

Water Safety

Managing water quality and preventing water-borne contamination at hospitals and healthcare centers

Issue management paper
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Recent contamination incidents highlight water quality concerns

Contaminated water and the issue of water quality continue to be a priority concern for hospitals and providers of healthcare. Vigilance and an informed approach to water safety are the keystones in preventing the transmission of waterborne infections.

The issue was highlighted recently with incidents of contaminated hospital water systems and health and safety breaches at several UK hospitals. In 2012, four babies died in neonatal units at hospitals in Belfast and Londonderry, of *Pseudomonas aeruginosa*. An investigation found that taps were contaminated with *Pseudomonas aeruginosa*, which was most likely transferred while washing during diaper changes. In 2013, the Basildon and Thurrock University Hospitals NHS Foundation Trust was fined for health and safety breaches that occurred between 2004 and 2010, where six people suffered serious illness and two patients died after contracting the Legionella infection.

Around 1,400 people die each year in the US as a result of waterborne nosocomial pneumonias due to *P. aeruginosa*, and there are 4,000 cases of *P. aeruginosa* bacteraemia in England, Wales and Northern Ireland per year. Additionally, between 2004 and 2008, the number of Pseudomonal bacteraemias increased by 24% in the UK. Other serious pathogens that pose a risk to patient safety include Legionella; there are approximately 300 cases of Legionnaires disease in the UK per year. Immuno-compromised patients are particularly at risk in augmented units such as neonatal units, burn units and intensive care units.

Controlling the formation of biofilms in hospital water systems, as well as on medical devices such as catheters or implants, is crucial, as biofilms provide a 'safe haven' for pathogens.

Hospitals are susceptible to the buildup of biofilms for several reasons. Old buildings often have old plumbing, following unknown routes, which lead to dead-legs and blind routes, and usually there have been many changes to the system over time. There are complex water systems with many outlets, and non-touch sensor taps have been increasingly installed (earlier designs of which were found to retain water and harbor Legionella). There can be issues relating to the use of thermostatic mixer valves to control temperature, and the increasing number of hand wash basins means that some may be underused, which is a known risk factor for Legionella.

New builds have risks too; construction of the water system might be poorly managed, or sections of the build may be left stagnant for long periods of time. The type of materials used in the water system can make a difference as well: latex and plastic are less effective at resisting biofilm growth, while even copper can corrode. Biofilms can occur throughout the water system, including the tank, water softener/reverse osmosis, storage water heaters, pipework, outlets and services.

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Establishment of Water Safety Group and Water Safety Plan

A multidisciplinary team approach to water safety in healthcare environments is essential. The infection risk posed by water should not just be the concern of facility management and infection prevention and control teams. Instead, it should be the responsibility of a Water Safety Group (WSG).

The WSG should undertake the commissioning and development of a Water Safety Plan (WSP), including:

- A risk-management approach to the microbiological safety of water that establishes good practices in local water distribution and supply.
- Identification of potential microbiological hazards caused by *P. aeruginosa* and other opportunistic pathogens.
- Advise on remedial action and detail appropriate control measures.

Members of the WSG should include the Director of Infection Prevention and Control (DIPC), the IPC team, a consultant medical microbiologist, the estates and facilities team (including cleaning staff and the 'responsible person' (water), and senior nurses from relevant augmented care units.

It is important to understand the microbiology of the water system. The WSG should review the water supply, along with the chemicals being used and their efficacy. There also needs to be an understanding of the microbiological data and its significance to the patient so that patient safety is not compromised.

Eliminating biofilms on medical device surfaces and in water systems requires a comprehensive system of sampling, testing and review. Frequency of testing should be set based on local risk assessment.

Guidelines for tap outlets and flow straighteners

- Where practical, consider removal of flow straighteners. Be aware, however, that the removal of flow straighteners may result in splashing and therefore additional remedial action may need to be taken.
- If flow straighteners are deemed necessary, periodically remove them and either clean/disinfect or replace them.
- Replacement frequency of flow straighteners should be verified by sampling/swabbing.
- Check for underused outlets – assess frequency of usage and if necessary remove underused outlet(s).
- Assess the water distribution system for nonmetallic materials that may be used in items such as inline valves, test points and flexible hoses.
- Dead-legs and thermostatic mixer valves: ensure there is no risk of stagnation in the cold supply.

Key considerations for endoscope washer disinfectors

Water quality is also important for endoscope washer-disinfectors (EWDs). It is important to understand the microbiology of the water systems. Departments should consider:

- Is the EWD supplied with appropriate water?
- Does water come from a separate tank or through the hospital's main supply?
- Are the filters/RO system failing too quickly?

Education and training support successful water safety strategies

Increasing worldwide demands on quality assurance, combined with a steady flow of new information about bacterial transmission, can make it a challenge for hospital staff to keep pace with changing standards. There is a clear need for comprehensive training programs to ensure safe, accurate and reliable operation of all equipment and systems. Training should also provide good basic knowledge in machine operation and the principles of good infection control, helping participants achieve maximum operational efficiency and full compliance with the toughest safety standards.

Getinge's training programs, offered through the company's 'Getinge Academy', have been developed to help participants achieve these goals. Visit www.getinge.com for more information about training or contact information for Getinge Academy.

The Getinge Academy: the knowledge is the value

Getinge's infection control systems provide hospitals with a complete solution for effective cleaning, disinfection and sterilization. They're designed to meet the needs of sterile processing departments, sterile processing in the O.R., endoscope reprocessing, dental, wards, outpatient clinics, and more. The product line includes washers, flushers, sterilizers, loading equipment, accessories and software solutions.

In addition to industry-leading disinfection and sterilization equipment and solutions, Getinge offers a comprehensive selection of professional training courses through the Getinge Academy, including application areas of infection and contamination control.

Beyond the broad selection of standard courses available at the training centers, Getinge Academy offers on-site training as well as distance learning on the internet. Courses can be customized based on attendees' level of knowledge, special requests and schedules. The training staff has extensive experience from the healthcare and life science sectors.

Best practices for clinical wash-hand basins

- Do not dispose of body fluids at the clinical wash-hand basin – use the sluice in the dirty utility area.
- Do not wash any patient equipment in clinical wash-hand basins.
- Do not use clinical wash-hand basins for storing used equipment awaiting decontamination.
- Do not touch the spout outlet when washing hands.
- Clean taps before the rest of the clinical wash-hand basin. Do not transfer contamination from wash-hand basin to wash-hand basin.
- Do not dispose of used environmental cleaning agents at clinical wash-hand basins.

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Getinge Group is a leading global provider of products and systems that contribute to quality enhancement and cost efficiency within healthcare and life sciences. We operate under the three brands of ArjoHuntleigh, Getinge and Maquet. ArjoHuntleigh focuses on patient mobility and wound management solutions. Getinge provides solutions for infection control within healthcare and contamination prevention within life sciences. Maquet specializes in solutions, therapies and products for surgical interventions, interventional cardiology and intensive care.

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