

AN OBSERVATIONAL STUDY ON PLANNING OF RADIOLOGY DEPARTMENT IN A NEWLY BUILT HOSPITAL

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INTRODUCTION

- The radiology department is one of the most important units of any new medical facility and delivers very critical diagnostic and curative interventions in comprehensive health care. It is the foundation of contemporary medical diagnosis equipped with state-of-the-art technologies in imaging, including magnetic resonance imaging, X-ray, computed tomography (CT), nuclear medicine, among others. More importantly, this unit is very important given that early and correct diagnostics undertaken as a normal survey and simple clinical examination are very significant. In this connection, new body imaging methods easily enable it for medics to pick out pathologies within the body and be able to be guided early to tell the atypical manifestations to lead to appropriate treatment.
- It also works with other medical services so that their experiences can be shared and integrated with therapy plans by other specialists. Furthermore, these steps will improve patient care.
- This would generally imply that in any emergency, a possible quick access to radiological services will become extremely important for quick assessment and life-saving decisions for the patient.

➤ **AIM:**

- This project aims to adopt the best practices for organizing and setting up a radiology department in a recently constructed hospital to improve patient care effectiveness and diagnostic capabilities.

➤ **Objectives:**

- To list out the essential components and infrastructure for a radiology department of a newly built hospital.
- To develop a framework for best practices in planning of radiology services.
- To find out the challenges faced by the established hospitals.

LITERATURE REVIEW

S. NO.	AUTHOR NAME & YEAR	TITLE	OBJECTIVE	METHODO-LOGY	RESULT
1.	Dalia Eltahlawy, Mahmoud Ahmed Zaki, Marwa Kamar Eldawla (2022)	New Design Guidelines for Diagnostic Radiology Departments at Tertiary Healthcare Facilities	By looking at imaging techniques, IT integration, and design issues, the literature review seeks to improve hospital design efficiency, especially in diagnostic radiology.	IT integration, design issues, and diagnostic radiology techniques are all covered in the qualitative analysis conducted through a review of the literature.	A basic framework to enhance hospital architecture was produced because of the literature research, especially for the diagnostic radiology department.
2.	L.R. Sante (1924)	The New Department of Radiology of the St. Louis City Hospital	The X-ray Department at St. Louis City Hospital is being expanded and modernized to meet the growing demand.	Mr. Nelson Cunliff, Director of Public Welfare, investigated as part of the technique used to propose and secure money for department enlargement by comparing X-ray departments around the country.	By 1924, the St. Louis City Hospital's X-ray department had successfully expanded and modernized because of the literature review.

3.	<u>Raymond W. Sze, Satoshi Teshima</u> (2017)	Radiology Design Project Primer	The goal is to enable radiology leadership to work more productively with designers to improve patient-centered treatment by creating an optimally designed healthcare environment.	With an emphasis on theme development, design partner selection, and using interdisciplinary teams in healthcare environment design, the technique consists of workable guidelines drawn from a survey of the literature.	By optimizing the design of the healthcare environment, the outcome is a set of actionable guidelines that radiology leadership can use to cooperate with designers and improve patient-centered treatment.
4.	Sahni et al. Sullivan and Gilligan (2018)	The difficulties in building and running a radiography department in a recently founded hospital are the subject of discussion.	to evaluate the operational and planning difficulties involved in establishing a radiology department in a recently founded hospital.	To determine planning issues and strategies, hospital administrators, radiologists, and technologists were interviewed as part of a qualitative analysis technique.	For newly established radiology departments, the outcome outlines typical obstacles and workable solutions for infrastructure, equipment acquisition, and regulatory compliance.

METHODOLOGY

METHODOLOGY

**STUDY DESIGN-
OBSERVATIONAL STUDY**

**SETTING –
Well-established hospital:
Fortis Memorial Research
Institute (FMRI) in Gurgaon.**

**SOURCE OF DATA –
PRIAMARY DATA ,
SECONDARY DATA**

DATA COLLECTION METHOD



Direct Observations: Conduct systematic observations during site visits, noting layout of Radiology departments including workflow within these departments as well as interactions occurring there-in while ensuring all relevant aspects are covered using a checklist.



Reviews: : Analyse review from staff of radiology department and observational notes from the visits to identify common challenges, and best practices.



Document Analysis: Collect and review relevant documents to gather background information and context. Analyze these documents to identify patterns and insights related to planning and operations.



Literature Review: Conduct a comprehensive review of existing literature on radiology department planning and best practices to provide a theoretical framework for the study.

Data Analysis



Qualitative Analysis: Analyse review from staff of radiology department and observational notes from the visits to identify common challenges, and best practices.



Synthesis of Best Practices: Integrate findings from the observational study with insights from the literature review to develop a set of best practices for planning radiology department in newly built hospital.

Radiology imaging equipment of Fortis Manesar in Comparison To FMRI

Sr. No.	Fortis Manesar	FMRI
1	Upgrade pf CT-128 slice (Phillips)	CT- 1228 slice
2	Anaesthesia Machine	Anaesthesia machine
3	Ultrasound Machine, Resona I9	GE Ultrasound machine
4	Ultrasound Machine, Venue Go	Phillips ultrasound machine
5	X-ray Machine (DR) siemens	X ray siemens
6	Ultrasound Machine siemens	Ultrasound siemens
7	Battery CT Scan UPS	Battery CT Scan UPS
8	MRI Machine Phillips	MRI Siemens
9	MRI - Pressure Injector, Fire Extinguisher, Wheelchair, Stretcher, IV Stand, Monitor	MRI - Pressure Injector, Fire Extinguisher, Wheelchair, Stretcher, IV Stand, Monitor
10	MRI-UPS, UPS Battery	MRI-UPS, UPS Battery
11	Wheelchair F12	Wheelchair F12
12	Dual Energy X-ray Absorptiometry Scan Machine (Hologic)	Dexa Scan (Hologic)
13	Mammography	Mammography siemens
14	X-ray Machine (Fluoroscopy) siemens	X ray Fujifilm

RESULT

Top Techniques

- **Staff Training:** Ongoing training programs were put in place to keep radiologists and technicians acclimated with the newest methods as well as technologies available. SOPs, or standard operating procedures, are SOPs that were clearly specified for every imaging modality to ensure consistency within image quality and excellent diagnostic results.
- **Patient management:** Effective appointment scheduling ensured a good patient experience through transparent communication with patients about procedures.

Feedback from Stakeholders

- **Radiologists:** They stressed on continuous professional development as well as recent types of machines to be used in their workplace
- **Technicians:** They said that imaging rooms require ergonomic design to reduce physical strain while enhancing operational efficiency.
- **Administrative staff:** To optimize operations, they claimed that cross-departmental collaboration and the establishment of effective lines of communication were necessary.

CHALLENGES

- **Challenges Faced by Patients**

- **Long Wait Times:** People have noted that the time spent waiting at FMRI Gurugram is rather large while observing. This may result in rose-painted problems if the waiting time grows during imaging appointments and their results. This delay tends to bring out more and more stress during the wait for important medical results.
- **Barriers to Communication:** It is not easy for a patient to grasp medical terminologies while elaborating on radiological findings. The use of those terminologies is rather confusing for people concerning healthcare information.
- **Access and Mobility Issue:** Elderly patient or physically disabled person who has an observed hard time reaching the radiology department due to the size and structure of the facility.
- **Financial Constraints:** a lot of people cannot afford modern imaging even when covered by insurance because most of these facilities are out of their insurance coverage. Financial barriers contribute to late diagnosis, delay in treatment, or both.
- **Emotional Stress:** Operations and other medical procedures make a patient feel emotionally tired and drained since so much surveillance is called to be done, primarily so if one suffers from a life-threatening condition or a chronic illness.

- **Challenges faced by administrative staff:**

- **Workflow Management:** A good workflow management system, at its helm, houses appointment tracking, patient flow control, as well as timely delivery of imaging data. Good workflow management is many times found to be elusive at FMRI Gurugram due to a shortage of human resources.
- **Technological integration:** It is a logistical and budgetary matter that comes into play with the integration of new imaging technologies, hence keeping equipment up to date; always consider worker productivity with interoperability with existing systems.
- **Regulatory Compliance:** This involves keeping in line with constantly changing regulations that make sure safety procedures are adhered to. Therefore, regular audits and proper documentation are required. This, however, was not possible always due to staff shortage.
- **Resource Allocation:** The management of human resources such as radiologists, technicians and support staff effectively become impossible regardless of the demand of imaging services. Normally existing employees get overwhelmed and therefore burned out due to the insufficiency of employees with required skills.

- **PATIENT COMMUNICATION**

- Patient communication is essential, but it often gets obstructed due to high patient volume and various communication requirements. To guarantee care what there is an unobstructed flow information reaching patients; appointments, preparation for imaging procedures and follow-up care are essential.

- **DATA MANAGEMENT**

- Data Management is a significant challenge given the volume of imaging data involved, its security and ease of access by clinicians while still maintaining patient confidentiality.

CONCLUSION

- This study of how to plan a radiology department in a newly built hospital has shown that there are several things you need to do if you want the place to work well. Among these are efficient space use and careful layout design, which were found to be critical by allowing for minimum patient movement times, shorter waiting periods and increased privacy hence leading into better patient experiences as well as operational efficiency.
- Ideally, this research called for diverse input from various quarters to ensure that the stakeholders involved during planning stages are not only radiologists but also technicians amongst others lest they make wrong judgments or forget some vital concerns. In order to be in a better position with more of these suggestion, we can improve the department's existing range by employing a few strategies described below; Systematic patient flow management through modernized booking systems would cut down on waiting times and optimize throughput rates too; Moreover, more investment into present diagnostic imaging approaches is required for enhancing its integration with what already exists hence improving effectiveness of operations and services rendered; On-job training has been acknowledged as useful particularly for those who interpret images because as time passes by new machines are manufactured thus requiring different capacities per period before another model arrives into market which calls for frequent learning of these changes by techs otherwise they will be outdated within a short time.

SUGGESTION

- **Strategic Location**
- **Optimal Layout**
- **Advanced equipment and technology**
- **Patient comfort and privacy**
- **Safety measurement**
- **Efficient Workflow**
- **Training and education**

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THANK YOU