Healthy Hydration In Hospitals

Three Keys To Wellness In Hospitals

Healthy hydration is imperative to hospital staff retention and operation. If nurses, doctors, patients and visitors aren't properly hydrated with safer water, negative impacts can reverberate throughout the hospital community. There are three main hydration issues facing hospitals.

Nurses are not properly hydrated. Poor hydration affects the overall wellness and mental acuity of the nursing staff, negatively affecting their job performance – including patient safety.

Healthy hydration directly impacts the health of the building envelope. Healthy hydration can increase the health of the building envelope by directly impacting the ability for a hospital to achieve its sustainability goals and reduce the use of one-use plastics.

Hydration directly impacts the health of communities. Safer water and healthy hydration have a direct impact on the health of communities. Hospitals are placing a higher emphasis on community health initiatives, specifically in lead-free and safer water, in the communities they serve.

The Impacts Of Nurse Hydration

Four impacts of nurse hydration include:

- Hydration is a critical key to overall nurse wellness, both mentally and physically.
- Proper hydration can positively affect nurse performance.
- Poor hydration can have negative impacts on patient outcomes.
- With high turnover, hospitals are fighting to hire and retain nurses. Providing water that is easily accessible and safer to drink can increase wellness and create a happier work environment, contributing to lower turnover.

What is dehydration? Dehydration is defined as a dangerous loss of body fluid caused by illness, sweating or inadequate intake of water.

Lack of proper hydration can lead to physical and cognitive impairment. The CDC specifically states that dehydration can cause unclear thinking.

Proper hydration is scientifically proven to help with fluid balance, provide fuel for muscles, generate clearer skin, remove toxins, increase productivity, provide brain boosts, lubricate joints, normalize blood flow, and decrease fatigue. It also helps your body keep a normal temperature, protects the spinal cord and other sensitive tissues, and gets rid of waste. With this multitude of impacts, one can easily see that if a nurse is not getting proper hydration, their performance can be compromised.

How much water does a person need? Current guidelines recommend that the average person drinks six to eight glasses of water each day (it's important to note that water consumption should not be replaced with sodas and juices, which are not healthy replacements). Best practices are to keep a log of water intake and utilize a reusable water bottle throughout the day.

For nurses, who are on their feet constantly throughout a typical 12-hour shift, it's important to avoid dehydration. Dehydration of as little as 2% of total body weight may impair physical and cognitive performance, putting nurses – and their patients – in jeopardy.

In addition to nurses, doctors and hospital staff work long hours in stressful environments. Medical professionals are constantly on their feet, meaning they are more prone to dehydration and its symptoms. Since body performance depends on hydration to make sure organs, cells and tissues perform properly, it is vital to ensure proper hydration throughout each shift.

Moira McGhee, in the article "Nurse Health: Why Hydration Matters and How to Maintain", explained, "Staying hydrated helps promote clearer thinking, improve physical performance, boost your mood, and fight off fatigue and drowsiness, which your patients definitely appreciate. Proper hydration improves circulation and helps absorb shock on your joints, which can prevent aches, pains, and muscle cramps during busy shifts. Plus, staying hydrated can help prevent diseases, ease headaches, promote weight loss and stimulate clearer skin, which helps you stay healthy and happy."[1]

What leads to nurse dehydration? In addition to being on their feet in stressful situations for long periods of time, there are physical barriers in a hospital that can contribute to dehydration. During a regular shift, physicians and nurses may be far removed from areas that provide access to fluids and, when available, cannot keep it handy for infection control purposes. Working in an air-conditioned environment can also increase evaporation, meaning increased water loss and the need for more fluid intake.

Good hydration may ultimately benefit not only the physicians and nurses themselves, but also their patients and the health care systems in which they work. Dehydration has been shown to adversely influence decision-making and cognitive performance, which may contribute to a decline in productivity and could be associated with an increased risk of work-related accidents.

Nurse turnover is a serious problem. Nurses work long shifts in stressful situations which causes both a mental and physical toll. Proper hydration cannot solve this problem, however, hospitals and health care building designers are actively designing and implementing respite areas and design elements, including hydration bottle filling stations, to improve overall nurse wellness. One reason resources are being allocated to this effort is because nurse turnover is highly costly to hospitals.

- The average turnover cost for an RN is approximately $52,350.
- Each percentage change in RN turnover represents a huge cost of savings for a hospital, an average of almost $400,000.
- It can take up to 120 days to recruit an RN.
- Eliminating travel nurses can save a huge amount of money. For every 20 positions eliminated, a hospital can save an average of $3,140,000.
- RN vacancy rates are more than 15% and essentially, these departments will turn over their entire RN staff in less than five years.
- Over the past five years, RNs in step down, emergency services, behavioral health, and telemetry were most mobile, with a cumulative turnover rate between 108.7 and 115.2 percent.
- RNs in surgical services, pediatrics and women's health were less mobile, with 2022 turnover rates of 16, 17.1 and 17.2% respectively, compared to the national average of 22.5 percent.[2]

Hospitals that implement bottle filling stations and other respite elements may see an increase in nurse job satisfaction with fewer complaints of burnout, resulting in less turnover and positive recruitment efforts.

There are clear correlations and direct causes and effects between hydration and nurse performance. If hydration is poor, you will see:

- A decrease in decision making ability
- A decrease in cognitive performance
- A decrease in visual motor tracking
- A decrease in short-term memory
- A decrease in arithmetic efficiency
- A decrease in productivity
- A decrease in alertness
- And a decrease in attention

These attributes are not ones a hospital wants to use when describing their nurses. These decreased performance indicators can lead to an increase in work-related accidents, resulting in higher operating costs for the hospitals and possible negative effects on patients.

The significant effect of hydration on nurses was scientifically noted in "Hydration Amongst Nurses and Doctors On-Call" in the National Library of Medicine. The study included 88 nurses and doctors from a university teaching hospital having hydration tests done before and after shift via blood and urine samples to compare results. The study covered a total of 130 shifts. Tests included full blood count, serum urea and electrolytes, and blood glucose.

Participants worked their normal shift and kept a fluid intake diary. Participants had their cognitive function assessed thorough a series of computer-based tests, before and after shifts. For the study, dehydration was defined as urine osmolality, which measures the concentration of all chemical particles found in the fluid portion of blood.

What were the results?

- 36% of participants were already dehydrated at the beginning of their shift.
- Those dehydrated increased at the end of the shift to 45%, meaning nearly 50% of participants working were dehydrated.
- Mean urinary osmolality was significantly greater at the end of the shift compared to the start of the shift. Urine osmolality is used to measure the number of dissolved particles per unit of water in the urine. Urine osmolality is useful in diagnosing disorders of urinary concentration, such as diabetes insipidus and in assessing hydration status.
- 41% of participants were oliguric at the end of the shift. Oliguria is defined as urinary output of less than 400 ml per day or less than 20 ml per hour and is one of the earliest signs of impaired renal function.
- Cognitive function test results from single number and five-letter Sternberg short-term memory tests were significantly impaired in dehydrated participants.[3]

This study showed that a significant number of nurses were dehydrated prior to starting their shifts and the number of those dehydrated increased after the completed shifts. One can speculate that those suffering from dehydration were more likely to have negative physical and mental impacts and lower job satisfaction.

Most concerning of the results was that the dehydrated participants were significantly cognitively impaired, which can directly and negatively impact decision making skills and patient outcomes.

The results enforce the fact that nurse hydration should be a priority for hospitals. Physician and nurse wellness, including hydration, should receive the same priority as patient care and financial viability. There is a link between all three.

Robert Dothard, a professional trainer, precisely summed up the importance of nurse hydration in "How Nurses Can Stay Hydrated" when he stated, "I can't think of any one thing that can impede your performance quicker than being dehydrated. In the medical field, where you're making crucial decisions constantly and even some that are 'life and death,' being in top mental and physical condition is critical. And drinking enough water can definitely help."[4]

The bottom line is that healthy hydration increases cognitive acuity and overall physical wellness, leading to lower accidents, illnesses and an improvement in patient outcomes.

Bottle filling stations are an easy solution hospitals can implement to create easy access to safer water and encourage proper nurse hydration.

Bottle filling stations:

- Encourage nurses to stay hydrated throughout the day
- Support wellness, respite efforts for nurses
- Help support nurse recruitment and retention efforts
- Are easily implemented
- Can track water consumption
- Encourage camaraderie amongst nurses and departments
- Can aid in decluttering workspaces

Case Study: Children's Wisconsin, Milwaukee, WI

Children's Wisconsin is a nationally ranked, freestanding, 298-bed, pediatric acute care children's hospital located in Milwaukee, Wisconsin. It is affiliated with the Medical College of Wisconsin and is a member of the Children's Wisconsin Health System, one of two of the children's hospitals in the system.

Children's Wisconsin currently has 30 bottle filling units throughout the hospital, with more to be installed with current and future construction projects. The primary reason Children's Wisconsin chose to install bottle filling stations was to improve nurse and staff wellness and morale. The secondary reason Children's Wisconsin installed bottle filling stations was to improve better hygiene practices through less germ transfer.

Children's Wisconsin is at the front of the industry trend of bottle filling stations being installed at an increasing rate with the primary reason being to improve nurse hydration, wellness, and morale. Dozens of hospitals are implementing team-building aspects with their bottle filling stations through nurse and departmental contests for water consumed and plastic bottles saved.

Sustainability: Healthy Hydration Directly Impacts The Health Of The Building Envelope

Nurses, staff and patients need to stay hydrated. How do we do it in a sustainable way? Do hospitals care about sustainability? The answer is an astounding yes. Sustainability in hospitals is now a mainstay goal and operational objective. Many if not all hospitals now include sustainability as a primary organizational-wide goal and initiative. Many have formal sustainability and green teams and there are sustainability champions throughout hospitals.

Dr. Jodi Sherman, M.D. Associate Professor of Anesthesiology of the Yale School of Medicine, Associate Professor of Epidemiology in Environmental Health and Founding Director of the Yale Program on Health Care Environmental Sustainability in the Yale Center on Climate Change and Health stated, "Health care itself is a leading contributor to pollution and climate change, against the mission to first do no harm, and mitigating health care pollution is a fundamental requirement for safe and high-quality health care delivery."[5]

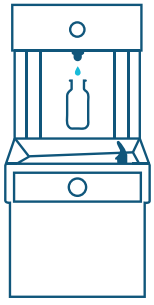
Hospitals are a major plastic waste producer. According to Practice Greenhealth:

- An estimated 25% of total waste generated by hospitals is plastic.
- Hospitals generate more than 29 pounds of waste per bed per day.
- Single-use plastic in hospitals represents 5 million tons of waste per year. Most single-use plastic used in hospitals is associated with medical devices and supplies, such as plastic packaging around a syringe.[6]

The health care world is adopting the mentality that there is a link between a healthy planet and a healthy patient. Fifty-eight percent of health care leaders expect sustainability to be a top priority in the next three years.[7] Green teams are being formed and leaders are stepping up to the plate to lead sustainability initiatives. There is a huge movement to reduce one-use plastics in hospitals. There are carbon neutrality initiatives and an overall push to be more sustainable in all areas of hospital operations and services. What are hospitals doing to increase sustainability efforts and reduce waste? According to Practice Greenhealth and Healthcare Without Harm, two industry organizations leading sustainability efforts in health care, most hospitals are focused on nine main areas of sustainability opportunities.

- Reducing chemical usage
- Reducing food waste and growing sustainable and healthy food
- Reducing energy waste
- Improving building envelopes and systems
- Better connecting the link between the climate and health
- Improving procurement to reduce waste
- Reducing the environmental impact of health care related transportation
- Reducing plastic waste
- Conserving water[8]

The last two focus areas of reducing plastic waste and conserving water are supported by providing healthy and safer water through bottle filling stations. They further reduce the carbon footprint associated with the manufacturing and distribution of single-use plastic water bottles. In 2022, bottle fillers avoided 1.72 million metric tons of CO2 that would've been emitted from the manufacturing of plastic water bottles, not to mention 426,000 metric tons of plastic waste.



Bottle filling stations have been estimated to save 75 billion single-use plastic bottles since 2012.

Case Study: Mercy Hospital, Springfield, MO

Mercy Hospital in Springfield, Missouri had a general goal of helping the environment and decided to remove all plastic bottles from all facilities. This included removing plastic water bottles in the cafeteria, vending areas, gift shops, and work areas. They switched to bottle filling stations and reusable bottles and have saved nearly 100,000 gallons of bottled water annually and eliminated approximately 500,000 plastic water bottles from landfills annually. They were able to have a huge impact and reduce the plastic water bottles by installing bottle filling stations. A secondary reason for installing the bottle filling stations was because of the higher water quality delivered through the stations.

Case Study: Aspirus Langlade Hospital, Antigo, WI

To protect against the spread of COVID-19, Aspirus Langlade put many measures in place at the start of the pandemic. One of these measures was to shut down use of its water fountains.

With the water fountains shut down, Aspirus Langlade Hospital Nutritional Services stepped up and began providing free bottled water to staff and visitors. Approximately 1,700 bottles of water were given out each week. That's more than 88,000 bottles annually.

To reduce its reliance on single-use water bottles while still providing free water to staff and visitors, Aspirus decided to stop handing out bottled water and to replace those efforts by installing water bottle filling stations. The stations offer an environmentally friendly alternative to drinking water from single-use plastic bottles. Thanks to these stations, Aspirus substantially cut down on the amount of plastic waste generated in its facilities, while also providing significant long-term cost savings.

A refillable water bottle was gifted to each Aspirus employee in anticipation of the installation of the water bottle filling stations. Employees are being encouraged to drink more water each day to reap the numerous health benefits associated with drinking water.

The installation of the bottle filling stations was headed by the Aspirus Sustainability Initiative, which was established in 2018 as a coordinated, strategic effort to identify and implement sustainability initiatives intended to improve the lives of patients and the health of communities. This initiative is in direct alignment with Aspirus Health's mission to heal people, promote health, and strengthen communities.

A secondary reason for installing the bottle filling stations was to reduce germ transfer. "The water bottle filling stations are hands free, which dramatically decreases the spread of germs," said Penny Matuszewski, Director of Food & Nutrition Services at Aspirus Langlade.

She continued, "There is almost no risk of contracting harmful germs from these mechanisms since the spout is recessed and the sensor-activated bottle fill solves the problem of contamination, keeping bacteria and virus out of the equation. That is crucial to us as a health care facility."

Lead-Free Water: Healthy Hydration Directly Impacts The Health Of Communities

Hospitals are embracing wellness and implementing initiatives that connect them to their surrounding communities. They are doing this by supporting and driving health initiatives that directly impact the citizens they serve. One of these initiatives is often centered around lead-free water and environments.

This commitment can be seen in the mission statements of some of the leading first-in-class hospitals:

- The Mayo Clinic wants to inspire hope and promote health.[9]
- John Hopkins' mission includes the commitment to improve the health of the community and the world.[10]
- UCLA Health vision includes the mantra to "heal humankind, one patient at a time, by improving health, alleviating suffering, and delivering acts of kindness." [11]
- New York Presbyterian's mission is to "provide caring, high quality, fiscally responsible health care services that meet the needs and expectations of the communities we serve." [12]

Many hospitals have community programs specifically to support and provide lead-free water and environments. Some hospitals with lead-free initiatives include:

- Penn Medicine
- UPMC
- Connecticut Children's
- Mt. Washington Pediatric Hospital
- Upstate Children's Hospital
- John Hopkins
- Boston Children's Hospital
- Dayton Children's
- C.S. Mott Children's Hospital

Bottle filling stations provide an easy solution for hospitals to align with their lead-free and community initiatives by ensuring they are providing lead-free water in their own facilities. Bottle filling stations have provided lead-free water in accordance with all state and federal laws since 1991. The stations have specially designed filters that are certified to meet or exceed NSF/ANSI Standard 53 to remove lead from the water source.

Case Study: Delta Dental

Delta Dental forged a partnership with Michigan schools to provide safe drinking water to children while at school. They launched a program called "Rethink Your Drink: Water is Cool at School Program" and donated $100,000 to Michigan schools to update their drinking water systems, including bottle filling stations. In addition to providing safer, healthier water in the first month of the program, they also saved more than 2,200 plastic bottles.

Bottle Filling Station Applications

When selecting a bottle filling station, there are certain features and benefits that shouldn't be compromised. Nine attributes to look for include:

- The unit should have antimicrobial protection on key components that inhibit growth of mold and mildew.
- The unit should include a visual filter monitor that indicates when the filter needs to be changed.
- A stainless-steel grate should provide an even rest platform for the bottle. It should be easy to remove and provide easy access to clean the basin.
- The unit should be able to deliver chilled water on demand.
- The unit should track the number of plastic bottles saved. Users of the station will appreciate seeing this and the hospital can use this as an important tracking metric for their sustainability goals.
- There should be options in design that assure easy access, such a wall projection of only 12 inches.
- The unit should include a real drain system that eliminates standing water.
- The unit should have a completely hands-free operation. The user shouldn't have to touch anything.
- The unit's filter should be NSF certified for lead and other contaminants.

Bottle filling stations offer numerous applications to suit different needs. They include surface mounts, combination units and in-wall units.

There are different styles to choose from depending on the building and environment in which it is being placed. Standard designs are available and higher-end styles are available and easily fit into spaces that call for it. Some installations have spaces and schedules that call for floor standing units. Outdoor applications are also available, which are important for pathways and outdoor respite areas at hospitals. These come in different styles and colors.

There are bottle filling stations available for new construction in addition to easy retrofit options. For each application, style and construction type, the bottle filling station should include the proper filter to keep water safer and lead-free.

- The filter should be tested and certified to NSF/ANSI 42 for the reduction of chlorine taste, odor and Class 1 particulates.
- The filter should be tested and certified to NSF/ANSI 53 for the reduction of both lead and cysts.

These certifications ensure that the water is not only refreshing, but also cleaner and healthier. The filter should also be designed with technology such as spun polypropylene prefilter mesh to prevent large, coarse sediment and particles from entering and clogging the media. A radial flow-through design can provide more surface area to interact with the water.

Conclusion

There are three main reasons hospitals should support healthy hydration with bottle filling stations.

1. Nurses need to be properly hydrated to achieve high job performance and improve patient outcomes.
2. Bottle filling stations support the environmental and sustainability efforts of hospitals by tracking and reducing the use of plastic bottles.
3. Bottle filling units provide healthier and safer lead-free water, which aligns with hospital goals of supporting healthy community initiatives.

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