Human-centred design in healthcare

Envisioning the future hospital

2024

Hospitals are primarily considered places of healing.
To maintain this status quo, a complex system operates behind the scenes to ensure optimal functionality. The hospital ecosystem relies on multiple subsystems, including infrastructure and design, personnel (healthcare workers, staff and management), patient experience, supply chains, emergency preparedness and information systems, among others, to function. These sub-systems are required to work together to create an environment best suited to delivering healthcare services.

While the core mission of providing healthcare remains constant, managing these subsystems requires continuous adaptation to meet present and future needs. As stated by Melles et al. (2021), evolving needs for patient safety and care have led to approaches such as organisational optimisation that considers "the needs and values of the stakeholders". One such approach is "networked care" where multidisciplinary teams of healthcare professionals collaborate to drive patient care, providing "value based care". These professionals involve patients in the treatment decision-making process, resulting in "shared decision making" (Melles et al., 2021).

The art of design and implementation can also significantly impact how healthcare is adapted to present day requirements revolving around delivery, management and perceptions of healthcare within a hospital space. Anderson et al. (2022) highlight this concept, sharing insights on how healthcare facility design affects patients, families and personnel. They argue that design should be "considered akin to a medical intervention" and thus requires ethical evaluation. The argument and evidence presented emphasises the value of physical, and social, determinants influencing healthcare in a facility (Anderson et al., 2022). Despite this evidence, health systems across the world often fail to consider the interplay between people and the healthcare environment during the design process (Kauppinen et al., 2024).

In a rapidly evolving hospital environment, where adaptation faces unique challenges and opportunities, human-centred design (HCD) emerges as a cornerstone of innovation and compassion. HCD originated after the second world war as a method to improve industrial production efficiency by 'fitting the task to the worker'. It has since evolved to encompass "physical and cognitive" considerations and also addresses the "organizational, social and emotional needs and pleasurable experiences" of users (Melles et al., 2021). HCD provides a holistic approach that considers human needs when designing, developing and implementing solutions for facilities, products, services, strategies, policies and more. This transformative approach goes beyond spatial aesthetics and focuses on redefining the entire healthcare journey for all stakeholders. By prioritising the needs, emotions and well-being of all stakeholders – patients, families, healthcare professionals and hospital management – HCD shapes a future where hospitals transcend their traditional roles. The inclusion of HCD principles in design, management, strategies and policies for hospitals offer solutions towards efficiencies, optimisation along with patient care, comfort and connection.

Holistic hospital vision: Beyond infrastructure to human experience

The future hospital, conceived through the lens of HCD and innovation, breaks away from conventional models. With the HCD approach, these institutions evolve into dynamic health ecosystems where medical care, well-being and innovation flourish in harmony with stakeholder needs. Embracing HCD enhances the experience of patients and healthcare workers and also promises a substantial return on investment for hospital management. Studies have shown that well-designed hospital environments can reduce the average patient recovery time, significantly lowering operational costs and improving bed availability. This directly contributes to increased revenue from higher patient turnover.

For example, Cleveland Clinic Abu Dhabi's value-based care model has effectively reduced medical costs and improved population health by focusing on patient-centred care and continuous improvement, which in turn contributes to operational efficiency and enhanced healthcare delivery.

Link for reference

The patient and family journey: At the core of the HCD approach

Central to HCD is the journey of patients and their families. These stakeholders require a significant degree of empathy and care from diagnosis through to recovery. By employing various HCD methodologies – including user research, prototyping and testing – hospitals can transform into more intuitive, enjoyable and effective environments.

Iterative prototyping and user testing in hospital design ensure that spaces are user-friendly and also adapt to the specific emotional and physical needs of patients and their families. These efforts directly contribute to higher patient satisfaction, which correlates strongly with increased patient referrals and return visits, thereby enhancing hospital revenue.

For instance, Nemours Children's Hospital in Orlando, Florida, in collaboration with IDEO, focused on guiding and supporting families through unique environments and integrated service moments. Features such as family lounges with kitchenettes, personalised care team introductions and smart rooms that "welcome" patients have significantly improved the overall patient and family experience.

Improved patient experiences resulting from HCD practices offer multiple benefits beyond direct care. These enhancements are linked to reduced complaint handling and lower litigation costs, providing significant risk mitigation and financial advantages for healthcare facilities. Moreover, environments optimised through HCD contribute to a stronger brand perception. This positive reputation attracts more patients seeking quality care and helps recruit skilled healthcare professionals, ultimately strengthening the facility's position in the competitive healthcare market.

Empowering healthcare workers through design

The well-being of healthcare workers is as crucial as that of the patients. Implementing HCD that enhances work environments can improve working conditions for healthcare workers, leading to reduced absenteeism and staff turnover and decreased recruitment and training costs. Moreover, improving the digital infrastructure to support healthcare workers, as highlighted during the COVID-19 pandemic, improves service delivery and also increases job satisfaction and operational efficiency and addresses digital health disparities.

Tailored HCD interventions can also enhance digital healthcare delivery, ensuring equitable access to essential services. For example, the University of Pennsylvania School of Nursing (Penn Nursing) and the Weitzman School of Design collaborated with the University of Pennsylvania's new hospital emergency department to address design and usability issues. The ED Pavilion Design Thinking Project used HCD to significantly reduce the frustration and time spent by staff searching for supplies, leading to improved job satisfaction, better team dynamics and enhanced overall workflow efficiency.

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Strategic hospital management

Effective hospital management is crucial for maintaining high standards of care and operational efficiency. Implementing HCD principles, coupled with robust change management strategies, facilitates continuous improvement and adaptation. This strategic approach helps in retaining skilled healthcare professionals and also boosts patient satisfaction, enhancing the hospital's reputation and competitive edge.

A notable example is Kaiser Permanente's "Patient Hub" concept, which centralises clinical services to minimise patient movement and streamline workflows, significantly improving both patient satisfaction and staff collaboration

Link for reference

In South Africa, the Hanover Park Day Hospital in Cape Town demonstrates the implementation of design thinking in healthcare. A garden was designed at the maternity unit for both patients and staff to enjoy moments of tranquillity and to socialise outdoors. Liesl Hermanus, Clinical Services Coordinator for the Perinatal Mental Health Project, notes that many patients in the community lack access to gardens, making this initiative particularly valuable. The hospital staff recently used the garden to promote mental health during a garden party, supporting "the integration of quality maternal health care into existing mother and child initiatives".

Link for reference

At Khayelitsha Hospital, Cape Town, the HCD approach involved integrating biophilic design elements, demonstrating how nature enhances staff and patient well-being. Mindful spaces and therapeutic gardens provide havens for reflection and recuperation, emphasising a holistic healing approach. Studies suggest such environments accelerate patient recovery and improve staff morale, decreasing absenteeism and healthcare errors.

The HCD approach for new and existing hospitals

The HCD method utilises the Double Diamond Approach to address challenges and requires these principles to be followed:

- **Designing the right thing:** This involves clearly defining the problem. It requires a thorough understanding of the challenge at hand before moving to solutions.

- **Designing things right:** This focuses on addressing human needs through design. It ensures that the solution is effective and also user-friendly and meets the actual needs of the people it's intended to serve.

These principles work in tandem to ensure that HCD solutions are both well targeted and well executed, addressing real problems in ways that work for real people.

Figure 1: The HCD Double Diamond Approach

Adapted from Melles et al., 2021
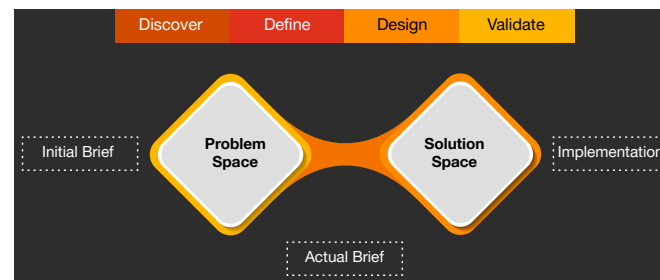
When designing a hospital of the future or improving existing facilities, adopting the Double Diamond Approach is essential to consider all stakeholders' needs. This model comprises four key stages: Discover, Define, Develop and Deliver.

- **Discover:** Engage patients, families, healthcare workers and the community to gather insights and understand their needs.

- **Define:** Synthesise these insights to pinpoint key challenges and opportunities.

- **Develop:** Generate and prototype ideas, ensuring spaces are intuitive, flexible and responsive.

- **Deliver:** Implement and refine solutions based on continuous feedback.

For new healthcare facilities, prioritise integrating nature, advanced technology and adaptable spaces to enhance patient care, improve operational efficiency and support healthcare professionals' well-being. Consider current and future healthcare services and practice needs.

For existing hospitals, the Double Diamond Approach can guide impactful changes:

- **Discover:** Gather feedback from all stakeholders on existing pain points.

- **Define:** Identify the most pressing issues.

- **Develop:** Explore and prototype solutions such as improving natural lighting, creating more family-friendly spaces and enhancing wayfinding systems.

- **Deliver:** Implement changes and continuously gather feedback for iterative improvements.

By fostering a culture of continuous feedback and iterative enhancements, hospitals can significantly improve patient satisfaction, boost staff morale and optimise overall healthcare delivery. This approach also facilitates strategy review and adaptation to new guidelines and policies.

Envisioning the hospital of the future in South Africa

Imagine a hospital designed with the human experience at its core, where every detail encourages healing and well-being. Nestled among therapeutic gardens, this hospital is more than a place of treatment; it is a sanctuary. Patients and families are welcomed by an entrance hall filled with natural light and local art, creating an immediate sense of calm and belonging. Expansive windows and open spaces offer views of the surrounding landscapes, which have been shown to reduce stress and aid recovery.

In this visionary setting, every aspect of the hospital adapts to the evolving needs of patients, families and healthcare workers. Inpatient rooms feature adaptable furniture, family lounges with kitchenettes and smart rooms that personalise the environment.

Collaborative spaces encourage interaction among staff, patients, and families, supported by regular feedback loops and participatory design sessions to address new challenges. Healthcare workers thrive in ergonomically designed workspaces with state-of-the-art technology, reducing stress and fostering better team dynamics.

This approach sets a new standard for healthcare excellence in South Africa and also demonstrates that when design is infused with empathy, collaboration and innovation, the potential for healing and transformation is truly boundless.

Conclusion: Reimagining healthcare with human-centred design

Healthcare facilities are already reaping the benefits of HCD principles and applications, and so too can future hospitals. HCD using the Double Diamond Approach allows one to prioritise the needs and well-being of all stakeholders. This is brought about by envisioning holistic, empathetic and integrated healthcare environments wherein we can meet the complex and ever-evolving demands of patients, families, healthcare professionals and hospital management. This vision challenges traditional norms and elevates global healthcare standards, proving that when design aligns with empathy, the healing potential is boundless.

For South Africa, embracing HCD offers a transformative opportunity to enhance patient care and address diverse community needs, setting a new standard for healthcare excellence.

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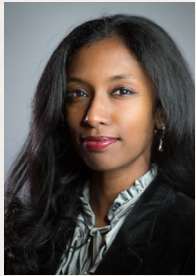
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