

CASE STUDY



BEHAVIORAL WATER REDUCTION OPPORTUNITIES IN ORs

The Problem

There are over 5,723 hospitals in the United States (AHA, 2014). They are the second largest users of energy, next to restaurants, and are the most water intensive facilities in the country (EPA, 2014). As a result of increased demand for health within the United States, construction of these facilities is on the rise. Their massive throughput of material, such as energy and water, burdens natural resources and emits pollution. For example, for every square foot, a hospital uses almost 43 gallons of water, or 559 gallons per patient day (Practice Greenhealth, 2015). Being such a large consumer, the hospital industry has the opportunity to be a leader in the utilization of sustainable water practices.

The Strategy Selected

There are over 50 million inpatient surgeries annually in the United States according to the CDC, and the majority of clinicians still practice the tradition of hand washing with soap as standard procedure. The Green OR Committee at Carolinas Medical Center formed a green mission statement and delegated responsibilities in reducing waste.

Annual Benefits

- Financial savings of \$158K from utilities.
- 2.7 million liters of water saved from natural resources.
- Employee water consciousness increased.

Implementation Process

Carolinas Medical Center performs 17,000 inpatient surgeries every year, the Green OR Committee discovered that only 22 percent of their clinicians were utilizing waterless scrubs (alcohol-based hand rubs). After facility education and system wide adoption, “over 80

Carolinas Medical Center

- Hospitals use approximately seven percent of total water in commercial institutional facilities in the US (EPA, 2016).
- Clinicians at Carolinas Medical Center in North Carolina assessed water usage in the ORs to determine reduction opportunities.
- Surgical scrubbing techniques saved 2.7 million liters of water in a single year.



Carolinas HealthCare System

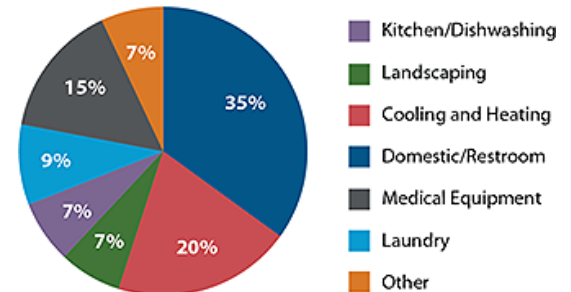
percent of surgical personnel including residents, surgeons, and scrub staff favored the waterless scrubs (Wormer et al, 2013).” After verifying through the use of flow meters at specific faucets, this new behavior change translated directly to 2.7 million liters of water savings resulting in annual financial savings of \$158,000. This is a prime example of a best practice that can be implemented immediately across healthcare facilities with positive benefit to the triple bottom line in profitability and mitigation on the planetary resource of water, especially in drought stricken regions like California and Australia.

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Challenges and Lessons Learned

Often times, behavioral practices as just as effective as technological efficiencies. In 2009, during Australia’s driest decade of drought, Launceston General Hospital conducted a review of surgical scrubbing procedures and determined that simple on/off techniques, requiring no equipment, reduced usage by 71 percent (Petterwood & Shridhar, 2009). Changing employee behaviors can be difficult but education and engagement helps remove barriers.

End Uses of Water in Hospitals



Source: WaterSense, U.S. Environmental Protection Agency, Office of Wastewater Management

Citations:

Wormer, B., Augenstein, V., Carpenter, C., Burton, P., Yokeley, W., Prabhu, A., Harris, B., Norton, S., Klima, D., Lincourt, A., Heniford, T., (2013). The Green Operating Room: Simple Changes to Reduce Cost and Our Carbon Footprint, *The American Surgeon*. Vole 79, Issue 7, P666-671.

Practice Greenhealth, (2015). Practice Greenhealth’s 2015 Benchmark Report. Online at <http://bit.ly/1CaggPp>

Petterwood, J., Shridhar, V., (2009). Water Conservation in Surgery: A Comparison of Two Surgical Scrub Techniques Demonstrating the Amount of Water Saving Using a ‘Taps on/Taps off’ Technique, *The Australian Journal of Rural Health*. Volume 17, P214-217



Above: Behavioral practices between hand washing with soap and waterless scrubbing with alcohol rub. Images source: *Outpatient Surgery Magazine & OR Today*.