

Design and Care in hospital planning

– Changing paradigm in new millennium

Praneet Kumar, M.D.

Architecture, one of the oldest profession of the civilisation, has a multi-faceted role to play in human lives from times immemorial. In order to keep pace with the developments in various spheres of life, architecture, as an evolving science and art of living, has tried to focus on a matching approach to the different elements it had to address. Incidentally, architecture is perceived as a testimony to the culture of the civilisation and depicts history for the students of anthropology.

Role of architecture in healthcare

The role of architecture in development of healthcare facilities is as old as civilisation itself. Needless to mention, it has responded to the changing needs of the health sector, just as it has done to the other spheres of life. The resultant effect has been seen in provision of design solutions that either enhanced the impact of delivery of care and/or made the delivery of care more efficient. This contribution to the humanity is a tribute to the interdisciplinary approach in the health facility planning and design process. It also marks the significance of tailoring the design solutions to the care needs of the individuals, both – sick and otherwise, and all those who are involved in the healthcare delivery process.

Current scenario

“Form follows function”, is the dictum, which is practised in the planning and design development of a facility be it a home or an institutional facility. This is of utmost importance while involved in building a health facility, as the design is expected to take care of the functional needs

– *“care parameters”*.

One may not be in a position to say with confidence that the present day architecture has been very successful to meet the fast changing requirements of the health sector in recent times. The primary reasons that could be attributed to this phase, are:

- Rapid technological developments that have overtaken the healthcare sector in the latter half of the twentieth century
- Diversity of locational requirements which are influenced by the local climatic conditions, cultural beliefs and practices, attitudes and prejudices of the community and above all the faith in health practices
- Organisational and financial structure of the local health system
- Dissonance in Design and Care parameters due to focus on fractured care of patients rather than total care
- Complete or near absence of focus on add-



Praneet Kumar, M.D.

Dr Kumar is a Senior manager with a background in Hospital/Healthcare Planning & Management, Strategic Planning and Project Management, and a successful track record achieved in a 23 years career in different facets of healthcare delivery systems. He has worked at both – operating and strategic levels. He is familiar with emerging trends and change factors that would catalyze and drive the healthcare delivery mechanism in the new millennium.

ressing the needs of patients and their accompanying relatives and friends

Impact on health facility planning & design development

The impact of the above in the lack of success in formulation of solutions, that would meet the needs and aspirations of all those who are involved in the delivery of care today, has highlighted issues that form a vicious circle, which is difficult to break. The modern medicine is today accused of being responsible for incomplete or fractured care. It is said that the current practice has, therefore, diverted the focus of care delivery on 'cases', like an inanimate object, rather than total care for human beings. The resultant effects of this distorted practice of medicine are:

- Complete neglect/apathy towards social and personal needs of patients and their accompanying relatives and friends
- Lack of appreciation of needs of care providers – physicians, nurses, technical and allied staff.

The aberrant approach has carried through the health facility design process, especially during this period. Thus, we have islands of clinical ex-

cellence with cold blooded efficiency but showing utter lack of humane touch. The onus of the responsibility of the present status lies on all those who are involved in the health system development rather than any one discipline.

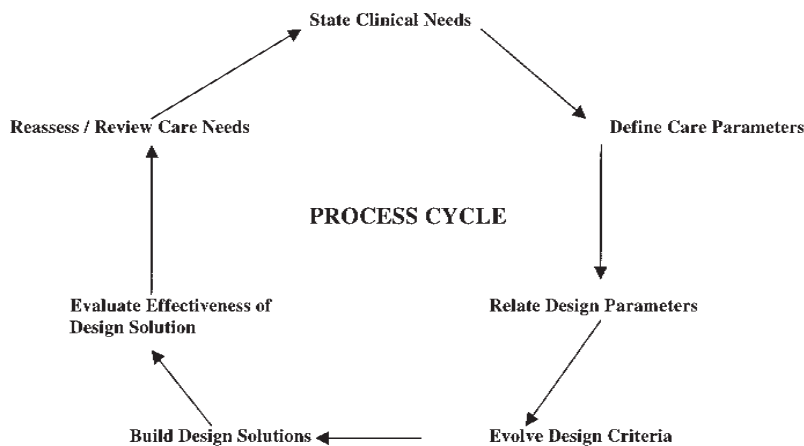
Review of health facility planning & design development approach

The above scenario throws a perspective that is not conducive to the overall health system. It has therefore been felt that there is an immediate need to shift the current philosophy of health facility planning and design development to a more 'user-friendly' approach. In order to address the issues involved, it is necessary to have a broad understanding of the process cycle of the health facility planning and design development.

Process Cycle for Design Evolution

The basic steps of the process cycle for a health facility planning and design development are depicted in figure below.

The sequence of activities that form the part of the design evolution process, focus on first defining a clear need statement as the starting point. It follows a cyclical pattern of step-



Health Facility Planning & Design Development – Process Cycle.

wise achievement of milestones as the process goes along with reassessment/review of the initial care parameters before finalizing the design solution.

Modified Approach – Need and Objectives

Need

It is quite obvious from the process cycle that it requires a constant and proactive participation *and* involvement of all the stakeholders of the healthcare delivery system to evolve a good design that would meet the defined care parameters and the design goals.

Objectives

It is imperative that well-defined objectives need to be stated to pursue the modification of the current approach of health facility planning and design development for the future projects. These objectives, that will form the basis of the modified approach to meet the new challenges – social and personal on one end and the results of new technology impact on the health system on the *other* end, are:

- To achieve synergistic synthesis of Design and Care parameters in planning of new health facilities, with a focus on total care, including the needs of patients and their accompanying relatives and friends.
- To achieve Design Solutions that reduce stress for all concerned and involved in-patient care (inclusive of patients and their accompanying relatives and friends).
- To ensure that the design solution, thus evolved, remains a viable proposition for the promoters and investors.

Criteria for Revised Strategy

In order to meet the above objectives successfully, one has to satisfy two divergent yet essential criteria, namely:

- Meeting the existing guidelines and norms of contemporary practices and quality assurance criteria, wherever available or else,

evolve them on the basis of local needs and expertise available. The broad parameters that would influence the design solution are-

- Space Requirements
- Alternatives based on suggested ‘Design Criteria’, and
- Ancillary requirements for the Medical Programme (to match supporting infra-structural needs).
- Incorporating the elements of locational requirements in the planning and design process, without compromising with technical requirements to be fulfilled to achieve clinical excellence, essential for positive patient outcomes.

Key Issues & Influencing Factors

Issues related to Guidelines and Norms

One can draw from the above, that *guidelines and norms that are sensitive to dynamics of healthcare delivery system*, will have to play a crucial role in making the healthcare facilities more conducive to reduced stress for all concerned and involved in patient care. It is anticipated that adoption of such reference norms and parameters would help the overall planning and design process so that the health facilities can really become patient friendly.

While, the set of guidelines and norms addressing the space requirement issues were available, yet, they could not be adopted without making room for adjustments influenced by the most important component of the healthcare delivery – *‘the physicians’*. Moreover, these parameters have also been in flux as a result of increasing specialisation in the field of healthcare over the last few decades along with gradual transformation from a predominantly in-patient care focussed facility to the one which has ever increasing focus on ambulatory care.

In this process, area assignment to the indoor complement of the facility has not changed significantly. However, area assignment to ambulatory care, critical and intensive care, and diagnostic and therapeutic elements has substan-

tially increased to accommodate newer processes, policies, and modalities. The following table and figure reflect the evolutionary process in the development of guidelines for area assignment/space requirements in a Multi-Speciality Referral Hospital and Super-Speciality Hospital with or without Multi-Speciality component in the twentieth century:

Locational Issues

The relevance of these guidelines and norms, which were evolved in developed countries, is all the more significant to Indian context wherein each patient is accompanied by the anxious and worrying relatives and friends. The family unit, here, forms the integral component of the patient as a unit. It is more pronounced in rural areas, where the whole village would satisfy the definition of this unit. Therefore a special attention is needed to address flow patterns, waiting spaces, service issues and policy regarding the type of patient accommodation – ranging from Nightingale type wards to private rooms furnished luxuriously.

The effectiveness of the design solution, based on meeting successfully such diverse and conflicting parameters, will enhance the patient outcomes by facilitating the care delivery process while making it smooth and efficient.

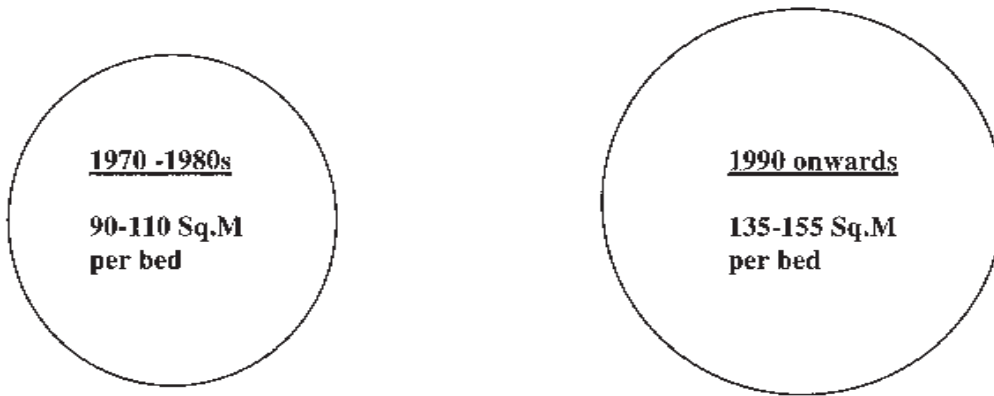
Changing paradigm in hospital planning and its outcome

A special focus was kept to remain sensitive and responsive to the two sets of criteria as enunciated above, while carrying out mid project review for an Oncology Centre at Jaipur (in north-western part of India) and planning and design development of Speciality Cardiac Centre at Mohali (north of capital city of Delhi). The key elements, that formed the basis of attempting to pursue the revised strategy for planning and design development, included:

- Defining ‘Care Parameters’ from the perspective of patients, community (accompanying relative and friends), providers (physicians, nurses, and allied staff), and promoters & investors.
- Formulation and evolution of ‘Design Parameters that satisfy the Care Parameters’, as defined and influenced by the attitudes and cultural practices of the beneficiaries, with a flexibility and modularity that enables the facility to adapt itself to changing needs.
- Formulation of a matrix of ‘Critical Success Factors (CSF)’ for evaluation of aboveparameters and their satisfactory resolution as evolving Design solution, throughout the design development process.

Evolution of Space Allocation for Multi-Speciality Referral Hospital.

Model	Conventional	Specialisation	Contemporary	Futuristic
Times	< 1950s	1960-1970s	1980-1990s	> 2000
Area per Bed	50 Sq.M	70 Sq.M	90 - 110 Sq.M	135 Sq.M



Evolution of Space Allocation for Super-Speciality Hospital.

Formulation of Care Parameters

The care parameters evolved out of the ‘care philosophy’ enunciated by both the promoter groups of the above projects. The essence of this philosophy, in both the cases, focused on – ‘a comprehensive speciality care in a humane environment, having local touch while providing clinical excellence facilitated by technological competence that is second to none, and yet not only affordable but also viable’. Thus, the care parameters, laid down for the start up of planning and design process comprised:

- Comprehensive speciality care under one roof.
- Effective and efficient hospital system for delivery of timely care based on clinical, social and personal needs of the individuals.
- Humane environment for facilitating fast healing and speedy recovery.

Design Response

The resultant design philosophy for the needs, as per the requirements of the care parameters, emerged as a combination of solutions that were specific in response to the local environment, way finding, operational efficiency, staff effectiveness and market focused image. Thus, the design goals in both the projects were expected to achieve:

- Humane environment.
- Clearly identifiable way finding.
- Operationally efficient hospital to maximize effectiveness of staff.
- Flexible and scalable to accommodate and adapt evolving changes as a result of technologies – both clinical and technical, and processes.
- Reduced first cost by making modular functional units.
- Special energy conservation methods to reduce operational cost.
- Local context design using a traditional courtyard approach and providing breathing spaces within the facility .

Evaluation of Design Development Process – Critical Success Factors Matrix

Although the formulation of clearly laid down care parameters resulted in determining the overall design philosophy and the design solution, yet it was felt that there is a need to evaluate the stages of design development and then the end result to ensure the success of the revised strategy adopted for facility development. This was necessitated to avoid extra cost and time delays in case of non-achievement of the end objectives on terminal evaluation.

In order to resolve the issue, it was felt that

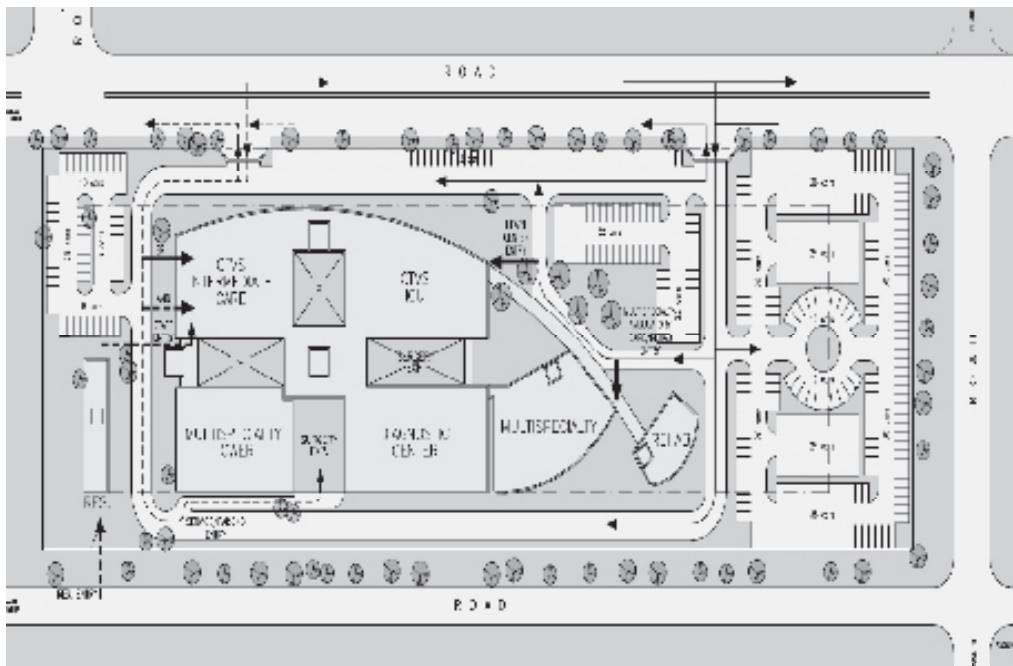
Evolution of Space Allocation for Multi-Speciality Referral.

PATIENTS	COMMUNITY (Relatives & Friends)	PROVIDERS		PROMOTERS & INVESTORS
		Physicians	Staff	
Positive Outcomes	Image	Hi-tech Hospital	Amenities	Low First Cost
Convenience	Proficient Physicians	Amenities	Education & Training	Low Operating Cost
Accessibility	Convenience	Support	Dignity	Maximum Profit
Post Operative Care	Accessibility	Actualisation		
Good Nursing Care	Education	Interaction		
Hospitality	Availability of Services & Facilities			
Patient Education				

the influencing factors based on the felt needs, aspirations and goals of all the stakeholders involved in the facility development, be recognized as essential parameters to be met for fulfillment of the objectives. These factors served as the backbone for the entire planning and design development purpose for evaluating the fulfillment of care parameters by the evolving design solution. Therefore, these factors were

identified as “Critical Success Factors (CSF)” for the key role in the assessment of effectiveness of the process and the product – ‘the final design’. The matrix, thus evolved, laid the foundation for evaluation of design solutions of the two projects, mentioned above is given below:

While there was a limited scope of exploitation of the revised strategy of design develop-



Organisation of Design Components.

ment in the Oncology Centre at Jaipur due to involvement at mid project review stage, there was freedom to employ these methods in Speciality Cardiac Centre at Mohali for it was a green field project. The planning and design development process focused on satisfying the critical success factors, as detailed above, before each element of design solution was firmed up as a parameter for satisfying the design goal. Thus, the design developed for this Centre, depicts the incorporation of the elements needed to focus on total care of the patient. A testimony to the achievement of the objectives at the design completion stage is reflected in the 1999 Modern Healthcare Award under the aegis of American Institute of Architecture (AIA) in the AIA Annual Conference at Houston on 28 October 1999.

Conclusion

The outcomes of the above endeavour are – achievement of synergy between Design and Care parameters, as defined in the objectives, to evolve design solution that passes the test on the CSF matrix and the overall success of the strategy, thus, reflects integrating Design and Care parameters while planning a new health facility in the new millennium. This shift from planning for a fractured care to total care will mark the basis of the changing paradigm for planning health facilities in the new millennium.

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