



ARCHITECTURAL PLANNING FOR AN EFFICIENT BURN UNIT: DESIGNING SPACES FOR OPTIMAL PATIENT CARE AND RECOVERY

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ABSTRACT

Architectural planning plays a vital role in creating efficient and effective healthcare environments, especially in specialized units such as burn units. This article explores the importance of thoughtful design in burn unit architecture, focusing on creating spaces that promote optimal patient care and recovery. The objective is to enhance patient outcomes, ensure staff efficiency, and foster a healing environment. The article begins by highlighting the unique challenges associated with burn care, including infection control, specialized equipment needs, and patient comfort. It then delves into the key principles that should guide architectural planning for burn units, such as patient flow optimization, and spatial organization.

Lastly, the article discusses the importance of collaboration between architects, healthcare professionals, and burn care experts throughout the design process. By incorporating their diverse perspectives and expertise, architects can create spaces that align with the specific needs of burn units, ensuring a patient-centered approach.

KEYWORDS: *effective healthcare environments, architectural planning, burn ward design, burn ward planning*

METHODOLOGY

Systematic qualitative research was performed which included books papers and research done after 2010 only along with observational research throughout random hospitals with burn wards in Delhi in carrying out the results along with interviews and discussions with associated professionals which included healthcare architects (which has previously designed 200 or more bedded hospital at least), doctors along with hospital support staff (both which has worked or is working in burn wards).

INTRODUCTION

The architectural planning of a burn unit plays a crucial role in the overall functioning and effectiveness of the facility. Burn units are specialized medical spaces that require careful consideration of design elements to provide a safe, comfortable, and efficient environment for patients, staff, and visitors. A different group of people which includes patients, attendants, and working staff are very susceptible to infections in the burn unit (Karim Rafla, 2011). This article explores the key considerations and best practices for architectural planning in burn units, aiming to enhance patient care and support the recovery process.

Patient Rooms and Care Areas

Patient rooms in a burn unit require specific design considerations to address the unique needs of burn victims. These rooms should be spacious enough to accommodate specialized burn care equipment, such as wound therapy systems and ventilators (Kalu1, 2020). Adequate space for the presence of family members or caregivers is also essential to provide emotional support to patients during their recovery

(Mohammadi, 2021). Furthermore, the materials and finishes used in patient rooms should prioritize infection control and ease of cleaning. Smooth, non-porous surfaces and appropriate ventilation systems help maintain a sterile environment and prevent the spread of infections. Natural light and views to the outdoors can contribute to a positive healing environment (Palmieri, 21 Feb 2019).

Location and Layout

The location of a burn unit within a hospital or medical facility is of utmost importance. It should be in close proximity to emergency departments and surgical suites to ensure quick access to critical care services in cases of hazards (Amir Hossein Aghapour a, November 2019). Ideally, the burn unit should have its own dedicated entrance to facilitate patient transportation and minimize the risk of cross-contamination (C. Beggs, October 2014). The layout of the burn unit should be designed to promote efficient workflows and patient safety. The unit should be divided into distinct zones, such as patient care areas, treatment rooms, and support spaces. A centralized nursing station allows for improved staff coordination and supervision, ensuring prompt response times and effective communication (Centralization of Intensive Care Units: Process Reengineering in a Hospital, 2010).

Treatment and Procedure Rooms

Burn units typically house treatment and procedure rooms for wound care, dressing changes, and surgeries. These spaces should be strategically located to minimize patient transportation and ensure efficient access for medical staff. Special attention should be given to the layout and organization of treatment rooms to optimize workflow. Protective isolation



is preferred as it helps in decreasing in infection and colonization risk in patients (Katrien Raes a, 2017) Equipment and supplies should be readily accessible, and ample counter space should be available for medical personnel to work efficiently. Adequate lighting, temperature control, and ventilation systems are essential to maintain a sterile environment and promote patient comfort (Eduardo Gus, June 2021).

Dedicated Areas for Triage and Decontamination

Triage and decontamination areas within a burn ward are crucial for efficient patient management, infection control, and the prevention of cross-contamination. A dedicated triage area allows healthcare providers to quickly assess the severity of burns and prioritize patient treatment based on the extent of the injury. This area should be equipped with necessary tools, such as burn assessment charts, pain assessment tools, and emergency medications, to ensure accurate and efficient triaging.

Rehabilitation and Therapy Areas

Burn patients often require extensive rehabilitation and therapy during their recovery process. Designing dedicated spaces for physical and occupational therapy is crucial. These areas should be equipped with appropriate exercise equipment, therapy tools, and adaptive technology (Holavanahalli, March-April 2011). Incorporating natural light, soothing colours, and views of nature can contribute to a calming and motivating environment. The layout should allow for privacy during therapy sessions while still providing supervision and monitoring capabilities for healthcare professionals (Mohammadi, 2021).

Staff and Support Spaces

Architectural planning for burn units should not overlook the needs of the medical staff. Adequate staff and support spaces, such as locker rooms, break rooms, and administrative areas, are essential to ensure the well-being and efficiency of healthcare professionals. Efficient communication systems, including nurse call systems and patient monitoring technology, should be integrated throughout the unit (Mohammed, 2016). These systems help facilitate rapid response times, enhance patient safety and streamline communication between staff members.

CONCLUSION

Architectural planning plays a significant role in creating an effective and efficient burn unit. By considering the unique needs of burn patients, healthcare providers, and medical staff, architects and designers can create spaces that promote optimal patient care, safety, and recovery. From well-designed patient rooms and treatment areas to rehabilitation spaces and support areas, every aspect of the burn unit should be carefully planned to create an environment that fosters healing, comfort, and positive outcomes for burn victims.

Efficient patient flow is a critical consideration in burn unit design, encompassing the movement of patients, staff, and supplies throughout the unit. Also, strategically located

treatment rooms play a vital role in the burn ward by offering immediate access to medical interventions and enhancing patient care. By situating these rooms in close proximity to the entrance, emergency department, and other critical areas, healthcare providers can ensure swift and efficient transportation of burn patients. The proximity of treatment rooms also facilitates the timely administration of pain management, wound care, and life-saving interventions, minimizing delays and reducing the risk of complications. The strategic placement of treatment rooms, well-designed corridors, and dedicated areas for triage and decontamination within a burn ward significantly contributes to enhanced patient care and safety. These elements optimize the workflow, facilitate prompt interventions, improve patient outcomes, and prevent the spread of infections or hazardous materials. By creating designated zones for different stages of burn care, including assessment, treatment, and rehabilitation, architects can ensure streamlined workflows and minimize cross-contamination risks. Additionally, the incorporation of communal spaces and natural lighting is explored as means to promote patient well-being and psychological healing.

Overall findings emphasize the significance of architectural planning in creating efficient burn units. By considering patient flow optimization, spatial organization, integration of advanced technologies, and collaboration with healthcare professionals, architects can design spaces that enhance patient care, facilitate staff efficiency, and contribute to the overall well-being and recovery of burn patients.

As development and futuristic progress are made, hospitals should also emphasize the integration of advanced technologies, such as telemedicine, electronic health records, and smart monitoring systems, into the architectural design. These technologies enhance communication, data management, and monitoring capabilities, leading to improved patient care and more efficient workflows. By incorporating these features into the design and organization of a burn ward, healthcare facilities can provide an environment that fosters the highest quality of care for patients with severe burns.

DISCUSSION

Much research is still needed on this subject to provide more concrete results which could be implemented throughout the hospital without taking into account its typology. Burn wards and centers with all the advancement present today still lack behind in terms of architectural concept and planning in comparison to other architectural projects. Multiple pieces of research can be done taking the aspect of the impact and influence of futuristic technologies and the incorporation of artificial intelligence and robotics.

Conflict of Interest: None.

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