



# Trends in architecture

The typical spaces in healthcare facilities can be standardised and defined by exacting codes and operational-oriented parameters

BY MANU MALHOTRA

**H**ow hospitals appeared a couple of decades ago, to the present day, it has been quite metamorphic. With the industry shifting to a value-based service model, where outcomes and satisfaction drive reimbursements, the patient experience is taking on a whole new level of importance for providers who are looking to add value by designing more patient-and family-friendly spaces which are simultaneously cost sensitive as well. Some of the trends that are picking up which designers and promoters need to keep innovating on are:

## Prefabricated structures

With the present construction of healthcare projects averaging over four years; by the time a new facility is built, it happens

that it is already out of date. Prefab construction can solve this problem and allow for a fast, low-cost, and scalable solution that is of a higher quality than conventional construction.

Healthcare architecture and prefabrication is a perfect pairing. First, healthcare organisations need to standardise building components to reduce variation wherever possible and appropriate. The typical spaces in healthcare facilities can be standardised and defined by exacting codes and operational-oriented parameters. Once the standardisation is done, individual parts come together in a modular planning, which offers consistent, repeatable elements that can be flexibly adapted and reconfigured for different programming needs and sites. Finally, standardised modular components are

**1.** The concept of hybrid patient rooms is picking up.

prefabricated. Prefabricated components are built off-site at the same time as on-site construction and then assembled on-site. This reduces cost by saving time and the associated general conditions of managing a construction site.

Prefab construction has begun in our country but is still underutilised. Whether it's expansion of an existing facility or a Greenfield project, prefabricated structures has a lot more to offer; prefabricated structures are easy to install, fast to erect and ensures better utilisation of economic resources. For an existing healthcare facility undergoing structural changes, prefabricated structures will not only ensure minimal disruption of the hospital but also noise and vibration control in various sensitive areas of the facility.

**2.** Predefined lighting settings can be provided to create optimised illumination.

## Modicare impact

With the announcement of "Ayushman

Bharat" also known as "Modicare", private healthcare providers are likely to face the challenge of providing quality medical care to such a large section of the population. Quality comes at a price and with the private sector service providers having to deal with diversified users based on payment criteria (cash v/s Private Insurance, CGHS, ESI, Ayushman Bharat and many other state sponsored schemes) the focus is on coming up with something which caters to cost without compromising on quality of service. Architects will play an important role in planning the facilities that through the design make the operations more efficient and allow for getting more done by saving whatever man-hours can be.

Modicare will radically transform the whole healthcare paradigm. It will lure more investments into private healthcare market. Healthcare providers will simultaneously move to tier-3 and tier-4 towns and expand



operations there to simultaneously provide employment opportunities in these towns. Architects will have to think ahead and the designs will have to be transformed keeping the dynamics in mind. The designs of past will have to go under serious transformation. In order to cater such demands hospitals will have to be leaner and have set their sights on improving patient convenience by achieving value outcomes in terms of patient comfort with the least inputs (manpower, time, cost) and further identifying and cutting out wastes such as over production, waiting and travelling time, material movement, inappropriate processing, inventory, errors and underutilisation of available resources.

#### **Sustainability leads to reduced operational cost**

Hospitals run 24x7 and are among the country's most energy-intensive facilities. In recent years, as resources have become tighter, energy costs have risen and health-care costs have skyrocketed, a commitment to sustainable operations has become more essential than ever in the past. Hospitals tend to make energy-saving strides through a combination of smart design, newer technology, and optimised mechanical systems. We suggest designing sustainable hospitals using simulation softwares like Design-Builder, Revit, SketchUp etc to analyse the building characteristics and its impact on surroundings and follow the design process based upon building physics that utilise massing and orienting to optimise daylighting and reduce costly heating and cooling loads associated with high ventilation demands as much as possible.

Responsibility towards environment is our biggest responsibility. The current trend expect the hospital to be environmentally sustainable, however, we architects must ensure that hospital remain financially sustainable and they are future proofed so that they remain adaptable to rapid changes in medical technologies.

The departmental planning that allow the engineering to be shared/switched off during period of low occupancies can result in significant saving in operating cost. A simulation of operating cost at the initial stages of the project can predict and identify the problems at the inception stage and result in a sustainable building.

Recently, the HUDA (Haryana Urban Development Authority) made amendments in their building byelaws imparting additional FAR to sustainable buildings that have achieved ratings from GRIHA/IGBC/LEED. Whether the promoter is willing to go for certification or not, one must ensure that the buildings are High Performance Buildings.

In some of our recent projects, Apollo Medics at Lucknow has attained Gold Certification and has become the first health facility to attain the same in the state of UP.

#### **Waiting areas addressing overcrowding**

Waiting space is not merely an area in a hospital; it is nowadays given prime importance in planning. The needs and requirements of the visitor differ according to their use and their age group. A healthy visitor might not want to sit alongside a patient having flu, or a patient waiting for dialysis will have different needs as compared to the one for chemotherapy. Each space should be accessible and communicative to the staff. From providing charging stations to interactive displays and reading stands, all engage the visitor to divert their attention from the waiting time. Thus, instead of aligning it all together in one linear segment, their needs should be addressed in a different manner.

Waiting spaces not only need to address the needs of privacy and cross infection but at the same time needs to be designed for various age groups. Elderly people may require a different seating space compared to someone with a knee problem and accordingly millennial group may require areas where they can work on the laptops



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as they are waiting or taking treatment. The design offering all this helps in eliminating overcrowding and claustrophobic experience for the patients. Strategically placing patient sub-waiting areas and accommodating family members will also help alleviate issues related to overcrowding.

## Patient room design: Hybrid type

When it comes to designing patient rooms for the generation who share the common themes of cost-conscious, social-minded and family-oriented; the concept of achieving efficiency through convertibility has a very significant role to play. Also, the presence of family and friends close during recovery can make a dramatic difference and all these concepts have encouraged the care providers to go for hybrid patient rooms where products like sofa beds and recliners and other convertible furniture can go a long way to ensuring that visitors have the required space without crowding the room. The walls can be designed to accommodate furniture like an attendant bed and working table when not in use- thus allowing larger clear space around the patient bed.

The use of automation techniques in the patient rooms to ensure patient comfort by giving patients full control over their room settings ensure patient safety and improve the patient's satisfaction and saves precious time. The new lighting technologies like

circadian lighting follow the patient's natural rhythm, increases their comfort and can shorten their recovery.

Predefined lighting settings can be provided to create optimised illumination during medical procedures to improve staff comfort and minimise the chance of medical errors. With room automation, employees can also set and later select predefined scenarios as needed for different therapeutic requirements. With machine learning and artificial intelligence companies like Google and Microsoft investing heavily to utilise the same for Healthnow rooms will become more and more personalised.

## Flexibility in design & master planning

With the advancements in medical sciences including those in diagnostic and therapeutic modalities, functions in healthcare facilities are changing more rapidly than ever and this has led the designers to not only aim for an optimum between building and function but to ensure that the building shall be able to sustain these changes with time. Universal space modules/ grids, modular design are now being utilised to keep pace with the changing needs of function and design.

The advancements in the field of construction techniques and materials, availability of new finishes and lighting options, introduction of other sectors like IT (in maintaining health records, patient monitoring), mechanics (in PTS-pneumatic tube system) within healthcare have reduced the risk and errors and considerably increased the efficiency of building. And the same may or may not be placed on day one, but the design should be able to allow for all these, as the promoters might decide to go for them at a later date and such can be incorporated without any disruption. [HR](#)



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