

**The role of water
management in
providing effective,
safe hospital care.**

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Healthcare estates have faced a multitude of challenges, particularly in these last 18 months. However, one steady constant for them to have always been aware of – and which could sometimes fly under the radar – is the importance of water management and monitoring. Our hospital water supplies can be a key point of risk for infection, with the taps and other infrastructure being common touch points, the risk of old, contaminated, or faulty piping and the dangers of stagnation in the water flow.

As Mathew Gleadall, Head of Estates at Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust, describes: “Water is essential to the delivery of high quality healthcare, and water safety is therefore of paramount importance to NHS Estates and Facilities teams.

“Many healthcare premises face a number of significant challenges, including aging infrastructure, a need to balance the requirement for storage to ensure resilience against the need to maintain an adequate turnover of water to avoid stagnation, and the presence of patients who are often more susceptible to the risks presented by water borne pathogens.

“Subsequently, water safety requires a substantial ongoing investment of both time and resource for the maintenance, monitoring, and improvement of water systems by most estates and facilities teams working in the NHS.”

In particular, as the health service has worked to address the pandemic, the risks around infection spread and stagnation of water having become increasingly important, with the latter impacted by some sections of hospital sites having gone largely unused for months due to changes in demand and service delivery.

For Sarah Delaney, National Health and Safety Lead (Water Management) at NHS Property Services, the pandemic has certainly created challenges, but ones which NHS Property Services – and by extension its partners – have worked effectively to address.

“Water safety in our buildings is a Priority 1 maintenance activity and it’s fair to say that the pandemic has certainly heightened the possibility of stagnant water due to infrequent use in some areas.

"However, NHS Property Services has a detailed Water Safety Plan in place that includes a full suite of technical standards for all elements of water planned maintenance and inspection. Therefore, we have ensured that all water safety maintenance activity, including flushing, has continued during the pandemic and has been increased based on risk where needed. The closing of NHS Property Services buildings or part of buildings were managed by a 'mothball' plan and this included enhanced flushing undertaken by teams in areas where NHSPS buildings are not in use – in full consultation with occupiers.

"Likewise, as occupiers move back to buildings, we have a reopening process to ensure that water safety remains top of the list and is fit for use by our occupiers."

But, if water management plans are in place and being carefully carried out, why do we still have significant additional focus on our water supply processes?

As David Merriman, UK National Sales Manager at Rada, explains, there are still challenges and risks which need constant diligence in order to ensure we stay on top of the situation. As he explains: "Some of the key challenges are around infection prevention – so, ultimately ensuring the safety of patients, health professionals and staff. That is absolutely key.



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"There [have been] instances of legionella and pseudomonas around and instances of cross contamination, which is a key challenge, and currently it is often a manual process to combat these.

"What we're doing is creating ways to automate and simplify compliance on these issues and make life a lot easier for the end users – the estates and hospital teams – who are actioning the compliance."

This is seconded by Sarah, saying: "Diligence in addressing waterborne infection risks is extremely important, and collaboration is a key part of our success in this area. Our estates and facilities teams communicate regularly with their wider network, with each other and of course with local occupiers."

The other big challenge raised: the staff themselves. Workforce shortages are nothing new in the health sector and extend to the estates and facilities teams often responsible for this management and compliance in water supply and safety. Greater automation of the processes involved and a reduction in the manual, labour-intensive tasks provide much greater efficiency for the workforce which an NHS organisation does have available to it.

Add into this the ability to automate the collection of data for analysis across the hospital site's water network, and suddenly these workers have a bird's eye view of the supply and any emerging problems much more quickly and reliably than if they needed to be on a rolling cycle of manual checks. Suddenly, these teams are able to much more proactive rather than reactionary in their maintenance and improvements of the system.

As David continues: "The NHS is always looking to make the hospital a place which is more sustainable and fit for the future.

"New technologies and ways of working are helping the NHS to achieve those goals, and one of those ways is through a system we call Intelligent Care.

"Whether that is water savings, cost savings or staff time, we [can use these types of technology] to help the NHS deliver on these areas."

Intelligent Care spawned out from hundreds of hours of research and interviews with healthcare professionals, cleaners, nurses, maintenance people and installers, as David explains, to develop a true, rich appreciation for the challenges at hand, and the ways in which solutions could be created for those problems.



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"We really started from a blank sheet of paper with Intelligent Care. We were asking simple questions such as 'what do you want?' and 'what do you need?' and then designed the range on the back of that collaboration."

That collaborative input from industry supported Rada to develop solutions which didn't just meet what they perceived to be healthcare's key challenges around its water supply; but actually address many of the genuine issues raised by those same healthcare workers that they'd spent the time interviewing and listening to. Now, from the ground up, they've been able to manufacture and supply into the health sector solutions which were built specifically for the people now using them.

It allowed the creation of that new technology, and those new ways of operating, which the NHS has made the backbone of its hospital redevelopment. Subtle, simple changes to the working lives of many different healthcare roles, but which have greatly increased efficiency and the NHS' ability to reliably deliver safe, efficient, and sustainable water.

David explains: "So, what is it? [At its most basic level] it is a new range of taps.

"But they've delivered no touch operation, which reduces the risk of cross contamination. We've got a brand new design for the digital thermostatic control that delivers an ultra-safe temperature.



"We've managed to reduce the complexity of the internals massively, which can be an issue for bacteria liberation. We've reduced the volume of plastics in contact with the water by 95%, so its nearly always only metal touching the water, which again reduces the proliferation of bacteria.

"And the water ways are designed in a way that the water is at high velocity to reduce the amount of biofilm which can build up in the product.

"Again, it's the idea of taking the design of a thermostatic valve back to the drawing board and asking how we can now meet the needs of these people we've collaborated with. That develops the mechanics of the tap, but then also leads to resource savings through lower water usage.

"The resource saving through low water usage and automated duty flushing [is hugely beneficial]. Generally, a hospital will be required to do a flush of their outlets periodically and we can automate that process, and also record that it is done for compliance automatically. That is a massive saving of labour and cost, and it makes the compliance bulletproof."

Automating these more time-consuming tasks ensures the estates team responsible for this can focus their efforts on more beneficial projects, without concern of something slipping through the net or reduced overall quality. Everything gathered for the compliance is managed through data storage and analysis, providing accurate, up-to-date information from across the

network and ensuring that, even once a duty flush is completed, there is still a complete year-long record of data on that tap available, which can then be easily accessed either direct at the tap or through a connected network to ease compliance, real time data and networking access.

"If you can imagine a hospital of taps that are all networked together, that you can now access centrally, that's a dream [for monitoring and compliance]."

But, alongside creating an interconnected, data capturing network of faucets across the hospital site, there is a very real benefit to the staff and patients too; one which has been of particular benefit in these challenging last 18 months.

With the no-touch technology, the need to touch these surfaces is no longer necessary. This greatly reduces the chances of cross contamination as a touch point, and the implementation of digital thermostat displays, which can equally be controlled without touching the tap itself, helps give a user complete control without an infection control risk – complete with clear visual indicators, including an active light when in use and digital display graphics indicating temperature change.

The reason for all this, as David describes, is to help play a part in the wider hospital efforts to combat infection spread, and in particular healthcare associated infections (HAIs) which might affect patients.

"We've gathered data [as a health service] which shows that one in five patients will acquire a HAI. That's a high number of patients, an unfortunately from that, 3.5% of those patients are likely to die.

"Patients in hospital settings are vulnerable to infections such as legionella and pseudomonas, and our solutions, while encouraging compliance with hand hygiene, are primarily aimed at reducing the risk of infections, cross contamination and waterborne infections.

"We've designed it with that in mind. It is a serious consideration [for us at Rada]."

Adding to that, Katy Rogers, Commercial Business Director, Rada, says: "Particularly with legionella, it's vulnerable patients – patients who are very ill or immunocompromised – elderly people and premature babies that are really susceptible to this.

"[To help foster understanding of the importance of investing in effective water delivery solutions in healthcare] we have spent time engaging with estates teams, but also with the water safety groups as well.


"This helps everyone understand because there is usually faith held in the water safety groups, and I think we can help them to raise this kind of understanding through the hospital and the NHS trusts."

This is also a step being undertaken to great success by NHS Property Services, as Sarah explains: "Regular communication that makes water safety risks a priority has been especially important in creating successful networks that share knowledge and work together to create solutions."

That understanding is often key to being able to position and encourage senior leadership in an NHS organisation, often faced with a lot of different areas of potential investment, to support and fund the introduction of these types of beneficial, new technology into their hospital sites. Without an understanding of the challenges, and that there is technology already available to address these areas, an organisation will not manage to achieve the necessary buy-in that it needs. Often, it needs the support and appreciation – if not understanding – of the whole organisation as to how important the matter is.

"When we think about who is involved in this process, it's the end users, the maintenance teams, installers. We offer support at every single point, and we've designed the product with the end customer in mind.

"We've got UK manufacturing to allow us to plan and build for our customers."



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The benefits of this came into effect for Rada during the pandemic when they were involved with the construction of the temporary NHS Nightingale hospitals. With a UK-based manufacturing operation, they were able to respond quickly and provide uninterrupted supply, ramping up parts of the manufacturing process where needed, to support those projects. It was a step which competitors without that UK base could not, and ensured Rada met the needs of the installers and customers quickly and effectively, with UK service teams then being able to install the products on site and ensure the water delivery system was ready to go and safe.

David continues: "We also offer training at every point. We'll go in and train staff on using the new technology, we will train installers on how to install the new technology, and we'll train the maintenance team with our service engineers on how to run it themselves.

"Equally, if we've got an old product which goes obsolete, we will commit to supplying spares for a minimum of 10 years after that product goes obsolete. There are still some products that are 20 years old that we still supply the spares for.

"ALL OF THAT JUST COMES BACK TO THAT UK MANUFACTURING CENTRE, WHICH ALLOWS US TO CONTROL ALL OF THESE ASPECTS OF OUR SYSTEM."

That commitment and honouring of out of service products reflects the healthcare engagement with Rada undertook, and an appreciation that the NHS – for all of its positives – still often finds parts of its hospital infrastructure running on legacy equipment. Sometimes, the key to supporting the health service is not just installing the newest, flashy gadgets, but also in standing by and safeguarding some of the older, more antiquated facilities to ensure that, even in the event of a problem, service can continue largely undisrupted.

As David perfectly encapsulates: "You've got [to provide] that peace of mind."