

Case Study - Connolly Hospital Water Sub Metering & Benchmarking

Background

Connolly Hospital initiated a leak detection programme in 2012, and since then as an Acute Teaching Hospital has continually worked on different aspects of healthcare water efficiency including sub metering and outlet benchmarking.

Like all hospitals, water is used for multiple functions throughout the Connolly hospital campus. Water is used for reverse osmosis for sterilisation, in the kitchens, for cleaning and of course by patients and staff. Without extensive sub-metering, it is virtually impossible to assign water consumption figures to individual healthcare functions. Consequently, it can be very difficult to target areas for improvement.

In 2017 Connolly hospital decided to target water used for the provision of basic services in their main ward block and Out Patient's Department (OPD). This area of the hospital campus has separate water storage tanks supplying hot water taps, cold water taps and toilets. Each of these water tanks was sub-metered. This allowed the volumes of water consumed by taps versus toilets to be tracked daily. Prior to this study, there was little data available on how much water was used by patients staying in hospitals.

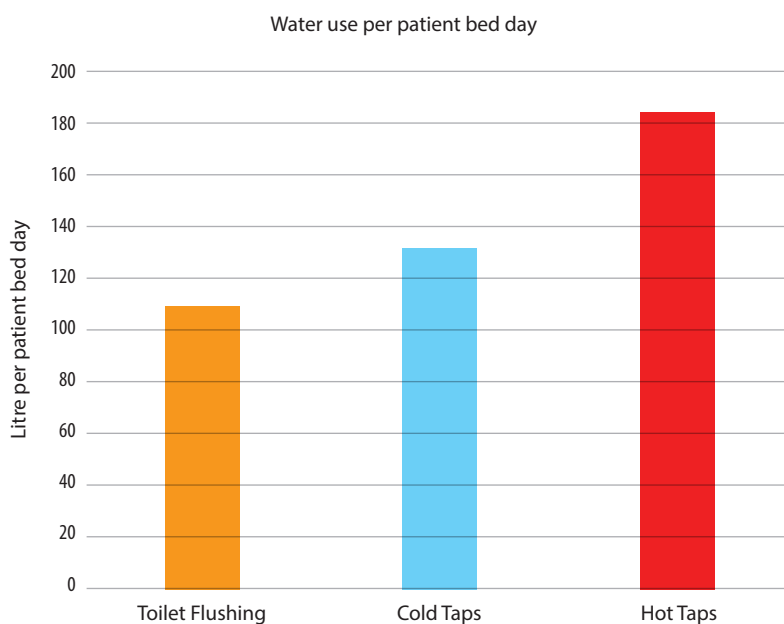


Results

The ward block and Out Patient's Department has 306 beds in total. When the sub-meters were installed in the in hospital main ward block, water consumption was assessed over a 6-month period. Based on the data gathered, the following profile outlines the breakdown, by volume, of the different types of water used per patient bed day*.

* This is a common healthcare water usage benchmark, and over the 6 month period examined, there were a total of 64,872 patient bed days.

Figure 1: the average water uses per patient bed day



This indicates that on average each patient bed day uses:

- 110 litres of water for toilet flushing and sluice room services,
- 132 litres of cold water from taps and
- 183 litres of hot water, mainly from taps but also including showers.

From this it is clear that hot water is the largest proportion of water consumed, and hot water is also the most expensive when energy usage is included, should be the first area to examine in terms of reducing water costs.

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Follow on

Subsequent to this sub-metering work a detailed assessment of all taps was carried out in the hospital's main ward block and Out Patient's Department.

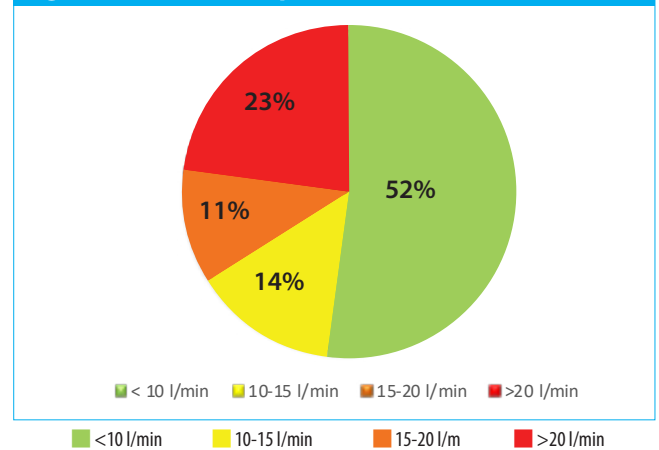
The flow rate of more than 800 taps was measured throughout. This work was carried out so that all flow rates measured were assigned to the correct tap and room on the hospital's asset inventory. This ensured that, should a retrofit programme be initiated the highest flow rate taps can be targeted.

Best practice would indicate that tap flow rates should be 5 litres/min but, for this work, tap flow rates were broken into 4 broad ranges with good practice recorded as less than 10 litres/minute.

BASED ON THE ASSESSMENT OF TAP FLOW RATES, IT WAS FOUND THAT 48% OF ALL HOT TAPS SURVEYED USE MORE THAN THE GOOD PRACTICE VALUE OF 10 LITRES/MINUTE. BASED ON PRELIMINARY ESTIMATES, REDUCING ALL FLOW RATES TO UNDER 10 LITRES/MIN COULD SAVE AS MUCH AS €50,000 per year.



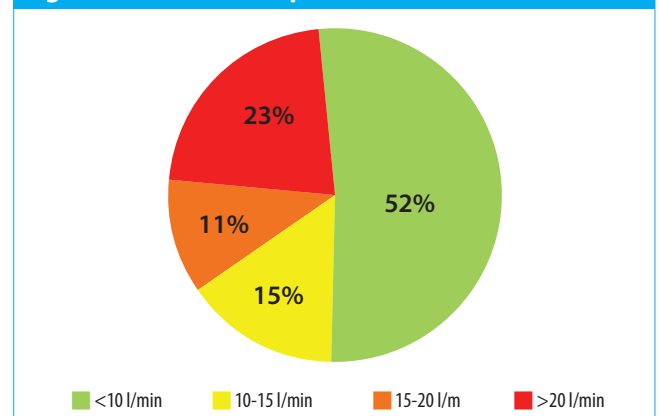
Figure 2: Hot water taps flow rate



A similar assessment of cold tap flow rates identified that again 48% of all the taps had flow rates above the good practice rate. A similar cost estimation identified that changing all taps to good practice levels could result in annual savings of up to €20,000.

THEREFORE, THE TOTAL POTENTIAL COST SAVINGS FOR UPGRADING TAPS ALONE COULD BE AS MUCH AS €70,000 ANNUALLY.

Figure 3: Cold water taps flow rate



Next Steps

Of course there would be a cost to implementing these changes and in order to determine the pay back on investment the following would need to be considered:

1. Cost of retro fitting taps
2. Issue of consistent water pressure

Once these have been calculated the total cost benefit of changing the high flow rate taps will be known.

