

The HSC Women's Hospital: Design and Patient Care

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Abstract

The recently built HSC Women's Hospital was designed with patient-centered care in mind. Many of the design elements used in the hospital are rooted in current evidence on how the physical environment impacts patient health outcomes and satisfaction. Some notable changes include improved air quality through using 100% circulating fresh air, inclusion of nature and wildlife elements in interior design, and adoption of single patient rooms throughout the hospital.

Keywords: hospital design, patient-centered care, single patient rooms, HSC Women's Hospital

When you walk into the new Health Sciences Centre (HSC) Women's Hospital on the corner of Sherbrook Street and Elgin Avenue, you are greeted by a beautiful two-story main level with large sunny glass windows, high and open ceilings, and the smell of freshly-baked muffins and croissants emanating from the local cafeteria. Above all, the most striking aspect is the sense of peacefulness and serenity that envelops the hospital.

The HSC Women's Hospital was originally scheduled to open in 2014. After a 5-year delay, due to a fire and other setbacks,¹ the hospital finally opened in November of 2019. EllisDon Corporation, a Canadian employee-owned company based in Mississauga, was commissioned to design and build the hospital.² Additionally, community consultation and input were welcome and incorporated at multiple stages of design.^{3,4} The hospital is on a spacious 250,000 square foot lot, bigger than the BellMTS Place. The first floor features 3 stretcher bays, 8 private obstetrical patient rooms with bathrooms, a fetal assessment unit, and retail services. The second to fourth floors house the Neonatal Intensive Care Unit (NICU), a 16-bed Labour and Delivery Unit, 3 operating rooms for Caesarean sections, and another 4 operating rooms for gynecological surgeries. Throughout the hospital, there are inclusive spiritual spaces, such as a Sanctuary and Ceremonial Room for smudging and other cultural practices.^{4,5}

The integration of nature and wildlife is also evident in the hospital design. The exterior glass panelling features a digitally superimposed elm forest, a tribute to Winnipeg's elm tree canopies.⁵ Wildflower themes are also incorporated into each floor of the hospital, with scenic wall art in reception areas and color-coordinated furniture.^{2,3} The rooftop gardens, open in the summer months, will feature plants native to Manitoba and lo-

cal Indigenous communities.

With the patient's privacy and comfort in mind, the designers opted for single patient rooms in the wards and triage. Each room features a window and an en suite bathroom with a shower. The patient rooms are spacious with room for personal belongings and a sleeping area for one support person.^{4,5} The rooms are also equipped with privacy curtains behind the doors, which make them accessible while maintaining patient dignity.

There have been numerous studies examining the effect of the physical environment on patients' wellbeing and satisfaction. Many of the design elements used in the hospital are rooted in evidence-based medicine.⁶⁻¹¹

Air Quality

Air quality in enclosed spaces has a significant impact on staff and patients' health. The use of recirculated air ventilation systems, such as the traditional HVAC systems, results in increased carbon dioxide levels, negatively impacting cognitive performance and delaying recovery for patients.⁹ Recirculated air has also been associated with Sick Building Syndrome, a set of non-specific symptoms and discomfort following extended time in closed buildings.⁹ The Women's Hospital's ventilation system is designed to provide 100% fresh air as opposed to recirculated air.² Low volatile organic compound-emitting construction materials were used, and the abundance of natural lighting in the hospital also improves air quality.^{2,4,9}

Nature and Wildlife

Natural or artificial sunlight, as in light therapy lamps, have well-documented positive effects on depression, including perinatal depression.^{6,11-13} Florence Nightingale, the founder of modern nursing, was the first to

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note the positive effects of nature and sunlight on patients.^{7,14} More recently, one study conducted in a psychiatric ward noted that patients housed in sun-lit rooms had an average of 2.6 days shorter stay compared to patients without sunlight.¹³ The presence of gardens also serves as a positive distraction for patients. It allows them a space to rejuvenate, connect with fellow patients, and engage in leisurely activities.^{8,10,15} One survey conducted in the UK found that 100% of their participants reported that the gardens improved their sense of wellbeing.¹⁵ Another study conducted in a women's hospital found that both the patients and their families used the gardens as a coping tool during difficult times.¹⁰ Exposure to nature and natural light has also been shown to be effective in alleviating depression symptoms, a common struggle for new mothers who may experience baby-blues, or more severely, postpartum depression.⁶ The new HSC Women's Hospital with solariums of living green wall plants, rooftop gardens, and large windows allow patients to feel connected to nature, and enhance their recovery and satisfaction with their care.²⁻⁴

Centralization of Care

The new Women's Hospital also centralizes services for patients. Previously, there were three different Neonatal Intensive Care Units (NICU) throughout HSC. All of the units have been amalgamated on the second level of the hospital, allowing easy transfer from the Labour and Delivery Unit. Furthermore, new mothers can now easily visit their babies in the NICU while in hospital. This facilitates more bonding time and skin-to-skin contact during a critical period in the baby's development.¹⁶ Additionally, the hospital features a 24-hour video link between Thompson and the NICU in Winnipeg, improving care for preterm infants until they are transferred to Winnipeg for subsequent care.²

Single Patient Rooms

The single patient rooms adopted by the HSC Women's Hospital will have a large impact on patient care. While walking through the hospital wards, it is almost impossible to ignore how quiet and peaceful the hallways are. A reduction in perceived noise by patients has been shown to decrease stress and physiological arousal.^{2,7,8,17} It also leads to improved sleep quality, decreased hospital stays, and decreased use of pain medications.¹⁷

Moreover, single patient rooms give patients a greater sense of control over their environment, as they can change furniture layout and limit foot traffic in and out of the room. As well, they have more freedom with visitors and accommodating family members. One study found that patients who were able to freely control their room temperature were more satisfied with their care.⁹

In addition, the single patient rooms allow patients more privacy and dignity, which is especially important in the Women's Hospital as patients are undergoing sensitive procedures where they may feel vulnerable

and/or embarrassed. For neonates, single rooms have been shown to reduce ventilator days, reduce medication use, and result in fewer episodes of apnea. Furthermore, they are associated with increased milk production in lactating mothers.¹⁶ These rooms also allow mothers to feel more freedom to engage in skin-to-skin care with their babies.¹⁸

Single patient rooms benefit hospital staff as well. The additional space allows for more personalized contact with patients, fewer interruptions during care delivery, and fewer medical errors.¹⁸ Single rooms have also been shown to reduce the incidence of hospital-acquired infections and infection transmission rates.^{7,18} The improved quality of care leads to higher patient satisfaction, thus decreasing the stressors on nursing staff and conflict with patients. The reduced hospital length of stay can also lead to cost-savings.¹⁸

Unfortunately, single patient rooms present some challenges. The distance between patients increases transition time between rooms and wards, as well as the workload for existing staff, and necessitates more hiring.^{7,18} Studies also showed that single rooms induce a degree of complacency when following basic infection control precautions such as hand-washing.^{7,18} Additionally, one study showed that staff might feel isolated and lose connection with their colleagues. The study also showed physician stress levels after transitioning from shared accommodation to single room hospitals were elevated even 15 months post-transition.¹⁸

Single rooms present a different set of challenges for patients. They may feel more secure in shared accommodations as they are visible to staff at all times.¹⁸ Shared accommodations also result in good patient camaraderie. One study found that a primary disadvantage to single patient rooms was the patients' experience of loneliness and feelings of isolation.⁷

Conclusions

The new HSC Women's Hospital is a much-needed upgrade. The design's focus on patient-centered care and improving outcomes is evident throughout. By using fresh air, natural lighting, gardens, wildlife, and single patient rooms, the designers have given patients a sense of control, increased positive distractions, and eliminated many of the negative aspects of hospital stays. It will be remarkable to see how the hospital's physical environment will affect patients and staff, and how architecture and design will be part of patient care.

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