legionella, hygiene, “safe” hot water, cold water and drinking water systems’.

The Approved Code of Practice L8 has a special legal status. Health and safety inspectors seek to secure compliance with the law and may refer to L8 as an illustration of good practice.

Compliance with Health Technical Memorandum 04-01 and this guidance document will satisfy L8.

19.2 All premises are required to have a written scheme and a Legionella risk assessment for controlling any identified risks in accordance with L8:

- Written schemes, to the required standard, can be produced by competent persons (generally members of the Legionella Control Association).
- A risk assessment for the water services will be necessary to identify potential problems in the system (for example, excess storage capacity, temperature distribution problems, low water usage, inappropriate materials etc.). The risk assessment should be carried out by a Competent Person.
- The Registered Manager should ensure that an operational plan is in place for each site under his/her control. This document should comprise:
  - up-to-date as-fitted drawings, schematic diagrams and descriptions of all the supply, storage and distribution systems within those premises;

As-fitted drawings can be obtained from third parties such as architects.

  - step-by-step instructions to operate, maintain, control and shut down the water supply, storage and distribution systems within those premises;
  - a schedule of possible emergency incidents causing loss of the water supply from the water undertaker. Each item in the emergency incident schedule should include guidance on operational procedures to re-establish a stable wholesome water supply.

19.3 The Registered Manager should implement a programme of staff training to ensure that those appointed to devise strategies and carry out control measures are appropriately informed, instructed and trained, and should be assessed as to their competency. It is also essential that they have an overall appreciation of the practices affecting water hygiene and safety, and that they can interpret the available guidance and perform their tasks in a safe and technically competent manner.

Safe hot water temperature

19.4 To reduce the risk of scalding, thermostatic mixing devices should be installed where applicable. A risk assessment will be necessary to establish the need and type of device to be installed.

19.5 Routine checks are essential to ensure continued satisfactory operation.

Utilisation

19.6 One of the critical factors affecting the quality of water within hot and cold water distribution systems is the extent of utilisation. The Registered Manager needs to ensure that there is good liaison between staff members in the dental practice to ensure that the water services are sufficiently used.

19.7 L8 recommends that, for sporadically used taps, flushing is carried out once a week. The procedure for such practice should be fully documented and covered by written instructions.
Flushing dental unit water lines (DUWLs)

19.8 For procedures on flushing DUWLs between treatment sessions and at the beginning/end of each working day, see paragraphs 6.84–6.86.

Decommissioning of DUWLs

19.9 Follow the manufacturer’s guidance for the temporary decommissioning of DUWLs.

19.10 In the absence of manufacturers’ guidance, DUWLs should be flushed, drained and left disconnected during any temporary closure of the treatment room. If this is not practicable, they should be flushed on a weekly basis as per the guidance above.

19.11 Self-contained water bottles (bottled water systems) should be removed, flushed with distilled or fresh RO water and left open to the air for drying. They should then be stored inverted to prevent contamination during the temporary closure.

Recommissioning of DUWLs

19.12 In the absence of manufacturers’ guidance, flush the DUWL for at least three minutes, disinfect the DUWL with a suitable disinfectant (as recommended by the manufacturer for routine disinfection of the DUWL), then flush for a further three minutes.

19.13 Where in-line filters are used, these will require treatment using a cleansing solution that has been recommended by the manufacturer. This step should be performed after first flushing the DUWL.

Note
Care should be taken to minimise the occurrence of splashing and aerosol formation.

19.14 If DUWLs have disposable filters, they should be replaced.

19.15 Self-contained water bottles (bottled water systems) should be flushed with distilled or clean RO water. Where visual contamination is present, flushing with a suitable disinfectant followed by thorough washing is necessary. The manufacturer’s instructions will specify which disinfectant to use. In instances where visual contamination is routinely detected, it will be necessary to decrease the interval between flushing operations. If good practice is followed, practices should not routinely detect evidence of visual contamination.

Note
The self-contained water supplies used for dental care systems should be freshly distilled or RO water (see Chapter 17).

19.16 As part of the recommissioning, dental equipment requiring protection against backflow should have the anti-retraction valves (incorporated on handpieces or waterlines) checked by the responsible person. They should ensure they are suitably decontaminated, refitted correctly and are operating in the correct manner. Examples of dental equipment requiring backflow protection are:

- dental spittoons;
- three-in-one syringes;
- ultrasonic scalers;
- wet-line suction apparatus; and
- self-filling automatic radiographic processors (where still used).

19.17 Adherence to the equipment manufacturer’s recommended cleaning procedures, including use of the manufacturer’s recommended chemicals, is a requirement for medical devices such as those listed above.

Maintenance policy

19.18 The Registered Manager is ultimately responsible for the provision of a wholesome water supply in the premises under his/her authority.

Contract maintenance

19.19 When selecting subcontractors, particularly in relation to the control of Legionella, their competence should be established beforehand (for example, companies/individuals who are members of the Legionella Control Association).

Emergency action

19.20 Contingency plans should be available in the event of the following:

a. A power failure:
   - This may result in a failure to maintain temperature in the hot water system.
   - If the dental practice produces its own distilled water, this will restrict the amount of distilled water that can be produced in a set time period.

b. A mains-water failure that could last beyond the period for which storage capacity has been designed:
– may result in the temporary cessation of the production of RO water;
– may require the temporary cessation of sterile supply activities;
– may result in hygiene issues for patient and staff WCs/washrooms;

The emergency action to be taken during an outbreak of healthcare-associated legionellosis is covered in Health Technical Memorandum 04-01 Part B Appendix 1.

**Documentation**

19.21 It is essential to have comprehensive operational manuals for all items of plant; they should include requirements for servicing, maintenance tasks and frequencies of inspection.

19.22 This information should be kept together with all commissioning data.

**As-fitted drawings**

19.23 The availability of accurate as-fitted drawings is essential for the safe operation of hot and cold water service systems. The drawings are necessary to perform the temperature control checks on the systems and will assist in identifying any potential problems with poor hot water circulation and cold water dead-legs where flow to sporadically-used outlets can be low. Such information should identify all key components in the installations, for example, water meters, storage tanks (filtration equipment, where fitted), calorifiers and the location of isolating valves in the systems. As-fitted drawings can be obtained from third parties such as architects.

19.24 In addition to drawings, there should be comprehensive schedules of outlets, lists of sentinel taps (outlets), other outlets to be tested annually and other components in the system.

**Note**

The information required above could be compiled by the Competent Person employed to produce the written scheme, since much of the information is an integral part of the written scheme itself.

19.26 The User should also ensure that records of all maintenance, inspection and testing activities are kept up-to-date and properly stored. Records should be kept for at least five years. As a minimum, the following items should be recorded:
- the names and positions of those responsible for performing the various tasks under the written scheme;
- a *Legionella* risk assessment and a written scheme of actions and control measures;
- details of precautionary measures that have been carried out, including sufficient detail to identify that the work was completed correctly and when the work was carried out.

19.27 Planned preventive maintenance will help to ensure that systems perform correctly, and an essential element of this process is the maintenance of accurate records.

19.28 Maintenance records should include the following:
- details of remedial work required and work carried out;
- details of cleaning and disinfection procedures;
- results of any chemical or microbiological analyses of water.

19.29 When alterations to equipment or systems are implemented, any drawings kept with the records should be updated to reflect the modifications carried out.

19.30 The asset register should be designed to provide the following information:
- an inventory of equipment;
- a basis for identifying equipment details;
- a basis for recording the maintenance requirements;
- a basis for recording and accessing information associated with disinfection and maintenance.

19.31 When completing records, it is essential that the individual concerned signs and dates the entries, and that there is an audit trail in place.

**Water supply hygiene**

19.32 After any installation work, all piping, fittings and associated services used for the conveyance of water for domestic purposes must be disinfected before being brought into use. The method generally used for disinfection is chlorination. Disinfection using chlorine should be carried out in accordance with BS EN 806-2:2005, BS EN 806-2:2005.
806-3:2006 and BS 6700:2006 (see also Health Technical Memorandum 04-01 Part A Chapter 17) and under the direct supervision of a nominated person.

19.33 Despite disinfection of systems, some outbreaks of disease related to treated water supplies still occur. To reduce the risk of such outbreaks, the design should eliminate:
- direct contact with the internal parts of water pipes and structures by people, animals or birds (for example, ensure covers are in place on storage tanks/cisterns);
- backflow (back-siphonage) of contaminated water into systems conveying potable water (mains and storage structures).

**Water treatment**

19.34 In a properly installed and commissioned hot water system, it should be possible to maintain a temperature of at least 55°C at the furthest draw-off point in the circulating system, and 50°C in the circulating system's return connection to the calorifier.

19.35 In older premises, however, this may not be possible, and in the case of cold water systems it is not always possible or practicable to maintain water temperature below 20°C because of utilisation and complexity. In addition, therefore, it may be necessary to apply a residual biocidal water treatment that has been shown to destroy and remove biofilm. Information on these techniques, which include chlorine dioxide and copper and silver ionisation, can be found in Health Technical Memorandum 04-01 Part B.

**Note**

In addition to residual biocidal techniques, there are other manufacturer-specified treatments that are developed for use on DUWLs and other associated dental equipment. Refer to the manufacturer’s instructions for their correct use.

19.36 Where automatic equipment is used for disinfection, it should indicate any change in the amount or concentration of material injected into the water so that immediate action can be taken.

19.37 Continuous dosing with appropriate biocides that have proven efficacy should be considered during construction to prevent the accumulation of biofilm. A regular flushing programme for all outlets should also be implemented.

19.38 The continuous chlorination of hot and cold water service systems to control the growth of Legionella is not generally recommended. Treatment using chlorine dioxide or copper/silver ionisation can be used. Advice should be sought from the Local Health Board Responsible Person (Water).

19.39 In defining their responsibilities, service providers should be asked to advise on test methods and anticipated concentrations of residual chemicals within the system. (See also Chapter 3 of Health Technical Memorandum 04-01 Part A for more guidance on water treatment regimens.)

**Purging the systems**

19.40 Where chemical treatment is introduced, it is essential to ensure that all parts of the system are purged so that adequate concentrations are achieved.

19.41 As temperature monitoring is performed on sentinel and representative outlets on a rolling basis only, additional draw-off will be required at all points on a regular basis.

**Ozone and ultraviolet treatment**

19.42 Whereas treatments such as chlorine dioxide and copper and silver ionisation are intended to be dispersive (that is, they result in a residual agent within the system), ozone and ultraviolet are intended to be effective close to the point of application. They are not, therefore, necessarily effective in hot and cold water service systems (see Chapter 15 of Health Technical Memorandum 04-01 Part A).

**Metal contamination**


**Filtration**

19.44 It is essential for filter cartridge elements to be changed at appropriate intervals in accordance with the manufacturer’s recommendations, taking into account local conditions.

19.45 Filter membranes should also be chemically cleaned or replaced at the recommended periods, and care must be taken to ensure that the “vessel” or “housing” containing the filter assembly is also disinfected appropriately during filter or membrane maintenance.

**Water storage**

19.46 For general information on water storage, see Health Technical Memorandum 04-01 Part A.
Cold water distribution system

19.47 The design and installation of the cold water distribution system should comply with the Water Supply (Water Fittings) Regulations 1999 and relevant parts of BS EN 806-2:2005 and BS 6700:2006. (See Chapter 8 of Health Technical Memorandum 04-01 Part A for further information.)

19.48 The control of water temperature in the cold water service will essentially rely on good insulation and water turnover. Cold water services should be sized to provide sufficient flow and should be insulated and kept away from areas where they are prone to thermal gains (this also applies to water supplies for spittoons). Stagnation must be avoided. Special attention should be given to the maintenance and monitoring of these systems.

19.49 Schematic drawings of the system with numbered and labelled valves will reduce confusion and save time in trying to identify appropriate isolating valves and other system components.

19.50 Checks and actions should be carried out to show that:

- the system components show no sign of leakage or corrosion;
- the system insulation is in good condition;
- the system filters have been changed and/or cleaned in accordance with manufacturer's recommendations. Strainers should be checked and cleaned regularly;
- all isolating valves have periodically been worked through their full range of travel;
- every water outlet complies with the backflow protection requirements of the Water Supply (Water Fittings) Regulations 1999.

Drinking water

19.51 If separate drinking water supplies are provided, reference should be made to Health Technical Memorandum 04-01 Part A (paragraphs 8.13 and 8.14).

Hot water storage and distribution

19.52 Hot water services should be designed and installed in accordance with the Water Supply (Water Fittings) Regulations 1999 and relevant parts of BS EN 806-2:2005, BS EN 806-3:2006 and BS 6700:2006. The hot water system may be of either the vented or the unvented type. (See Health Technical Memorandum 04-01 Part A Chapter 9 for further information.)

19.53 To control possible colonisation by Legionella, it is essential to maintain the temperature within the hot water circulating system. To some extent, if properly maintained, the calorifier/water heater will provide a form of barrier to Legionella and other water-borne organisms. The minimum flow temperature of water leaving the calorifier/water heater should be 60°C at all times and 55°C at the supply to the furthest draw-off point in the circulating system.

Notes

A minimum of 55°C may be required for the operation of suitable mixing devices to provide "safe" hot water at the upper limit of the recommended range.

In large non-recirculating systems, the minimum of 55°C should be maintained by electric trace-heating.

19.54 The minimum water temperature at the connection of the return to the calorifier/water heater should be 50°C. To achieve the required circulating temperatures, it will be necessary to maintain the balance of flows to individual pipe branches and draw-off points.

19.55 Calorifiers (where fitted) should be subjected to regular procedures that include the following:

- cleaning and maintenance;
- quarterly draining to minimise the accumulation of sludge. This may be extended to annual draining if, during inspection, it is found that there is little accumulation of debris;
- whenever dismantled for statutory inspection, or every year in the case of indirect calorifiers, calorifiers should be thoroughly cleaned to remove sludge, loose debris and scale;
- whenever a calorifier is taken out of service, it should be refilled, drained, refilled again and the entire contents brought up to, and held at, the nominal operating temperature of 60°C for at least an hour.

See also Health Technical Memorandum 04-01 Part B paragraphs 7.74–7.76 for further advice on calorifiers.
Instantaneous water heaters for single or multi-point outlets

19.56 The general principles and limitations of instantaneous water heaters are given in the relevant parts of BS EN 806-2:2005, BS EN 806-3:2006 and BS 6700:2006. In essence:

- the flow rate is limited and is dependent upon the heater's hot water power rating;
- where restricted rates of delivery are acceptable, the heater can deliver continuous hot water without requiring time to reheat;
- they are susceptible to scale formation in hard water areas, where they will require frequent maintenance;
- this form of hot water heating should only be considered for smaller premises or where it is not economically viable to run hot water distribution to a remote outlet.

Safe hot water delivery devices

19.57 Appropriate types of thermostatic mixing device are specified in Health Technical Memorandum 04-01 Part A Table 4.

19.58 It is essential to check the temperature settings and operation of all water mixing devices regularly (preferably every six months, provided that there is no “drift” in excess of 1°C). Other maintenance should be strictly in accordance with the manufacturer’s instructions.

19.59 Local water quality will influence the maintenance frequency for any installation. (A relatively small piece of debris may restrict the operation of the temperature control and fail-safe mechanisms.)

19.60 The recommendations regarding safe water temperature apply to all areas to which patients and visitors have free access.

Materials of construction

19.61 Systems should comply with the requirements of the Water Supply (Water Fittings) Regulations 1999. Materials used in contact with water that is for drinking etc. should comply with BS 6920-1:2000 and be listed in the latest edition of the ‘Water Fittings and Materials Directory’ published by WRAS.

Temperature control regimen

19.62 Temperature control regimen is the preferred strategy to maintain systems free from Legionella and other water-borne organisms. This will require monitoring on a regular basis. The test frequencies are listed opposite in Table 1.

Point-of-use filtration

19.63 Point-of-use filters must be changed in accordance with manufacturers’ recommendations, typically at least once a month. When changing filters, it is recommended that water-quality sampling takes place at outlets identified as sentinel points before refitting a replacement filter. Except where taking samples as above, once point-of-use filtration has been introduced, taps or showers must not be used without a filter in place.

19.64 Where point-of-use filters are no longer required, the outlet and associated pipework must be disinfected to remove any accumulated biofilm before the system is returned to service (see also Health Technical Memorandum 04-01 Part A paragraph 5.16).

Summary checklist

19.65 A summary checklist for hot and cold water services showing recommended frequency of activity is given in Table 2.

The checks/tasks outlined in Tables 1 and 2 could be carried out by trained user or contracted-out to a third party (for example, an LHB).
Table 1: Tests for temperature performance

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Check</th>
<th>Cold water</th>
<th>Hot water</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly</td>
<td>† Sentinel outlets</td>
<td>The water temperature should equilibrate below 20°C after draw-off for 2 minutes</td>
<td>The water temperature should equilibrate to at least 50°C after draw-off for 1 minute</td>
<td>These measurements are applicable to non-mixed outlets only</td>
</tr>
<tr>
<td>Monthly</td>
<td>Inlets to sentinel TMVs</td>
<td>Temperatures as above</td>
<td>Temperatures as above</td>
<td>Measurements can be made by means of surface temperature probes</td>
</tr>
<tr>
<td>Monthly</td>
<td>Water leaving and returning to calorifier</td>
<td></td>
<td></td>
<td>Also to be monitored continuously by BMS</td>
</tr>
<tr>
<td>6-monthly</td>
<td>In-coming cold water at inlet to building – in the winter and in the summer</td>
<td>The water should be below 20°C</td>
<td>The water should be below 20°C</td>
<td>Also to be continuously monitored by BMS</td>
</tr>
<tr>
<td>Annually</td>
<td>‡ Representative outlets</td>
<td>The water temperature should equilibrate below 20°C after draw-off for 2 minutes</td>
<td>The water temperature should equilibrate to at least 50°C after draw-off for 1 minute</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

† Sentinel outlets are normally those that – on a hot water service – are the first and last outlets on a recirculating system. On cold water systems (or non-recirculating hot water systems), they are the closest and furthest from the storage tank (or water heater). The choice of sentinel taps should also include other outlets that are considered to represent a particular risk, for example, those installed in accommodation in which particularly susceptible patients are treated, or others identified in the risk assessment and temperature mapping exercise as having the least satisfactory temperature performance.

‡ Representative outlets include conventional and mixed-temperature taps; 20% of the total number installed throughout the premises would be tested annually on a rotational basis: that is, all taps checked every five years.

1. The Health & Safety Commission’s (2000) Approved Code of Practice L8 permits a period of two minutes to achieve an equilibrium temperature below 20°C. Achieving this minimum requirement would be indicative of an exceptionally underutilised water system. (At a typical flow to a wash-hand basin of 4.5 L/m, 2 minutes to achieve temperature would indicate a 50 m dead-leg of 15 mm pipe.)

2. The Water Supply (Water Quality) Regulations 2000 permit water undertakers to supply water to premises at temperatures up to 25°C. In practice, the water temperature is likely to be below this maximum value, typically below 10°C in winter and 20°C in summer. If, during prolonged periods of high environmental temperature, the water temperature starts to exceed 20°C, the water undertaker should be asked to see whether remedial action could be undertaken. Within the curtilage of the premises, the aim should be to ensure that the temperature difference between the in-coming supply and most distal parts of the distribution system is below 2°C.

3. The Health & Safety Commission’s (2000) Approved Code of Practice L8 permits a period of 1 minute to achieve an equilibrium temperature of 50°C. A minimum of 55°C may be required for the operation of suitable mixing devices required to provide “safe” hot water at the upper limit of the recommended range. Hot water at 55°C is required in many cases for reasons of food hygiene or decontamination requirements, for example, in kitchens and sluice rooms etc. In a properly balanced hot water circulating system, with the circulation taken close to the draw-off point, achieving temperature should be virtually instantaneous. (At a typical flow to a wash-hand basin of 4.5 L/m, 1 minute to achieve temperature would indicate a 25 m dead-leg of 15 mm pipe.)
### Table 2: Summary checklist for hot and cold water services

<table>
<thead>
<tr>
<th>Service</th>
<th>Task*</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hot water services</strong></td>
<td>Arrange for samples to be taken from hot water calorifiers/water heaters in order to note condition of drain water</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Check temperatures in flow and return at calorifiers/water heaters</td>
<td>Monthly 4</td>
</tr>
<tr>
<td></td>
<td>Check water temperature after draw-off from outlets for 1 minute to ensure that 50°C has been achieved in sentinel outlets</td>
<td>Monthly 4</td>
</tr>
<tr>
<td></td>
<td>Visually check internal surfaces of calorifiers/water heaters for scale and sludge.</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Check representative taps for temperature as above on a rotational basis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manual check to confirm secondary hot water recirculation pumps are operating effectively</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>Cold water services</strong></td>
<td>Check tank water temperature remote from in-coming ball valve and mains temperatures. Note maximum temperatures recorded by fixed max/min thermometers, where fitted</td>
<td>6-monthly 1</td>
</tr>
<tr>
<td></td>
<td>Check temperature in sentinel outlets after draw-off for 2 minutes to establish that it is below 20°C</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td>Visually inspect cold water storage tanks and carry out remedial work where necessary. Check representative taps for temperature, as above, on a rotational basis</td>
<td>Annually</td>
</tr>
<tr>
<td><strong>Dental equipment</strong></td>
<td>Drain down and clean</td>
<td>At the end of each working day</td>
</tr>
<tr>
<td><strong>Emergency eye wash sprays</strong></td>
<td>Flush through and purge to drain</td>
<td>6-monthly or more frequently if recommended by manufacturers</td>
</tr>
<tr>
<td><strong>Mixed-temperature outlets</strong></td>
<td>Check delivery temperature in accordance with D08</td>
<td>6-monthly</td>
</tr>
<tr>
<td><strong>Showerheads</strong></td>
<td>Dismantle, clean and descale showerheads and hoses</td>
<td>Quarterly, or as necessary</td>
</tr>
<tr>
<td><strong>Sporadically-used outlets</strong></td>
<td>Flush through and purge to drain, or purge to drain immediately before use without release of aerosols</td>
<td>At least twice weekly 6</td>
</tr>
</tbody>
</table>

Notes:

* See paragraph 182 in the Health & Safety Commission’s Approved Code of Practice L8 for further guidance on tasks that should be undertaken.

1. For effective operation of hot water services, the minimum equilibrium temperature should be 55°C and be achieved within seconds.

2. For thermostatic mixing devices, temperatures should be measured at the inlet.

3. For satisfactory operation of cold water services, temperature equilibrium to below 20°C should be achieved well within one minute.

4. Temperatures should be continuously monitored by the BMS.

5. Additional checks should be made on the hot water circulating system and systems using trace heating at distal points.

6. Risk assessment may indicate the need for more frequent flushing of outlets. It is preferable that this form part of the daily cleaning routine where appropriate. Alternatively, self-purging showers that discharge water to a drain prior to use and without the release of aerosols can be considered.
Microbiological monitoring

19.66 Apart from situations where there are taste or odour problems, microbiological monitoring for total viable counts (TVCs) is not considered to be necessary.

19.67 If performed for these purposes, the detection of low TVCs is not necessarily an indication of the absence of *Legionella*, but is an indication of the overall water quality and signifies a generally unfavourable environment for bacteria.

19.68 All microbiological measurements should be by approved methods and/or be carried out by United Kingdom Accreditation Service (UKAS)-accredited laboratories. Dip slides are not acceptable.
Dental practitioners should read Health Technical Memorandum 07-01 – ‘Safe management of healthcare waste’, which provides a good-practice framework for the management of healthcare waste, helping healthcare organisations such as dental practices to meet legislative requirements.

The guidance includes:
• a unified approach to identifying and classifying infectious and medicinal waste to comply with health and safety, transport and waste regulations;
• a revised colour-coded waste segregation and packaging system to allow standardised identification of waste;
• the use of European Waste Catalogue (EWC) codes on all waste documentation;
• a new offensive/hygiene waste stream for non-infectious waste (human hygiene waste and sanpro (sanitary protection) waste);
• items and equipment that do not pose a risk of infection, including gowns, gloves, plaster casts.
• Check with the local waste contractor to ensure that colour-coded waste containers, labels and documentation comply with the latest guidance.

The Registered Manager is solely responsible for ensuring that waste is:
• correctly segregated;
• stored safely and securely away from areas of public access within the premises;
• packaged appropriately for transport;
• described accurately and fully on the accompanying documentation when removed;
• transferred to an Authorised Person for transport to an authorised waste site;
• appropriately registered, with necessary records and returns at premises.

The Registered Manager should also ensure that staff are trained and aware of the waste procedures.

Waste segregation, packaging, classification and labelling
Dental practices will produce a wide range of both hazardous and non-hazardous wastes. Figure A1 outlines some key dental waste streams, including an explanation of each stream, what waste containers should be used, what can be placed in these containers, how waste should be classified and described and advice on waste disposal.

Waste transfer and documentation
As the producer of the waste, the dental practice bears the legal responsibility of ensuring that waste documentation is complete and accurate.

There are two different types of documentation required for waste transfers:
• consignment notes that are used for hazardous wastes;
• waste transfer notes that are used for non-hazardous wastes.

What is a consignment note?
A consignment note is used to track the movements and ensure the safe disposal of hazardous wastes. It is also designed to ensure the information accompanying the waste is sufficient to enable its safe disposal. A new consignment note must be completed for each individual collection of hazardous waste. Each note will consist of producer, carrier and consignee copies.

Figure A2 provides a completed example of a standard consignment note for a number of dental waste streams.
Who completes the consignment note, and when?
Before the waste is removed from the dental practice:
- Part A contains details of the dental practice and the destination of the waste. This must be completed by the practice.
- Part B contains details about the waste, its properties and its packaging. This must be completed by the practice.
- All three copies should then be provided to the waste carrier.
- Part C contains details of the waste carrier, the driver, the vehicle and a declaration that the carrier has verified key information in sections A and B. This must be completed by the carrier.
- The paperwork is then passed back to the producer. Only after section C is completed can the dental practice complete section D to verify sections A to C (as this includes a record of the number plate of the vehicle onto which the waste was loaded).
- Once parts A to D are complete, the carrier may remove the waste.

On arrival at the destination (consignee) site, the consignee completes Part E to verify what they have received.

Further guidance on this is provided by the Environment Agency at www.environment-agency.gov.uk/hazwaste.

What is a multiple consignment note?
A multiple consignment note (MCN) is a type of note used by waste carriers to collect hazardous waste from a number of small producers in the same journey. An “M” on the end of consignment note number identifies that this collection is part of a larger collection round.

A MCN contains the same information as a standard consignment note; however, the layout is slightly different. The waste carrier must provide the dental practice with two documents:
- a multiple collection note that contains information common to all the collections (for example, the carrier details, the destination site, and the Part E consignee information); and
- an annex that is specific to the practice, which looks very much like a standard consignment note (without Part E); section B should be identical to the standard note.

Waste transfer notes
Waste transfer notes are used for the collection of non-hazardous wastes. The dental practice completes a waste transfer note. The legal responsibility for describing the waste rests with the dental practice.

Registrations, records and returns
Registrations
There are two key waste registrations:
- registering as a hazardous waste producer;
- seeking an exemption from an environmental permit for transporting and storing waste.

Why register as a hazardous waste producer?
All dental practices that produce 500 kg or more of hazardous waste in any 12-month period need to register their premises annually, as decreed by the Hazardous Waste Regulations 2005.
If the practice produces less than 500 kg in any 12-month period, it is exempt.
This information is used to track hazardous wastes and ensure that they are safely managed.

How to register as a hazardous waste producer
Apply for registration from the Environment Agency visit http://www.environment-agency.gov.uk/apps/hazwaste/registrationwelcome.jsp
When the premises are registered, the practice will be given a hazardous waste producer registration number called a premises code. This code must be used on all consignment notes where hazardous waste is removed from those premises.
Registration is only valid for 12 months, so must be renewed annually.

Why register for an exemption from an environmental permit?
Usually a waste treatment, recovery or disposal operation needs to be authorised by a permit. A waste exemption is a very specific type of low risk waste handling operation that does not require a permit although exemptions usually need to be registered with the Environment Agency.
Previously, dental practices that stored waste returned by patients applied for a “paragraph 39 exemption” for such activities. The exemption meant that the practice did not need a full permit as long as it complied with the conditions of the exemption.
In April 2010 new Environmental Permitting Regulations were introduced affecting waste exemptions. The existing list of exempt operations was changed, and under the new regulations the “paragraph 39 exemption” no longer exists and there is no longer a requirement to register or renew existing paragraph 39 exemptions.
For further details of environmental permitting requirements and exemptions, visit the Environment Agency guidance at [http://www.environment-agency.gov.uk/business/topics/permitting/default.aspx](http://www.environment-agency.gov.uk/business/topics/permitting/default.aspx)

**Hazardous waste – records and returns**

Dental practices are required to keep a register that contains their hazardous waste records. This requirement is usually met by keeping copies of both:

- standard or multiple consignment notes (including annexes); and
- consignee returns to the producer or holder.

Where relevant, the register should also contain records of any rejected loads or carrier schedules.

Guidance on consignment notes and their completion is provided in a series of guides to the Hazardous Waste Regulations ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)).

**Consignee returns to the waste producer or holder**

Each consignee (destination site) is required to send to the dental practice a return each quarter. This return is a record of what has happened to the waste and must be placed in the waste producer’s register. These returns must be present to ensure the register is legally complete.

Where a waste contractor does not provide returns:

- the producer should formally request one in writing;
- if this is unsuccessful, the waste producer should consider making alternative arrangements for their waste disposal until the contractor complies with the law and also pass their details to the Environment Agency.

Where the waste is taken to a transfer station before being sent elsewhere, it is recommended that the dental practice request copies of the associated completed paperwork for that onward movement which confirms that it was received at the final destination.

**Where should the register be kept?**

Where the register is kept depends on the number of practice branches and whether these are each registered as hazardous waste producers or not.

- Registered premises – if a practice is registered, the register for any hazardous waste that is removed from that practice must always be kept on the premises.
- Exempt premises – if a practice branch is exempt from registration as a hazardous waste producer, the register for any hazardous waste that is removed from that practice should be kept at the principal place of business. This may be another practice if the practice is one of several in a company. If a practice wishes to keep the register anywhere else, this must be agreed in writing with the Environment Agency.

**How long should the register be kept?**

The register must be kept for at least three years. The three years commences from the date the waste was removed from the practice’s premises by a waste carrier.

**Non-hazardous waste records**

Waste transfer notes should be kept for a minimum of two years.

Where season tickets are used, a record should also be kept of the times when each of the regular collections are made using the note.
### Figure A1: Waste segregation and classification table (see supporting text)

<table>
<thead>
<tr>
<th>Container type</th>
<th>Example waste description</th>
<th>Contents</th>
<th>Classification and EWC codes</th>
<th>Disposal</th>
</tr>
</thead>
</table>
| Sharps box (yellow lid)             | Clinical waste: mixed sharps and pharmaceutical waste for incineration only                | – Hypodermic needles, syringes and syringe barrels including those contaminated with medicines (not cytotoxic and cytostatic)  
– Used medicine vials                                                                  | 18 01 03* & 18 01 09 Hazardous                                                            | Incineration only             |
| Soft clinical wastes *(orange bag)* | Clinical waste: infectious, suitable for alternative treatment                              | Body-fluid-contaminated dressings, PPE and swabs, and other waste that may present a risk of infection 
NO medicinally, chemically or amalgam contaminated wastes                                | 18 01 03* Hazardous                                                                     | Alternative treatment or incineration |
| Medicines (rigid leak-proof container) | Non-cytotoxic and cytostatic medicines, clinical waste, for incineration only             | Non-cytotoxic and cytostatic medicines including used and out-of-date stock                  | 18 01 09 Non-hazardous                                                   | Incineration only              |
| Offensive or hygiene wastes         | Offensive/hygiene waste from dental care suitable for landfill                              | Gowns, gloves, tissues, X-ray film and other items from dental care which are not contaminated with bodily fluids, medicines, chemicals or amalgam | Non-hazardous 18 01 04 Landfill                                         |                                 |
| Amalgam waste                       | Dental amalgam: infectious, clinical waste, for recovery                                    | Teeth with amalgam fillings                                                                  | Hazardous 18 01 10* Metal recovery                                       |                                 |
| Amalgam waste                       | Dental amalgam and mercury: non-infectious, for recovery                                    | Dental amalgam and mercury including spent and out-of-date capsules, excess mixed amalgam, and contents of amalgam separators |                              |                                 |
| X-ray fixer (container type not specified) | Photographic fixer                                                                          | Waste photographic fixer from X-ray (must be kept separate from developer)                   | Hazardous 09 01 01* Recovery (various)                                   |                                 |
| X-ray developer (container type not specified) | Photographic developer                                                                     | Waste photographic developer from X-ray (must be kept separate from fixer)                   | Hazardous 09 01 04*                                                     |                                 |
| Lead foils (container type not specified) | X-ray lead foils from dentistry                                                             | Lead foils from X-ray film packaging                                                          | Non-hazardous 15 01 04 Landfill or municipal waste incinerator          |                                 |
| Municipal waste                     | Mixed municipal waste                                                                        | Domestic type refuse: food packaging paper/magazines that cannot be recycled paper towels (no hazardous wastes) | Non-hazardous 20 03 01 Landfill or municipal waste incinerator           |                                 |
**PART A Notification Details**

1. Consignment note code: ABC123/AB001
2. The waste described below is to be removed from (name, address, postcode, telephone, e-mail & fax): The Dental Practice, High Street, New Town, The Shire, XX12 3YY Tel 0123 456789, soretooth@hotmail.com
3. Premises code: ABC123
4. The waste will be taken to (address and postcode): The Transfer Station, Low Street, Old Town, The Shire YY12 4XX
5. The waste producer was (if different from 1) (name, address, postcode, telephone, e-mail & fax)

**PART B Description of waste**

1. The process giving rise to the waste(s) was: Dental healthcare.
2. SIC for the process giving rise to the waste: 85.13
3. WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified).

<table>
<thead>
<tr>
<th>Description of waste</th>
<th>EWC code</th>
<th>Qty (kg)</th>
<th>The chemical/biological components of the waste, their concentrations</th>
<th>Physical form</th>
<th>Hazard code(s)</th>
<th>Container type, number &amp; size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical waste: mixed sharps and pharmaceutical waste for incineration only</td>
<td>18 01 03* 18 01 09</td>
<td>10 kg</td>
<td>Sharps, syringe barrels, medicine vials and ampoules (not cytotoxic and cytostatic)</td>
<td>mixed</td>
<td>H3, H4, H5, H9, H14</td>
<td>2 x 14-litre yellow-lidded sharps box</td>
</tr>
<tr>
<td>Clinical waste: infectious, suitable for alternative treatment</td>
<td>18 01 03*</td>
<td>20 kg</td>
<td>Dressings, PPE and swabs, not contaminated with chemicals or medicines</td>
<td>mixed</td>
<td>H9</td>
<td>4 orange bags</td>
</tr>
<tr>
<td>Dental amalgam: infectious, clinical waste, for recovery</td>
<td>18 01 10*</td>
<td>0.5 kg</td>
<td>Teeth with amalgam fillings (mercury)</td>
<td>solid</td>
<td>H6, H9, H14</td>
<td>1 amalgam pot 500ml</td>
</tr>
<tr>
<td>Dental amalgam and mercury: non-infectious, for recovery</td>
<td>18 01 10*</td>
<td>0.5 kg</td>
<td>Dental amalgam and mercury – spent and out-of-date capsules, excess mixed amalgam, and contents of amalgam separators</td>
<td>mixed</td>
<td>H6, H14</td>
<td>1 amalgam pot 1 litre</td>
</tr>
<tr>
<td>X-ray fixer solution</td>
<td>09 01 01*</td>
<td>10 kg</td>
<td>Acetic acid 1–5% Silver 1–2%</td>
<td>liquid</td>
<td>H4</td>
<td>1 x 15-litre drum</td>
</tr>
<tr>
<td>X-ray developer solution</td>
<td>09 01 04*</td>
<td>10 kg</td>
<td>Hydroquinone 5–10% Diethylene Glycol 1–5% Sodium Carbonate 1–5%</td>
<td>liquid</td>
<td>H4, H7, H11</td>
<td>1 x 15-litre drum</td>
</tr>
</tbody>
</table>

ADR information for each EWC identified above:

<table>
<thead>
<tr>
<th>EWC code</th>
<th>UN identification no.</th>
<th>Proper shipping Name</th>
<th>UN class(es)</th>
<th>Special handling requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 01 03*</td>
<td>UN 3291</td>
<td>Clinical waste, unspecified, n.o.s</td>
<td>6.2 II</td>
<td>No persons in handling chain to have direct contact. Waste to be disposed of at authorised site</td>
</tr>
</tbody>
</table>

etc. etc. etc.
### PART C Carrier’s certificate

(If more than one carrier is used, please attach a schedule for subsequent carriers. If a schedule of carriers is attached tick here)

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct & have been advised of any specific handling requirements:

1. Carrier driver name (please PRINT) Brian Jones
2. On behalf of
   (name, address, postcode, telephone, e-mail & fax)
   The Transfer Station, Low Street, Old Town, The Shire, YY12 4XX
   Tel: 0987 654521; email: transfer@hotmail.com
3. Carrier’s registration no/exemption reason:
   ABC/012345
4. Vehicle registration no: AB09 FIL

Signature  **B. Jones**

Time: 18.00   Date: 29/02/2010

---

### PART E Consignee’s Certificate (where more than one waste type is collected, all of the information given below must be completed for each EWC)

<table>
<thead>
<tr>
<th>Individual EWC code(s) received</th>
<th>Quantity of each EWC code received (kg)</th>
<th>EWC code accepted/rejected</th>
<th>Waste Management operation (R or D code)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I received this waste at the address given in A4 on
Vehicle registration no (or mode of transport if not by road):
Where waste is rejected please provide details:
I certify that the waste management licence/permit/authorised exemption no(s).

Name: (please PRINT)
On behalf of (name, address, postcode, tel, e-mail & fax):
Signature:

authorises the management of the waste described in B at the address given at A4

Date:
Time:

---

### PART D Consignor’s/holder’s certificate

I certify that the information in A, B and C above is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

1. Consignor/Holder name (please PRINT)
   Mr David Mathews
   on behalf of
   (name, address, postcode, telephone, e-mail and fax)
   The Dental Practice, High Street, New Town, The Shire, XX12 3YY
   Tel 0123 456789, soretooth@hotmail.com

Signature  **D. Mathews**

Time: 18.00   Date: 29/02/2010
Electronic and electrical wastes

A detailed explanation of the requirements for disposal of electrical waste is beyond the scope of this document. Further information is available from Health Technical Memorandum 07-05.

There are four key points to note:

• Many electrical wastes including refrigerators, freezers, fluorescent tubes, televisions, cathode-ray tube (CRT) and TFT (flat screen) computer monitors, and certain batteries (lead acid or nickel-cadmium) are hazardous wastes and must therefore be consigned from the dental practice.

• The local civic amenity site is unlikely to be authorised to accept commercial electronic waste. Check before taking this waste there, and ensure that a consignment note is used if it is.

• New regulations on the disposal of waste electrical and electronic equipment (WEEE) have been introduced.

• When new equipment is purchased, there is an opportunity to make arrangements with the supplier to remove the old one.

For older electrical equipment WEEE (placed on the market before 13 August 2005) that is not being replaced by new equipment serving an equivalent function, the dental practice itself is responsible for arranging and financing its collection and treatment in accordance with the WEEE Regulations.

For all other WEEE from the practice, it may be possible to call upon a responsible producer compliance scheme (PCS) to take-back and treat the old equipment. The Environment Agency website gives details of the PCS each equipment producer is a member of.

When new equipment is purchased, the supplier may not mention take-back, so it is in the practice’s interests to be proactive.

Chemicals

A detailed explanation of the requirements for disposal of chemical waste is beyond the scope of this Appendix.

There are three key points to note:

• Chemicals should not be disposed of in the clinical waste stream. This may cause chemical releases and worker exposure issues during subsequent handling and disposal.

• Hazardous chemicals (including photochemicals) should not be disposed of to foul sewer or surface drains.

• Some chemicals may react to produce fire or toxic gas. These incompatible chemicals should be disposed of and stored separately. Flammable, corrosive and oxidising chemicals are of particular concern in healthcare.

Further guidance on the storage of chemicals is available from the Health & Safety Executive (www.hse.gov.uk/chemicals).

Waste audit and duty-of-care checks

Waste audit

If asked, the dental practice should be able to provide detailed information on its waste segregation procedures, their effectiveness and therefore the content of each waste stream.

Specifically, it should identify those waste streams that contain or are contaminated with, in any quantity:

• other medicines;
• amalgam;
• chemicals and photochemicals.

Undertaking such audits will enable the practice to demonstrate that it has discharged its duty of care in describing and packaging its waste.

Note

The statutory duty of care applies to everyone in the waste management chain. It requires producers and others who are involved in the management of the waste to prevent its escape and to take all reasonable measures to ensure that the waste is dealt with appropriately from the point of production to the point of final disposal. A key element to the duty of care is the requirement for businesses to keep a written description, adequately describing the type and quantity of waste. This should accompany the waste as it is moved from point of production to point of final disposal.

Main responsibilities of the waste producer in line with the duty of care:

• Describe the waste fully and accurately.
• Complete and sign a waste transfer note (or consignment note for hazardous waste) prior to waste being transferred to another party.
• Pack waste securely (where appropriate) in line with the Carriage Regulations.
• Tag and label waste receptacles for identification.
• Store waste safely on-site.
• Register as a waste carrier (if required), and make all reasonable checks on waste carriers.
• Select an appropriate recovery or disposal method.
• Ensure waste falls within the terms of the waste contractor’s waste management licence, permit or exemption.
Pre-acceptance audits

Producers of healthcare wastes, including those from dental practices, are required to undertake regular (usually annually) pre-acceptance audits of their premises. The purpose of the audits is to ensure that waste is being segregated and disposed of appropriately and in line with all legal and other requirements. Evidence of the pre-acceptance audit should be supplied to the healthcare waste disposal contractor used by the practice. If the audits are not undertaken the waste contractor may refuse to accept the waste, as without evidence of the audit they will be in breach of their Environment Agency permit conditions. For further advice, consult with your waste contractor, also, in-depth guidance on waste auditing is available in HTM 07-01: Safe Management of Healthcare Waste.

Waste carriers

The waste contractor who collects the waste must be a registered waste carrier. This should be checked by, for example, comparing the carrier registration number on Part C of the consignment note to the information held on the Environment Agency’s electronic public register.

Waste disposal

Waste from small practices is frequently taken to a waste transfer station where it is combined with other wastes and sent for final disposal. Check if the waste is being taken to a waste transfer station and, if this is the case, ask for copies of the documentation used for onward movement of the waste to its final destination.
A hand-hygiene policy must be available within the practice and should contain, at least, the following:

- Wash hands between each patient treatment, and before donning and after removal of gloves.
- Bar soap must not be used or made available in the practice.
- Do not use scrub or nail brushes because these can cause abrasion of the skin where microorganisms can reside.
- Nails must be short and clean. Nails should be free of nail art, permanent or temporary enhancements (false nails) or nail varnish.
- Nails should be cleaned using a blunt “orange” stick.
- Use good-quality soft paper hand-towels.
- Ensure that paper towels and drying techniques do not damage the skin.
- Use a hand cream following hand-washing at the end of a session to counteract dryness, but do not use hand cream under gloves because this can encourage the growth of microorganisms.
- Antibacterial-based hand-rubs/gels formulated for use without water can be used on visibly clean hands in conjunction with a good hand-washing technique for invasive dental procedures.
- Antibacterial-based hand-rubs/gels can also be used instead of hand-washing between patients during surgery sessions.
- Follow local infection control guidance or manufacturers’ instructions on the maximum number of applications of antibacterial-based hand-rubs/gels that can be used on physically clean hands before hand-washing is required. Be aware that build-up of product on the hands occurs with repeated application. If hands become “sticky”, they must be washed as normal using a proper hand-hygiene technique.
- Alcohol-impregnated wipes used for cleaning surfaces should not be used in place of hand-rubs/gels, as they are not effective in hand decontamination.
- Use a foot-operated or sensor-operated waste bin.
### Table A1: Levels of hand hygiene

<table>
<thead>
<tr>
<th>Why?</th>
<th>Level 1: Social hand hygiene</th>
<th>Level 2: Hygienic hand hygiene</th>
<th>Level 3: Surgical scrub</th>
</tr>
</thead>
<tbody>
<tr>
<td>To render the hands physically clean and to remove transient microorganisms, picked up during social activities.</td>
<td>In addition to level 1, to destroy microorganisms and to provide residual effect during times when hygiene is particularly important in protecting yourself and others.</td>
<td>In addition to level 2, to substantially reduce the numbers of resident microorganisms that normally live on the skin during times when surgical procedures are being carried out.</td>
<td></td>
</tr>
</tbody>
</table>

### When?

#### Before:
- commencing/leaving work
- using computer keyboards
- eating or handling food or drinks
- carrying out decontamination procedures
- preparing or giving medications
- direct patient contact where no exposure to blood or other bodily fluids or non-intact skin has occurred.

#### After:
- becoming visibly soiled visiting the toilet
- patient contact even where no exposure to blood or other bodily fluids, or non-intact skin has occurred
- carrying out decontamination procedures
- using computer keyboard
- handling laundry, equipment or waste
- blowing, wiping or touching nose.

### What hand hygiene to use?

- Mild liquid soap – does not need to be antibacterial or antiseptic.
- Antibacterial-based hand-rubs/gels can be used when hands have not been soiled.
- Bar soap should not be used.

### How long for?

- Level 1: 10–15 seconds
- Level 2: 15–30 seconds
- Level 3: 2–3 minutes, ensuring all areas of hands and forearms are covered.

### What hand hygiene to use?

- An approved antibacterial hand cleanser (for example, 2–4% chlorhexidine, 5–7.5% povidone iodine, 1% triclosan or plain soap from a dispenser).
- Antibacterial-based hand-rubs/gels (for example, when performing aseptic techniques) to provide further cleansing and residual effect, and may be used with plain (liquid) soap where necessary.
- An approved antibacterial hand cleanser (for example, chlorhexidine gluconate 4%, povidone iodine 7.5%). People who are sensitive to antiseptic cleaners can wash with an approved plain liquid soap followed by two applications of an antibacterial-based hand-rub/gel. Skin problems should be reported and discussed with a GP or occupational health, and a local procedure followed.
**HAND CLEANING**

**How to handrub?**

1a. Apply a small amount (about 3ml) of the product in a cupped hand, covering all surfaces.

1b. Rub hands palm to palm.

2. Rub back of each hand with the palm of other hand with fingers interlaced.

3. Rub palm to palm with fingers interlaced.

4. Rub with backs of fingers to opposing palms with fingers interlocked.

5. Rub tips of fingers in opposite palm in a circular motion.

6. Rub each thumb dapped in opposite hand using rotational movement.

7. Rub each wrist with opposite hand.

8. Rinse hands with water.

9. Dry thoroughly with a single-use towel.

10. Use elbow to turn off tap.

11. Your hands are now safe.

**How to handwash?**

**WITH SOAP AND WATER**

0. Wet hands with water.

1. Apply enough soap to cover all hand surfaces.

2. Rub hands palm to palm.

3. Rub back of each hand with the palm of other hand with fingers interlaced.

4. Rub palm to palm with fingers interlaced.

5. Rub with backs of fingers to opposing palms with fingers interlocked.

6. Rub tips of fingers in opposite palm in a circular motion.

7. Rub each thumb dapped in opposite hand using rotational movement.

8. Rub each wrist with opposite hand.

9. Rinse hands with water.

10. Use elbow to turn off tap.

11. Dry thoroughly with a single-use towel.

12. Your hands are now safe.

Adapted from WHO World Alliance for Patient Safety 2006.
## Appendix 3 – Examples of logbook pages

### Table A2: Summary details

<table>
<thead>
<tr>
<th>Steam sterilizer details</th>
<th>Dental practice address</th>
<th>Make</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ref. No</td>
<td>Serial No.</td>
</tr>
</tbody>
</table>

**Contents – the following forms:**

<table>
<thead>
<tr>
<th>Name of form</th>
<th>Code</th>
<th>Copy</th>
<th>Purpose</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily test sheet</td>
<td>Yes</td>
<td>A record of all daily testing</td>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>Weekly test sheet plant history record</td>
<td>No</td>
<td>A record of faults/maintenance</td>
<td>A4</td>
<td></td>
</tr>
<tr>
<td>Quarterly and yearly test sheets</td>
<td>Yes</td>
<td>Competent Person’s (Decontamination) quarterly and yearly test sheets</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Test history record</td>
<td>Yes</td>
<td>History of the weekly, quarterly and yearly tests</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Autoclave history record sheet</td>
<td>Yes</td>
<td>Record of all faults, maintenance and repairs to the autoclave</td>
<td>A5</td>
<td></td>
</tr>
<tr>
<td>Process log sheet</td>
<td>No</td>
<td>Provides a record of every sterilizer load processed</td>
<td>A6</td>
<td></td>
</tr>
</tbody>
</table>

**Personnel**

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Name/organisation</th>
<th>Tel. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infection control nurse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competent Person (Pressure vessels)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authorised Person (Decontamination)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competent Person (Decontamination)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service engineer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiologist</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*These personnel should have qualifications/training/registration defined in HTM 01-01 Part A

**Pressure Systems Safety Regulations 2000**

This section to be filled in by the Competent Person (Pressure vessels)

Written scheme of inspection exists/is suitable

Inspection carried out on Date: Inspected by:

Result of examination/comments

**Review of records by PCT/Authorised Person (Decontamination)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Comments on review</th>
<th>Name/signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table A3: Daily test sheet

Tests to be carried out in accordance with HTM 01-05

<table>
<thead>
<tr>
<th>Sterilizer location</th>
<th>Serial No.</th>
<th>Week beginning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make/model</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cycle number</th>
<th>Temp °C min/ max</th>
<th>Pressure bar</th>
<th>Min : sec</th>
<th>During sterilizing hold period</th>
<th>Sterilizing hold time</th>
<th>Automatic control test result</th>
<th>Steam penetration test Pass/Fail/ Not applicable</th>
<th>Certified fit for use by user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F/NA</td>
<td></td>
</tr>
<tr>
<td>Tue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Wed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Thur</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Fri</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Sat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F</td>
<td></td>
</tr>
<tr>
<td>Sun</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>P/F</td>
<td>P/F</td>
<td></td>
</tr>
</tbody>
</table>

**Reservoir water changes (where applicable).** Drain, rinse and refill with freshly distilled or RO water.

<table>
<thead>
<tr>
<th>Cycle number when water changed</th>
<th>Comments</th>
<th>Water changed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Faults – new or existing (also enter in plant history record)**
Table A4: Weekly test sheet
Tests to be carried out in accordance with HTM 01-05

<table>
<thead>
<tr>
<th>Sterilizer location</th>
<th>Serial No.</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make/model</td>
<td>Ref. No.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week beginning</th>
<th>Cycle number</th>
<th>Automatic air leakage test result</th>
<th>Automatic control test result</th>
<th>Steam penetration test</th>
<th>Weekly safety checks</th>
<th>Certified fit for use by user</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pass/Fail</td>
<td>Pass/Fail</td>
<td>Pass/Fail/Not applicable</td>
<td>Satisfactory/Unsatisfactory</td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F/NA</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/F</td>
<td>P/F</td>
<td>P/F</td>
<td>S/U</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Only where the sterilizer has an in-built self-test programme. Otherwise the test should be carried out by a CP (D) and copies of the CP(D)’s test sheets should be inserted.

Weekly safety checks (tick if satisfactory)

<table>
<thead>
<tr>
<th>Week beginning</th>
<th>Cycle number</th>
<th>Door seal</th>
<th>Door pressure interlock</th>
<th>Door closed interlock</th>
<th>Satisfactory/Unsatisfactory</th>
<th>Tested by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S/U</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S/U</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S/U</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S/U</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S/U</td>
<td></td>
</tr>
</tbody>
</table>

Faults – new or existing (also enter in plant history record)
Table A5: Autoclave history record sheet

<table>
<thead>
<tr>
<th>Type of autoclave</th>
<th>Start date for this sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental practice</td>
<td></td>
</tr>
<tr>
<td>Department/location</td>
<td>Ref. No</td>
</tr>
<tr>
<td></td>
<td>Serial No.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FAULTS RECORD</th>
<th>MAINTENANCE RECORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault number</td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Cycle number</td>
</tr>
<tr>
<td>------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 4 – Periodic test: small steam sterilizers

Key

<table>
<thead>
<tr>
<th>Cycle type</th>
<th>Air removal</th>
<th>Load type</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Passive (gravity displacement).</td>
<td>Non-wrapped solid items.</td>
<td>Simplest type. Least expensive to purchase, operate and maintain.</td>
<td>Not to be used for: • Hollow devices or those with lumens; • Wrapped loads (e.g. items in pouches).</td>
</tr>
<tr>
<td>B</td>
<td>Active (forced) air removal.</td>
<td>Wrapped or non-wrapped solid items (e.g. cannulae within dimensions specified by sterilizer manufacturer). Porous loads (e.g. fabrics, swabs, dressings).</td>
<td>Widest range of applications.</td>
<td>Expensive to purchase and maintain. Additional periodic testing required. Post-sterilization drying stage essential for wrapped items increases total cycle times.</td>
</tr>
<tr>
<td>S</td>
<td>Active (forced) air removal</td>
<td>Only suitable for types of loads specified by the sterilizer manufacturer.</td>
<td>Wider range of applications than Type N</td>
<td>Expensive to purchase and maintain. Additional periodic testing required. Post-sterilization drying stage essential for wrapped items increases total cycle times.</td>
</tr>
</tbody>
</table>

Note: Ideally, only the highest specification cycle should be available to the operator. Other cycles should be disabled, until specifically needed

Table 2: Types of sterilization cycle (taken from reference documents)

### Daily Tests

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Sterilizer Cycle Type Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Control Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Steam Penetration Test</td>
<td>B, S</td>
</tr>
</tbody>
</table>

### Weekly Test

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Sterilizer Cycle Type Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Control Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Steam Penetration Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Leakage Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Detector Function Test</td>
<td>B, S</td>
</tr>
</tbody>
</table>

### Quarterly Test

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Sterilizer Cycle Type Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Leakage Test (Sensors inserted)</td>
<td>B, S</td>
</tr>
<tr>
<td>Automatic Control Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Verification of Control</td>
<td></td>
</tr>
<tr>
<td>Small Load Thermometric Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Air Leakage Test (Sensors removed)</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Detector Function Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Steam Penetration Test</td>
<td>B, S</td>
</tr>
</tbody>
</table>
Yearly/Revalidation Test

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Sterilizer Type Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Leakage Test (Sensors inserted)</td>
<td>B, S</td>
</tr>
<tr>
<td>Automatic Control Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Verification of Control</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Chamber Wall Temperature Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Steam Generator overheat cut-out test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Air Detector Performance Test – Small load</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Detector Performance Test – Full load</td>
<td>B, S</td>
</tr>
<tr>
<td>Full Load Thermometric Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Porous Load Dryness Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Small Load Thermometric Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Solid Load Thermometric Test</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Solid Load Dryness Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Tests for Performance Re-qualification (as required by User)</td>
<td>B, N, S</td>
</tr>
<tr>
<td>Air Leakage Test (Sensors removed)</td>
<td>B, S</td>
</tr>
<tr>
<td>Air Detector Function Test</td>
<td>B, S</td>
</tr>
<tr>
<td>Steam Penetration Test</td>
<td>B, S</td>
</tr>
</tbody>
</table>

Please consult documents listed for further clarification.

MDA DB 9804 (1998): This Device Bulletin has been withdrawn from circulation. However, for the purposes of the above tests this document is still considered to be ‘best practice’ until the proposed HTM 01-07 Decontamination in primary care document is published.

MDA DB 2002 (06) – 2002
BS EN 13060
HTM 2010
Manufacturers’ guidance
It should be noted that this list may not be totally inclusive at the time of reading. Advice should be sought on the currency of these references and the need to include new or revised documents.

**Acts and regulations**


**Codes of Practice**


**British, European and International Standards**


Health Service Circular (HSC) 1999/179 – Controls assurance in infection control: decontamination of medical devices.


Health Technical Memorandum 01–05 – Decontamination in primary care dental practices - Welsh edition

Department of Health publications


National standards, local delivery: main principles to be considered when setting up a decontamination service for PCTs. National Decontamination Programme, 2005.


Potential vCJD transmission risks via dentistry: an interim review.


Uniforms and workwear: Guidance on uniform and workwear policies for NHS employers


Other publications


www.mhra.gov.uk/Publications/Safetyguidance/DeviceBulletins/CON007359


www.mhra.gov.uk/Publications/Safetyguidance/DeviceBulletins/CON007326


www.sehd.scot.nhs.uk/publications/DC20041202Dental.pdf


www.who.int/water_sanitation_health/dwq/secondaddendum20081119.pdf

Healthcare associated infections – a community strategy for Wales

http://wales.gov.uk/topics/health/protection/communicable_disease/publications/community/?lang=en

Advice for dentists on re-use of endodontic instruments and variant Creutzfeldt-Jakob disease (vCJD)


National Infection Control Policies for Wales


WHC(2000)71 - For the record - Managing Records in NHS Trusts and Health Authorities

http://www.wales.nhs.uk/documents/WHC(00)71.htm

The Private Dentistry (Wales) Regulations 2008
