

# Looking deeper

THE JOURNAL OF THE WATER SAFETY FORUM

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Issue 8 | Winter 2020/2021

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## Covid and water safety: a steep learning curve

Looking Deeper Editor, **Susan Pearson**

While the last Looking Deeper editorial touched on a dystopian future that included the entirely possible scenario of increasing deaths caused by 'drug-resistant' superbugs, we could not then have imagined where we find ourselves now — in a real dystopia, the midst of a global pandemic.

With the summer issue of Looking Deeper a casualty of the Covid-19 lockdown, and with our world apparently completely changed, we have chosen this latest front cover as a reflection of where we are now — our masked woman peers fearfully into the distance uncertain of what the future might look like.

In this winter issue we look at what the current situation means for those managing water safety in healthcare. Despite all the uncertainty, a positive is that the unavoidable steepness of our learning curve in understanding the SARS-CoV-2 virus has at least lead us to quite rapidly become better placed in dealing with the consequences of the pandemic.

For example, the ESCMID (European Society of Clinical Microbiology and Infectious Diseases) study group on *Legionella*, ESGLI, has put together new guidelines with highly specific advice for different types of premises. This includes advice specific for care homes, which we cover in some detail on pages 10-11.

*'Unintended consequences' are outcomes of a purposeful action that are not intended or foreseen — term popularised by American sociologist Robert K. Merton*

But some of the epidemiology measures designed to combat the Covid-19 pandemic have resulted in unforeseen consequences — and the ESGLI guidance particularly highlights the need for solutions for these. Specifically, the long national 'lockdown' earlier this year resulted in unforeseen consequences such

as the stagnation of water systems in buildings closed down during this period — potentially promoting the ideal conditions for growth of dangerous microbial pathogens.

On pages 5-7, we look at how these 'unintended consequences' become significant when healthcare facilities such as dental practices, hydrotherapy centres and single buildings within larger facilities are re-opened, putting their users at risk. At the time of going to press, several areas of the UK were experiencing further partial lockdowns, and more lockdowns were also imminent across the rest of the country — creating a new cycle of closures and water stagnation.

Looking Deeper has always aimed to foster a forum for discussion of problems and solutions in water safety and infection control. More than ever, in this challenging time of shifting priorities, we'd welcome your feedback on what we cover and other issues and information you'd like to see us discuss.

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**Armitage Shanks**

For commercial applications, Armitage Shanks, is the definitive British brand with pioneering solutions in washroom fixtures, fittings and water conservation. These solutions extend to bacteria sensitive healthcare environments, where the safe management and delivery of water is critical to infection control, controlling the spread of infectious diseases. Now leading the industry in safe water management, Armitage Shanks is committed to supporting the Water Safety Forum.

## Editorial Contributions



Susan is an independent journalist and communications specialist with a background in biology, medical research and publishing. She has been writing on medical issues for over 30 years and on waterborne infection and water management since 2010. She has been a frequent contributor to IHEEM's Health Estate Journal, WMSoc's Waterline and the Clinical Services Journal.

**Susan Pearson**



Elise is an independent consultant to the water and medical devices industries and a former Chair of the Water Management Society (WMSoc). She is a state-registered microbiologist and a Fellow of WMSoc, IHEEM, RSPH and IBMS. She chairs and presents at numerous international conferences.

**Elise Maynard**



Dr Susanne Surman-Lee is a public health microbiologist with over 45 years' experience in clinical and public health microbiology. She is a former Director of the HPA (now Public Health England) London Food Water and Environmental Microbiology Laboratory and now Director and co-owner of Leegionella Ltd., an independent public health consultancy. Dr Surman-Lee has been involved for 20 years with the development of national and international guidelines, is a certificated expert witness and is Chair of the Royal Society of Public Health Water Special Interest Group.

**Dr Susanne Surman-Lee**

## Dates for diaries...

**Federation of Infection Societies (FIS) International conference 2020**  
9-11/11/2020 Webinar — hosted by HIS  
[his.org.uk/training-events/fis-his-2020/](http://his.org.uk/training-events/fis-his-2020/)

**10th World Congress on Clinical Microbiology and Infectious Diseases**  
16-17/11/2020 On-line  
[clinicalmicrobiology.conferenceseries.com/](http://clinicalmicrobiology.conferenceseries.com/)

**Legionella Control Association webinar: Legionella Risk Assessment Standard**  
19/11/2020 On-line  
[legionellacontrol.org.uk/events/event/?id=60](http://legionellacontrol.org.uk/events/event/?id=60)

**Legionella Conference: Prevention of Disease and Injury From Waterborne Pathogens in Health Care**  
20-22/01/2021 Chicago, US  
[legionellaconference.org/newsroom/legionella-conference-rescheduled.php](http://legionellaconference.org/newsroom/legionella-conference-rescheduled.php)

**WMSoc Training Course: HTM 04-01 Water Hygiene Training-W037**  
26/01/2021 and 6/07/2021 Tamworth, UK  
[www.wmsoc.org.uk/legionella-training-courses/all/679/](http://www.wmsoc.org.uk/legionella-training-courses/all/679/)

**Legionella Control Association webinar: Legionella Sampling & Analytical Standard**  
18/02/2021 On-line  
[legionellacontrol.org.uk/events/event/?id=60](http://legionellacontrol.org.uk/events/event/?id=60)

**18th International Conference on Pseudomonas**  
27/09 - 02/10/ 2021 Atlanta, Georgia, US  
[pseudomonasconference.com/](http://pseudomonasconference.com/)

## Share your thoughts with us in the next issue

We would really value your reactions to this latest issue of Looking Deeper. We'd like to hear from you about what you liked, what you feel could be improved on and what topics you want to see discussed. You can contact us at [editorial@lookingdeeper.co.uk](mailto:editorial@lookingdeeper.co.uk)



## In the news...

### Raft of new guidelines under development

New guidance is on its way to provide welcome longer term back-up for hard-pressed facilities managers and infection control professionals engaged in the complex business of re-opening premises after Covid-19 lockdowns.

The BSI (British Standards Institution) is developing two new crucial water management standards: on risk assessments for *Pseudomonas aeruginosa* and on sampling for *Legionella* bacteria in water systems.

The two new BSI Codes of Practice are BS8580-2 "Water Quality — Risk Assessments for *Pseudomonas aeruginosa* and other waterborne pathogens" and a revision of 7592:2008 "Sampling for *Legionella* bacteria in water systems".

The development panel for BS8580-2 is chaired by Dr Susanne Surman-Lee, with publication due in January 2022, while the 7592:2008 revision panel is chaired by Dr John Lee, for February 2022 publication. Dr Surman-Lee,

is a former Director of the London Regional Food, Water and Environmental Microbiology Laboratory Services, while Dr John Lee is a former Head of the HPA Water and Environmental Microbiology Research Unit; both are international experts in the detection, survival and control of pathogenic environmental microorganisms.

Dr Surman-Lee said: "It's important that risk assessments for *Pseudomonas aeruginosa* are a team effort and involve not just an assessment of the water system, but also take into account the usage and the susceptibility of the users of all types of water within a healthcare facility. As well as assessing risk in augmented care areas, separate risk assessments should be carried out for other areas, for example hydrotherapy pools, and it's essential that these risk assessments are specific for *P. aeruginosa*, not just for *Pseudomonas* species. The full involvement of the water safety group is key in deciding where these risk assessments are needed".

## Superbug-killing drug on the horizon

An international collaboration of researchers are testing a new compound composed of inexpensive chemicals that has been found to kill a wide range of superbugs, including the antibiotic-resistant WHO- 'priority pathogen' *Pseudomonas aeruginosa*.

Known as AB569, the compound contains ethylenediaminetetraacetic acid (commonly referred to as EDTA) and acidified nitrite that have been discovered to work together effectively to kill disease-causing bacteria without harming human cells.

AB569 was developed at the University of Cincinnati by Dr. Daniel Hassett, a Professor in the Department of Molecular Genetics, Biochemistry and Microbiology at the University's College of Medicine.

He said: "AB569 kills these pathogenic bacteria by targeting their DNA, RNA and protein biosynthesis as well as energy and iron metabolism at concentrations that do not harm human cells... Our data implicate that AB569 is a safe and effective means that could be applied to eradicate these superbugs."

The *Pseudomonas* Genome Database from the Brinkman Laboratory at the Simon Fraser University in British Columbia, Canada, was utilised alongside computer-based analysis of molecular data to establish how the AB569 chemicals were likely to kill drug-resistant *P. aeruginosa*.

The new therapy will be particularly applicable to the treatment of *P. aeruginosa* respiratory infections in cystic fibrosis individuals. AB569 has been licensed exclusively to Toronto-based biotechnology firm Arch Biopartners and is now in the first phase of human trials.



## Covid-19: Unforseen consequences



It seems a long time since our pre-Covid-19 world at the beginning of the year — with no return to our previous 'normal' lives in sight any time soon. For facilities managers, water microbiologists, clinicians and infection control personnel it is clear that the pandemic has brought with it a set of specific knock-on consequences, introducing new dynamics into infection control and water management.

With the crisis potentially taking priority away from the routine management of water systems and associated equipment, experts have warned that reasonable responses to the pandemic have produced unforeseen risks to public health from waterborne diseases such as Legionnaires' disease. Without a strong focus now on water management, there could be major problems down the line.

Scenarios contributing to unforeseen consequences that are now adding to the mix of water management challenges include:

- Months-long lockdown closures of healthcare facilities, including those with specialist equipment, such as dental facilities — leading to an unprecedented decline in water usage, which in turn has led to lack of water flow and irregular temperature changes once these buildings are brought back into use
- Changes of use — hotels, exhibition centres and other buildings have been converted for managing COVID-19 patients and those in isolation, a process that has happened very rapidly
- Residential nursing care homes taking patients from hospitals that are more susceptible to waterborne infections than the normal population to make room for COVID-19 patients.

### Covid-19 and Legionella

An infection with Covid-19 and an infection with the *Legionella pneumophila* bacterium that causes Legionnaires' disease have some major features in common: not only are many of the symptoms similar, but the same groups of people are most at risk — the elderly, immuno-suppressed individuals and those with an underlying illness such as heart disease, diabetes and other respiratory conditions, with men more often infected than women.

There is a concern that because many of the symptoms of Covid-19 are similar to Legionnaire's disease, this may give rise to late diagnosis and more serious consequences to patients as a result of delays in treatment. For example, a paper from Japan describes the case of an 80-year-old man who following a visit to Egypt in late February/early March 2020 had started to experience serious respiratory symptoms. He was diagnosed with Legionnaires' disease and treated with antibiotics, but not tested for Covid-19 until day eight of his illness, when he tested positive. He sadly died.<sup>1</sup>

Water stagnation and lack of temperature control leading to tepid temperatures (keeping high temperatures high, above 50°C, and low temperatures low, below 20°C, being a crucial control measure) are key in the build-up of biofilm\* that harbours waterborne pathogens, such

as *Pseudomonas aeruginosa*, *Stenotrophomonas maltophilia* and *Legionella pneumophila* bacteria. Water stagnation increases the likelihood of these pathogens growing to levels that may cause infections.

A paper from Italy illustrates this scenario and, again, how cases of Legionnaires' disease may be confused with Covid-19. A dishwasher who worked in Rome at a restaurant that had re-opened in late May was admitted to hospital as an emergency after suffering with fever, a dry cough and headaches. Repeated testing for Covid-19 came back negative, while an eventual test for *Legionella* gave a positive result. The man was successfully treated with antibiotics. The paper's authors stress the importance of: "strict monitoring of water and air systems immediately before re-opening business or public sector buildings, and the need to consider *Legionella* infections among the differential diagnosis of respiratory infections after lockdown due to the ongoing COVID-19 pandemic."<sup>2</sup>

Evidence has also been emerging that one of the most important risk factors for mortality in Covid-19 patients is developing a co-infection. High numbers of these patients are being diagnosed with secondary infections, particularly respiratory co-infections, which appear to have an impact on their chances of survival. A retrospective study from Wuhan in China found that of the 68 Qingdao Covid-19 patients investigated, 80% had antibodies against at least one respiratory pathogen, with 20% of these being against *L. pneumophila*.<sup>3</sup>

### Social distancing

The need for social distancing in public spaces such as leisure centres and pubs, cafes and restaurants also has



the potential to result in unintended consequences: blocking off hand wash basins and urinals to space out these facilities will create plumbing dead legs that lead to water stagnation and bacterial proliferation.

### Multi-drug resistance

A further unforeseen consequence of the Covid-19 pandemic is the contribution to the already worrying rise of multi-drug resistant organisms, as around 90% of Covid patients will be receiving antibiotic treatment to treat bacterial co-infections.<sup>4</sup>

### Finding solutions

#### Guidance

In the UK, the Health and Safety Executive has issued specific guidance on *Legionella* risks during the coronavirus outbreak,<sup>5,6</sup> while organisations such as the Water Management Society and the Legionella Control Association have also issued advice on the issue.<sup>7,8</sup> The European Society for Clinical Microbiology and Infectious Diseases (ESCMID) Study Group for Legionella Infections, ESGLI, have also put together guidance for a range of types of facilities and buildings on the controls that are needed to adequately manage the risks in the scenarios outlined above.<sup>9</sup>

The ESGLI guidance provides useful checklists to help identify whether the processes are in place to keep particular types of buildings safe, such as ensuring that specific water safety plans (see pp 8-9) and risk assessments that deal with the current water safety risks have been drawn up.

In addition, a new British Standard, BS8680, has recently been published providing a code of practice for putting together water safety plans (see pp 8-9).<sup>10</sup>

#### Dental units

The disinfection of dental waterlines can be difficult and dental treatments have an enhanced risk of infection because of their close proximity to the nasal cavity and, likewise, the oral cavity, where there is an increased risk of inhalation of contaminated water.

The new ESGLI guidance includes how to verify that any control measures have been effective and recommends that *Legionella* testing should be capable of detecting as low as 50 CFU/L. Results should be below 100 if control measures after a period of stagnation have been effective.

### Augmented care and re-purposing complex buildings

Patients accommodated in designated augmented care areas, such as intensive care, high dependency and oncology units/wards, will be also be those most vulnerable to opportunistic infections — and the water safety plans governing these units will reflect this risk. Because Covid-19 patients are at higher risk of infection



from waterborne pathogens than other patients, the management of the water systems wherever they are accommodated must take in the same factors as those considered in augmented care, where both clinical and cleaning staff are trained to be aware of water safety and how to manage the risk from water in these settings

Since these patients may be accommodated in re-purposed wards or non-medical buildings, the specification and installation commissioning for changes to water systems or the construction of new ones, including the installation of equipment, may be rushed, with the potential to increase the risk of introducing contamination. In these situations, risk assessments must include consideration of how fitting additional point-of-use fittings, extra showers for staff and extra clinical hand wash basins, for example, will affect the dynamics of a water system, and whether mobile hand-wash stations have been stored or pressure tested with contaminated water before being fitted into a system.

In one anecdotal scenario described by an independent consultant,\*\* patients who were recuperating from Covid-19 were to be accommodated in a community hospital. The ward that was to house them was re-designated as a Covid-recovery ward, therefore becoming in effect an augmented care unit. Under its new status the hospital's water safety group (see pp 8-9) instructed that the ward now needed to be tested for *Pseudomonas aeruginosa*, which had previously been unnecessary. A testing regime was set up — but following anticipatory mitigation measures such as the removal (where feasible) and thorough descaling of flow straighteners that exacerbate *P. aeruginosa* growth, and thorough cleaning of the system.

The rapidly commissioned Nightingale Hospitals are also very specific examples of the complexity of re-purposing buildings that have previously had no medical function. Some of the water management logistics that might need consideration in a major project of this kind include:

- Location of clinical hand wash basins
- A flushing regime to counteract stagnation from unused

facilities within the building, such as food outlets and customer toilets

- Placement of patient toilets
- A water testing regime relevant to augmented care patients, so including for *P. aeruginosa*
- A water safety plan in place, ideally based on the new BS standard 8680 (see above and pp 8-9).<sup>10</sup>



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- 3] [doi.org/10.1101/2020.02.29.20027698](https://doi.org/10.1101/2020.02.29.20027698)
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- 10] <https://shop.bsigroup.com/ProductDetail?pid=000000000030364472>

\*Biofilm is an intricate colony of microorganisms that proliferate in damp conditions and form a sticky mucus that holds the colony together and allows attachment to inanimate surfaces such as metal, plastic and glass.

\*\*Details anonymous for legal reasons.

# Planning water safety — a new British Standard

Water safety plans are the most effective way of consistently ensuring water supply safety. A new British Standard, the first of its kind, now offers much needed guidance on how to ensure water in buildings does not present any risks to the occupants. This article is based on a webinar presented for the BSI by Dr Susanne Surman-Lee, Chair of the BSI panel that drafted the new BS 8680 Code of Practice for Water Safety Plans.



preventable diseases. Hazards of both a chemical and microbiological nature can increase within water systems, especially if flow becomes slow or a system becomes stagnant, and particularly when temperatures are between 20 to 45°C, and where there are nutrients and chemicals that may be derived from contamination of the materials and components themselves, which in turn can support the growth of pathogens.

Unless water is managed effectively within a building, it can deteriorate, particularly in large and complex systems such as hospitals.

## What is a water safety plan?

WSPs represent a move away from historical sampling-based methodologies. These were seriously flawed because by the time results were available, the water had already been drunk, with large outbreaks occurring as a consequence. The water safety plan approach is instead based on risk assessment and putting effective barriers in place to prevent contamination. They follow the Hazard Analysis and Critical Control Points (HACCP) approach used in food safety, which is based on "prevention being better than cure" and has successfully improved the quality of potable water supplies within buildings.

WSPs are based on identifying all significant risks to public health by appointing a multidisciplinary water safety group (WSG); ensuring a system is fully described and hazards identified; establishing a risk assessment to determine if controls and the multiple barriers in place are effective; and outlining back-up options in the event of a control measure failing, including validation and verification, monitoring to ensure that controls and barriers remain effective and a range of supporting programmes.

## Why is BS 8680 needed?

There has previously been a lack of consistency between the remits of WSPs, with WSPs coming in many different forms, sizes and complexity. "Even when inhabiting a pile of huge lever arch files, a WSP

may still lack sufficient details on governance and accountability detail and a clear, straightforward policy statement," Dr Surman-Lee says. "It's very difficult to see the wood from the trees, and for relevant staff to identify what the important steps are."

This is where the new code of practice steps in to provide coherent guidance. It includes not just the microbiological chemical and radiological hazards, but also physical hazards and the relevant factors that need to be considered to develop a comprehensive water safety plan. Dr Surman-Lee emphasises that "ensuring water safety requires not just an understanding of the risk to health within and from the building infrastructure, but also an understanding of the risks from poor design — and therefore the build and design process, water chemistry and radiological hazards."

She notes that poor design also includes the potential for physical risks such as slips and trips from spillage, splash contamination, electrocution and flooding. Comprehensive WSPs should be developed from the very first stage of the building, from the concept right through to refurbishment of existing systems.

A WSP needs to be concise and at the same time include all the policies and processes that need to be in place to ensure water is safely managed, including for each type of use and user, taking account of their individual susceptibility and likely exposure. This core plan should then be supported by documentation which can be referred to and accessed as necessary.



*"A water safety plan needs to be an active living document, and not just something to fill a filing cabinet."*

*Dr Susanne Surman-Lee*

## What's in the new Code of Practice?

BS 8680 aims to support building managers of any size and complexity to develop and implement a usable, comprehensive high level strategic WSP that takes account of all water-related risks within the premises and associated estate, irrespective of the size and complexity of that system.

It covers the development of water safety plans for all types of undertaking and all types of premises where there could be a risk to those exposed from either the water itself or aerosols derived from it. BS 8680 is applicable to new buildings, modifications and renovations, and can be applied retrospectively.

A core component of the code of practice emphasises the appointment and role of key personnel with the responsibility for developing and implementing the



WSP. In complex systems such as healthcare facilities, a multi-disciplinary WSG should be appointed, who have a thorough understanding of the systems and any associated equipment involved. Typically, WSGs will include, engineers, water quality specialists, environmental or public health professionals, operational staff: (such as cleaners) and representative user groups, and in healthcare, infection prevention and control personnel should be core members.

## Conclusion

During this Covid-19 pandemic those in charge of managing water systems face extra challenges over and above those encountered during previous 'normal' operation, such as re-opening of closed buildings with stagnating water systems. BS 8680 provides a timely coherent guide to help prevent outbreaks of deadly opportunistic pathogens such as *Legionella* and *Pseudomonas aeruginosa* bacteria.

Dr Surman-Lee says:

"If organisations follow this code of practice we should begin to see effective WSGs, improvements in water safety, a reduction in waterborne infections, especially in healthcare, and also a significant reduction in running costs."

*Details of BS 8680:2020 can be found at: [shop.bsigroup.com/ProductDetail?pid=00000000030364472&ga=2.45120420.165511370.1603667978-1303759095.1598367500](https://shop.bsigroup.com/ProductDetail?pid=00000000030364472&ga=2.45120420.165511370.1603667978-1303759095.1598367500)*



## Care in the time of Covid: a focus on water safety

As care homes and nursing homes face the challenge of the Covid-19 pandemic, already vulnerable residents may be at greater risk from waterborne infections. However, recently published guidance designed specifically for the care sector offers targeted advice to help water managers keep residents and staff safe.

Of all the healthcare facilities facing the huge challenges from SARS-CoV-2 virus infections, care homes and nursing homes have faced some of the most tragic consequences. As the virus ripped through care homes in March and April 2020, it became clear this population of residents and patients was at the top of the vulnerability list. The press was full of stories of large outbreaks and multiple deaths in care facilities across the country. While this eased off as protective measures were eventually put in place, at the time of writing, September 2020, this highly susceptible community is again at high risk as numbers of infections are on the rise and providers have highlighted that testing is insufficient.

In this climate the routine management of water systems in care home and nursing facilities may not seem to be at the top of the list of priorities.

### Legionnaires' disease and Covid-19

Despite mains water reaching all regulatory standards, naturally occurring bacteria that cause no harm to younger, healthy individuals can still enter a building's water systems. Without vigilance, in water systems that are poorly designed or not well managed, conditions may arise that cause background organisms, in particular

*Legionella pneumophila*, the cause of Legionnaires' disease, and *Pseudomonas aeruginosa*, to grow to a level where they can cause severe pneumonia and even death in susceptible residents.

The elderly and those with underlying health conditions are the most vulnerable to these opportunistic pathogens — the same group most at risk from Covid-19.

Evidence is gradually emerging that Covid-19 patients are at increased risk of secondary co-infections, such as Legionnaires' disease, both during recovery and for some time afterwards.<sup>1,2</sup>

As nursing homes in particular prepare for an increase in patients during the pandemic as patients are transferred out of hospital to make room for Covid-19 patients, there is a real risk from outbreaks of waterborne infections. Any outbreaks that do occur may be missed as many of the symptoms of Legionnaires' disease are very similar to those of Covid-19.

So when highly susceptible patients are moved out of their protected environments into a care home or nursing home, it is crucial to retain a strong focus on water management to prevent potential risks from waterborne infections from being overlooked.

In this heightened situation, new specific guidance aimed at minimising the risk from waterborne infections in care homes and nursing homes during the Covid-19 pandemic has been published by the ESCMID (European Society of Clinical Microbiology and Infectious Diseases) study group for *Legionella* infections, ESGLI. The ESCMID/ESGLI guidance outlines key technical recommendations alongside local and national guidance — specifically L8, HSG274:Part 2, HSG220 and HTM 04-01.<sup>4,5,6</sup>

### Preventing microbial growth

The ESGLI guidance provides a reminder of the main conditions that lead to the proliferation of *Legionella* and other waterborne pathogens such as *Pseudomonas aeruginosa* in hot and cold water systems.

Waterborne pathogens that pose a threat to care home and nursing home residents will flourish and multiply:

- In water temperatures between 25°C and 50 °C
- In water that is stagnant due to low or no flow
- Where materials are used that provide nutrients for bacterial growth, such as certain types of plastics, and contaminants, such as limescale, are present.

Even if these conditions occur only in a small area of pipework, any exponential growth of bacteria will allow them to spread to other parts of a water system, making it difficult to control widespread contamination.

These bacteria can be transmitted to residents and patients in aerosols, for example from taps, showers, flushed toilets and splashing from contaminated hand wash basins.

The guidance goes on to outline the factors that increase these risks during the Covid-19 pandemic, including:

- Difficulties in applying routine control measures and performing routine maintenance and monitoring due to shutdowns and staff shortages
- Rushed planning, specification and installation of equipment for COVID-19 patients or patients moved from a hospital setting to make way for COVID-19 patients without proper risk assessments
- Reduced testing for *Legionella*, leading to under-recognition of contaminated sources and outbreak cases.

### Solutions

The authors stress the importance of consulting with the facility's water safety group (WSG), or establishing a WSG if there isn't one already in place, before putting in place any plans to make changes to the water system, such as adding temporary wards or water outlets. The use of external expertise is recommended if needed. A WSG is a multi-disciplinary team representing every speciality that might be found in a healthcare facility, with the collective responsibility to originate, deliver and maintain a water safety plan (WSP).

The HSG274 and HTM 04-01 guidelines advise that water systems and associated equipment should have WSPs,



including up-to-date risk assessments and management plans for controlling *Legionella* and *P. aeruginosa*.

It should also be noted that the Care Quality Commission (CQC) in England are the lead investigator of incidents where residents have been harmed because of unsafe or poor quality care and Regulation 12 of the Health and Social Care Act 2008 (Regulated Activities) Regulations 2014: applies.<sup>7,8</sup>

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Further information on *Legionella* and *Pseudomonas aeruginosa* growth and transmission can be found in the Armitage Shanks 'Back to Basics' series. To request copies of these supplements, email: [editorial@lookingdeeper.co.uk](mailto:editorial@lookingdeeper.co.uk)

## J Hosp Infect.

June 2020 105(4) doi: 10.1016/j.jhin.2020.05.039

Healthcare workers' attitudes to how hand hygiene performance is currently monitored and assessed.

Cawthorne K-R, Cooke RPD.

Engagement of healthcare workers (HCWs) is critical to maintaining high levels of hand hygiene (HH). However, attitudes of HCWs to how compliance is monitored has been poorly described. This study explored the HCW perspective on direct observation (DO) as a gold standard for HH monitoring. It also sought their opinions on innovative technology. A survey was emailed to all staff in two NHS trusts: 1120 responses were analysed. Nursing staff and doctors accounted for the largest quantity of responses; 58% of HCWs did not strongly endorse DO assessment of HH compliance. Staff were open to considering alternative innovative technologies.

## J Hosp Infect.

2020 Jan;104(1):53-56. doi: 10.1016/j.jhin.2019.08.007. Epub 2019 Aug 10.

Extended-spectrum b-lactamase Enterobacteriaceae (ESBLE) in intensive care units: strong correlation with the ESBLE colonisation pressure in patients but not same species

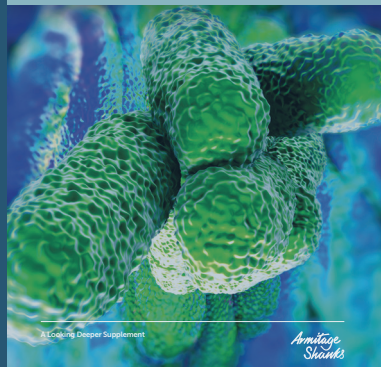
Lemarie C et al.

Sink drains of six intensive care units (ICUs) were sampled for screening contamination with extended-spectrum b-lactamase-producing Enterobacteriaceae (ESBLE). A high prevalence (59.4%) of sink drain contamination was observed. Analysing the data by ICU, the ratio 'number of ESBLE species isolated in sink drains/total number of sink drains sampled' was highly correlated (Spearman coefficient: 0.87;  $P < 0.02$ ) with the ratio 'number of hospitalisation days for patients with ESBLE carriage identified within the preceding year/total number of hospitalisation days within the preceding year'. Concurrently, the distribution of ESBLE species differed significantly between patients and sink drains.

*Armitage Shanks*

## Legionnaires' disease

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