

LTHT Infection Control Policies
Policy No 30

Decontamination of Dental Unit Waterlines

Dental unit water lines (DUWLs) may be contaminated with a variety of potential pathogens, such as *Pseudomonas* species, *Legionella* species, and non-tuberculous mycobacteria. As such, they present a potential hazard to patients, particularly those who are immunosuppressed. Therefore, decontamination of DUWLs should be undertaken to reduce this risk.

Scope of policy

This policy applies to:

- All staff and students at the LTHT who use DUWLs and who use equipment attached to DUWLs to treat patients.

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Key Points

- Some dental units include facilities for automatic internal disinfection, in which case manufacturers' instructions should be followed.
- Dental units with an independent bottled water supply should be initially treated with the product 'BRS-Forte' and actively maintained with the product 'Alpron'.
- Independent bottled water supplied units should have their waterlines flushed for 15 seconds at the beginning of each day and for 15 seconds in between patients. In both instances, this should be carried out without hand-pieces attached.
- Dental units attached to the hospital mains water supply, should be disinfected every four months with 500 ppm chlorinated water.
- Dental units attached to the hospital mains water supply should have their waterlines flushed for one minute at the beginning of each day and for 30 seconds in between patients. In both instances, this should be carried out without hand-pieces attached.
- Incorporate anti-retraction valves and terminal flush devices into the dental unit.

New equipment specification

- Anti-retraction valves and terminal flush devices required.
- Dental units should have an independent bottled water supply. Independent carts/nurses equipment also require a bottled water supply.
- The supply of water to the spittoon should be of drinking water quality.
- It should be made clear to all chair suppliers/manufacturers that the Leeds Dental Institute reserves the right to apply its own DUWL treatment and testing procedures. Chair suppliers/manufacturers will not be allowed to insist on the Leeds Dental Institute using its own products for this purpose. This will have to be included in any service level agreements made in relation to this matter.

1. Decontamination/disinfection of dental units with independent bottled water systems

The level of contamination that confers risk to patients is unknown. Drinking water quality standards exist but differ from country to country (the numbers stated assume that none of organisms are indicators of faecal contamination). For example in Japan it is set at <100 colony forming units (cfu)/ml. In the European Union it is <200 cfu/ml and the United States it is <500 cfu/ml. To complicate matters further, the American Dental Association

has recommended that dental line water should contain <200 cfu/ml. The BDA has yet to set a standard for the UK.

The acceptable agreed standard for the **Leeds Dental Institute is <100 cfu/ml.**

To achieve this standard in dental units supplied with an independent bottled water system, two chemical biocide products will be used, one product ('BRS Forte') to remove existing bio films and another product ('Alpron') to maintain the bacterial counts at the acceptable level of <100cfu/ml.

If the following procedure for decontamination of independent bottled water systems is adhered to, a consistently high standard of clean water delivery to the hand-piece and triple syringe can be maintained.

Initial treatment phase

Initially, all independent bottled water system units require treatment with the product 'BRS-Forte' to remove existing bio films, this includes new unused units (units are wet tested at manufacture and on installation on site). The initial and subsequent treatment if required with the product 'BRS-Forte' will be undertaken by the maintenance/estates staff.

Maintenance treatment

The product 'Alpron' will be used to maintain the bacterial counts to <100 cfu/ml in the DUWL. 'Alpron' will be diluted with drinking quality water from designated taps in the clinical areas (instructions for mixing and dilution in appendix 1). The maintenance of the DUWL with the diluted product 'Alpron' will be undertaken by the Dental Nurses. All staff and students using the DUWLs are responsible for flushing the DUWLs as stated below.

Flushing Independent bottled water supplied DUWL

Gloves and eye protection must be worn during flushing procedures.

When flushing the system **always** hold the syringe and hand piece tubing over a sink, basin or bucket.

- Waterlines should be flushed for **15 seconds at the beginning of each day** and for **15 seconds in between patients**. In both instances, this should be carried out without hand-pieces attached.

2. Decontamination/disinfection of dental units supplied with mains water

Maintenance treatment

The maintenance/estate staffs are responsible for disinfecting the DUWLs in the dental units supplied with mains water every four months, with a solution of 500 ppm sodium hypochlorite, for thirty minutes. The DUWLs are then flushed to remove the sodium hypochlorite before patient use. All staff and students using the DUWLs are responsible for flushing the DUWLs as stated below.

Flushing mains fed water supplied DUWL

Gloves and eye protection must be worn during flushing procedures.

When flushing the system **always** hold the syringe and hand piece tubing over a sink, basin or bucket.

- Waterlines should be flushed for **one minute** at the beginning of each day and for **30 seconds in between patients**. In both instances, this should be carried out without hand-pieces attached.

References and further reading

British Dental Association. Infection Control in Dentistry: Advice sheet A12; 2003

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Appendix 1

To make a 1% 'Alpron' solution

Bottle of undiluted 'Alpron' solution
Water from designated drinking water supply
5 litre storage canister
2 litre (2000ml) measuring jug
Funnel

For 1 litre of 1% 'Alpron' solution:

1. Place the graduated bottle cap from the 'Alpron' bottle onto a flat surface, measure out **10ml of undiluted 'Alpron'** and pour this into the measuring jug.
2. Carefully fill the jug with water from the designated drinking water tap, exactly to the **1 litre (1000ml)** mark.
3. Pour the mixture into the 5 litre storage canister, using the funnel to prevent spillage. Legibly label the storage canister with your name, date and time of mixing.

For 5 litres of 1% 'Alpron' solution:

1. Place the graduated bottle cap from the 'Alpron' bottle onto a flat surface, measure out **5 x 10ml of undiluted 'Alpron' (50 ml in total)** and pour this into the 5 Litre storage canister using the funnel to prevent spillage.
2. Carefully fill the canister with water from the designated drinking water tap, exactly to the **litre (5000ml)** mark, seal with cap. Legibly label the storage canister with your name, date and time of mixing.