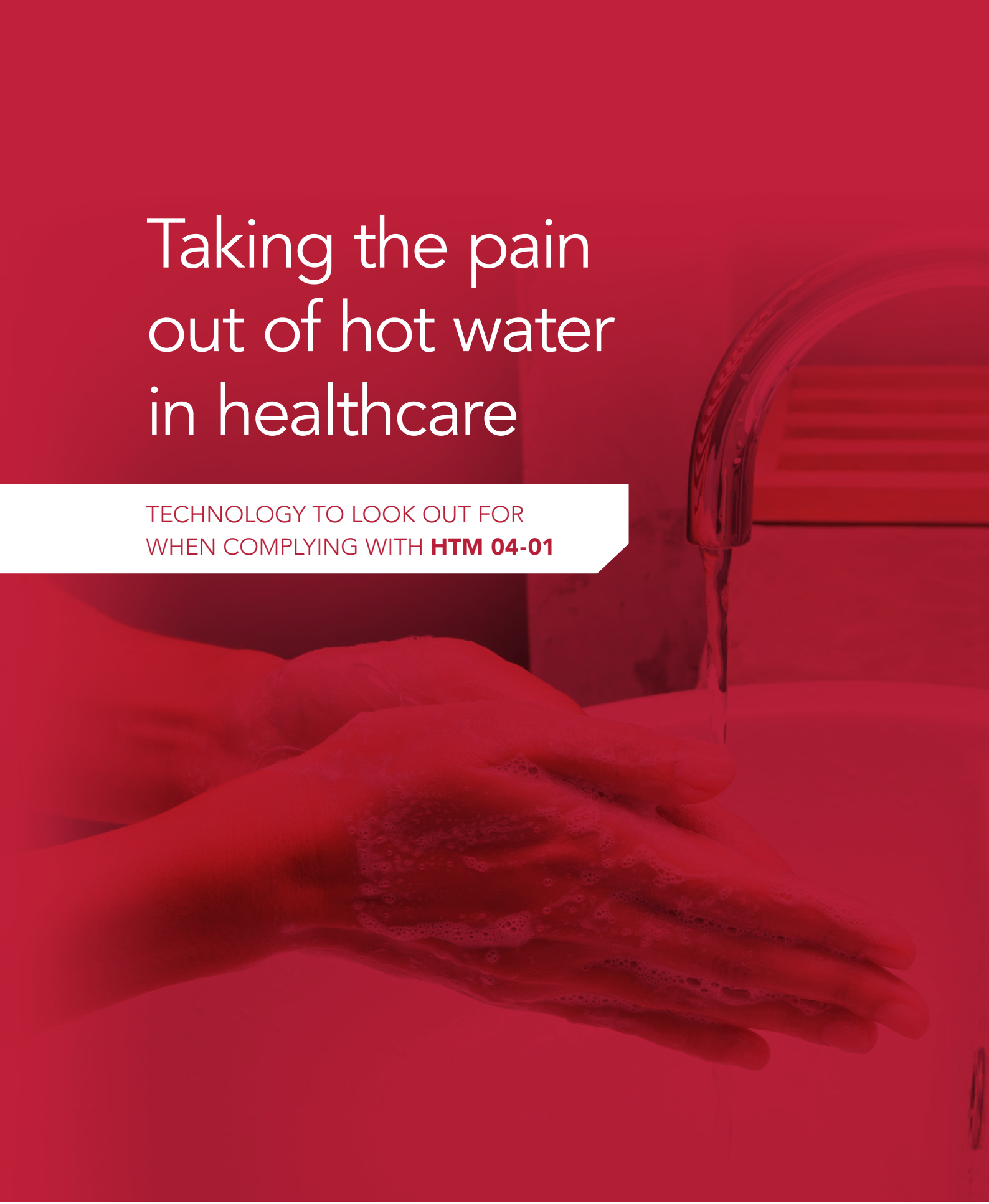
Taking the pain out of hot water in healthcare

TECHNOLOGY TO LOOK OUT FOR WHEN COMPLYING WITH **HTM 04-01**



HEATRAE SADIA

SMARTER | CLEANER | WARMER

In no other environment is access to a steady supply of water more important than healthcare. It maintains clinical standards for both patients and staff, and is essential for treatment purposes. Above all, it sustains life.

Good healthcare is severely compromised without safe water. The design and function of hot and cold systems must therefore minimise the potential for downtime, while ensuring that liquid is adequately stored, cycled and distributed to prevent a build-up of harmful bacteria. It must also be dispensed properly to minimise the risk of scalding.

It is not an exaggeration to suggest that patient safety and comfort stands and falls with the standard of water provision found within a hospital. Water-based health hazards need to be carefully managed in every building, but in hospitals and other healthcare facilities the issue becomes mission critical. Injury and illness pose a great threat to patients recovering on a ward, and even minor incidents can have serious consequences.

Fortunately, the Water Safety Group and Department of Health (DoH) work together to prevent this from happening. In 2016, the DoH updated its Health Technical Memorandum (HTM) 04-01 to cover safe water within public healthcare, paying close attention to the risk of waterborne pathogens like Legionella and Pseudomonas aeruginosa.[1]

This guidance represents the gold standard for water compliance in healthcare environments. It helps stakeholders – including estate and facilities mangers, suppliers and NHS management – to mitigate the risks associated with large, complex water systems found across UK hospitals, clinics and surgeries.

HTM 04-01 is a substantial document split into three sections, covering design, installation, commissioning and operational management. While the guidance is understandably thorough, its length can make compliance an arduous process. Consequently, hospitals can find their water provision lagging behind the latest innovations as management strives to reach a satisfactory position.

Water safety and design continues to evolve yet hospitals may be missing out on essential improvements. It is right that healthcare water systems should be as safe as possible, and compliance should be central to any management strategy, but this approach also runs the risk of complacency. There are now products on the market that outperform existing hospital equipment and also offer a more straightforward route to full compliance. This guide has been written to highlight these technologies and identify opportunities for improved water provision in healthcare.

Simon Russell
NATIONAL SALES MANAGER
Commercial and Corporate Specification Heatrae Sadia

1 https://www.gov.uk/government/publications/hot-and-cold-water-supply-storage-and-distribution-systems-for-healthcare-premises

REGIONAL VERSIONS OF HTM 04-01

Health Technical Memorandum 04-01 is the document used in England to cover safe water within English healthcare facilities. It is important to be aware that regional versions of the document exist, such as SHTM 04-01 for Scotland, and WHTM 04-01 for Wales. The content of these documents is largely the same, but water delivery must comply with local regulations, and is therefore governed separately. As we refer to HTM 04-01 throughout this guide, please note that water in Scotland, Wales and Northern Ireland must be delivered in compliance with local regulations.

WHAT CAN GO WRONG?

Water may seem like a difficult thing to get wrong but it often causes significant problems in healthcare. Not only is it given to patients to drink but it is also used for clinical purposes, such as cleaning surgical instruments and other medical devices. This means potentially dangerous water has multiple points of contact with patients and staff, elevating the risk of infection.

A quick look through the news will reveal a long list of water-related incidents that have caused disruption, serious illness and, in the very worst cases, even fatalities. It is hardly surprising given the huge number of different microorganisms, biotoxins and other contaminants that can cultivate in water. These represent a legitimate threat even to healthy people, let alone vulnerable patients.

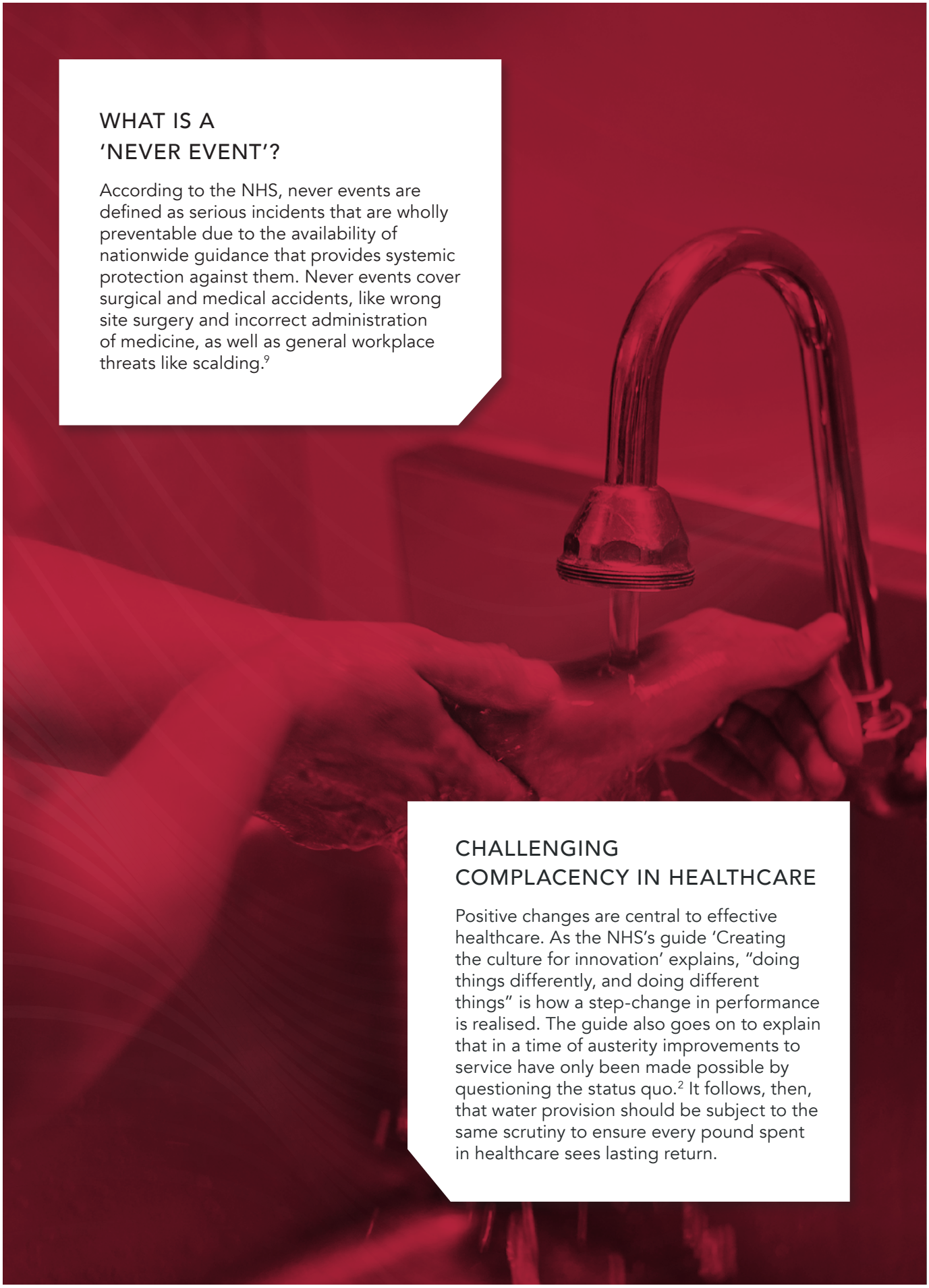
In 2018, for example, the Royal United Hospital in Bath was fined £300,000 for health and safety breaches after a patient died from Legionnaire's disease.[3] Sadly, these incidents are far from unusual and the Centres for Disease Control and Prevention states that one in four cases contracted in a hospital results in death.[4] Other notable cases, like the outbreak at NHS Greater Glasgow and Clyde in 2018, have seen mothers and children suffering from blood stream infections as a result of Cupriavidus pauculus bacteria found in hand-wash basins.[5]

Problems are not just limited to the public sector. Private healthcare facilities also have to manage the same risks, often with the threat of more serious financial penalties for failure to comply. One case, for example, ended with Bupa being fined £3 million after a resident died from Legionnaire's disease contracted in one of its nursing homes.[6] Another high-profile case saw a care home in Kirkby-in-Ashfield pay £600,000 for criminal neglect after an elderly resident died from contaminated water while in its care.[7]

The challenge is not just limited to bacteria. Dispensing of hot water can also be problematic for healthcare facilities, with young and elderly patients at greater risk from scalding or burns. Hospitals therefore have to select products that not only comply with workplace law – such as the Health and Safety at Work Act 1974 and Provision and Use of Work Equipment Regulations 1998 – but also carry out assessments to determine which products present the least risk.[8]

Highlighting these cases is not intended to damage the reputation of healthcare. UK hospitals continue to provide high-quality service despite the many pressures they face. What it does try to show, however, is the danger of complacency in healthcare and a need to constantly question whether current infrastructure is fit for purpose. Doing so will limit the chances of a 'never event' from occurring.

2 https://www.england.nhs.uk/improvement-hub/wp-content/uploads/sites/44/2017/11/Creating-the-Culture-for-Innovation-Practical-Guide-for-Leaders.pdf
3 https://www.bbc.co.uk/news/uk-england-bristol-43842469
4 https://www.cdc.gov/legionella/about/diagnosis.html
5 https://bit.ly/2JxlJNx
6 https://www.bbc.co.uk/news/uk-england-essex-44483283
7 https://www.nottinghampost.com/news/local-news/care-home-fined-600k-over-2186049
8 http://www.hse.gov.uk/pubns/hsis6.pdf



WHAT IS A 'NEVER EVENT'?

According to the NHS, never events are defined as serious incidents that are wholly preventable due to the availability of nationwide guidance that provides systemic protection against them. Never events cover surgical and medical accidents, like wrong site surgery and incorrect administration of medicine, as well as general workplace threats like scalding.[9]

CHALLENGING COMPLACENCY IN HEALTHCARE

Positive changes are central to effective healthcare. As the NHS's guide 'Creating the culture for innovation' explains, "doing things differently, and doing different things" is how a step-change in performance is realised. The guide also goes on to explain that in a time of austerity improvements to service have only been made possible by questioning the status quo.[2] It follows, then, that water provision should be subject to the same scrutiny to ensure every pound spent in healthcare sees lasting return.

9 https://improvement.nhs.uk/documents/2265/Revised_Never_Events_policy_and_framework_FINAL.pdf

ADVANCES IN HOT WATER COMPLIANCE

Improvements to water technology now makes compliance more straightforward. Installation of new products will not only ease the paperwork burden but will also offer better water provision for both patients and staff. Recent reports show these kinds of improvements are sorely needed, with some arguing the "parlous" state of public hospitals is now beginning to put people at unnecessary risk.[10] However, urgency is also needed in the private sector, with compliance not only impacting patients but also the interests of shareholders who pick up the bill in the event of failure. This section identifies the latest technology that improves water provision in public and private healthcare and cross references it with relevant passages of HTM 04-01 for the reader's convenience.

INFECTION PREVENTION

Despite the efforts of the Water Safety Group and guidance set out in HTM 04-01, outbreaks of legionella continue to occur. Part of the problem lies in the bacteria's optimum range, multiplying anywhere between 20-45 °C. This complicates the compliance process as many plumbing and HVAC units will contain water that sits naturally between these two temperatures.

To combat this, Health and Safety Executive recommends that cold water is kept below 20°C at all times, while hot water should be stored at above 60°C and distributed with a minimum temperature of 50°C. Water treatment is also identified as another effective method of bacteria control.[11] For an entire overview of legionella control, refer to HTM 04-01, part B, 4.

Good hot water units designed for healthcare will now incorporate antibacterial silver ion agents, such as Biomaster®. As Science magazine points out, silver ions work by puncturing holes in bacterial membranes and binding to essential cell components like DNA, preventing basic reproductive functions from occurring.[12] Users should note, however, that concentration of silver should not exceed recommendations set out in guidance (HTM 04-01, A, 4.17). Combining this technology with pasteurisation (HTM 04-01, A, 4.1) will inhibit cultures from developing long before they present a serious threat to patients. Clinically focused equipment will also have anti-corrosion fonts to prevent contamination from chemical breakdown of metal parts (HTM 04-01, A, 5).

10 https://ubm.io/2NuPEH4
11 http://www.hse.gov.uk/healthservices/legionella.htm
12 https://www.sciencemag.org/news/2015/05/silver-turns-bacteria-deadly-zombies

STRAIGHTFORWARD MAINTENANCE

Treating water is only one part of the process. Ongoing maintenance is also necessary to achieve a compliant state. This can prove a headache for hospital management, as well as estates and facilities managers, who will arrange and oversee engineers.

Prolonged disruption to a hospital's water supply can create a knock-on effect that seriously impedes service. It is therefore vital to install products that are designed with simplicity in mind. This means selecting units with built-in inspection hatches and tapless outlets that keep maintenance times to a minimum (HTM 04-01, A, 10.38). Not only will this free up time but also stop unnecessary expense.

RESILIENT COMPONENTS

Keeping maintenance times to a minimum also means selecting products that are built to last. Polycarbonate tanks, for example, will limit the amount of scale that builds up in a unit, while a conditioner will raise the quality of water supplied in a hospital. This is especially important for the majority of south, east and central England where water is hard- to very-hard.[13] Guidance states that softening may be needed in hard-water areas to reduce risk, particularly for steam boilers, hot water services and laundries (HTM 04-01, A, 6.9).

SAFETY BY DESIGN

Water safety cannot be limited to internal plumbing. Contact points must also be considered. Good healthcare water units will now feature anti-tamper screws to prevent unsafe access to heated components and hot water (HTM 04-01, B, 0.23 and 6.24), while dispensing will be tapless to limit the spread of bacteria (HTM 04-01, C, 2.6 and 2.12).

13 http://www.dwi.gov.uk/consumers/advice-leaflets/hardness_map.pdf

TRIAL, TRAIN AND SUPPORT

Patient safety and comfort are always the top priority in healthcare, and compliance is a key part of achieving high standards. The sheer volume of regulation, however, can add to the complexity in already high-pressure environments. Fortunately, there are now products on the market, such as Heatrae Sadia's Multipoint and Supreme, that are specifically designed for hygiene-critical environments. These two product ranges offer management a straightforward route to full compliance and elevated standards of care.

Our

Trial, Train and Support

offering is designed to ***eliminate complexity*** and ***offer full assistance*** around the clock.

Trial

Heatrae Sadia customers have the option to trial products prior to purchase to ensure they meet the demands of a healthcare environment. Consultation with water safety groups and other stakeholders is also offered to understand a facility's specific needs.

Train

Compliance is only ever as good as the direction people are given.
Heatrae Sadia recognises this and now offers water regulation training to installers.

Q

What training is offered?	What are the benefits and how does this help with compliance?	Does this service save money?	What is strip down and rebuild maintenance training?
Accredited training takes place at Heatrae Sadia's training and development centres, covering all relevant water regulations and bylaws, and compliance for unvented hot water storage systems. Informal maintenance overviews for drinking water are also provided for those involved with regular in-house servicing.	Heatrae Sadia's training provides peace of mind and benefits anyone who requires an understanding of water regulations and bylaws. People gain the legal ability to install, commission and service unvented hot water systems. In a healthcare environment, this expertise is invaluable.	Yes. Training assists with achieving a compliant state, reducing the chances of an unnecessary call out.	This is an informal maintenance overview carried out by a Heatrae Sadia area manager. It takes place at the customer's site and is used to identify any areas that fall short of recommended guidance and regulation.

A

Support

Customers are fully supported with a dedicated representative and supply chain of nearby partners to ensure maintenance times are minimised. This network also eliminates the need for customers to store extra spares on site, saving on real estate floorspace.

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Multipoint

Heatrae Sadia's Multipoint range is ideal for any situation where a single water heater is required for multiple outlets. Tank size ranges from 10 litres through to 100 litres. When used and maintained according to specification, all models in this range help to comply with HTM 04-01.

MULTIPOINT 10 AND 15 LITRE

The Multipoint 10 and 15 litre models are ideal for facilities that need reliable hot water.

PRODUCT FEATURES

- 10 and 15 litre capacities
- Choice of 3kW and 4.5kW ratings
- Five-year inner container guarantee with on-site service support
- CFC/HCFC free (ODP zero) flame-retardant expanded polystyrene
- Designed, engineered and manufactured in the UK
- No sacrificial anode to inspect or replace
- Suitable for use with any standard mixer or tap
- Kiwa approved, CE marked and IPX4 rated
- Replaceable long-life alloy sheathed element
- Element 'On' indicator

COMPLIANCE FEATURES

- Externally adjustable thermostat from 10°C to 70°C max which is lockable in hot or mid-range position (HTM 04-01, B, 4.7)
- Anti-tamper design (HTM 04-01, B, 0.23 and 6.24)
- Inspection hatch for simple maintenance (HTM 04-01, A, 10.38)

MULTIPOINT ECO

The Multipoint Eco water heater is built with its own Legionella control system, continuously monitoring temperature within the tank and activating a heat cycle if water drops below 60°C.

PRODUCT FEATURES

- 30, 50, 80 and 100 litre capacities
- 3kW element rating
- Smart thermostatic control
- Available in vertical or horizontal models
- Digital interface
- 15-year inner container guarantee
- Two-year guarantee for other components
- Digital display for easy temperature checks

COMPLIANCE FEATURES

- Built-in Legionella control system (HTM 04-01, B, 4)
- Water pasteurisation (HTM 04-01, A, 4.1)
- Anti-tamper design (HTM 04-01, B, 0.23 and 6.24)
- Corrosion-resistant components (HTM 04-01, A, 5)
- Inspection hatch for simple maintenance (HTM 04-01, A, 10.38)

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Biomaster PROTECTED

Supreme

Heatrae Sadia's Supreme model provides instant boiling drinking water wherever there is a need for it, requiring only a mains electrical connection and plumbing directly to the cold water supply. Supreme has the added benefit of Heatrae Sadia's smart Intelliboil™ Plus technology, ensuring energy efficient management of the boiling cycle. If there is no use for an hour, the temperature is reduced by 10°C to save energy.

Supreme has an integrated water conditioner to decrease scaling and a detachable steam condensing chamber, allowing for easy servicing access. Biomaster®, a silver-ion agent, is also added to all Supreme on-wall water dispensers to prevent bacterial build up in hygiene-critical environments.

SUPREME

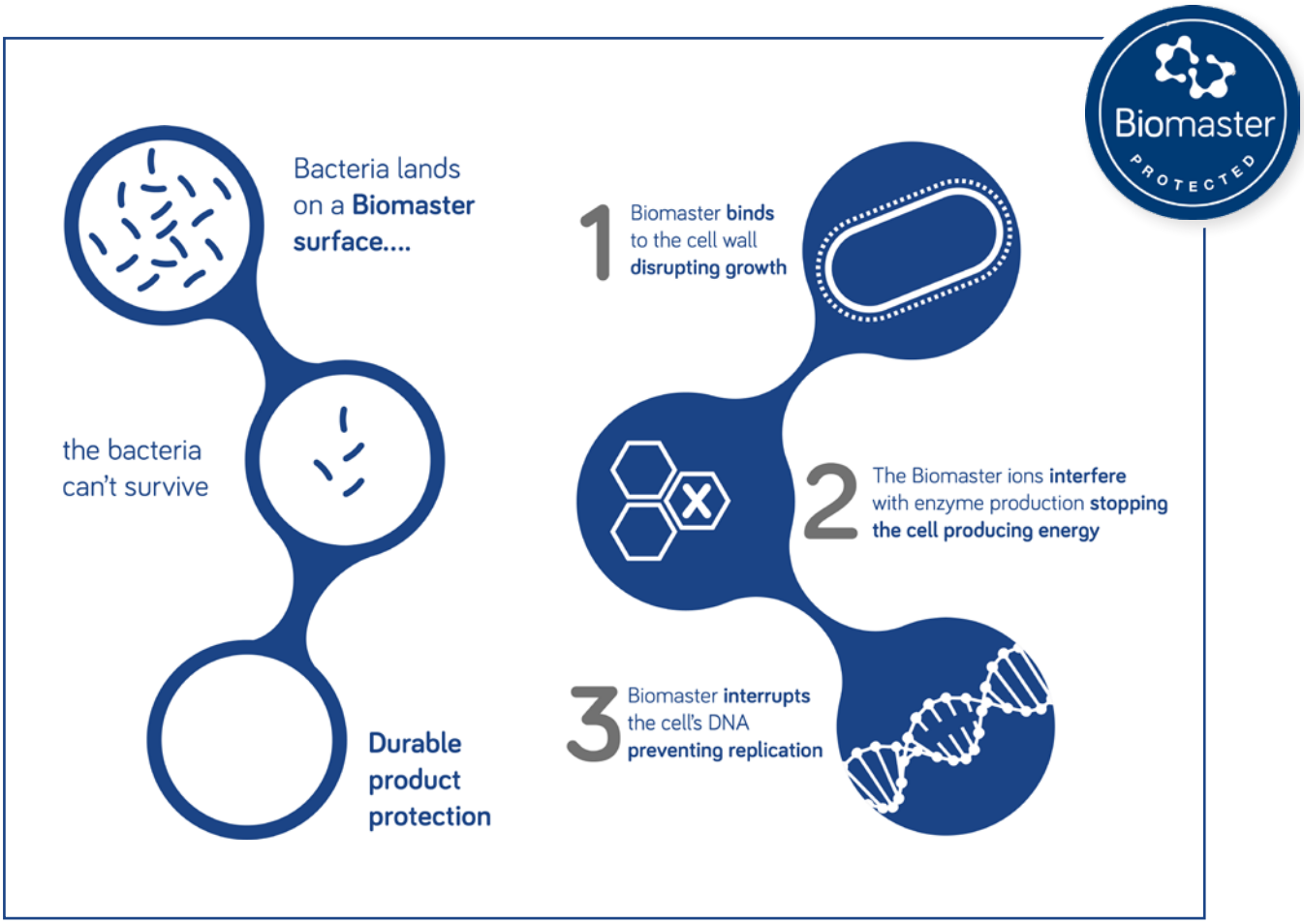
This model guarantees fast, effective antimicrobial protection for its effective lifetime.
The Supreme's simple-to-clean surfaces reduce the risk of cross-contamination, aiding HTM 04-01 compliance.

PRODUCT FEATURES

- Intelliboil™ Plus technology for the efficient management of the boiling cycle
- 'Temperature ready' indicator confirms when ready to use
- Easy installation with auto-commissioning
- Integral electronic water conditioner makes Supreme less prone to scale
- Design, engineered and manufactured in the UK
- High-grade thermoplastic water container for longer life expectancy
- Modular construction

COMPLIANCE FEATURES

- Biomaster® antimicrobial technology protects the unit from harmful bacteria for its lifetime (HTM 04-01, B, 4 and C, 2)
- Detachable steam condensing chamber for ease of access (HTM 04-01, A, 10.38)
- Corrosion-resistant components (HTM 04-01, A, 5)
- Anti-tamper design (HTM 04-01, B, 0.23 and 6.24)
- Easy to clean and disinfect (HTM 04-01, C, 2.12)



CONCLUSION

Compliance is rarely straightforward, let alone in healthcare, but it can be managed better. A combination of the latest technology and ongoing support will allow stakeholders to take a best practice approach to the specification of hot water solutions in their healthcare facilities. This will save money, free up time and, most importantly, help to elevate standards of care.

For more information,
head to www.heatraesadia.com

Or call 0344 871 1535

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Registered office address:
Baxi Heating UK Limited,
Brooks House, Coventry Road, Warwick, CV34 4LL.
Company registered in England and Wales: 3879156.
VAT registration number is 604 6658 37.
Please contact us with any enquiries, feedback, suggestions or praise.

marketing@heatraesadia.com