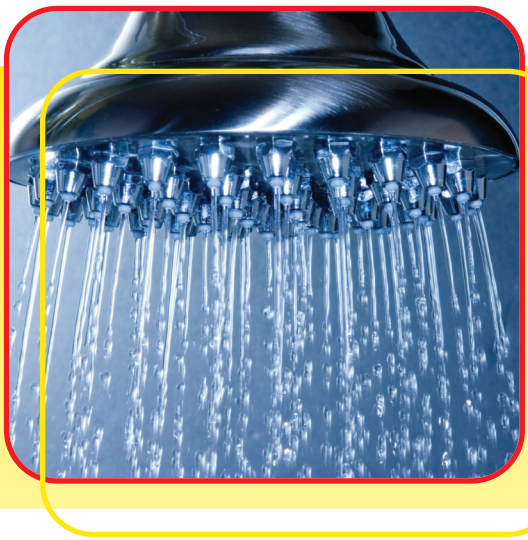
Controlling Legionnaires' Disease in Health Care Settings

Information Sheet

September 2011

This information sheet highlights the main controls for Legionnaires' disease in health care settings such as hospitals, care homes and dental facilities. The information sheet is aimed at existing operations and does not deal with new builds. The information provided supplements the general Legionnaires' disease information sheet.



Why is Legionnaires' disease a risk in healthcare?

Legionnaires' disease is one of a group of diseases know as legionellosis. It can be a risk in healthcare facilities, especially in hospitals or care facilities, due to the presence of complex water systems and immunocompromised people. Facilities which have:

- old or redundant pipe work or fittings;
- complex lengthy pipe systems;
- poorly maintained wet air conditioning systems; or
- intermittently used areas such as premises not used over a weekend or temporarily closed wards or departments;

may present ideal environments for the growth of the bacteria.

Where are most aerosols generated in healthcare facilities?

Any water based system, which has the right environmental conditions, has the potential to be a source for *Legionella* bacteria growth. Aerosols can be generated from any water outlet for example, when a bath or basin is filled.

The following non-exhaustive list identifies potential sources of aerosols which may contain *Legionella* bacteria in healthcare settings such as:

- showers, taps and toilets;
- clinical humidifiers, respiratory and other therapy equipment;
- cooling towers and evaporative condensers;

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- spray washing equipment and high pressure hoses;
- ornamental fountains and water features, particularly indoors;
- spa pools, whirlpool baths or therapy pools;
- ice machines;
- fire fighting systems such as sprinklers and hose reels;
- dental chair unit water lines (fixed and portable); and
- portable ultrasonic scalers.

Who is at risk?

Anyone such as staff, contractors, visitors and patients can be at risk of acquiring the disease. However, patients are clearly the most vulnerable due to their current health status. Elderly people, males, smokers and immunocompromised people such as those suffering from cancer (due to their disease or therapy) and those with organ transplants are also at risk. Patients with underlying disease such as diabetes, chronic respiratory, heart, liver or kidney diseases are also susceptible.

Managing the risk

In order to control exposure to *Legionella* bacteria, healthcare facilities should:

- Carry out a risk assessment as detailed in the general Legionnaires' disease information sheet.

Where a risk is identified, management should:

- Ensure that the necessary competence is available to manage the risk.
- Appoint a responsible person to manage and ensure that control measures are implemented and that a written control scheme is in place.
- Ensure that all persons involved in implementing control measures receive appropriate information, instruction and training.
- Ensure that all roles and responsibilities are clearly defined and understood.
- Review control measures regularly to ensure that they are still effective.

Controlling the risk

The risk from exposure will normally be controlled by measures which prevent growth of *Legionella* bacteria and reduce exposure to water droplets and aerosols. Control methods rely on:

- prevention of favourable temperatures and conditions for bacterial growth;
- prevention of water stagnation;
- control of water spray release; and
- maintenance and safe operation.

Choosing which control method or combination of control methods to be used will depend on the findings of the risk assessment.

Temperature control

Temperature control is the preferred method for reducing the risk of *Legionella* in water systems. By keeping the temperatures in the water system outside of the 20 – 50°C range the bacteria are less likely to grow.

- Cold water systems should be maintained at a temperature < 20°C.
- Hot water should be stored at 60°C and distributed so that it reaches a temperature of 50°C within one minute at the water outlets.
- At 50°C the risk of scalding is usually low for most people. However, the risk to young children, disabled or elderly people will be greater. So where a significant scalding risk is identified the use of Thermostatic Mixing Valves (TMVs) should be considered to reduce temperature.
- Where water is required to be held hot for *Legionella* control all outlets should be clearly labelled very hot to avoid accidents.
- Sentinel taps (that is the first and last taps on a hot water recirculating system and the nearest and

furthest taps from the storage tank on a cold water or a non-recirculating hot water system) and also any other taps that may present a risk should have their temperature checked monthly. A representative number of taps should be checked annually on a rotating basis. Cold water should be below 20°C after running the tap for up to two minutes and hot water should be above 50°C within one minute of running the water.

Thermostatic Mixing Valves (TMVs)

These valves must be correctly fitted and maintained regularly in accordance with the manufacturer's instructions or they could harbour *Legionella* bacteria.

- TMVs should be sited as close as possible to the point of use.
- Ideally a single TMV should not serve multiple tap outlets but if it does, the mixed pipe work should be kept as short as possible.
- A documented maintenance schedule which takes into account local conditions such as hard water and the risk of valve failure should be followed and recorded. Every TMV must be cleaned and maintained at least once every calendar year.
- As with any safety device, routine checks will be essential to ensure continued satisfactory operation. Such devices however should not be a substitute for caution and there are circumstances where staff should always use a thermometer for example, when performing assisted bathing or bathing children.

Flushing

Stagnation or low water use can cause problems especially if water outlets such as showers are underutilised or not in use.

- All unnecessary water outlets such as showers or sinks should be removed and the supply pipe work cut back as far as the mains.
- Flushing procedures, including the frequency and duration of flushing and the number of outlets that can be flushed simultaneously, should be based on a risk assessment of the water system. The period of flushing should be sufficient to remove all stagnant water leading to the outlet. At a minimum, intermittently used outlets should be run once a week for 3 minutes (timed once the water is cold/hot) each at both the cold and hot setting. More frequent flushing may be required in high risk areas such as renal transplant wards. Showers and water outlets that are in daily use will usually not require flushing.
- Emergency showers and eye wash sprays should be flushed quarterly or more frequently if recommended by the manufacturer. Eye wash sprays should be on an independent water reservoir.
- Dental unit water lines should be flushed for a minimum of 2 - 3 minutes at the beginning of each working day and for a minimum of 20 – 30 seconds after each patient. Dental hand pieces, ultrasonic scalers and air/water syringes should also be flushed for a minimum of 30 seconds after each patient.
- Personnel involved in flushing procedures should be adequately trained in safety procedures including the minimisation of aerosols and the use and maintenance of personal protective equipment.

Water Treatment, Cleaning and Disinfection

The presence of sediment, sludge, scale and other material within the water system can facilitate the growth of *Legionella* and may provide protection for the bacteria from temperatures and disinfectants that are used to kill or inhibit growth of the bacteria. Removal or control of these elements will reduce the risk and also reduce the requirements for residual disinfection. An effective water treatment regime is essential for *Legionella* control.

- Showerheads and hoses should be dismantled, cleaned and descaled quarterly or more frequently as required based on risk assessment. Alternatively, consider replacing showerheads and hoses.

- Cold water system tanks should be visually inspected annually. Water cisterns and storage tanks should be kept covered, insulated, clean and free of debris.
- Dental unit water lines should be disinfected at least once a week with an appropriate disinfectant or biocide. The manufacturer of the unit should be contacted for advice on products and procedures for waterline disinfection. If the unit is connected to the public water mains supply, it is essential that the connection is turned off prior to disinfection in order to stop the disinfectant from contaminating the main waters supply.
- National legionellosis guidelines recommend that healthcare facilities should not have fountains or water features that generate aerosols. However, where present they must be well maintained, regularly cleaned and disinfected. If maintenance is not possible, they should be removed.
- When using disinfectants, ensure that that they are compatible with the fixtures, freshly made up and used in accordance with manufacturer's recommendations. All fixtures and lines should be rinsed with fresh water to remove residual disinfectant.
- Where chemical control is used, for example, chlorine dioxide or silver / copper ionisation treatment, appropriate procedures must be in place to ensure that any breakdown products do not affect any high risk groups such as neonates or renal dialysis patients. Where chemical control is used the concentration and rate of dosing should be in accordance with national legionellosis guidelines.

Other Plant and Equipment

- Respiratory therapy equipment can be a risk if it is cleaned with unsterilized tap water. Sterile water, not tap water, should be used for clinical humidifiers and nebulisers, which should be emptied and cleaned thoroughly after each period of use. Where this is not feasible, single use disposable nebulisers should be used.
- All equipment with water reservoirs should be stored dry.
- Cooling towers should have high efficiency drift eliminators fitted to minimise water droplets and aerosols and should be monitored and inspected in accordance with national legionellosis guidelines.
- The use of whirlpool baths is not recommended in healthcare facilities as the risk of *Legionella* outweighs their benefits.
- Hydrotherapy spas or pools must be maintained in accordance with manufacturer's recommendations and national legionellosis guidelines.

Sampling for Legionella

Sampling for the purposes of routinely monitoring the effectiveness of control measures should only be carried out based on the risk assessment. It is not a substitute for good maintenance and water treatment.

Where can I get further information?

- Information on occupational health and safety, including general information on Legionnaires' disease and risk assessment is available on our website at www.hsa.ie or by contacting the Workplace Contact Unit at 1890 289 389.
- For detailed information on Legionnaires' disease see the Health Protection Surveillance Centre's "National Guidelines for the Control of Legionellosis in Ireland, 2009" at www.hpsc.ie.
- See the Health Protection Agency's document "Management of Spa Pools: Controlling the Risks of Infection" at www.hpa.org.uk for further information on spa pools.