☐ ADMINISTRATE POLICY & PROCEDURE (APP)	☐ INSTITUTIONAL POLICY & PROCEDURE (IPP) ☐ INTERDEPARTMENTAL ☐ INTERNAL

TITLE		POLICY NUMBER/V#
Treatment of Dental Unit Waterlines		MMC- DENTAL – (03) 01
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APPLIES TO		**RESPONSIBILITY**
Dental clinic Staff		Dental clinic Staff

1. PURPOSE

1.1 To prevent/minimize the risk of infection in dental settings.
1.2 To promote awareness for each dental personnel in the importance of dental unit waterlines.
1.3 To provide a framework for the education of dental healthcare personnel in the infection prevention and control

2. DEFINITION

2.1 Biofilm: is an aggregate of microorganisms in which cells adhere to each other on a surface.
2.2 Colony forming unit (CFU): the minimum number of separable cells on the surface of or in semi-solid agar medium, which gives rise to a visible colony of progeny, is on the order of tens of millions.
2.3 Independent water reservoir: a container used to hold water or other solutions and supply it to hand pieces and air/water syringes attached to a dental unit.
2.4 Retraction: the entry of oral fluids and microorganisms into waterlines through negative water pressure.

3. RESPONSIBILITY

3.1 All healthcare workers have the responsibility to conform and respect all aspects of this policy.
3.2 Managers/ department heads have a key responsibility to ensure their department functions within the parameters of the policy and that staff are trained and assessed in these issues

4. POLICY

4.1 This policy is a guide for all dental healthcare personnel to ensure full understanding on the best practice of treatment of dental unit waterlines.

5. PROCEDURE

5.1 The following approaches are acceptable methods for reduction of the number of microorganisms and bacterial endotoxins exiting the waterlines:

5.1.1 Use of single-use disposable or sterilizable tubing, Elimination of the biofilm,

5.1.2 Use of microfiltration devices placed inside DUWLs to treat water exiting the water lines.

5.1.3 Combined approach.

5.2 Single-use Disposable or Serializable Tubing:

5.2.1 Whenever possible, single-use disposable or serializable tubes, which allow the cleaning and removal of the organic matrix of the biofilm from their lumens, are the preferred method of controlling the microbial population within DUWLs.

5.2.2 When used with a self-contained, sterile water source, this type of system may even be used during surgical procedures.

5.3 Elimination of the Biofilm:

5.3.1 When using non-detachable tubing's, management of waterline contamination should aim at elimination of the biofilm.

5.3.2 Attempting to eliminate the resident bacteria without removal of the biofilm is an inadequate approach to DUWL treatment, which may increase the hazards of contaminated water.

5.3.3 Biofilm re-growth in DUWLs usually occurs within a week following disinfection/cleaning and so DUWLs need be treated regularly

5.3.4 Elimination of the biofilm can be achieved through the use of a variety of chemical products.

5.4 Any product used must be:

5.4.1 Shown to be effective in the independent literature

5.4.2 Compatible with the DUWL components (as recommended by the dental unit manufacturer),

5.4.3 Non-toxic to patients or DHCP when used as recommended by the dental unit manufacturer, and

5.4.4 Does not have adverse effects on the environment.

5.5 Introduction of the chemical agent into the waterlines:

Introduction of the chemical agent into the waterlines may be either intermittent or continuous.

5.1.1 The intermittent method of waterline treatment:

5.1.1.1 This method involves placement of the chemical agent in a self-contained water reservoir (the source bottle) and flushing the water lines to allow the chemical to fill all the tubing's.

5.1.1.2 The chemical is, then, left in contact with the tubing's for the appropriate contact time advised by the chemical's manufacturer.

5.1.1.3 Afterwards, the chemical should be flushed out thoroughly with water, and, depending on the type of chemical disinfectant, the unit is not put into use for a specified number of hours.

5.1.1.4 If the unit is connected to the municipal water mains supply, it is essential that the connection is turned off prior to treatment of the waterlines to prevent contamination of mains water with treatment agent.

5.1.2 The continuous method of waterline treatment:

5.1.2.1 This method involves mixing low concentrations of the chemical agent with the dental treatment water.

5.1.2.2 This may be achieved either through mixing the chemical agent with the source water in a self-contained system or through placement of the agent in a reservoir inside the dental unit which provides for measured, continuous release into the water passing through the tubing's.

5.1.2.3 The continuous method may be used alone or may be used after a single regimen of the interment type.

5.1.1.4. Once a dental unit is in place, the dental unit manufacturer's instructions must be observed regarding the protocol and choice of chemical for treatment of the DUWLs, while ensuring the method and chemicals used have been proven effective.

Adherence to maintenance protocols is necessary, as non-compliance has been associated with persistence of contamination of the water.

5.6 Microfiltration:

5.6.1 Microfilters placed near the exit of waterlines reduce the number of bacteria in dental treatment water.

5.6.2 Sediment filters commonly found in dental unit water regulators have pore sizes of 20-90 am and do not func on as microbiological filters.

5.6.3 Microfiltra on occurs at a filter pore size of 0.03-10 µm.

5.6.4 The nearer the filters are placed to the exit of the tubings, the lower the bacterial counts achieved.

5.6.5 Filters are not sufficient to manage the water-line problem alone, but they may be used in conjunction with other water-line treatment methods to improve the quality of outgoing water.

5.7 Combined Approach:

5.7.1 An ideal water-line treatment regimen would be filters combined with treatment of the water-lines to remove the biofilm.

5.7.1.1 Additional recommendations:

5.7.1.1.1 flushing for 2 minutes in the morning and for 20–30 seconds after each patient should be considered the norm for dental surgery procedures, and longer flushing is suggested after weekends.

5.7.1.1.2 Flushing at the beginning of the day should be performed without handpieces connected to the waterlines.

5.7.1.1.3 At the end of each working day, the water supply should be disconnected and the water lines purged with air.

5.7.1.1.4 If the dental units have anti retraction devices, the manufacturer must be consulted to determine whether testing or maintenance of anti-retraction valves or other devices is required.

A. If required, efficacy testing of anti-retraction valves/devices should be performed yearly.

6. REFERENCE

CDC guidelines for infec on control in dental sengs, 2016. 7.2. Infec on control guidelines for the college of den stry king Saud university, 2013.

7. Approval

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