



Health Estate

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**Tap upgrade wins
praise all round**

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An ongoing upgrading of clinical handwashing facilities at its hospitals by NHS Lanarkshire is seeing the Scottish Health Board replace, in many cases, ageing basins and taps subject to Healthcare Environment Inspectorate (HEI) criticism, with standardised modules comprising a clinical basin, Horne Engineering's Optitherm thermostatic tap, and soap and towel dispensers, all mounted on a single integrated panel structure. As Horne's marketing manager, Hannah Berry, explains, one of the many benefits is that the Board's Estates Department no longer needs a large "arsenal" of spare parts in stock for different fittings.



Courtesy of NHS Lanarkshire

Optitherm taps are now in use, or being installed, not only at the Monklands Hospital (left), but also at the Hairmyres Hospital (centre) in East Kilbride, and at the Wishaw General Hospital (right).

NHS Lanarkshire, in Scotland's central belt, started a programme of rolling refurbishment in August 2010 to replace all clinical handwashing facilities across its estate. The standardised module that it is now using comprises a clinical basin, the Optitherm thermostatic tap from Horne Engineering, and soap and towel dispensers, all mounted on a single integrated panel structure. Prior to this, handwashing facilities within the Board's hospitals and other healthcare facilities were in dire need of an upgrade, and had been commented upon in a recent Healthcare Environment Inspectorate (HEI) report for Monklands Hospital in Airdrie. An allocation of new funding allowed the problems with the existing estate to be addressed.

The Optitherm tap, which comprises a thermostatic mixing valve (TMV), warm water tap, and a dedicated cold water tap combined into a single unit that offers significant benefits relating to installation, operation, and maintenance, was first trialled out at Monklands Hospital, a large district general hospital offering acute services and a 24-hour

accident and emergency department which has 535 inpatient beds.

Over the course of several months, I spoke with Billy Lindsay, Monklands Hospital's maintenance manager, and Linda Thomas, infection control nurse, about their decision to standardise on the Optitherm tap at Monklands, and then propose its installation across the entire Trust estate.

The initial problem

The policy on clinical handwashing basins and taps at Monklands prior to December 2009 had, I discovered, been very informal and, over a number of years, resulted in the use of great variety of basins and lever and spout configurations. A large arsenal of costly spare parts for the numerous

fitting types was required to be held in estates stores – wasting valuable space and money. The need to be familiar with a large number of variants also affected the efficiency with which the maintenance team could operate when repairing multiple items. Broken levers from ageing fittings, and underperforming and inaccessible TMVs and swan-neck spouts, which were highlighted in a HEI report as potential reservoirs for infection, were problems that began to mount up and become an increasing battle for the maintenance team to attend to.

Billy Lindsay and his team generally try to avoid on-the-ward maintenance where possible, preferring to remove the offending item to the workshop to be repaired. For example, three taps (or associated TMVs) in a four-bed area could be in need of attention, and these would be removed to the workshop for maintenance. The downside is that while the taps or TMVs are being worked on, the whole four-bed area needs to be shut down, causing delays and frustration for staff and patients alike.

It was, however, Bill Lindsay explained, not always possible to avoid on-the-ward maintenance. For example, a recent

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identification of *Stenotrophomonas Maltophilia* bacteria in both the hot and cold water supplies of the intensive therapy unit (ITU) at Monklands Hospital caused severe disruption due to the need for regular water sample collection.

Removing wall panels

To access the water supply, sampling points immediately upstream of the TMV have historically required the wall panel to be removed, which presented an infection risk to patients in the immediate vicinity. It has therefore proven necessary to put in place costly measures to reduce the infection risk before breaching the wall. Following sample collection, the wall panel has had to be put back in place and the area made clinically clean again. This has proved an extremely costly process – in terms of maintenance time, use of specialised equipment, downtime of the handwash stations, and disruption to healthcare workflow, not to mention the potential cost to patients should exposure to harmful organisms have affected their recovery. Billy Lindsay is very much aware of how any maintenance can disrupt healthcare delivery, and was therefore looking for a solution that would minimise maintenance time and disruption to health service delivery.

What prompted the change?

During an announced HEI audit in November 2009, a number of recommendations were made. It was observed, for instance, that a number of mixer taps at clinical handwash basins were of the “swan neck” design, and therefore did not comply with published guidelines presented in HTM 64, “Sanitary Assemblies”, and SHFN 30, “Infection control in the built environment”. The Health Board, however, was keen to point out to the inspection team that it was aware of the issue, and was considering a long-term ward refurbishment programme to address the problem.

Another of the HEI team’s observations was increasing delays between maintenance issues being reported and the issues being attended to. This perhaps was a consequence of the overwhelming issues associated with the very old and decrepit hand wash fittings throughout the hospital, and other issues associated with the various buildings’ general age.

It was also noted during the inspection that there was no documented evidence to suggest that prevention and control of infection were considered part of the procurement process for equipment.

A planned refurbishment of Ward 22 at



The Optitherm was considered very easy to clean due to its smooth and rounded shape, and “lack of nooks and crannies”, while access for maintenance is also straightforward, with no need to remove the wall panel.

Monklands Hospital in December 2009 presented an opportunity to upgrade the handwashing facilities and trial out an arrangement which, if successful, would become standard across the Board.

Evaluation committee formed

A committee comprising estates personnel, control of infection (COI), and hotel services staff, was set up to evaluate the various components that would form a standard clinical handwash module: IPS wall panelling and framework, basin and trap, tap and associated thermostatic control, soap and hand towel dispensers.

Problems encountered in the past were discussed, and used as a basis for deselecting products and technologies. For example, swan-neck taps, now outlawed, had been identified as potential reservoirs for *Stenotrophomonas Maltophilia* infection, and required removal. Other technologies discounted at the outset included sensor-operated outlets; they were perceived to require a disproportionate amount of maintenance effort. Billy Lindsay, in fact, refers to them as “more trouble than they are worth”, and does not deem the technology sufficiently stable or robust for the healthcare environment; nor does he feel such outlets would offer significant enough improvements to the accessibility of the TMV, or indeed the various components of the sensor itself.

Replacing the existing arrangement with like-for-like manual taps and new behind-the-wall TMVs was also

discounted, due to the problems associated with lack of access for maintenance and water sample collection, as well as the difficulties regarding installation. In addition, the regulations regarding the control of *Legionella* (HTM 04-01, 2007) now suggest that, to minimise mixed water “deadlegs”, TMVs should be connected directly to the outlet or be integral with it, and be the method of flow and temperature control. This regulatory change meant that a thermostatic tap was recommended, and a number of such systems were then available on the market.

Discounted due to size/cleaning difficulties

A number of thermostatic tap designs were discounted due to their small size and difficulties regarding their cleaning. The taps have acute angles and hard to reach places – “they are full of nooks and crannies” that are difficult to clean effectively. The surface of the taps’ hot inlet was also known to reach the temperature of the circulating hot water temperature – around 60°C –

and therefore posed a severe burn risk to patients, visitors, and staff.

As a supporter of Horne products, and knowing that the company does not engage in designing “me-too” products, Billy Lindsay was already keen to see how our first thermostatic tap would differ from the others on the market. A number of the tap’s features stood out as offering a real saving by reducing the time required for maintenance. Firstly, the Optitherm is very easy to install, commission, and maintain, due to the single spigot and tap arrangement. As Billy Lindsay put it: “The biggest draw for me was that everything maintenance-wise was done on this side of the wall. I do not need to take the wall panel off, and so we avoid the infection risk associated with taking the wall away.” Water sample collection could also be done quickly and easily using the Optitherm’s Flushing Kit. Rather than a ward area being decommissioned due to faulty taps, a tap in need of repair could be swapped for a working one in a matter of minutes, and then removed to the workshop.

Anti-vandal clutch

The anti-vandal clutch mechanism on the levers was also considered a valuable feature, as it prevents the levers from snapping should excess force be applied to them. A person intent on breaking the lever may push it in either direction with force; initial resistance will suddenly cease as the lever moves around its axis by a “notch”. The vandal incorrectly assumes that the



To aid hygienic handwash, the Optitherm's double lever operation allows the tap to be operated using the thumb, then turned off using the elbow or upper forearm, while the outer surface is continuous and smooth for easy cleaning.

The success of the Ward 22 refurbishment at Monklands Hospital prompted the decision to standardise on the Optitherm for clinical handwash throughout the Lanarkshire NHS Trust

lever mechanism is broken, but this is a deliberate feature, and there is no risk of the lever snapping. The lever position is corrected simply by ratcheting it back in the reverse direction, again with moderate force, until the resistance ceases.

From a cleaning and infection prevention perspective, the tap was considered very easy to clean due to its smooth and rounded shape, and "lack of nooks and crannies". The infection control team was initially concerned about the combined flow regulator and conditioner, and there was much debate as to whether it was an aerator or not. Once its function was properly explained – it regulates the flow to 6 litres/minute, and "conditions" the water column to ensure it falls in a uniform, unbroken manner into the basin with no splashing or forming of aerosols – this was accepted, and the Optitherm was selected for installation.

Trial period

In December 2009, Ward 22 (Acute Elderly Medicine and Rehabilitation) at Monklands Hospital was refurbished, and 25 new clinical handwash modules were installed. Eighteen months on, how is the Horne product performing, and what effect does its presence have on the operation of the hospital?

Day-to-day operation of the taps is, it transpires, good, and there are no complaints or issues about the temperature or the flow rate delivered. Billy Lindsay is very happy with the tap's thermostatic performance. He says: "Even if there is a problem elsewhere, like variable hot water temperatures, the Optitherm is delivering the correct temperature, and we are not getting any

complaints at ward level." Nursing staff are also happy with the temperature, which they say "seems pretty consistent", and the 6 litre/min flow rate is deemed appropriate for handwashing. This is, they say, "significantly better performance" than experienced with the previous installations. Nursing staff have said they much prefer the tap system to the previous sensor-operated outlets, while Richard Fox, lead infection control nurse, says he is very happy with it for a number of reasons – including its reliability, ease of maintenance, especially for routine water sampling collection, and the fact that it has been supplied by a local Scottish company.

Water sampling for *Legionella* is required in some areas, and this is now done very easily using the system's flushing adaptors. "A 30 minute job can now be completed in less than 2 minutes".

Maintenance times reduced

Time spent on maintenance has also greatly reduced – only one tap has required attention to date, which has had a significant impact on operational costs. Billy Lindsay explains: "I think we have reduced the operational cost, because we are not spending as long at each tap doing the maintenance. Maybe it is only 10 minutes a tap that we are saving, but, bearing in mind the number that we have installed, and are going to have installed over the course of a year, it is going to be quite considerable.

"In 18 months, and with 175 taps now installed, we've only had one tap that required repair. That tap was replaced and then removed to the workshop – resulting

in no downtime at the handwash facility concerned and no closing of ward areas, meaning no disruption. I love this tap because I can fit it and forget it; it's one less headache for me."

Future plans

The success of the Ward 22 refurbishment at Monklands prompted the decision to standardise on the Optitherm for clinical handwash both at Monklands and throughout the rest of the Lanarkshire NHS Trust. Since then some 175 have been installed throughout Monklands. Wards 16 (Dermatology), 15 (Haematology), 20 (Acute Elderly Medicine and Rehabilitation), 1 (Renal/Endoscopy), and 26 (ITU) have all been upgraded, and the tap installed at all clinical handwash points.

In the coming months another 50 will be required for installation in the Outpatients' Department, but this will depend on further funding allocation. Meanwhile, installations at Hairmyres Hospital in East Kilbride (within the hospital's ITU), and at Wishaw General Hospital, are now under way, with a further 34 units installed at the new Hunter Health Centre in the centre of East Kilbride.

With the 175 Optitherms now installed at handwash units at Monklands Hospital, and the further 50 planned for the future, on the basis of Billy Lindsay's calculation on reduced maintenance time per tap, the Trust should see a time saving of about 37.5 hours over the course of a year.

The savings as regards reduced infection risk to patients are less easy to quantify, but should have significant impact where wall panelling would otherwise be removed. +

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