

Infection Control

1. Course Information

This self-directed learning course is relevant to all members of the dental team. It takes the form of a workbook, requiring deep study. Wider reading is encouraged. It will be important for learners to maintain their knowledge of this subject upon completion of this course.

1.1 Aim

The aim of this course is to provide learners with current knowledge on the subject of infection control with relevance to the dental workplace setting.

1.2 Objectives

In this course, learners will have the opportunity to:

- Recognise various factors leading to infections.
- Grasp methods for preventing infections in a healthcare (dental) setting.
- Differentiate between optimal protocols and fundamental quality standards.
- Identify the components of a thorough decontamination procedure.
- Define their duties and obligations with relation to infection control within a dental workplace.

1.3 Learning Outcomes

Upon finishing this course, learners will acquire knowledge of:

- The causes and transmission of infections within a dental environment.
- The various forms of microorganisms like bacteria, viruses, fungi, spores, and prions.
- Proper hand hygiene techniques, and standard measures for infection control in daily dental practice.
- The fundamentals of infection prevention in a clinical setting.

- Optimal practises and Essential Quality Requirements (EQR) related to infection control.
- The steps of the decontamination process and its safe and efficient execution.
- The methods for maintaining water systems and minimising the threat of Legionella.
- The protocols for handling spills and exposure incidents, particularly those involving blood borne viruses.
- The scope of validation, routine testing, and record-keeping requirements.
- The kinds of proof necessary during an audit to indicate adherence to the guidelines.

1.4 GDC Development Outcomes

- **A** - Effective communication with patients, the dental team and others across dentistry, including when obtaining consent, dealing with complaints, and raising concerns when patients are at risk.
- **B** - Effective management of self and effective management of others or effective work with others in the dental team, in the interests of patients; providing constructive leadership where appropriate.
- **C** - Maintenance and development of knowledge and skill within your field of practice.
- **D** - Maintenance of skills, behaviours and attitudes which maintain patient confidence in you and the dental profession and put patients' interests first.

1.5 Relevant Legislation

- The Health and Safety at Work Act 1974.
- The Health and Social Care Act 2008.
- The Control of Substances Hazardous to Health (COSHH) Regulations 2002.
- RIDDOR 2013 (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013).
- The Environment Protection Act 1990 (including Duty of Care regulations).

- The Controlled Waste (England and Wales) Regulations 2012.

1.6 Relevant Regulations

- Decontamination in Primary Care Dental Practices (HTM 01-05).
- Managing Decontamination in Dental Practice (SDCEP).
- Decontamination In Primary Care Dental Practices And Community Dental Services (WHTM 01-05).
- Welsh Healthcare Technical Memorandum (WHTM 01-05).
- Management and Disposal of Healthcare Waste (HTM 07-01).
- Safe Water in Healthcare Premises (HTM 04-01).
- The Legionella Approved Code of Practice (ACOP).
- The Infection Prevention Society (IPS).
- Standards for the Dental Team (GDC).

1.6.1 General Dental Council (GDC) - Standards for the Dental Team

- GDC Principle 1 - Put patients' interests first.
- GDC Principle 2 – Communicate effectively with patients.
- GDC Principle 4 - Maintain and protect patients' information.
- GDC Principle 5 - Have a clear and effective complaints procedure.
- GDC Principle 6 – Work with colleagues in a way that is in patients' best interests.
- GDC Principle 7 – Maintain, develop and work within your professional knowledge and skills.
- GDC Principle 8 - Raise concerns if patients are at risk.
- GDC Principle 9 - Make sure your personal behaviour maintains patients' confidence in you and the dental profession.

1.6.2 Care Quality Commission (CQC) - Health and Social Care Act 2008 (Regulated Activities) Regulations

- Regulation 12: safe care and treatment.
- Regulation 15: premises and equipment.

- Regulation 17: good governance.
- Regulation 18: staffing.
- Regulation 19: fit and proper persons employed.

2. Infection Control: At a Glance

- Infection control involves applying microbiology in our practice procedures to prevent the transmission of infections caused by microorganisms.
- In dental workplaces, microorganisms typically include: bacteria, viruses, fungi, spores, and prions.
- Practice policies and procedures are in place to support this process and reduce the incidence of infection transmission among patients, between patients and staff, and from staff to patients.
- Infections have the potential to be transmitted via:
 - Interaction between individuals (e.g., infection spreads from human-to-human).
 - Surfaces that are contaminated (e.g., infection spread from patient to a dental chair, and then to another patient, if the chair is not cleaned appropriately).
 - Transmission through the air (airborne) (e.g., through sprays (aerosols) produced by dental hand tools, and water lines in dental units).
 - Hand hygiene due to poor cleanliness, which fails to remove temporary bacteria (e.g., transient flora).
 - Improper sterilisation of dental tools and equipment utilised during dental treatments.

2.1 Chain of Infection

- The chain of infection, as demonstrated through six main phases, considers the transmission of infection, and the movement of microorganisms from host-to-host:
 - Infectious microbe (e.g., bacteria, virus, fungi, prion, spore, or protozoa).

- Reservoir (e.g., location where the microorganism resides and reproduces, like in humans, animals, foodstuffs, fluids, water, and equipment).
- Portal of exit (e.g., location where the microorganism exits the reservoir, for instance via bleeding, coughing, sneezing, and faeces).
- Mode of transmission (e.g., contact via hands, sharp injury, airborne, or a medium such as a dental unit water line).
- Portal of entry (e.g., an entry point could be a wound, a cut in the skin or mucous membrane of the mouth, stitches, IV lines, or catheters).
- Susceptible host (e.g., an infant, older person, someone without immunity, immunodeficiency, or immunosuppression due to medication).
- By recognising every phase, and disrupting just one connection in the sequence, we might decrease, or stop the transmission of infection.
- The six connections may differ based on the type of microbe and the illness, yet the fundamental concept is identical.
- The chain of infection forms the basis of numerous infection control protocols in dental workplaces, and serves to:
 - Educate employees on preventing infections.
 - Evaluate hazards in clinical environments.
 - Create broader public health plans (e.g., for handling outbreaks or pandemics).
- In dental workplaces, such paradigm assists the team in identifying areas that might require improvement, for example, by enhancing hand hygiene, ensuring proper personal protective equipment (PPE) usage, conducting thorough surface disinfection, or sterilising instruments correctly.

2.2 Route of Transmission in Dental Workplaces

- Infection may be transmitted through the subsequent pathways:
 - Direct contact (e.g., spread of microorganisms by touching contaminated hands, tools, devices, or individuals through direct contact).

- Indirect contact (e.g., spread of microorganisms by touching surfaces or items that have been in contact with droplets or splatter during dental treatments).
- Droplet transmission (e.g., contamination arising from bigger respiratory droplets released whilst providing treatment, like those produced when talking, coughing, or operating tools such as a high-speed handpiece or 3-in-1 syringe).
- Aerosol transmission (e.g., transmission of microorganisms through small aerosol particles produced during dental treatments or by coughing and sneezing; these particles have the ability to stay suspended in the air and can be breathed in).
- Common source transmission (e.g., infection associated with a common origin, like polluted waterlines in dental units).
- Fomite transmission (e.g., microorganisms are spread by touching infected objects or surfaces like mobile phones, doorknobs, or stationery).
- Exposure to bodily fluid occurrences (e.g., percutaneous wounds like needle pricks or sharp injuries, and splattering of blood or other bodily fluids into the mouth, nose, or eyes).

3. Bacteria: At a Glance

- Bacteria are microscopic organisms, formed of a single cell that can be found in nearly all surroundings, such as within the human body.
- They are categorised into three primary groups based on their shape:
 - Spirochaetes: spiral or corkscrew shaped.
 - Bacilli: rod or cylindrical shaped.
 - Cocci: spherical or round shaped.
- They are very versatile and are available in a variety of forms, some of which are actually valuable, while others can lead to infection.
- Bacteria are notably larger than viruses, typically 10 to 100 times larger, and possess a firm external cell membrane.

- In the dental field, it is essential to grasp the function of bacteria in the spread of diseases, and in maintaining oral wellbeing.
- Bacteria are frequently present in saliva, plaque, aerosols, dirty instruments, and on various surfaces within dental workplaces.
- Certain kinds of bacteria have the potential to lead to severe infections if not appropriately controlled using efficient infection control measures.
- The dental workforce is susceptible to being exposed to specific bacterial infections via blood, bodily fluids, or aerosols.
- Due to this fact, it is vital for dental staff to be vaccinated against these bacterial illnesses:
 - Tuberculosis (TB).
 - Tetanus.
 - Diphtheria.
- Such immunisations provide protection for both the person receiving them, and the persons under their care.
- Keeping immunisations current is an essential aspect of the broader duty to avert cross-infection in dental environments.

4. Viruses: At a Glance

- Viruses are tiny infectious entities, composed of genetic material, which can be either RNA or DNA, encased within a protein coat.
- Viruses are not independent living organisms like bacteria.
- Viruses are unable to replicate independently, and depend on infecting living cells to increase in number.
- Viruses are not affected by antibiotics because they lack a cell wall.
- The majority of antibiotics function by attacking the cell walls of bacteria, a component that viruses lack.
- This explains the reason why viral infections need to be handled differently, frequently through vaccination, antiviral medications, or by letting the body naturally combat them.
- Viruses pose a significant risk in dental settings because they can be transmitted through saliva, blood, aerosols, and other bodily fluids.

- Certain viruses can retain their infectious properties on surfaces for prolonged durations, thus necessitating rigorous infection control measures.
- In order to minimise the risk of transmitting viral infections within dental workplaces, it is essential for the clinical workforce to receive vaccinations against the following viruses:
 - Hepatitis B.
 - Varicella (chickenpox).
 - Measles, mumps and rubella (MMR).
 - Polio.
 - Seasonal flu.
 - COVID-19.
- These vaccinations safeguard both dental practitioners and their patients, and are a crucial component of a secure and conscientious strategy for preventing infections.

5. Fungi: At a Glance

- Fungi are intricate, multicellular microorganisms that possess a higher level of structural complexity compared to bacteria or viruses.
- They can be located in various habitats, typically inhabiting the skin, oral cavity, and other warm, moist regions of the body.
- They mostly reside without posing any harm as a component of the normal microbiota, but they can proliferate and lead to infection in particular situations.
- Fungal infections are commonly observed in dentistry when a patient has a weakened immune system, inadequate oral hygiene, or alterations in the normal bacteria balance in the mouth, such as following antibiotic treatment or denture wear.
- Typical fungal infections observed in dental settings include:
 - Oral candidiasis (oral thrush) – a white covering or painful areas, resulting from an excessive growth of the *Candida* species.

- Denture stomatitis - inflammation beneath a denture that is frequently associated with inadequate denture hygiene or the practice of wearing dentures during the night.
- Angular cheilitis - sore, chapped, or inflamed sores at the edges of the mouth, frequently associated with a fungal and/or bacterial involvement.
- Early detection and care of fungal infections is key to alleviating pain, lowering the chances of further infection, and promoting overall oral wellbeing.
- Dental professionals should be mindful of referring patients for specialist care, especially in cases where fungal infections linger or reoccur.

6. Prions: At a Glance

- Prions are atypically folded proteins that have the ability to induce contagious illnesses, especially those impacting the brain and nervous system.
- Recognised as the tiniest infectious agents, they are unique, since they do not have any genetic material, in contrast to bacteria, viruses, or fungi.
- Prions have been associated with several uncommon yet severe neurodegenerative diseases, such as:
 - Bovine Spongiform Encephalopathy (BSE) (i.e., 'mad cow disease').
 - Creutzfeldt-Jakob Disease (CJD) and a variant form, vCJD.
- Such diseases impact brain matter and could result in death.
- vCJD is characterised by an abnormally extended period of time before symptoms appear, allowing individuals to knowingly, or unknowingly, harbour the illness for many years, or even several decades, without showing any signs.
- Typically located in nerve or brain tissue, prions are highly resilient to traditional sterilisation methods (e.g., autoclaving).
- Consequently, specific tools (e.g., endodontic files) that come into contact with pulpal nerve tissue, are assigned single-use in the UK to avoid any chance of spreading infection.

- Universal safety measures are vital in dentistry, as we must consider each patient as a possible spreader of contagious disease, and thus, adhere to thorough disinfection and infection prevention procedures consistently.

7. Spores: At a Glance

- Upon encountering challenging conditions that hinder their ability to survive or replicate, certain species of bacteria react by producing spores.
- A spore is a resting, safeguarding configuration of a bacterium, surrounded by a sturdy external covering.
- The bacterium, in such condition, does not replicate, but stays dormant for long periods, possibly months or more, until the environment becomes favourable once again.
- When circumstances get better, the spore has the ability to become active again and revert to its typical bacterial state.
- The protective covering of the spore provides it with strong resistance to high temperatures, dehydration, and numerous chemical cleaning agents.
- This resilience demonstrates that spores are more challenging to eradicate compared to typical bacteria.
- In the dental field, workers must be mindful that regular disinfectants might not be effective enough to eliminate spores.

8. Hand Hygiene

- A standardised hand hygiene protocol must be adhered to in order to guarantee that every area of the hands and wrists is completely sanitised.
- There must be a thorough and methodical application to ensure that every area is treated with soap or disinfectant.
- Intense rubbing is necessary as it helps to physically eliminate microbes through friction.
- To effectively cleanse hands and wrists, it is advisable to wash them with regular or antibacterial soap, for a period of 15 to 30 seconds (this is also the same if using waterless products).

- Surgical hand hygiene, involving the hands, wrists, and forearms, necessitates a longer period of two to three minutes.
- It is important to dry your hands completely after washing, as moist skin promotes the growth of bacteria.
- Satisfactory drying is essential for preserving skin health and preventing harm, as bacteria reproduce more quickly, and slough off more from injured skin.
- It is advisable to utilise disposable paper towels for drying hands, in order to uphold hygiene standards.
- It is vital to regularly use moisturiser on the hands to shield the skin from dryness and harm, resulting from frequent handwashing.
- Learning proper hand cleanliness is an essential requirement for all employees, whether they are new or highly experienced; hand hygiene is typically included in induction programmes.
- Motivating and ensuring adherence can be accomplished by senior team members leading by example, showcasing educational posters, and carrying out routine hand hygiene audits with feedback.
- In summary, hand hygiene should be performed:
 - Prior to and following the utilisation of personal protective equipment (PPE).
 - Prior to and following each treatment session.
 - If PPE is taken off, while performing treatment.
 - Following the washing of dental instruments, or performing manual cleaning.
 - Prior to coming into contact with sterilised tools.
 - Following any decontamination tasks.
 - Once decontamination equipment has been cleaned or maintained.
 - Upon finishing decontamination duties.

9. Personal Protective Equipment (PPE)

- Personal protective equipment (PPE) is an essential component of standard precautions to prevent and manage infections in dental settings.

- PPE serves to shield the dental workforce from coming into contact with blood, saliva, and other potentially contagious substances.
- Although it is crucial for safeguarding dental workers, it should not be the sole reliance.
- Its efficacy is maximised when combined with additional preventive measures like following safe work protocols, ensuring proper ventilation, and maintaining current immunisations.
- It is important to integrate PPE with practises like hand hygiene, secure handling of sharp objects, and maintaining cleanliness in the environment, rather than underestimating such practises.
- Clinical staff within dental workplaces must receive training on how to correctly use and choose PPE necessary for clinical procedures and cleaning instruments.

9.1 Gloves

- Gloves are utilised for safeguarding patients and dental staff against the spread of infection.
- Gloves should not replace proper handwashing or caution when dealing with sharp objects.
- Gloves are designed for one-time use and new ones should be donned after each patient.
- While they do not entirely prevent sharp injuries, gloves can help minimise contamination by acting as a barrier when sharp objects puncture them.
- It is crucial to remove gloves in an aseptic manner to prevent contaminating your hands.
- Nitrile or neoprene gloves are recommended over latex gloves to decrease the risk of developing allergies.
- For invasive procedures, it is advisable to use sterile gloves.
- When cleaning instruments, heavy-duty gloves should be donned to shield against sharp objects and chemicals.

9.2 Eyewear (Goggles and Masks)

- Eye safety is crucial for all dental tasks, particularly when there is a chance of splashing or when manually sterilising tools.
- Goggles and face shields create a protective barrier against particles and liquid splashes.
- Glasses alone are not as effective because they do not have side protection.
- Face shields can be worn on top of glasses or loupes, and aid in averting any habit of touching the face during procedures.

9.3 Masks and Respirator Masks

- Masks are essential during all patient procedures, as they enable protection from splatter but their efficiency against aerosols is questionable.
- The majority of surgical masks do not create a complete seal, and they do not fully purify the air that is breathed in.
- Masks with multiple layers and a well-fitted nose strip might offer improved filtration of approximately 70%.
- Workers must refrain from touching the outer surface of the mask, and avoid pulling it down beneath the chin.
- When removing masks after a procedure, workers must do this by the straps to prevent contamination.
- Respirator masks like FFP3 provide a higher level of defence, and are utilised when treating patients with airborne diseases including measles, flu, or TB.
- Respirator masks filter the air that is breathed in and lessen exposure to microbes by as much as 98%.
- A proper fit is crucial for effectiveness, as leaks can diminish respirator masks' protective capabilities.

9.4 Aprons and Gowns

- Just wearing uniforms is not enough to provide sufficient protection from splashes or bodily fluids.

- When performing procedures that may involve contact with blood or saliva, like scaling, aerosol generating procedures (e.g., cavity or crown preparations), or instrument cleaning, it is highly recommended to put on a plastic apron.
- Workers must be cautious when putting on, and taking off aprons by only touching the inner part.
- For treatments with a high risk of splashes, such as periodontal or implant surgery, it is advisable to use a fluid-resistant gown.
- Workers must ensure that gloves are worn over the cuffs of the gown.
- Prior to putting on a gown, hands should be clean and exposed below the elbows.

9.5 Removal of PPE

- To prevent the spread of infection, it is important to take off PPE in this specified sequence:
 - Gloves.
 - Apron or gown.
 - Mask or respirator mask (visor first if worn, and then the mask).
 - Protective eyewear.
 - Hand hygiene performed.

10. Impressions

- Proper disinfection is vital for maintaining satisfactory infection control in dentistry.
- It is important to ensure that dental impressions, prosthetics, laboratory work, and orthodontic devices are disinfected properly before being sent to the lab, and prior to insertion into the patient's mouth.
- Consistency in disinfecting impressions and proper labelling of disinfected items is fundamental, as this helps safeguard laboratory staff and avoids the need for multiple disinfection attempts, which may impact the dimensional strength of the impression.

10.1 Outgoing Laboratory Work

- After taking an impression, it must be washed with running water to get rid of any noticeable particles.
- Then, it must be submerged in a disinfectant solution for 10 minutes (the manufacturer's instructions must be consulted to determine the exact soaking time).
- Next, with gloves on, the impression must be removed from the solution, and washed under water to eliminate any disinfectant residue.
- Alginate impressions need to be covered with moist gauze to avoid excessive wetness (will cause expansion) or drying out (will cause shrinkage).
- These wrapped impressions should then be kept in a sealed, airtight bag.
- For crown and bridge impressions, after disinfection, they should be dried using a triple syringe and then stored in an airtight bag, at room temperature or below until they are transported.
- When sending work to the laboratory, it is important to specify the decontamination method employed, and such information can be conveyed by attaching a label to the package, or by noting it on the laboratory docket.
- The disinfectant solution must be replaced after each session (morning/afternoon), or if it appears soiled before that.
- It is vital to refer to the manufacturer's guidelines regarding the solution or powder being utilised to guarantee the accurate dilution.

10.2 Incoming Lab Work

- Upon receiving work from the laboratory, it is necessary to disinfect any appliance before inserting it into the patient's mouth.
- Disinfection can be achieved through either soaking or spraying.
- It is important to have distinct disinfection solutions for both incoming and outgoing lab tasks.

10.3 The Immersion Method

- This method is recommended because:

- The impression remains submerged during the entire contact duration.
- All surfaces are disinfected.
- The impression can be left in the solution for the time recommended by the manufacturer without the need for continuous monitoring.
- Workers will need to consult the detergent manufacturer to identify when the solution becomes excessively soiled.

10.4 Spray to Disinfect

- This method is not recommended because:
 - Aerosols might be generated.
 - Spraying does not ensure complete coverage of all areas.
 - It is challenging to determine the appropriate contact time, and it is crucial to prevent the surface from drying out while applying the solution.

11. Surface Cleaning

- Bacteria, viruses, and fungi might be found on surfaces, and in the clinic after treating patients, so it is vital to clean and disinfect thoroughly to keep patients safe and minimise the chances of cross-contamination.
- Surface cleaning and disinfecting surfaces are crucial for proper infection control in dental clinics.
- It is important for the clinic to have a specific plan that details how often surfaces and rooms should be cleaned.
- Such plan can be part of the infection control policy, infection control statement, or documented during daily checks in the surgery logbook.
- Surfaces should be cleaned:
 - Before clinical activities.
 - At intervals between patients.
 - Following clinical activities.
- It is advisable to clean the patient treatment area after each session with disposable cloths or fresh microfibre materials, regardless of whether the area seems free of contamination.

- After each patient, it is necessary to clean and disinfect the following:
 - Worktops and surfaces.
 - Dental chair and upholstery, making sure there are no rips or tears.
 - Light curing devices.
 - Inspection lights and handles, wherever feasible, should be protected with disposable coverings.
 - Hand controls.
 - Delivery units and trolleys.
 - Spittoons.
 - Aspirators.
 - Dental x-ray units.
- It is essential to wipe down equipment after each use, and perform a thorough cleaning of these at the end of the session.
- Plastic covers can be utilised but should not be a substitute for regular cleaning.
- Following each clinical session, it is crucial to clean and disinfect the following areas:
 - Taps and drain areas.
 - Sinks and splashbacks.
 - Cabinetry.
 - Flooring, especially near the base of the dental chair.
 - Spittoons must be meticulously cleaned according to the manufacturer's guidelines.

12. **Spillages**

- It is expected that spillages will occur in a dental clinic, whether they involve bodily fluids or dangerous substances.
- It is imperative to have thorough planning and well-defined procedures in operation to manage these incidents in a secure and consistent manner, safeguarding the wellbeing of patients, staff, and the entire clinic.
- All clinics must have a documented plan, outlining the steps for cleaning and disposing of bodily fluids or hazardous substances.

- Trained staff should manage these tasks, and adhere to the regulations set forth in the Control of Substances Hazardous to Health (COSHH) legislation.
- Employees need to be properly trained on how to handle spillages, which includes:
 - Being aware of the location of the spillage kit.
 - Being proficient in using the kit.
 - Being knowledgeable about implementing the appropriate procedure
 - Being confident about how to report such incident.
- It is necessary to have a spillage kit in the clinic, complete with all essential tools and substances to manage spillages competently.
- Regular inspection of the kit is required, to replace utilised supplies, and discard any expired items.
- Suggested items for a body fluid spill kit should include:
 - A single-use plastic apron.
 - Cardboard scoop.
 - Protective gloves and eyewear.
 - Bag for clinical waste disposal.
 - Granules of sodium dichloroisocyanurate to solidify a spill, so it can be easily removed using a scoop.
 - A disinfectant cleaner, also known as chlorine-releasing granules, should come with detailed usage guidelines.
 - A chlorine level of at least 1,000 ppm is recommended for general cleaning purposes.
 - For cleaning blood spills, a concentration of 10,000 ppm chlorine is advised.
 - Chlorine tablets should be dissolved following the instructions provided by the manufacturer.
 - The chlorine concentration in a bodily fluid spillage kit must agree with the specified levels for its intended application.

12.1 Managing a Spillage

- Should there be a spillage, it is necessary to respond promptly and reliably to safeguard the wellbeing of employees, patients, and visitors.
- Having precise protocols can reduce dangers, and guarantee a speedy and secure cleanup.
- Utilising a warning sign, or biohazard tape to mark the area, or seal it off, helps notify individuals and prevents unintended exposure.
- Suggested steps to manage a spillage:
 - Notify all individuals, nearby, including staff and patients.
 - To minimise the possibility of breathing in any dangerous fumes or sprays, provide ventilation to the area.
 - Alert the Registered Manager.
 - Display caution signs conspicuously.
 - Eliminate any unaffected equipment to facilitate cleaning access.
 - Retrieve the spillage kit.
 - Wear suitable personal protective gear.
 - Ensure all cleaning equipment is ready prior to starting.
 - Adhere closely to the spillage kit manufacturer's guidelines.
 - Be aware of the environment and others nearby during cleanup.
 - Dispose of all contaminated waste correctly, labelling containers or bags according to local regulations.
 - Thoroughly wash hands after completion.
 - Debrief as a team to examine if preventive measures could have been taken to avoid the spillage.

13. Sharps Injuries

- Injuries from sharp objects, such as needlestick injuries, cuts, and puncture wounds, along with exposure to bodily fluids via splashes or splatter on compromised skin, eyes, the oral cavity, or mucous membranes, present a potential risk for the transmission of blood-borne viruses, including HIV, hepatitis B (HBV), and hepatitis C (HCV).
- The majority of sharps injuries happen during the following activities:

- Manually recapping or re-sheathing needles.
- Disassembling equipment.
- Discarding sharp objects.
- These injuries can be prevented by following best practices, such as:
 - Refraining from re-sheathing.
 - Utilising safety-engineered (safer) sharp instruments.
 - Promptly disposing sharps into a designated, puncture-resistant vessel.
- The appropriate handling of sharp objects is addressed within The Health and Safety (Sharp Instruments in Healthcare) Regulations 2013, which mandate timely reporting of all incidents involving sharps injuries to the employer.

13.1 Post-Exposure Prophylaxis (PEP)

- Should a risk assessment indicate probable exposure to blood-borne viruses, it is recommended to promptly initiate PEP.
- Typically, the initial treatment is administered by the workplace's health service provider or the nearby Accident and Emergency (A&E) department.
- Virus-specific PEP protocols:
 - Hepatitis B (HBV) –
 - The majority of dental workers are expected to have received vaccination.
 - An additional dose (booster) might be necessary following potential exposure.
 - In cases where the individual does not respond to the vaccine, the option of providing Hepatitis B Immunoglobulin (HBIG) should be considered.
 - It is optimal to administer Post-Exposure Prophylaxis (PEP) within 48-hours; however, it could still be efficacious if administered within a 7-day timeframe.
 - Hepatitis C (HCV) –
 - Currently, there is no vaccine or reliable preventive measure accessible.

- It is recommended to conduct blood screenings initially, and then at 6, 12, and 24 weeks to detect any indications of infection (seroconversion).
- In case of confirmed infection, antiviral therapy should be provided.
- Human Immunodeficiency Virus (HIV) –
 - PEP is unnecessary if the source individual has tested negative for HIV or if the risk level is determined to be low.
 - Direct contact of HIV-positive blood with unbroken skin does not present a risk of transmission.
 - In cases where PEP is deemed necessary:
 - It is recommended to commence treatment within one hour of exposure, although it can be administered up to 72-hours afterwards.
 - Typically, an initial supply of HIV PEP medication is dispensed.
 - If the source individual is confirmed HIV-negative within 24-hours, PEP can be discontinued.
 - Should the source individual be HIV-positive, the full 28-day regimen must be completed.
 - Regular blood tests should be conducted over a minimum of 12 weeks as part of the follow-up process.

13.2 The Use of Safer Sharps

- Healthcare facilities, including dental workplaces, are obligated by the Health and Safety (Sharp Instruments in Healthcare) Regulations 2013, to utilise safer sharp tools whenever reasonably feasible.
- A safer sharp is a single-use instrument with an integrated safety element, like a retractable or sliding mechanism, designed to reduce the chances of unintended needlestick accidents.
- In the dental workplace:

- The needle cover or shield automatically encloses the needle once it has been used.
- The complete set (needle and syringe) is disposed together into a sharps box.
- Re-sheathing or disassembling, which are highly risky actions, is unnecessary.
- The safer sharp's design greatly decreases the risk of harm during or following a procedure.
- Sharps must be disposed off immediately and safely after use.
- Regular reviews of the sharps policy and upgrading equipment when necessary, should take place.
- All members of the team must receive training on the proper utilisation of such safety devices.

13.3 Managing a Sharps Injury

- Each dental clinic needs to establish a precise procedure for handling sharp object injuries.
- Such accidents pose a danger of coming into contact with blood-transmitted infections (e.g., HBV, HCV, and HIV), making it crucial to react promptly and calmly.
- A clearly communicated protocol guarantees that all staff members are well-informed about the necessary steps to take, minimising misunderstandings, anxiety, and hindrances in obtaining medical assistance.
- Particularly, a well-defined sharps injury protocol:
 - Assists in decreasing the likelihood of severe infection.
 - Promotes the welfare of employees.
 - Complies with legal and regulatory duties.
 - Fosters a safety-oriented environment within the dental workplace.
- A sequence of what to do in case of a sharps injury:
 - Stimulate the wound to bleed - allow the wound to bleed softly, and avoid sucking it; this aids in removing any impurities.

- Thoroughly cleanse - wash the area with soap and flowing water, and avoid scrubbing the wound, as this could further harm the skin and heighten the chances of infection.
- Dry and shield - gently dry the area and place a waterproof dressing to safeguard the wound.
- Immediately report the incident as per RIDDOR legislation - inform the practice manager or the designated individual in charge of infection control, as timely reporting is crucial for assessing the risk and getting post-exposure care.
- Review the patient's medical background - if the source is identified, their medical background can assist in determining the risk level, but this should be handled with care, and following confidentiality guidelines.
- Reach out to Occupational Health - Occupational health will conduct a risk evaluation and determine if PEP or other follow-up measures are necessary; if no such service is available, head directly to the local A&E.
- Document an incident or accident report – as per RIDDOR, log the details of the incident, including when and how it happened, and the actions taken; this aids in the follow-up process, learning from the incident, and supporting any affected staff.
- It is important for all team members to be aware of the location of such sharps injury protocol, and to be prepared for any situation, even if they believe it is unlikely to occur to them.

14. Immunisations

- Immunisation plays a vital role in the realm of public health by safeguarding individuals and communities against severe infectious illnesses.
- For the dental workforce, ensuring adherence to the suggested vaccination protocols is not merely a worthwhile habit, but it also serves to shield patients, coworkers, and the general population, particularly those who are vulnerable.

- In a healthcare context such as dental workplaces, where regular close contact and exposure to blood and saliva occur, vaccination plays a crucial role in providing protection.
- Immunisation has effectively managed, and in certain instances eliminated, numerous severe illnesses such as smallpox, polio, and tetanus.
- Insufficient vaccination rates may lead to the resurgence of preventable illnesses such as measles and mumps, as evidenced by occurrences in certain regions of the world.
- Vaccinations not only safeguard the individual undergoing immunisation but also provide protection to others by decreasing the spread of diseases, including individuals who may have compromised immune systems.

14.1 Types of Immunity

14.1.1 Inactive Vaccinations

- Vaccinations like the hepatitis A vaccine consist of inert protein fragments derived from deactivated Hep A viruses; these protein components are non-pathogenic, yet they can stimulate the immune system to generate defensive antibodies.

14.1.2 Modified and Attenuated Live Vaccinations

- Live vaccines consist of harmless, altered strains of the virus.
- While they do not induce sickness, individuals receiving the vaccine might encounter minor effects like localised tenderness or inflammation at the injection location, or a slight increase in body temperature.
- Patients with significantly weakened immune systems resulting from conditions like cancer or AIDS might require specialised consultation, as certain live vaccines could be inappropriate for them.

14.1.3 Passive Immunity

- Immunoglobulins refer to antibody preparations that offer prompt yet brief defence against diseases for individuals with a heightened susceptibility to severe ailments or complications, such as those who are immunocompromised or expectant mothers.
- Healthcare workers lacking immunity, like individuals who do not acquire immunity even after receiving a series of HBV vaccinations, may be provided with HBV globulin (HBIG) following a needle stick injury that poses a high risk of HBV transmission.

14.1.4 Recommended Vaccinations

- According to the Green Book of the UK Health Security Agency, the following vaccine-preventable infections are of concern for healthcare workers:
 - Measles, mumps and rubella (MMR)
 - Hepatitis B (HBV)
 - Chickenpox (varicella)
 - Tetanus, diphtheria and polio
 - Flu (seasonal influenza)
 - COVID-19
- Dental workers who regularly interact with patients and face potential exposure to blood, saliva, and aerosols should ensure they are fully informed and compliant with the necessary guidelines to safeguard both themselves and the patients under their care.
- Guidelines for vaccination may differ, based on professional designation (clinical or non-clinical), individual risk evaluation, and guidance from local occupational health authorities.
- Dental workplaces must:
 - Maintain an accurate and current documentation of employees' vaccination statuses.
 - Provide access to vaccinations for staff members as needed.
 - Foster a supportive environment promoting occupational health and preventing infections.

- Promote messaging that vaccination safeguards not only the individual, but also the entire dental staff and the patients under their care.

15. The Dental Environment

- Ensuring cleanliness and proper upkeep of the surroundings is crucial in dental settings to mitigate the transmission of infections.
- In the dental context, the term 'environment,' incorporates every space where patients, employees, or visitors might encounter surfaces, furnishings, or structures.
- The dental environment encompasses:
 - Surfaces positioned horizontally: Encompassing both elevated and low levels within the patient environment, especially those that are frequently contacted.
 - Areas within rooms and communal spaces: Such as dental surgery rooms, treatment spaces, waiting sections, reception areas, and storage facilities.
 - Furnishings and fixed objects: Dental chairs, carts, tables, and seats.
 - Sanitary zones: Such as lavatory facilities, washbasins, sinks, and their associated components like faucets, soap dispensers, paper towel holders, and adjacent doorknobs or handles.
 - Overall surroundings: Including walls, skirting boards, partitions, lighting apparatus and controls, drapes, and window shades.
 - Areas designated for food preparation: These must be factored into infection control.
 - Risk assessments and professional expertise are essential for identifying the areas that require focus within specific working environments.

15.1 Surfaces and Material Considerations

- It is necessary for work surfaces to be impermeable, sealed, and simple to clean by wiping.

- The flooring needs to be slip-resistant, without seams, and preferably should curve up the wall by a minimum of 75mm to facilitate straightforward cleaning processes.
- Carpets are not appropriate for use in clinical or communal spaces.
- Flooring joints must be sealed or welded to avoid harm from moisture.
- Upholstered furniture, such as dental chairs, ought to be impervious and cleanable by wiping.

15.2 Storage and Waste Considerations

- Clinical waste bins in treatment areas should be constructed from metal, designed with foot pedals for operation, equipped with lids, and conveniently located for accessibility.
- It is essential that supplies are consistently stored above ground level.
- Storage fixtures such as shelves or cabinets should be resistant to water and designed for effortless cleaning.

15.3 Maintenance Considerations

- It is imperative to promptly address damaged items, including cracked chairs or torn upholstery, by repairing, replacing, or removing them.
- If there are any concerns regarding the risk of infection resulting from any damage, they must be reported without delay.

15.4 Cleaning Responsibility Considerations

- A documented cleaning schedule ought to specify:
 - Clear assigned responsibilities for each task.
 - The frequency of cleaning for different areas (e.g., daily, twice daily, or as per the risk assessment).
 - Outline the specific techniques and cleaning products to be employed.
- Distinct work timetables need to be established for the following worker categories:

- Cleaning personnel are responsible for general cleaning tasks.
- Clinical staff are tasked with duties like decontaminating equipment or clinical workstations.
- Such timetables should serve as explicit guidelines.
- Such timetables will be particularly beneficial for locum or temporary employees, to aid their familiarity with the practice's routines and expectations.
- Timetables should be visibly displayed in each respective area.
- The comprehensive cleaning strategy must be assessed, no less than once a year, to certify its efficacy and appropriateness.

15.5 Best Practice for Maintaining the Dental Environment

- In order to minimise the possibility of cross-contamination across various zones, it is advisable to adhere to a distinct system of color-coding for cleaning.
- This entails the use of distinctively coloured mops, cloths, buckets, and gloves designated for specific areas within the workplace.
- In accordance with the NHS national colour classification system, the guidelines are as follows:
 - Red indicates bathrooms, toilets, and washrooms.
 - Blue designates general low-risk zones like waiting rooms and offices.
 - Green indicates kitchen and food preparation spaces.
 - Yellow is used for clinical areas, including treatment rooms.
- It is advisable that dental organisations obey local regulations, provide training for all employees on color-coded systems, and prominently place a detailed color-coding guide in suitable locations.
- It shall be important to display signs or provide verbal instructions to promote proper hand hygiene, both prior to, and following patients' and visitors' visits to the dental clinic.

16. Decontamination

- Decontamination is a critical procedure in dentistry that involves multiple stages to ensure that tools and surfaces are safe to be reused and used on patients.

16.1 Best Practice

- The term "best practice," also known as the epitome of standards, exceeds simple adherence to regulations.
- It involves more than just fulfilling requirements; it entails striving for the utmost levels of safety, hygiene, and effectiveness in decontamination procedures.
- Best practice signifies a progression beyond the baseline, and demonstrates a forward-thinking attitude, where staff consistently seek to enhance procedures, risk reduction, and readiness in adapting for the future.
- The most effective best practices are not fixed; they develop alongside updated advice, technology advancements, and research findings.
- Forward-looking dental clinics constantly assess their procedures and strive for continuous enhancement.
- It is crucial to understand that attaining optimal performance involves more than just physical arrangement and tools; it also involves establishing strong processes and behaviours.
- Each team member should be cognisant of the significance of adhering to best practices, and recognise how their responsibilities support a secure, lawful, and effective operation.
- Procedures should include thorough documentation, employee training history, and continuous monitoring to ensure conformity and pinpoint areas for enhancement.
- Each dental facility is obliged to adhere to the Essential Quality Requirements (EQR) as detailed in the Health Technical Memorandum 01-05 (HTM 01-05) – these are essential Department of Health guidelines that

provide detailed information on infection control and the sterilisation of reusable equipment in the UK's primary care dental facilities.

- HTM 01-05 serves as a strong basis; however, adhering to best practices necessitates dental clinics to take additional steps such as:
 - Employing systems for instrument tracking and traceability, and utilising techniques like barcoding or digital recording.
 - Engaging in ongoing professional development, concerning infection control and decontamination protocols.
 - Procuring modern equipment that minimises manual labour and enhances efficiency.
 - Consistently evaluating policies, and revising standard operating procedures, according to audit results and staff input.

16.2 Optimal Standards

- Attaining optimal standards in decontamination is centred on three main focal points:
 - Environment:
 - An essential requirement for optimal practice involves ensuring that decontamination procedures are carried out separately from all other activities within the practice facility.
 - This necessitates the presence of a specialised decontamination area, commonly known as a Local Decontamination Unit (LDU).
 - The LDU must have a distinct division between areas designated as 'dirty' and 'clean' to prevent any possibility of cross-contamination.
 - Instruments should follow a systematic progression within the LDU: moving from a contaminated state to being cleaned, disinfected, sterilised, packaged, and ultimately stored.
 - Washer-Disinfector:
 - The installation and proper utilisation of a washer-disinfector are deemed essential for optimal standards.

- Washer-disinfector systems are completely automated, lessening manual interaction, and lowering the likelihood of needlestick injuries and human error.
- Both the user, and a certified service or validation technician must perform regular upkeep and validation in accordance with the manufacturer's guidelines.
- Recording daily and weekly inspections is crucial for audit purposes, as per continuous quality control.
- Storing Instruments:
 - According to recommended protocols, sterilised instruments should be kept in a centralised location, separate from any treatment area.
 - The ideal storage location would be a hygienic section within the decontamination unit (LDU) or a specifically designed storage area.
 - The storage setup should facilitate convenient retrieval, shield instruments from pollutants, and be integrated into a well-defined inventory management system.

16.3 Decontamination Room

- According to national guidelines such as HTM 01-05 Best Practice, it is necessary for decontamination to occur in specifically designated areas, separate from where clinical activities take place.
- This helps to minimise the risk of cross infection, ensuring that the cleaning, examination, and sterilisation procedures obey recognised quality standards.
- In the past, decontamination procedures were typically conducted within clinical spaces.
- In some instances, instruments used in operating theatres were cleaned and sterilised manually in small autoclaves within the treatment room, while the patient was present.
- This method lacked proper quality control, depended on insufficient training and equipment, and posed evident risks of cross infection.

- Gradually, decontamination activities were shifted to specialised areas with dedicated staff.
- Guidelines and standards were enhanced, advanced equipment and processes were implemented, and the contemporary Central Sterile Services Department (CSSD) became the norm for hospitals.
- Regulations and standards progressed, leading to the relocation of decontamination processes from non-theatre areas to CSSDs, thereby, eliminating most ward and department-based decontamination facilities.
- In primary care and community environments, many procedures are now supported by either an accredited CSSD, or disposable instruments.
- In dental clinics, due to the high expense of specific instruments, and the need for quick turnover, most facilities maintain their own decontamination areas.
- The usage of disposable devices is rising where appropriate products are offered.
- Essential criteria for a decontamination area in a dental clinic include:
 - It is vital to have a distinct separation of clean and contaminated tasks to prevent spoilage of sterilised instruments.
 - This can be accomplished through the following methods:
 - Designating two specific areas: one for cleaning and another for inspection, packaging, and sterilisation, following the CSSD standard.
 - Having a single designated space with a workflow from contaminated to clean areas, and scheduling tasks in a way that clean and contaminated activities do not overlap in time, with thorough cleaning and disinfection of surfaces in between uses.
 - Utilising airflow to enhance separation, like installing extractor fans in the cleaning area, and air vents in the sterilisation area to establish a flow from clean to contaminated zones.
 - In cases where the only available space for decontamination is the treatment room, temporal segregation should be implemented, ensuring that decontamination procedures are

conducted at a different time than when patients are in attendance.

- When establishing or renovating a decontamination area, it is important for the design to comply with the recommended standards of HTM 01-05.
- The configuration needs to facilitate safe movement, offer sufficient room for tools, facilitate easy cleaning, and safeguard instruments from spoilage.
- It is pivotal to take into account ventilation and storage requirements early on in the planning process, to avoid the inconvenience and expense of later modifications.
- HTM 01-05 provides suggested layouts that can be adjusted according to the space available, ensuring effective separation and operational efficiency are maintained.

16.4 Zoning

- It is advisable for a dental clinic to have a specialised decontamination area, consisting of distinct clean and dirty rooms, in order to lessen the risk of cross contamination.
- Due to space constraints, many clinics combine the decontamination process into one room, clearly delineating clean and dirty zones within it, instead of having separate rooms.
- To prevent contamination, instruments should be decontaminated away from the dental chair, as reasonably possible.
- Decontamination within the treatment room should be avoided whilst patients are present, as activities like manual cleaning, accessing equipment, or emptying machines can lead to the discharge of contaminated aerosols and splashes.
- The dirty zone needs to have the following components:
 - A designated spot for placing dirty instruments.
 - A separate sink for handwashing.
 - Sinks or bowls for washing and rinsing.
 - An ultrasonic cleaning device.
 - A washer disinfectant.

- A light for inspecting cleanliness.
- The clean zone should contain:
 - Autoclaves for sterilisation.
 - An area for inspecting and packaging items.
 - A handwash sink, which can be omitted if the room is single-purpose but there is enough room.
- In spaces where there are no physical obstacles like walls, doors, or screens separating clean and dirty zones, it is imperative to have a strong cleaning routine to avoid recontamination.
- The movement should be strictly unidirectional, always going from the dirty area to the clean area without any mixing.
- It is important to keep surfaces clear of any mess, and sanitise them with single-use disinfectant wipes at each phase of the cleaning procedure.
- In a single room setup, it is necessary to move clean tools away from work surfaces before starting work in the dirty zone, to prevent contamination from airborne particles.
- Sterilised tools kept in pouches must be stored in drawers to shield them from damage caused by moisture, steam, and aerosols that could affect the packaging's stability.
- The airflow should be planned to move from the sanitised section towards the unclean section to prevent unclean air from infiltrating clean regions.
- It is essential to routinely replace clean air filters and ensure that ventilation grilles are cleaned according to the facility's cleaning timetable.
- The use of extractor fans above areas where manual cleaning occurs can help restrict the spread of airborne particles.
- When separate clean and dirty rooms are accessible, each room should have its own ventilation system.
- If air conditioning units are utilised, they should be situated in the clean section to lessen steam accumulation.
- Regular maintenance and filter replacements are essential to prevent the growth of *Legionella* bacteria.

17. Legionella

- Legionella, a bacterium found in the environment, poses a significant threat in healthcare environments like dental clinics, as it can multiply in standing water systems.
- Dental unit waterlines (DUWLs) are especially at risk of contamination, particularly if maintenance procedures are not followed correctly.
- These waterlines are capable of producing tiny airborne particles during dental procedures, such as when using tools like handpieces, ultrasonic scalers, and 3-in-1 syringes, thereby heightening the chance of exposure to the Legionella bacteria.
- HTM 01-05 sets out the obligations that dental practices must adhere to for preventing Legionella infections.
- Notably, HTM 01-05 highlights that registered managers must prioritise their duty of care, as per the Health and Safety at Work Act 1974, to evaluate and manage the dangers linked to waterborne pathogens.
- Conducting a documented Legionella risk assessment, putting in place suitable preventive measures, and regularly reviewing these actions, will be vital.
- Legionella pneumophila, the main species to be aware of, is the cause of Legionnaires' disease, which is a severe type of pneumonia that can be life-threatening.
- Legionella pneumophila flourishes in water temperatures ranging from 20°C to 45°C, especially in biofilms that may accumulate in waterlines inadequately flushed or disinfected.
- While the risk to the overall population in dental environments is deemed minimal, the impact of contracting the infection can be serious for specific individuals.
- Individuals with a higher likelihood of contracting Legionnaires' disease comprise:
 - People over 50-years old.
 - Those with long-term respiratory or heart issues.

- Patients with diabetes, kidney problems, or weakened immune systems.
- Individuals receiving cancer treatment or on extended immunosuppressant drugs.
- Smokers.
- Men are more commonly impacted compared to women.
- It is important to note that Legionella is not transmitted between people.
- Infection occurs when individuals inhale water droplets containing the bacteria.
- Therefore, effectively managing Dental Unit Water Lines (DUWLs) is crucial for ensuring patient safety and complying with the law in dental settings.
- According to the Control of Substances Hazardous to Health (COSHH) Regulations, employers are obligated to identify and handle any biological agents that could endanger health.
- A thorough Legionella risk assessment should be conducted by a competent individual to pinpoint potential sources of contamination and establish measures to reduce the risk.
- These duties are supported by the Health and Safety Executive's Approved Code of Practice (ACOP) L8: Legionnaires' disease, which lays down regulations for managing Legionella in water systems to ensure compliance in all workplaces.

17.1 Best Practice Recommendations

- These include:
 - Flushing DUWLs at the beginning of each workday and in between patients, usually for 20-30 seconds.
 - Opting for independent or self-contained water systems over mains supply, if feasible.
 - Applying suitable biocidal agents to waterlines, as instructed by the manufacturer.
 - Consistently cleaning, disinfecting, and upkeeping DUWLs to avoid biofilm development.

- Periodically testing water quality as needed.
- Maintaining written documentation of maintenance plans, water treatments, and flushing procedures.
- Despite the minimal likelihood of Legionella infection in dental environments, it is still important to proactively address the issue.
- By adhering to the recommendations in HTM 01-05 and integrating Legionella prevention measures into regular infection control procedures, dental clinics can effectively fulfil their legal responsibilities, while safeguarding the health of both patients and staff.

17.2 Legionellosis and Dentistry

- In the UK, instances of Legionella infections originating from dental unit waterlines are extremely uncommon.
- Despite several international reports emphasising possible dangers and fatalities, documented cases within UK dental facilities are rare due to strict infection control protocols and compliance with regulations like HTM 01-05 and ACOP L8.
- According to surveillance data from Public Health England and records from the Health and Safety Executive (HSE), there have been minimal reported incidents linked to dental procedures.
- However, due to the serious nature of Legionnaires' disease, especially for patients at risk, it is essential for dental practices to prioritise thorough risk assessments and proper waterline management to ensure safety and adherence to legal requirements.
- In the UK, all dental practices are required by law under the Health and Social Care Act 2008 Code of Practice and HTM 01-05 to carry out a written Legionella risk assessment covering hot and cold water systems and DUWLs.
- Every UK-based dental clinic must obey the legal obligation outlined in the Health and Social Care Act 2008 Code of Practice and HTM 01-05, by conducting a documented risk assessment of Legionella risk.
- Such assessment should specifically focus on hot and cold water systems and Dental Unit Water Lines (DUWLs).

- The aim of relevant risk assessments are to:
 - Recognise and assess potential causes of Legionella proliferation and aerosol formation, like:
 - Excessive water storage capacity.
 - Locations with low water circulation or utilisation.
 - Problems with temperature regulation in plumbing setups.
 - Utilisation of materials that could foster bacterial development.
- According to HTM 01-05, risk assessments should be conducted by capable individuals.
- Usually, such role is fulfilled by a certified water engineer who belongs to the Legionella Control Association.
- This guarantees the thoroughness of the assessment, and the suitability and effectiveness of the control strategies in operation.

18. Waterlines

- Guidelines in HTM 01-05 offer clear instructions on how dental clinics should manage dental unit waterlines (DUWLs), in connection with the broader water system.
- The main emphasis is on preventing conditions that could lead to the proliferation of waterborne pathogens like Legionella.
- It is integral for dental teams to ensure they have measures in place, such as engineering controls, maintenance protocols, and flushing routines to reduce risks, especially in situations where persons more at risk could be exposed to aerosols.
- Following the recommendations in HTM 01-05 and the Health and Safety Executive's advice, dental clinics must prevent water from becoming stagnant anywhere in the system.
- Stagnation may happen if water is left standing for long periods, or in parts of the plumbing system that are not frequently used.
- Due to their design and tendency to create aerosols, DUWLs are regarded as posing a higher risk.

- In order to decrease the chances of Legionella and biofilm growth, dental clinics should implement the following precautionary steps:
 - Avoid having stagnant water areas in the plumbing system.
 - Get rid of, or flush out outlets that are not frequently used, like taps and DUWLs.
 - Keep the volume of storage tanks to a minimum, preferably containing no more than a day's worth of water.
 - Prevent the accumulation of sediment by consistently cleaning and maintaining tanks and pipelines.
 - Implement thermal regulation, ensuring that:
 - Cold water is stored and dispersed at temperatures below 20°C.
 - Hot water is stored at 60°C and attains a minimum of 50°C within one minute of opening the tap.
 - Insulate cold tanks and place them in cool surroundings.
- According to HTM 01-05, extensive microbiological checks on water supplies are not generally mandatory for dental facilities unless a risk is identified, like visibly declined water quality, or having particularly vulnerable patients prone to Legionella infection.
- It is crucial to avoid using dip slides for assessing DUWL water quality, as they tend to underestimate the true bacteria count, as stated in HTM 01-05.
- If testing is needed, a skilled individual, using suitable laboratory techniques should perform it.
- It is recommended, as best practice, to flush the water systems, daily, between patients, which might also be recommended in local infection prevention guidelines.

18.1 Biofilm

- Bacteria have the ability to rapidly develop a biofilm layer within dental unit waterlines, if left untreated.
- Once the biofilm forms, it starts releasing a large amount of bacteria into the water, which can occur within a week.

- Due to the potential health hazards involved, it is mandated by law, under the Health and Safety at Work Act 1974 and Control of Substances Hazardous to Health (COSHH) Regulations 2002, for dental clinics to conduct a risk assessment.
- Such assessment should pinpoint any factors in the water system that could promote the proliferation of bacteria, such as Legionella.
- Multiple elements are recognised to promote the development of biofilms in dental unit waterlines, including:
 - The use of small-diameter tubing in dental chairs, which offers an extensive surface area compared to the volume of water.
 - Water remaining stagnant, notably during prolonged periods of inactivity or overnight.
 - Reduced overall water flow, which diminishes the flushing action crucial for hindering bacterial proliferation.
 - The presence of 'dead-end' segments in plumbing where water does not circulate.
 - Taps or handpieces that are seldom or infrequently used, which are prone to encouraging biofilm formation.
- Water distributed to Dental Unit Waterlines (DUWLs) must meet the standards for drinking water quality.
- Although HTM 01-05 and associated recommendations do not specifically mention a legal threshold for bacteria, a total viable count (TVC) of 100-200 cfu/ml is commonly acknowledged as the appropriate norm for water utilised during dental procedures.
- Such guideline is backed by information in NHS materials and other references tailored to the dental workforce.

18.2 Dip Slides

- Dip slides refer to plastic paddles covered with pre-prepared agar, utilised for microbiological assessment of a surface or liquid.

- Despite not being advisable for evaluating the quality of drinking water, and lacking the ability to identify Legionella, or offer precise microorganism counts, dip slides can still be beneficial in detecting the presence of biofilm.
- HTM 01-05 advocates that dip slides should not be the sole, regular method for analysing water quality.
- Yet, if utilised correctly, they can signal elevated levels of bacteria in DUWLs, indicating potential biofilm concerns.
- Thus, dip slides are a valuable and cost-effective initial screening tool, especially for identifying instances where additional inspection or cleaning may be necessary.

19. Transporting Instruments

- Before reusing any dental instruments, it is crucial to subject them to a complete decontamination process.
- If a separate decontamination area is utilised in a clinic, it is important to ensure safe and secure transportation of instruments between this area and the treatment space to minimise the possibility of cross-contamination.
- The use of transport boxes for this purpose is mandatory, with the following criteria for their selection:
 - Sturdy to safeguard instruments from any harm during transit.
 - The box should be strong to endure frequent use without breaking or losing shape.
 - Watertight to prevent leaks and decrease contamination risks.
 - Simple to clean and disinfect, ensuring that the boxes can be efficiently cleaned and disinfected.
 - Capable of being securely sealed to keep the contents safe and lessen the exposure risk.
- Each transportation box needs to be marked to indicate whether it holds clean or contaminated tools.
- While a color-coded scheme can assist with this, written tags are necessary for clear identification.

- It is crucial that transportation containers are allocated for specific purposes and not swapped.
- A container assigned for carrying contaminated tools should never be repurposed to transport clean tools, even if it has been cleaned in the interim.
- By ensuring dedicated use, effective infection control is preserved throughout all decontamination phases.

20. Manual Cleaning Instruments

- Current national guidelines, such as HTM 01-05 (England), and others pertaining to Wales and Scotland, allow for manual cleaning.
- However, guidelines in Northern Ireland advise against manual cleaning, and that the use of a washer disinfectant is mandatory.
- Manual cleaning is appropriate when:
 - Other cleaning methods like an ultrasonic cleaner or washer disinfectant are not accessible.
 - The instrument manufacturer specifies it as the sole effective cleaning method.
- It is vital to conduct manual cleaning in specialised sinks that are exclusively for this purpose.
- Section 16 of HTM 01-05 (2013) outlines a comprehensive manual cleaning procedure that can be adjusted by workplaces to accommodate their facilities.
- Placing a laminated version of the specific protocol above the manual cleaning zone is advisable.

20.1 Manual Cleaning Brushes

- In order to minimise aerosol creation, it is pivotal that instruments are entirely submerged in the solution while being cleaned.
- The tips below should be considered when utilising cleaning brushes:
 - Employ long-handled brushes with soft bristles to prevent splashing, and lower the chances of harm.
 - Refrain from using tools that may impair instruments, like wire brushes or harsh scrubbing pads.

- Ideally, opt for disposable brushes.
- In case they are reusable:
 - Thoroughly wash them after each use using hot water and a detergent authorised by the manufacturer.
 - After cleaning, visually inspect the brushes to ensure that all visible dirt has been eliminated.
 - Store brushes in an upright position to dry, with the brush head facing upwards.

20.2 Water Temperature and Detergent

- It is essential to monitor water temperature diligently when manually cleaning:
 - Verify that the temperature remains under 45°C using a thermometer that is free of mercury.
 - Cleaning at temperatures above 45°C can lead to the coagulation of protein, making it more challenging to eliminate debris.
 - Ensure that the temperature aligns with the guidelines provided by the detergent manufacturer.
 - Solely utilise enzymatic detergents specifically created for cleaning surgical instruments.
 - Avoid using household cleaning items, as they are ineffective in dealing with surgical soil; additionally, they may harm the instruments or introduce risks of infection.

21. Ultrasonic Bath

- Ultrasonic cleaning is a well-established technique, advocated by national directives such as HTM 01-05 (England), and those in Wales and Scotland for eliminating dirt from dental tools.
- It is commonly employed before sterilisation, and is more reliable and thorough compared to manual cleaning in isolation.
- Ultrasonic baths operate by generating high-frequency sound waves that create tiny bubbles in the cleaning fluid.

- When these bubbles implode, they exert pressure to remove contaminants and grime from instruments, even in inaccessible areas.
- For efficient ultrasonic cleaning, it is integral to obey the following essential guidelines:
 - Utilise only ultrasonic cleaning solutions that are specifically made for this purpose, avoiding the use of household products.
 - Daily, or more frequently if necessary, replace the solution in the bath when it appears dirty or contaminated.
 - Following the manufacturer's guidance, de-gas the bath after filling it, to eliminate trapped air, and enhance the cleaning process.
 - Ensure that instruments are:
 - Completely submerged in the solution throughout the cleaning process.
 - Ideally opened up if they have hinges to enable a thorough cleaning process.
 - Positioned within a perforated tray or basket, not directly on the base of the bath.
- It is essential to adhere to the recommended cleaning time specified by the manufacturer, which typically ranges from 10 to 15 minutes, depending on the load and the cleaning solution employed.
- To maintain the effectiveness of ultrasonic baths, regular testing and maintenance are necessary:
 - Conduct foil tests on a consistent basis, usually weekly, to ensure that the cavitation process is functioning correctly.
 - Record all testing and maintenance activities in a logbook, aligning with the expectations outlined in HTM 01-05.
 - Make sure to clean and dry the unit daily, and wipe down the tank at the end of each cleaning session.
 - Following ultrasonic cleaning, it is crucial to thoroughly rinse the instruments in clean water and then either:
 - Move them to a washer disinfectant (if available), or
 - Proceed to the inspection and sterilisation phase.

- Although ultrasonic baths are effective for cleaning, they do not disinfect or sterilise instruments.
- They should be integrated into a validated decontamination process that includes inspection and sterilisation using an autoclave.

22. Washer Disinfector

- Automatic washer disinfectors are widely regarded as the best choice for cleaning reusable dental instruments and medical devices, due to their ability to provide a consistent, repeatable, and verified cleaning process.
- This helps minimise the uncertainties and dangers linked with manual cleaning procedures.
- These machines typically offer a cycle record that can be printed or downloaded, aiding in tracking and adhering to regulations.
- The automated process integrates cleaning and disinfection seamlessly within a single cycle.
- Washer disinfectors must adhere to high industry standards like those outlined in HTM 01-05.
- It is expected that washer disinfectors are to be used in NHS dental facilities, since they will be striving to meet and exceed compliance levels.
- The customary cycle of a washer disinfector generally consists of the following steps:
 - Initial rinse: this aims to eliminate substantial contaminants like blood, tissue, bone fragments, and any visible debris from the instruments.
 - Washing: detergents and mechanical processes collaborate to dislodge and break down lingering dirt on the tools.
 - Those detergents authorised for use in washer disinfectors are only recommended.
 - They should be compatible with both the washer disinfector and the instruments to prevent any harm.
 - The water quality must also suit the selected detergent.
 - Rinsing: this phase removes any leftover detergent and may involve multiple sub-stages.

- The quality of the rinse water is crucial to ensure that instruments are left clean and devoid of stains before sterilisation.
- Organisations should refer to manufacturers for advice on water hardness and compatibility with the machine and detergents.
- Thermal Disinfection: The items are heated and kept at a specific temperature for a set duration to ensure disinfection, such as:
 - 80°C for 10 minutes, or
 - 90°C for 1 minute.
- Drying: Heated air is applied to dry the instruments and chamber, eliminating any remaining moisture before the examination and sterilisation process.

22.1 Safety and Effectiveness

- For the efficient and safe usage of washer disinfectors, it is important to follow these guidelines:
 - Operate the machine according to the manufacturer's instructions and guidelines set by local protocols.
 - Prior to loading, if needed, pre-rinse heavily soiled instruments.
 - Load baskets as directed:
 - Instruments must be arranged in a single layer with hinged items open.
 - Instruments should not overlap to maintain optimal cleaning.
 - Handpieces can only be processed if compatibility is confirmed by both the washer disinfectant and handpiece manufacturers, and specific adaptors should be used if necessary.
 - All filters are correctly positioned.
 - Rotors can move freely before beginning the cycle.
 - After completion of the cycle:
 - Confirm that all cycle parameters were met.
 - Document all relevant information in the washer disinfectant logbook.

- The correct use of a washer disinfectant contributes to enhanced infection control, adherence to national guidelines, and safe, reliable reprocessing of dental tools.

23. Inspecting Instruments

- After cleaning, it is vital to meticulously examine each instrument visually to confirm it is clean and free of any stains or dirt before proceeding to the sterilisation process.
- To enhance the efficacy and detail of the inspection, it is advisable to utilise an illuminated magnifying tool.
- The visual check is a crucial stage during the decontamination process.
- Properly cleaning the instruments is important; if the cleaning is not completed correctly, the whole sterilisation procedure might prove ineffective in ensuring safety.
- If any instruments are seen to be visibly dirty or contaminated, they must be sent back for repeated cleaning, and reprocessing again.
- Reoccurring discoveries of contamination could point out an issue with the cleaning techniques or tools, which ought to be thoroughly inspected and resolved.

24. Sterilisation

- Sterilisation is the essential method of extinguishing all types of microorganisms, such as bacteria, viruses, fungi, prions and robust spores.
- It plays a crucial role in preventing infections in dental facilities by stopping the transfer of disease between patients and staff due to contaminated instruments.
- As outlined in HTM 01-05, Section 4.2, the optimal way to sterilise the majority of dental instruments is by using saturated steam at high pressure and temperature that is suitable for the item.
- The main choice for sterilisation in dental practices is small steam sterilisers, which come in three distinct types, each with their own set of operational requirements and capacity restrictions.

- It is key to carefully choose and operate the steriliser correctly to ensure successful sterilisation and adherence to advocated standards.
- Type N sterilisers (non-vacuum):
 - Also called gravity or downward displacement sterilisers.
 - Utilise passive air removal, which does not allow steam to reliably penetrate packaging.
 - Instruments in packaging should not be sterilised in these sterilisers.
 - Devices with narrow lumens, like handpieces, are generally not ideal for sterilisation in type N models, since steam does not actively flow through the lumen.
 - Despite the challenge of achieving sterility for lubricated handpieces in any kind of steriliser, current recommendations still permit the use of type N sterilisers for lubricated handpieces, according to HTM 01-05.
- Type B sterilisers (vacuum):
 - Utilise an active vacuum for air removal before steam is introduced.
 - This method enables effective sterilisation of wrapped instruments, hollow devices, and handpieces by ensuring that steam penetrates into lumens, thus, enhancing the sterilisation process for hollow instruments.
- Type S sterilisers (vacuum):
 - Are specifically designed for certain types of loads specified by the manufacturer.
 - This may include wrapped or hollow items but only if explicitly allowed in the manufacturer's instructions.
- It is crucial to strictly follow the manufacturer's guidelines while operating any of these sterilisers.
- Irrespective of the type of steriliser, certain factors are vital for ensuring effective sterilisation:
 - Temperature: The optimal temperature range is between 134°C and 137°C.
 - Time: A minimum of 3 minutes is essential for the load to remain at 134°C.

- Pressure: The pressure should be around 2 bar, which is necessary for producing steam at 134°C.
- Most contemporary sterilisers come equipped with automated trackers or printers that document cycle details.
- If these tools are not present, employing a data logger is recommended as best practice.
- In the absence of both, maintaining a manual log of each cycle is necessary to comply with regulations.

25. Pouching and Storage

- Instruments that are pouch-sealed, either before or immediately after sterilisation, have the potential to be stored for up to 12-months, as long as the pouch remains fully sealed and undamaged.
- It is important to ensure that each pouch is clearly labelled with a date at the moment of sealing.
- It is considered best practice to document both the sterilisation date and the expiration date of the instruments.
- Regulatory bodies like the Care Quality Commission (CQC) require, at a minimum, that the expiry date is marked on the pouch.
- Unpackaged instruments should be utilised on the same day of sterilisation, and until then, they should be kept in clean, dry conditions and shielded from aerosol contamination.
- If not used by the end of the day, they must undergo reprocessing.
- Additional guidelines from HTM 01-05 (2013) permit unpackaged instruments to be stored in an unused clinical setting, such as an unused surgery, or the clean side of a decontamination room, for up to seven days without a need for reprocessing.
- To reduce unnecessary reprocessing, it is advisable to only lay out instruments that are expected to be used during a treatment session.
- All instruments set out for treatment, whether used or not, must be reprocessed before they can be utilised again.
- Storage facilities should:

- Safeguard instrument packs from moisture and impurities, as wet packaging can compromise their sterility.
- Enable straightforward access to the correct instruments with little handling.
- Implement an efficient stock rotation system (e.g., first in, first out).
- Include protocols for routinely checking instrument expiration dates.

26. Single Use

- When a product such as a medical device bears the single-use symbol on its packaging, this indicates that it is intended to be used only once.
- This universal emblem serves as a warning that the device should never be reused.
- Single-use items are specifically manufactured to be utilised on a single patient, during a single procedure, and then carefully disposed.
- These items are not produced to withstand the processes of cleaning, sterilising, or so forth, and any attempt to do so could jeopardise patient safety by heightening the likelihood of infections, or device malfunction.
- Within the dental field, it is vital to acknowledge and adhere to this standard, in order to uphold a superior benchmark of infection prevention and patient wellbeing.
- Reusing single-use devices can result in the transfer of infection, decreased device efficiency, and potential harm to patients.
- Several typical disposable instruments utilised in dental procedures consist of, but are not restricted to:
 - Endodontic reamers and files.
 - Saliva ejectors.
 - Disposable impression trays.
 - Single-use needles and syringes.
 - Disposable suction tips.
 - Plastic barriers and covers.
 - Certain types of scalers or curettes labelled as single-use.

27. Waste Types

- In a dental clinic, it is imperative to manage waste properly to safeguard public health, staff wellbeing, and the wider environment.
- Adhering to regulations is a necessity, especially to comply with the Environmental Protection Act 1990, Hazardous Waste Regulations 2005, and Controlled Waste Regulations 2012.
- Ensuring waste segregation, storage, and disposal are done correctly is indispensable.
- It is important to have a documented waste management plan within the clinic's policies, so that all team members are understanding.
- Herein, is a list of the primary waste streams of significance for dental clinics:
 - Sharps containers:
 - Categorised as hazardous waste.
 - Intended for objects like needles, scalpels, matrix bands, and various sharp tools.
 - Sharps bins contaminated with medications, excluding cytotoxic or cytostatic drugs, should be appropriately labelled.
 - It is important to avoid overfilling sharps containers, and dispose of them once they attain the manufacturer's designated fill level.
 - Keep them in a secure, away from public reach, and make sure there is proper assemblage and labelling when first utilised.
 - Soft clinical waste:
 - Classified as hazardous waste.
 - Orange clinical waste bags are used for disposing.
 - These bags are for items soiled with blood, saliva, or other bodily fluids from patients with a potential infection risk.
 - Chemical, medicinal, or amalgam contaminated waste should not be put into the orange bags.
 - The bags must be sealed securely, labelled, and filled up to three-quarters of their capacity.
 - Medicine containers:

- Although rare in dental settings, expired medications may be disposed of using this method.
- It will be important to adhere to the disposal instructions given by the waste management provider or local pharmacy drop-off service.
- Offensive or hygiene waste:
 - Classified as non-hazardous waste.
 - Disposed in yellow and black bags known as "Tiger" bags.
 - Comprises non-contagious personal protective equipment (PPE), gloves, masks, and other soft waste with little body fluid spoilage.
 - Contains hygiene waste from bathrooms like nappies and feminine products.
 - Offensive waste must be kept safely and picked up by a licensed waste disposal company.
- Amalgam waste:
 - Classified as hazardous waste.
 - Dental chairs need to have amalgam separators installed following DEFRA regulations.
 - Trained staff can transfer amalgam waste from separators to assigned containers, or have this picked up by the waste management service.
 - The waste management service will provide containers with a mercury suppressant.
 - Amalgam waste must never be discarded in regular clinical or medical waste streams.
 - Extracted teeth:
 - Categorised as non-anatomical infectious waste, unless it includes amalgam.
 - If teeth do not have any amalgam, they can usually be placed in a yellow sharps bin, but this needs to be verified with the waste management provider.
 - Teeth with amalgam need to be placed in specific waste designated for amalgam to avoid mercury pollution.
 - Dental plaster (gypsum):

- Classified as controlled waste.
- Study models fabricated from gypsum must be separated upon construction.
- Non-infectious models must be kept apart from infectious waste, and should be discarded following guidance from waste management experts.
- Models that have been in contact with blood or saliva should be handled as hazardous clinical waste, placed in the orange bag.
- Gypsum waste should not be mixed with regular landfill waste, to avoid environmental risks.
- Domestic waste:
 - Categorised as general waste.
 - Consists of materials like food scraps, wrapping, tissue paper, and used tea bags.
 - Managed by a professional waste management company.
 - It is advisable to promote recycling and sustainability by the reuse of paper, cardboard, plastic, and various metals, whenever feasible.
- Confidential waste:
 - Designated as confidential content under the General Dental Protection Regulation 2018 and Data Protection Act 2018.
 - Comprises physical patient files, referrals, schedules, or any personal data that can be traced back to individuals.
 - Should be destroyed, either on location (e.g., shredding), or by an approved confidential waste firm that will securely exterminate and dispose of the documentation, prior to recycling.

28. Validation and Record Keeping

- HTM 01-05 brought in the idea of validation in dental instrument sterilisation, emphasising the significance of "parametric product release."

- This requires having a documented procedure in place that ensures instruments are effectively cleaned and safe for use.
- Adhering to HTM 01-05 involves using a validated approach for instrument cleaning prior to sterilisation.
- It is imperative to adhere to the testing schedule advised by the instrument manufacturer, even if the HTM guidelines offer broad suggestions.
- Validation and maintaining records are crucial to guarantee that instruments are secure and effectual, safeguarding both patients and staff members.
- Additionally, they indicate adherence to legal and ethical guidelines, a vital aspect of any dental facility.
- All documentation must be stored securely and easily accessible for regular inspections or reviews.
- It is fundamental that all team members participating in the cleaning and sterilisation procedures receive adequate training, and recognise their responsibilities in preserving precise validation records.

28.1 Manual Cleaning Validation

- Demonstrating the effectiveness of manual cleaning can be difficult.
- It is crucial to maintain detailed documentation each time manual cleaning is performed, which should include:
 - Date of the manual cleaning.
 - Temperature of the water utilised.
 - Type and strength of the detergent used.
 - Verification of rinsing the instruments post scrubbing.
 - Findings from visual inspections
 - Details of the individual carrying out the cleaning
- It is recommended to conduct a protein residue examination every week to detect any remaining organic substances on the instruments.

28.2 Ultrasonic Cleaner Validation

- In order to confirm the effectiveness of ultrasonic cleaning, it is necessary to document the subsequent verifications:

- On a daily basis:
 - Cleaning and maintenance of strainers and filters.
 - Evaluation of cleaning performance through visual inspection.
 - Monitoring of water temperature.
 - Emptying the ultrasonic bath after each use.
- On a weekly basis:
 - Safety inspections.
 - Testing for protein residue.
 - Conducting a soil test to evaluate cleaning efficiency.

28.3 Washer Disinfector Validation

- Validation records are required on a daily and weekly basis for washer disinfectors.
- The tasks include:
 - Daily:
 - Removing and cleaning strainers and filters.
 - Inspecting cleaning results visually.
 - Weekly:
 - Conducting a safety check.
 - Performing a protein residue test.
 - Carrying out a soil test.
- According to HTM 01-05 and WHTM 01-05 standards, a formal soil test to assess cleaning effectiveness should be conducted every quarter and the results must be documented in the machine's logbook.
- In contrast, Scottish guidelines recommend performing this test on a weekly basis.
- Manufacturer guidelines can differ, sometimes suggesting tests to be done as frequently as weekly, or as infrequently as monthly.

28.4 Autoclave (Benchtop Steriliser) Validation

- Autoclave cycle validation involves routine tasks to be performed on a daily and weekly basis:
 - Everyday:
 - Replace reservoir water.
 - Initiate warm-up cycle.
 - Conduct automatic control examination.
 - Utilise TST (time, steam, and temperature) strips: one strip daily with a data logger, or printer-equipped autoclave, or one strip per cycle without this feature.
 - Helix test specifically for vacuum autoclaves.
 - Weekly:
 - Perform a safety assessment.
 - Conduct residual air testing if supported by the autoclave.
 - Check for air leakage, if necessary.

29. **Legislation and Regulatory Frameworks**

- It is key for all dental healthcare providers to possess a comprehensive knowledge of the main laws and recommendations that regulate infection control in their care environment.
- Such understanding is vital to guarantee safe and lawful procedures.
- A notable example is HTM 01-05, a healthcare technical memorandum that focuses on decontamination methods, establishing guidelines for cleansing, sterilising, and certifying equipment.
- Dental facilities in Scotland adhere to recommendations from the Scottish Dental Clinical Effectiveness Programme (SDCEP), which provides specific advice on infection control in dentistry.
- For dental professionals in Northern Ireland and Wales, there are tailored frameworks such as the Northern Ireland decontamination guidelines and the Welsh Healthcare Technical Memorandum (WHTM 01-05), both of which adapt best practices to local contexts.
- In addition to decontamination, there are other important guidelines like HTM 07-01, focusing on the proper disposal of healthcare waste, and HTM

01-04, offering direction on maintaining safe water systems within healthcare facilities to prevent waterborne infections.

- The Infection Prevention Society (IPS) offers a plethora of information on various infection control topics, and it is recommended that Dental Care Professionals (DCPs) regularly refer to this resource to stay current with best practices.
- Compliance with legal requirements is imperative.
- The Environment Protection Act 1990, particularly the Duty of Care regulations, establishes stringent guidelines for the safe disposal of clinical waste to safeguard the environment and public health.
- The Legionella Approved Code of Practice (ACOP) L8 outlines measures to fulfil legal obligations in controlling and preventing Legionella bacteria in water systems, a significant concern in healthcare settings.
- Understanding and adhering to these documents is essential for dental professionals to create a secure environment for both patients and staff, while fulfilling their legal and ethical obligations.

30. Further Reading

- Decontamination in Primary Care Dental Practices (HTM 01-05) - https://www.england.nhs.uk/wp-content/uploads/2021/05/HTM_01-05_2013.pdf
- Managing Decontamination in Dental Practice (SDCEP) - <https://www.psm.sdcep.org.uk/topics/infection-prevention-and-control/managing-decontamination-in-dental-practice-mddp/>
- Welsh Healthcare Technical Memorandum (WHTM 01-05) - <https://nwssp.nhs.wales/ourservices/specialist-estates-services/publications-and-information/welsh-health-technical-memoranda-whtms-health-technical-memoranda-hrms/>

- Management and Disposal of Healthcare Waste (HTM 07-01) - <https://www.england.nhs.uk/wp-content/uploads/2021/05/B2159iii-health-technical-memorandum-07-01.pdf>
- Safe Water in Healthcare Premises (HTM 04-01) - <https://www.england.nhs.uk/publication/safe-water-in-healthcare-premises-htm-04-01/>
- The Legionella Approved Code of Practice (ACOP) L8 - <https://www.hse.gov.uk/pubns/priced/l8.pdf>
- HSE – Infections and Biological Hazards at Work - <https://www.hse.gov.uk/biosafety/index.htm>
- The Infection Prevention Society (IPS) – <https://www.ips.uk.net/>
- Green Book of the UK Health Security Agency – <https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book>
- UK Health Security Agency – How to Hand Wash Step by Step Images - <https://www.england.nhs.uk/wp-content/uploads/2022/09/nipc-manual-appendix-1-handwashing.pdf>
- British Dental Association (BDA) – Advice Sheet: Infection Control in Dentistry A12 – <https://universitydental.co.uk/resources/bda-cross-infection.pdf>
- Textbook: Lakshman Samaranayake, *Samaranayake's Essential Microbiology For Dentistry*. 6th Edition. Elsevier. ISBN: 9780443117213, 9780443118210.

- Standards for the Dental Team (GDC) -
<https://standards.gdc-uk.org/pdf/Standards%20for%20the%20Dental%20Team.pdf>
- GDC CPD Guidance
<https://www.gdc-uk.org/docs/default-source/education-and-cpd/cpd/cpd-scheme/cpd-guidance-for-professionals.pdf>
- CQC Health and Social Care Act 2008 (Regulated Activities) Regulations
<https://www.cqc.org.uk/guidance-regulation/providers/regulations-service-providers-and-managers/health-social-care-act>
- The Health and Safety at Work Act 1974 -
<https://www.legislation.gov.uk/ukxi/2014/2936/contents/made>
- The Health and Social Care Act 2008 -
<https://www.gov.uk/government/publications/the-health-and-social-care-act-2008-code-of-practice-on-the-prevention-and-control-of-infections-and-related-guidance/health-and-social-care-act-2008-code-of-practice-on-the-prevention-and-control-of-infections-and-related-guidance>
- The Control of Substances Hazardous to Health (COSHH) Regulations 2002 -
<https://www.legislation.gov.uk/ukxi/2002/2677/contents>
- RIDDOR 2013 (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013) -
<https://www.legislation.gov.uk/ukxi/2013/1471/contents>
- The Environment Protection Act 1990 (including Duty of Care regulations) -
<https://www.legislation.gov.uk/ukpga/1990/43/contents>
- The Controlled Waste (England and Wales) Regulations 2012 -
<https://www.legislation.gov.uk/ukxi/2012/811/contents>

31. Assessment

31.1 Reflection

- We appreciate your participation in the course, and we trust you found it to be informative.
- The purpose of reflection is to deliberate the results of Continuing Professional Development (CPD) endeavours.
- Reflection is a personal undertaking, and it is advisable to engage in it in a manner that aligns with your preferences.
- While the General Dental Council (GDC) does not mandate a specific method for conducting reflective learning, it is recommended to reflect on your most recent CPD training.
- The GDC stipulates the following steps:
 - Assess your activity.
 - Deliberate on the effects on your daily practice and patients.
 - Document your reflections.
 - Modify your Personal Development Plan (PDP) as necessary
- Key Points for Reflection:
 - What new insights did you gain from this course?
 - In what ways do you intend to implement the knowledge acquired from this course into your professional practice?
 - How do you plan to sustain this knowledge in the long term?
 - What strategies will you employ to further progress in this particular area of expertise?