

The "Smart Patient Room" of Tomorrow

Research Summary

A successful hospital design requires considerable research on behavior and interaction of care givers, patients and their families in a healthcare setting, and the effects of interior design on physical and psychological experiences in these spaces. The interior designer plays a major role in creating a space that provides an environment which is universally therapeutic for patients, technologically timeless and sustainable in its design.

Hospital stays for all patients should be unthreatening, relaxing and as stress-free as possible. A universally therapeutic interior consists of some important aspects:

- Use of familiar and relevant materials
- Building orientation: use of natural light
- Color, texture and pattern should all give cues for a "way-finding" process

Aesthetics is closely related to creating a therapeutic environment, so it is important in creating an everlasting and attractive space to better staff morale and promote patient rejuvenation. Timeless and technological aesthetic design considerations include:

- Admitting ample natural light, natural materials and textures
- Providing patients with a bedside console that enables them overall control
- Interactive video screen display connected to patient's tablet
- Laminated switchable glass for bathrooms

Hospitals have significant direct and indirect impacts on the environment, society, and economy; they are heavy users of energy and water and produce large amounts of waste. By placing such demands on community resources, hospitals are natural candidates for an overall sustainable design. The main objectives of a sustainable interior design are:

- Enhancing Indoor Environmental Quality (IEQ)
- Use of materials with lower VOCs (stone, linoleum, terrazzo)

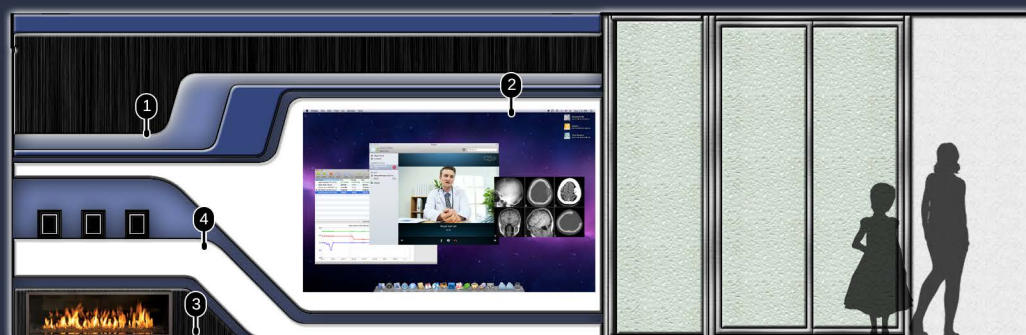
Interior design impacts humans both physically and psychologically. An effective healthcare design solution that has a universally therapeutic environment due to the technologically timeless and sustainable design will help produce a successful project that meets the needs of the client, the project's stakeholders, and the patients who will utilize these spaces.

Design Goals

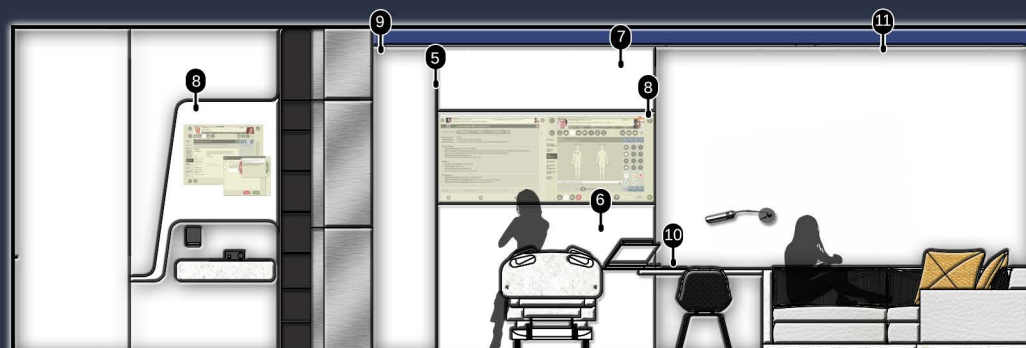
1. Therapeutic To provide a comforting and stress-free environment for patients.
2. Technological To incorporate top of the line technology to empower the patient with control, connect them to the outside world, and increase productivity for doctors and nurses.
3. Sustainable To impact the environment minimally through skillful, sensitive design and generate long-term relationships between user and object/service.



Room Perspective



West Wall Elevation
Scale: 3/16" = 1'-0"



East Wall Elevation
Scale: 3/16" = 1'-0"

Elevation Notes

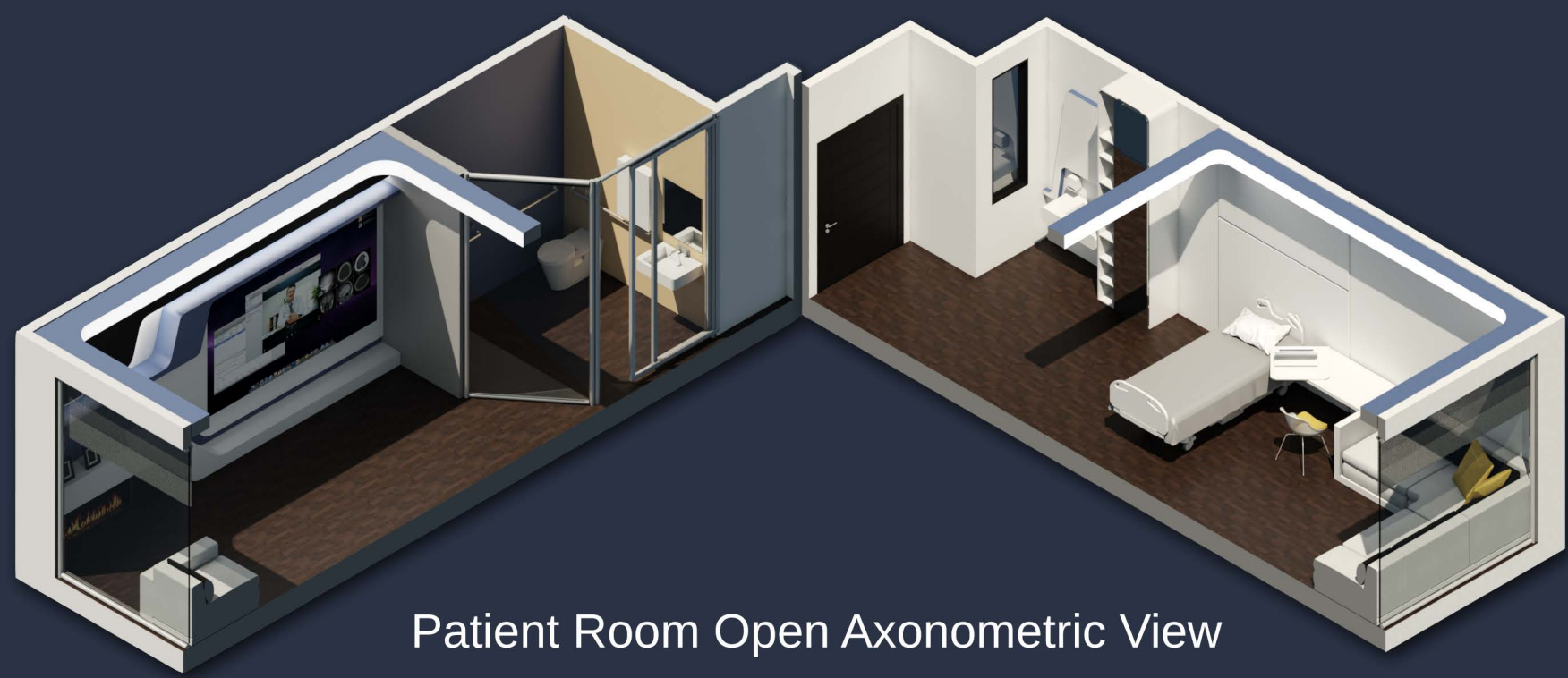
1. Dimmable LED downlight
2. Widescreen projection for video calls and entertainment purposes
3. Gas fireplace feature
4. Hidden storage and shelving for personal belongings/decoration
5. Trufig flush headwall gas outlets
6. E&P solid surface headwall system
7. Patient lift nest
8. Patient information display screen
9. Bose focused audio speaker
10. Table with extension leaf for tablet
11. Patient controlled ceiling display

Concept Statement

The planned design for the "smart" hospital room will be patient focused and family centered. Tomorrow's patient room increases safety and provides an environment which is universally therapeutic by allowing patients to be in control of the room and the care they receive. By incorporating cutting-edge technology with the integration of light and nature, the patients' experience and doctors' workflow will be enhanced as a whole. The spaces will exhibit a streamlined design that seeks to capture characteristics of modernism through modular furniture through the seamlessness seen in the sustainable material of the walls, floors, lighting and ceiling features.

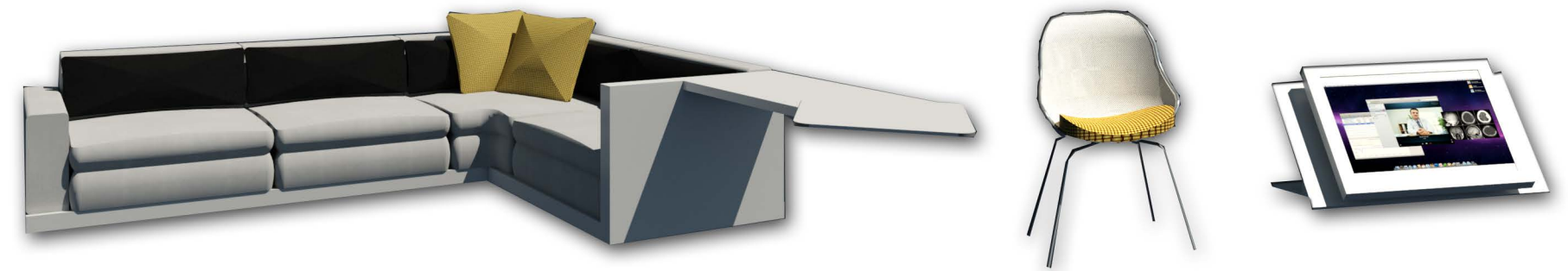
Resources:

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2. National Institute of Building Sciences (2014, August 25). Sustainable. Retrieved from <http://www.wbdg.org/design/sustainable.php>
3. National Institute of Building Sciences (2011, April 21). Hospital. Retrieved from <http://www.wbdg.org/design/hospital.php>
4. Rogers, E., Piotrowski, C. (2007). Designing Commercial Interiors (Ed. 2). New Jersey: John Wiley & Sons.
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Patient Room Open Axonometric View

Furniture Selection



Ultra Fabrics "Wild Honey" Polyurethane Fabric
 Ultra Fabrics "Eco Tech Coal" Polyurethane Fabric
 Ultra Fabrics "Eco Tech Gypsum" Polyurethane Fabric



Polyurethane fabric is a 100% waterproof fabric, typically polyester, but may be cotton or a polyblend material that has been heat-laminated to a polyurethane layer. Fully reacted polyurethane polymer is chemically inert. PUL is lightweight, breathable, and durable enough to withstand machine washing in hot water & heat drying.

Benjamin Moore "In The Midnight Hour" with Polyurethane Paint Coating
 Benjamin Moore "Chantilly Lace" with Polyurethane Paint Coating




Polyurethane Paint (Aqueous PUD Coating) is a perfect green paint based on Water borne Polyurethane finish for concrete and masonry surfaces. This Polyurethane Paint gives a hygiene wall coating, having antifungal and antibacterial characteristics and excellent weather resistance properties. These paints are extra resistant to water and chemicals.

Sage Glass Switchable Glass



Also known as Smart Glass windows, switches from frosted to clear at the flick of a switch. This means that the Switchable coating can be simply applied to any type or thickness of glass (including fire rated), creating a solution with optimum clarity and performance. A simple ON - OFF mode switches the glass from being clear to opaque. In its frosted state the film acts as an electronic blind providing privacy and security for any glass, window or partition.

Fabric and Finish Selection

Armstrong "English Walnut" Luxury Vinyl Flooring 



Not only does LVT provide a warm inviting atmosphere, it is of high quality, great durability, superior performance, low maintenance, lower lifecycle cost, and is easy to install. Most brands use a UV-cured urethane coating that reduces scratching; LVT also has an extra wear layer to avert staining and damage from medically used chemicals. It is practically waterproof and offers good indoor air quality characteristics and won't trap dust. LVT can also be recycled.

Nevamar Panolam "True White" High Pressure Plastic Laminate 



HPL is considered to be one of the most durable decorative surface materials and is available with special performance properties including chemical, fire and wear resistance. Special grades of HPL can be postformed around curved edges by application of heat and restraint.

Prototype located on South side of building
 between two other patient rooms

Patient Room Summary

Hygiene Zone

- Patient bathroom across family/staff zone for direct sightline
- Roll-in shower at all bathrooms for accessibility
- Continuous handrail from door to shower
- Wide door to accommodate patient & helper
- Sliding door to eliminate the threshold that can be a trip hazard
- Switchable glass to provide privacy but also as safety precaution

Family Zone

- Dedicated family area with pull out sofa sleeper to promote integrated care in all rooms
- Electrical and data ports for personal computer and other devices
- Wall mounted reading light
- Ability to dim lighting when needed
- Guest seating for 4-5

Staff Zone

- In-room hand washing sink close to door with integrated hand-washing indicator lights
- Wall concealed computer with patient information and radio-frequency identification enclose
- Work counter provides dedicated space for clinician use
- Individualized lighting

Patient Zone

- Patient "ribbon" contains lighting and audio systems, HVAC diffusers, electrical and gas components and more
- Patient wardrobe includes personal safe
- Footwall includes display shelf and electronic entertainment with appointment schedules/reminders
- Maximum daylight and views to exterior
- View of fireplace to enjoy with family members
- Pull-over leaf from table to eat and place Smart Tablet
- Patient control from bed:
 - o Temperature
 - o Ceiling & entertainment display
 - o Roller mesh shade
 - o Lighting
 - o Audiovisual systems
 - o Lift

Outside Room

- Decentralized nurse station provides quiet area for concentration
- Work counter is height adjustable
- Window gives visual access to patient room
- Work chair with lumbar support
- Individualized lighting



Floor Plan
 Scale: 3/16" = 1'-0"