

ENHANCING HOSPITAL INFRASTRUCTURE: A COMPREHENSIVE STRATEGY FOR PLANNING OF SUPPORTIVE SERVICES

Abstract

The evolving healthcare landscape hinges on effective hospital planning and comprehensive ancillary services to ensure top-notch patient care. A well-designed hospital, coupled with robust ancillary support, drives efficient operations, optimal resource utilization, and improved patient experiences.

Hospitals function as open systems, adapting to feedback from patients, healthcare professionals, and communities while maintaining equilibrium with societal needs. These institutions are integral to the broader healthcare system.

Hospital planning is geared towards enhancing healthcare services and accommodating population needs. Efficient resource allocation and patient flow optimization are central goals. Ancillary services, crucial for primary care, save time and costs. They expand patient access, connect to diverse patient bases, and offer expertise with stringent quality standards. Education and support are key components benefiting clinic operations.

However, the implementation of ancillary technology faces challenges. Lack of interoperability, patient cost concerns, and limited collaboration hinder progress. Despite these hurdles, ancillary care adoption is gaining momentum as it streamlines secondary care processes, reduces costs, and expands healthcare reach.

Infrastructure significantly impacts patient safety and care. Effective hospital planning, design, and ancillary services are

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vital for success. Ancillary technology adoption enhances efficiency and profitability for healthcare organizations, ultimately benefiting patients. This topic delves into these crucial aspects, highlighting the synergy between hospital planning, ancillary services, and technological advancements in modern healthcare.

Keywords: Implementation, Hospital Infrastructure, Patients, Organizations.

I. PREFACE

In the ever-evolving landscape of healthcare, effective hospital planning and the provision of ancillary services play a vital role in delivering high-quality patient care. A well-designed hospital facility, supported by comprehensive ancillary services, ensures efficient operations, optimal resource utilization, and enhanced patient experiences. The critical aspects of hospital planning and the significance of ancillary services in creating a seamless healthcare environment. This chapter focused on the efficient design and management of hospital infrastructure, with a specific emphasis on planning and integrating ancillary services. This chapter would likely delve into strategies, best practices, and considerations for optimizing a hospital's physical layout, technological integration, and operational workflows to ensure seamless delivery of ancillary services such as diagnostic imaging, laboratory testing, pharmacy services, rehabilitation, and more. The comprehensive approach mentioned in the title suggests that the chapter would provide a holistic perspective, considering factors such as patient experience, staff efficiency, regulatory compliance, and cost-effectiveness in planning and implementing ancillary services within the hospital infrastructure.

II. FEATURES OF HOSPITAL

A hospital possesses several key features that contribute to its effective functioning within the healthcare system. Firstly, a hospital operates as an open system, engaging and interacting with its surrounding environment. It must adapt to changes and incorporate feedback from patients, healthcare professionals, and the broader community to continually improve its services. Secondly, a hospital system is dynamic and strives to maintain equilibrium with the broader social system. It must align with societal needs and respond to evolving healthcare demands, ensuring its services remain relevant and effective. Furthermore, a hospital is not an isolated entity but an integral part of the more extensive healthcare system. Collaboration and coordination with other healthcare providers, such as clinics, laboratories, and specialized medical centers, are essential for seamless patient care and efficient healthcare delivery. Several features are crucial to create an environment that is welcoming and acceptable to patients. Personalized and specialized care is vital, ensuring that each patient receives individual attention and tailored treatment to meet their unique needs. Additionally, incorporating ultra-modern technologies and state-of-the-art equipment enables hospitals to provide advanced diagnostic and treatment options, enhancing the quality and effectiveness of care. Finally, a hospital's reputation and acceptability rely on providing quality healthcare services. Highly qualified doctors, specialists, and medical professionals, supported by competent nursing staff, work together to deliver excellent patient care.

III. AIMS OF HOSPITAL PLANNING

Hospital planning aims to achieve various objectives to improve healthcare services and meet the population's growing needs. One primary goal is to increase the utilization of hospital facilities by efficiently allocating resources and optimizing patient flow. Hospitals can better cater to the increasing demand for healthcare services by enhancing operational efficiency and streamlining processes.

Another crucial objective is to expand population coverage, ensuring that a more significant portion of the community has access to quality medical care. This may involve

establishing new healthcare facilities or extending existing ones to reach underserved areas and accommodate a more significant number of patients. Hospital planning also consists of the enlargement of existing hospitals by introducing new facilities and services. This expansion may include the addition of specialized departments, advanced diagnostic and treatment facilities, or incorporating modern technologies to enhance patient care. By staying up-to-date with medical advancements and meeting evolving patient needs, hospitals can provide comprehensive healthcare services to their communities. Increasing the productivity of hospitals is another key aim of planning. This involves optimizing resource utilization, implementing efficient scheduling systems, and improving staff allocation to enhance the overall productivity and quality of care. By maximizing the output of healthcare providers and minimizing unnecessary delays, hospitals can improve patient satisfaction and achieve better health outcomes.

Modernizing the already existing facilities is a critical aspect of hospital planning. This may involve renovating outdated infrastructure (brown field projects), upgrading medical equipment and technology, and improving the hospital's overall ambiance and patient experience.

Modernization efforts can enhance healthcare delivery's efficiency, effectiveness, and safety, providing a conducive environment for both patients and healthcare professionals. Lastly, hospital planning aims to reduce the cost of operations while maximizing the efficiency of services. Hospitals can enhance financial sustainability and allocate resources more effectively by implementing cost-saving measures, such as streamlining administrative processes, optimizing supply chain management, and minimizing waste.

IV. CONTENTS OF HOSPITAL PLANNING AND ANCILLARY SERVICES

1. Steps of Hospital Planning: Importance of Hospital Planning- Proper hospital planning is the foundation for a healthcare facility. It encompasses various factors such as infrastructure design, layout, functional zoning, and future expansion considerations.

- **Preliminary Survey:** To determine the character, needs, and liability towards the community to which the hospital will provide services. Various points in the survey are:
 - **Size of Community:** The size of the community refers to the population the hospital intends to serve. It is an essential factor to consider as it directly influences the healthcare needs and demands of the community, which in turn impacts the scale and scope of the hospital facility.
 - **Economic Status in General:** Additionally, the size of the community also impacts the hospital's financial sustainability.

Overall, understanding the size of the community is essential in hospital planning as it provides insights into the healthcare needs, determines the scale and scope of the facility, influences resource allocation, and aids in designing a healthcare system that effectively serves the target population.

- **The Extent of availability of Health Service:** This includes evaluating the required infrastructure, medical equipment, and technology to deliver high-quality healthcare. Planning for the availability of essential resources, such as hospital beds, operating rooms, diagnostic facilities, and intensive care units, is necessary to ensure the hospital can meet the demand for healthcare services. Another aspect of the extent of availability of health services is related to the accessibility of the hospital. The extent of availability of health services in hospital planning encompasses the range, accessibility, and capacity of healthcare services provided by the hospital.
- **Need for Health Services:** It involves determining the breadth of medical specialties and subspecialties that the hospital will offer. This includes assessing the demand for various healthcare services, such as general medicine, pediatrics, surgery, obstetrics and gynecology, cardiology, neurology, and other specialized areas. By understanding the specific healthcare needs of the community, the hospital can plan its services accordingly and ensure a comprehensive range of medical specialties to cater to the population.
- **Transport System commonly used:** Transportation to infrastructure to ensure that the hospital is easily reachable for the community it serves. Accessibility also includes parking facilities, public transportation options, and accommodation for patients and their families, especially those traveling from distant areas.
- **The General Attitude of People towards Health and Health Service:** By considering these factors and addressing community perceptions, beliefs, and behaviors, hospital can tailor their services to meet the needs and preferences of the community, enhance patient satisfaction, and ultimately improve health outcomes.
- **Study of an Existing Hospital:** The study of existing hospitals provides crucial insights and knowledge that inform hospital planning. It helps assess healthcare needs, evaluate service provision, identify operational challenges, understand the patient experience, learn from best practices, and optimize resource allocation. By leveraging this information, planners can design and develop hospitals aligned with the community's specific healthcare needs, ultimately improving healthcare delivery and patient outcomes.

This study should be comprehensive and involve short- and long-term needs and objectives. It should cover the following areas:

- Bed capacity of the institute
- Physical condition
- Hospital occupancy
- Bed ratio
- Volume and kind of hospital service
- Quality of facilities and service

This study will help the core team understand the strengths and limitations of existing facilities and facilitate the hospital's planning.

- **Study of required staff and service:** The consultant or the committee must study human resources, doctors, nurses, and other professional staff needed for the proposed hospital. It is generally agreed that specialists in the disciplines of eye, ENT, dermatology, radiology, pathology, and urology must be provided in addition to traditional services such as internal medicine, general surgery, pediatrics, obstetrics, and gynecology. Furthermore, hospital planning should address the availability of health services in terms of human resources. This involves determining the staffing requirements, including physicians, nurses, technicians, and other healthcare professionals. Ensuring adequate skilled and qualified staff members is crucial for delivering timely and effective healthcare services.
- **Patient Bed planning:** It depends on the size of the community around the hospital. In cities, more beds are required because of increasing urbanization; bed planning should provide privacy between beds and enough space between each bed to give patients a conducive environment.
- **Choosing Hospital Site**
 - **Land Requirements:** Determining the requirement of land depends upon many factors. Plentiful land may be available in rural and semi-urban areas, permitting the hospital to grow horizontally. However, there will always be a significant premium on land in urban areas, and the only available avenue will be vertical growth.
 - **Soil Structure:** Two critical factors should be considered in selecting the site: the subsoil water level and the soil structure. A preliminary soil survey to determine subsoil water level and the “bearing” quality of the soil will help determine the type of foundation, the possibility of constructing a basement, and the effectiveness of the sewage plant (if it is to be built on the site).
 - **Public Utilities:** Three other important considerations in site selection are water supply availability, sewage disposal system, and electric power.
 - **Water:** Water is required for patients and patient care activities in wards and supportive services. The national building code of the ISI suggests 455 liters of water per consumer day (LPCD) for hospitals up to 100 beds and 340 LPCD for hospitals of 100 beds and over.

2. Ancillary Services

- **What Are Ancillary Services?**

A patient’s treatment plan does not end as soon as they are out of the hospital. Post-care treatment at home simplifies the patient’s life and supplements exclusive healthcare services. It improves operational efficiency and offers patients an opportunity to heal at home.

That is where ancillary medical services come in. They include supportive therapies and specialized diagnostic services that complement a patient's medical care along with their primary care doctor on the way. This system is effective and has become quite popular in the healthcare industry.

Ancillary services refer to the supportive functions that complement the primary medical services offered by a hospital. These services are pivotal in improving patient outcomes, streamlining operations, and optimizing resource allocation. The following subtopics explore the significance of various ancillary services:

- **Types of Ancillary Services**

- **Diagnostic Services:** Diagnostic services facilitate timely, cost-effective care in a secure environment. It comprises Pathology and Laboratory Medicine, Nuclear Medicine, and Radiology services. The ancillary care providers provide efforts as nurses, technicians, administrators, and technologists. By integrating state-of-the-art diagnostic facilities within a hospital, healthcare providers can expedite diagnoses and facilitate prompt interventions.
- **Pharmacy and Medication Management:** Pharmacy services are integral to patient care, ensuring timely access to medications, medication safety, and effective management of medication regimens. Proper planning and integration of a pharmacy within a hospital setting streamline medication-related processes, reduce errors, and improve patient adherence to prescribed treatments.
- **Medical Equipment and Supply:** Hospitals manage the procurement, maintenance, and distribution of medical equipment and supplies necessary for patient care, such as surgical instruments, monitoring devices, and disposables.
- **Medical Transport:** Hospitals often have ambulance services or medical transport teams that facilitate the safe transportation of patients to and from the hospital, including inter-facility transfers.
- **Rehabilitation Services:** Rehabilitation services involve physical, occupational, and speech therapy. These services help patients recover and regain physical and cognitive abilities after an illness, surgery, or injury.
- **Respiratory Therapy:** Respiratory therapists assist in diagnosing, treating, and managing respiratory disorders. They provide oxygen therapy, mechanical ventilation, pulmonary function testing, and breathing exercises.
- **Dietary and Nutrition Services:** Dietary and nutrition services focus on meeting patients' nutritional needs during their hospital stay. By incorporating well-equipped kitchens, trained dietitians, and specialized dietary planning, hospitals can ensure that patients receive appropriate nutrition tailored to their specific medical conditions, promoting faster healing and better overall health outcomes.

3. Importance of Ancillary Services on Healthcare Service Provider

- **Comprehensive Patient Care:** Ancillary services ensure patients receive holistic and comprehensive care. They support the primary medical services by providing essential diagnostic, therapeutic, and supportive services that contribute to accurate diagnoses, effective treatments, and improved patient outcomes.
- **Specialized Expertise:** Ancillary services often involve highly technical professionals with expertise in specific areas. For example, radiologists in diagnostic imaging or respiratory therapists in respiratory care. Describing these services helps highlight the presence of specialized professionals and their roles in patient care.
- **Treatment Planning and Coordination:** By understanding the available ancillary services, healthcare providers can effectively plan and coordinate the treatment of patients. They can order diagnostic tests, consultations, or therapies to support accurate diagnoses and appropriate treatment plans.
- **Collaborative Healthcare:** Ancillary services require collaboration among different healthcare professionals. Describing these services helps emphasize the importance of interdisciplinary teamwork and cooperation in providing comprehensive patient care. It highlights the need for effective communication and coordination among various departments and professionals within a hospital.
- **Patient Education:** Describing ancillary services can also help educate patients about the different aspects of their care. When patients are aware of the various support services available, they can better understand their treatment options, participate in decision-making, and actively engage in their healthcare.
- **Healthcare Resource Management:** Ancillary services are vital in managing healthcare resources effectively. By describing these services, hospitals can assess and allocate resources appropriately, ensuring that the necessary infrastructure, personnel, and equipment are available to meet patient needs.

4. Other Ancillary Services: The range of ancillary services hospitals offer may vary depending on the specific healthcare facility and its resources. These examples demonstrate the diverse support services available to enhance patient care and improve healthcare delivery.

- **Medical Transcription:** Medical transcriptionists convert dictated recordings by healthcare professionals into written medical reports, ensuring accurate and organized documentation of patient encounters, diagnoses, and treatments.
- **Biomedical Engineering:** Biomedical engineers maintain and repair medical equipment, such as imaging machines, surgical instruments, and life-support systems, ensuring proper functioning and safety.

- **Infection Control and Prevention:** Infection control teams work to prevent and control the spread of healthcare-associated infections within the hospital. They implement protocols, provide education, and monitor compliance with infection prevention measures.
- **Medical Records and Health Information Management:** Professionals in this field organize and manage patient medical records, ensuring proper documentation, privacy, security, and accessibility of patient information.
- **Patient Advocacy:** Patient advocates act as liaisons between patients, families, and the healthcare system. They assist patients in understanding their rights, addressing concerns or complaints, and navigating the complexities of healthcare delivery.
- **Spiritual Care:** Hospital chaplains or spiritual care providers offer emotional and spiritual support to patients, respecting their diverse religious and cultural beliefs. They provide counseling, comfort, and guidance during challenging times.
- **Blood Bank Services:** Hospitals with blood banks provide blood transfusion services, ensuring a safe and adequate supply of blood and blood products for needy patients.
- **Palliative Care and Hospice Services:** These services focus on improving the quality of life for patients with serious illnesses. Palliative care aims to manage symptoms and support patients and their families, while hospice care offers comfort and support during end-of-life stages.
- **Health Education and Wellness Programs:** Hospitals may offer health education classes, workshops, and wellness programs to promote preventive care, healthy lifestyles, and disease management. These programs may cover nutrition, exercise, stress management, and chronic disease education.
- **Language Interpretation Services:** Hospitals provide language interpretation services to ensure effective communication between healthcare providers and patients with limited English proficiency. These services help overcome language barriers and ensure accurate understanding and delivery of care.

5. Summary and Conclusion

- **Administrative Resources:** Ancillary services for primary care are vital in saving time and operational costs. Instead of operating independently, the providers work for you and receive payment processing, collections, resolution management, and appeals on your behalf. Therefore, they ensure your patients receive the best secondary care, essential for acquiring and retaining new patients.
- **Increased Patient Access:** Ancillary services enable you to expand your patient reach by connecting you to a broader patient base insured under worker compensation, group health, secondary group health, auto medical, and plans.

- **Credentialing:** Ancillary care allows you to be in a company of well-skilled experts and technicians. These services are certified in providing stringent quality and control standards. They regularly monitor the network to ensure that patients are receiving excellent-quality care.
- **Education and Support:** Ancillary service providers are medical experts, too, and readily educate the patients and payers on the advantages of how their services can bear a change in the overall clinic operation.
- **Challenges in Implementing Ancillary Technology in the Healthcare Sector:** As a broad, multi-faceted industry, it faces many problems as well, as discussed below.
- **Lack of Interoperability:** One of the major challenges in ancillary technology is the need for compatibility in the computers or systems ancillary care providers utilize for coding, billing, and monitoring patient care.
- **Lack of Consumer Ability:** The large deductible of patients substantially influences their decisions on how and where to get care and how much money they wish to spend.
- **Limited Leverages:** Healthcare providers want to pay less for materials and better business solutions, which is possible only if ancillary providers agree to share the same goals and increased authority.

V. CONCLUSION

Although hospitals need to have a team of experienced and professional doctors, the other doctors to treat patients play an important role in treating the patients in the hospital's infrastructure. The infrastructure design of the hospitals plays a crucial role in the safety of the patient. No matter how much money is spent on the hospital's infrastructure, one can only renovate the hospital infrequently. Therefore, infrastructure must be kept in mind before building a hospital. The infrastructure of the building should be designed in such a way that it looks attractive, functional, and safer for the patients. This is why hospital planning and design play a vital role. Ancillary technology has been out for a while now, but until recently, healthcare providers have commenced readily adopting these services. Ancillary care helps organizations reduce costs and inefficiency by streamlining secondary care processes essential for appropriate patient care. It also enables clinics and hospitals to expand their reach and attract more patients. If you are a doctor, physician, dentist, or clinician, embrace ancillary technology and improve your organization's productivity and profits.

KEYWORDS

Hospital planning, Ancillary services, Healthcare landscape, Patient care, Hospital facility, Resource utilization, Open systems, Efficient resource allocation, Patient flow optimization, Education and support, Ancillary technology adoption, Interoperability, Patient cost concerns, Specialized expertise, Treatment Planning, Collaboration, Patient education, Medical transcription, Patient advocacy, Administrative resources, Increased patient access, Credentialing, Lack of interoperability, Limited leverage, Bed capacity, Space planning, Equipment selection, Staffing, Budgeting, Quality assurance, Risk management,

Sustainability, Site selection, Architectural Design, Engineering services. Construction management, Commissioning, Operations, Maintenance, Financing, Marketing, Regulation, Accreditation.

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