Hospital Architectural Planning and Designing – Part 2

Prof (Col) Dr R N Basu
Adviser, Quality and Academics
Hospital Planning and Management

Principles and Planning Parameters of Hospital Building

1. Efficiency and Cost-Effectiveness
   - An efficient hospital layout should:
     - Promote staff efficiency by minimizing necessary travel between frequently used spaces
     - Allow easy visual supervision of patients by limited staff
     - Include all needed spaces, but no redundant ones
     - Provide an efficient logistics system
     - Make efficient use of space by locating support spaces so that they may be shared by adjacent functional areas

2. Flexibility and expandability – room sizes since medical needs and modes of treatment will continue to change, design should be flexible
   - Follow modular concepts of space planning and layout
   - Use generic room sizes and plans as much as possible, rather than highly specific ones
   - Where size and program allow be designed on a modular system basis
   - Be open ended with well planed directions for future expansion

3. Therapeutic environment
   - Hospital patients are often fearful and confused and these feelings may impede recovery
     - Every effort should be made to make the hospital stay as unthreatening, comfortable, and stress-free as possible

4. Cleanliness and sanitation
   - Hospitals must be easy to clean and maintain. This is facilitated by
     - Appropriate, durable finishes for each functional space
     - Careful detailing of such features as doorframes, casework and finish transition to avoid dirt-catching
     - Adequate and appropriately located housekeeping spaces
Principles and Planning Parameters of Hospital Building

5. Accessibility
- Should comply with Person With Disability Act, 1995
- Should be easy to use by the many patients with temporary or permanent handicaps
- Ensuring grades are flat enough to allow easy movement and sidewalks and corridors are wide enough for two wheelchairs to pass easily
- Ensuring entrance areas are designed to accommodate patients with slower adaptation rates to dark and light
  - Glass walls and doors should be such that their presence is obvious

6. Controlled Circulation – a hospital is a complex system with interrelated functions
- This requires constant movement of people and goods. Much of this circulation should be controlled
- Outpatients visiting diagnostic and treatment areas should not travel through inpatient functional areas nor encounter severely ill patients
- Typical outpatient routes should be simple and clearly defined
- Visitors should have a simple and direct route to each patient nursing unit without penetrating other functional areas

7. Aesthetics
- Aesthetic is closely related to creating a therapeutic environment
  - It is important in enhancing the hospital’s public image and is thus an important marketing tool
- A better environment also contributes to better staff morale and patient care
- Aesthetic considerations include:
  - Increased use of natural light
  - Use of artwork
  - Attention to proportions, colour, scale, and detail
  - Bright, open, generously-scaled public spaces
  - Homelike and intimate scale in patient rooms, day rooms, consultation rooms, and offices
  - Compatibility of exterior design with its physical surroundings

8. Security and safety
- In addition to the general safety concerns of all buildings, hospitals have several particular security concerns:
  - Protection of hospital property, including drugs
  - Protection of patients, including incapacitated patients, and staff
  - Safe control of violent or unstable patients
  - Vulnerability to damage from terrorism because of:
    - proximity to high-vulnerable targets, or
    - they may be highly visible public buildings with an important role in public health system
Principles and Planning Parameters of Hospital Building

9. Sustainability
   - Hospitals are heavy users of energy and water
   - They produce large amounts of waste
     • Some of these wastes are hazardous
   - Hospitals have significant impact on environment
     • Hospitals place large demands on community resources
   - Hospitals, therefore, are the most suitable candidate for sustainable design

Location

- The hospital should be located at a site that should have the following considerations
  - Access
    • The site of any health care facility shall be convenient both to the community and to service vehicles, including fire protection apparatus
  - Availability of Transportation
    • A transportation plan should be established
  - Security
    • Health facilities shall have security measures for patients, families, personnel, and the public consistent with the conditions and risks inherent in the location of the facility

- Availability of Utilities to provide reliable utilities
  • These utilities are:
    - Water
    - Gas
    - Sewer
    - Electricity
  - Water Supply
    • The water supply shall have the capacity to provide for normal usage, and
    • Fire fighting requirements

- Electricity
  • The electricity shall be of stable voltage and frequency

- Freedom from Natural Hazards
  • There should not be undue threat to flood or storm
  • Land slide

- Environment
  • Noise
  • Pollution from factory

- Land
  • Land should be available for future expansion

Selection of Site

Location

- Availability of Utilities to provide reliable utilities
  • These utilities are:
    - Water
    - Gas
    - Sewer
    - Electricity
  - Water Supply
    • The water supply shall have the capacity to provide for normal usage, and
    • Fire fighting requirements

Architectural Design

Location

- Electricity
  • The electricity shall be of stable voltage and frequency

- Freedom from Natural Hazards
  • There should not be undue threat to flood or storm
  • Land slide

- Environment
  • Noise
  • Pollution from factory

- Land
  • Land should be available for future expansion
Architectural Design

- Architectural design must proceed in an orderly manner
- There are several steps in a hospital building project.
- These steps are:
  - Programming
  - Site Design
  - Schematic design
  - Design development
  - Construction Documents
  - Materials and Specification
  - Bidding
  - Construction administration

Programming

- The first step in design is referred to as Programming
- It is the vision of the client how s/he wants the future hospital to be
- Programming is the responsibility of owner
- The client may broadly communicate the hospital size, number of beds, services to be provided, allocation of spaces, adjacency and relationship and so on
- The client, most often, is not technically qualified to provide all details
- Therefore, most often the client assigns this job to the architect

- The Basics
  - Programming involves discovering the client’s needs and goals
  - These needs of the client are to be captured on paper either written or graphic form
  - These requirements spelled out by the client may be expressed either in qualitative or quantitative form
  - This allows the architect to understand the client’s needs in terms of:
    - Hard numbers (square feet), and
    - Emotional expectations for how the space will feel and function

- Program driven for functional efficiency, will significantly affect the form of the building
- Program evolving from the social and psychological needs of the users will also have,
  - prescriptions for identified spaces and their sizes, characteristics, and relationships
- In Program evolving from economic concern, many essential aspects may be eliminated
- A carefully conceived and comprehensive architectural programming should ensure that
  - All appropriate values have been identified and prioritized
• The deliverable is a written architectural program which includes:
  – Methodology used,
  – An executive summary,
  – Value, and goal statements,
  – The relevant facts,
  – Data analysis conclusion,
  – The program requirements, including space listings by function and size, relationship diagrams, space program sheets, stacking plans, percept drawings and flow diagrams
  – It may also include project cost estimate and a project schedule

Thank you