

INTERNSHIP REPORT

By

Dr Himanshu Ashwinkumar Shah



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

Chapters

1. Introduction
2. Objectives of the Internship
3. Organizational Profile
4. Services provided by the Organizations
5. Key Learnings from Internship
 - (a) Tele-radiology
 - (b) Corona pandemic and radiology
 - (c) Artificial Intelligence in radiology
 - (d) Dealing with sickness absenteeism
 - (e) Quality indicators in radiology
6. Key activities for managerial role
7. Projects Undertaken other than Dissertation

1. Introduction

Classroom teaching helps the student by making conceptual base clear, but the job training is the practical way of learning that concept. Internship prepares students for their future journey. It gives them a beforehand experience of the practical scenarios, difficulties and approaches needed in life while continuing their journey in to academic field. By the end of internship, student is about to finish stipulated academic sessions. Combination of theoretical and practical knowledge makes a student an ideal candidate for the job market. What a student imbibes during internship, shapes his career. So, with showing my gratitude for teachers of IIHMR University and Radiscan Diagnostics, I am submitting this internship report.

Internship report contains organizational introduction of Radiscan diagnostics and my learning journey for last three and half months.

2. Objective of the Internship

Internship provides a structured opportunity for students to apply theories, ideas, principles, and skills learned in the classroom to healthcare practice. The internship experience also provides students an opportunity to understand healthcare organizations, their culture, management systems, operations, resources, products, services, markets, service areas, business model and specialty areas in toto.

Specific objectives are:.

1. Become familiar with the roles and responsibilities associated with the day-to-day work of a health care administrator.
2. Become involved in various activities and administrative projects at the internship site that achieves the specified goals of the Internship..
3. Implement, complete, and report on administrative project as specified.

3 .Radiscan Diagnostics Organizational Profile



Radiscan diagnostics is state of the art diagnostic centre catering patients for radiology and pathology laboratory services. Radiscan diagnostics started its operations in 2015 and today it is one of the top most diagnostics centre in Gujarat.

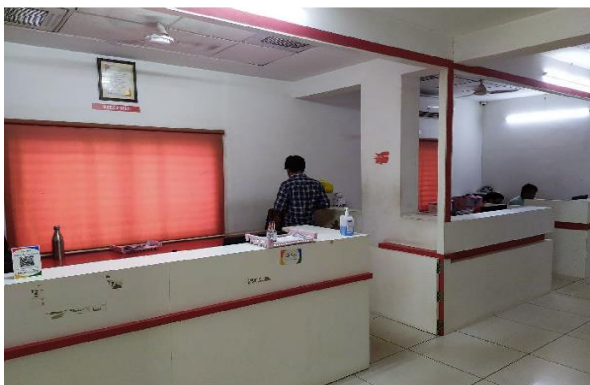
-Radiscan Diagnostics has two branches: Main branch in Akhbarnagar area and a branch with same facilities in Shahibaug area of Ahmedabad.

Pathology Laboratory

Imaging Centre



Inquiry Desk



Reception and Registration



Waiting Area



Conference Hall for Academic Sessions



-Mission

Quality and innovation is our fortress and way of life for us. To us, it is more than a goal. It is our leaders, clinicians, technicians and support staff who make Radiscan Diagnostics a place of highly specialized centre of excellence with advanced technology and modern facilities.

Our mission is:

- Providing care with state-of-the art facilities and equipment
- Attract and retain talented workforce with eyes set on pan-India presence.
- Affordable healthcare
- 100 % satisfaction to patients with our services
- Professional and scientific integrity
- Embracing newer technology and management principles for better care of the patients

-Vision

By creating institutes of excellence in integrated diagnostic and medical care , it is our vision to deliver world class health services. Our vision is to promote research and support academics. We intend to deliver ethical practices in safe environment to treat all patients with respect and dignity."

- Core Values

Quality

Competencies

Team work

Integrity

Professional secrecy

Respect for patients' rights

Doctor's team –

Dr Rajendra Solanki is the Managing Director and Chief Radiologist. He also serves as Consulting Radiologist at Suyog Imaging Centre, Mehsana.

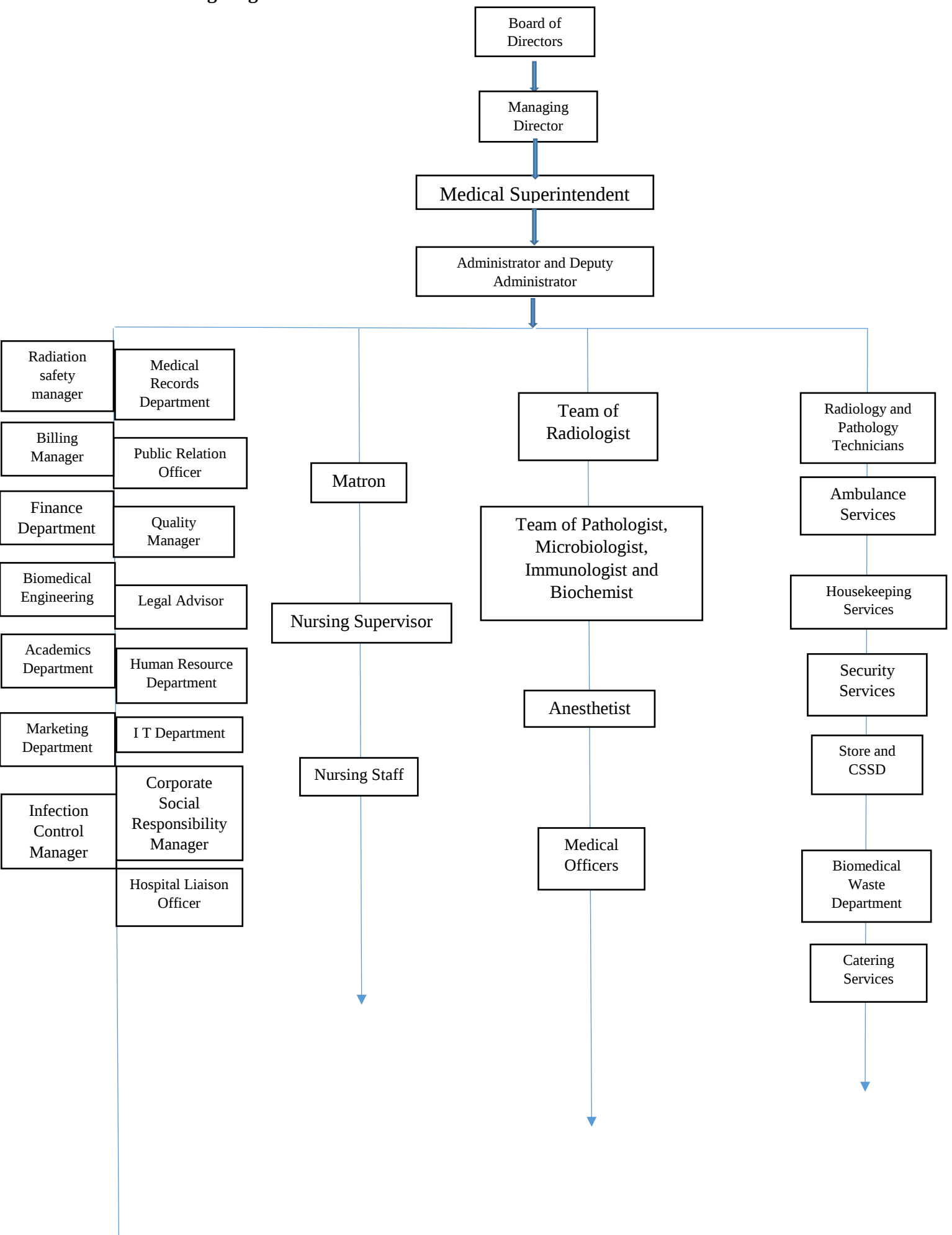
He was associated with B J Medical College, Ahmedabad as Associate Professor in Radiology. He has been Professor and Postgraduate teacher in Medical College and Diplomat of National Board teacher in Gujarat Imaging Centre & Research Institute, with special interest in Head & Neck Imaging with research focus in MSK and cochlear imaging.

He is a founder member of Indian Society of Head & Neck Radiology (ISHNR). He was member of Governing Council of the Indian College of Radiology & Imaging (ICRI).

He is author of multiple research articles in radio imaging. He has also presented research papers at Radiology Society of North America (RSNA) and European Congress of Radiology (ECR). He was a special invitee for to represent research paper at Korean Congress of Radiology (KCR). He has deep interest in international collaboration in academics. He is actively involved in preparing next generation radiologists for to meet future demand of healthcare.

Radiscan diagnostics has 12 full time radiologists with different specialities, 5 pathologist, 2 microbiologist and an immunologist in Akhbarnagar branch. A part of team is engaged in dealing with tele radiology services. Shahibaug branch houses other set of clinicians.

Organogram



4. Services provided by the Radiscan Diagnostics

--Imaging centre--

USG Machine



Mammography Machine



MRI Machine



CT scan Machine



X-ray Machine



→ It has CT scan, MRI, X ray, 3D 4D Ultrasonography, Mammography in radio imaging services. DEXA scan and interventional radiology services are added in to Shahibaug branch. It provides 24 x 7 services to the patients with sterling quality.

Radiscan Diagnostics has a large number of tie-ups for provision of radiology services with all major hospitals and other diverse industries.

In addition to the services provided in two branches, Radiscan provides tele radiology services also. Tele-radiology is the transmission of radiological images such as CTs, PET/CTs and MRIs, from one location to another for the purposes of sharing studies with other radiologists and medical consultants. It enables patient care by allowing Radiologists to provide services without actually having to be at the location of the patient. This is particularly important when services of a specialist such as neuroradiologist, paediatric radiologist, or musculoskeletal radiologist is needed in remote areas, since these professionals are generally only located in large metropolitan areas working during day time hours. Tele radiology allows for trained specialists to be available 24/7. Radiscan Diagnostics provides tele-radiology services to number of multispecialty and super speciality hospitals of the country.

PACS Workstation

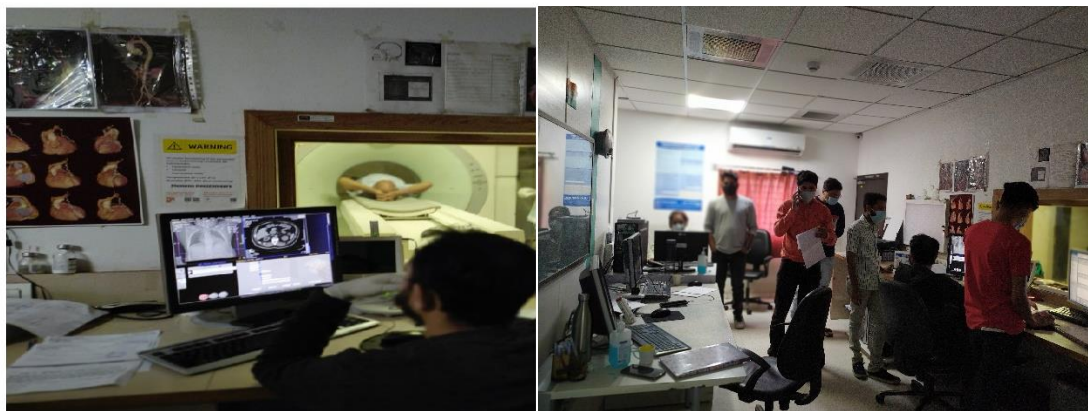


Image Review Centre

Printer



--Pathology Laboratory--

Radiscan diagnostics offers pathology services for wide range of investigations from routine tests to highly specialized ones. It has top of the line fully automatic analyzers and a team of highly skilled and trained technical staff to undertake these investigations. It covers clinical biochemistry, hematology, clinical pathology, histopathology and cytology, microbiology, serology and immunology services.

A complete spectrum of services from routine tests such as Complete Blood Count to Random Blood Sugar to highly specialized investigations for infectious diseases, cancer markers, hormonal assays, therapeutic drug assays.

Experienced, professionally qualified medical doctors supported by a team of qualified and trained technologists head each individual discipline.

Use of automated analyzers smoothen the process and reduces chance of human errors.

It provides facility for home collection of samples. Qualified technicians who are carefully selected and trained to deliver service collect samples. It saves time and human resource, easy to order, gives value for money at convenience of the patients.

Samples are analyzed without delay and report is generated as soon as possible. Results can be collected by the patients in person, by phone, by email or by online web portal.

Serology Section



Haematology Section



Blood Sample Collection Room



Microbiology Section



5. Key Learnings from Internship

During internship, I have come across new learnings in different arenas.

(a)Tele radiology

Tele radiology is a business process outsourcing. Tele radiology uses technology to acquire high quality imaging diagnostics from remote hospitals globally and complete interpretation of report-reads in real time. Tele radiology can be answer to the continuing shortages and uneven distribution of radiologists, and the increasing use of radiological imaging for diagnosis.

It is a virtual radiology service based on workload sharing and reallocation.

Usually, RIS-PACS cloud based workflow platform, which operates on a pay-per-click model, has contributed to tele radiology adoption in India

Radiscan Diagnostics is providing tele radiology services to other multispecialty hospitals of the country. Tele radiology services can be provided to the hospitals abroad if it fulfils statutory regulations of that land. Institute is using best technology platform for to cater need in tele radiology. Minimal turnaround time and quality of reporting have added business in tele radiology.

It is used for expert/second-opinion or for global virtual radiology service, on-call coverage.

There are certain drawbacks. For example, there can be insufficient visibility on images received, loss of images or electronic requests, inconsistencies between images and problems of a technical nature such as limited integration of clinical information.

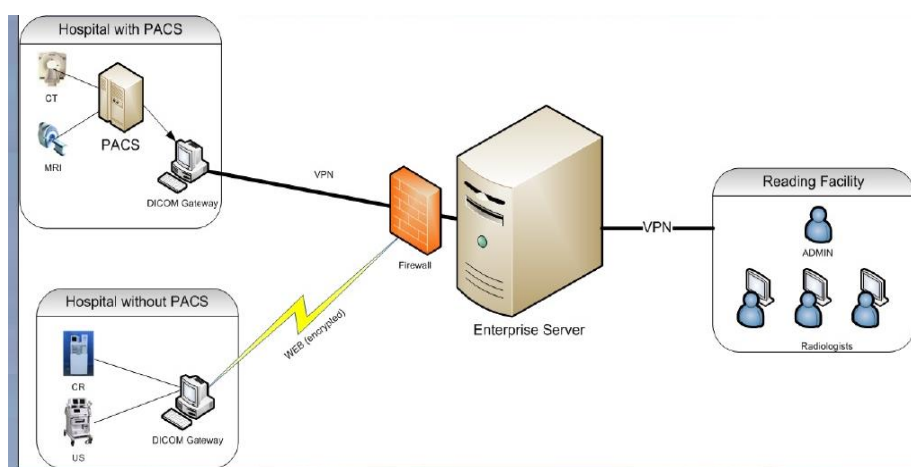
Though Indian government has issued a guideline but still there are various legal and regulatory issues, data security breach can arise, will need to be solved. Tele radiology is less complicated than other forms of telemedicine like teleconsultation as you are less likely to miss diagnosis which is based on image received.

With technological advancement, price of radiology instruments is moderating. And with ever increasing multispecialty hospitals in peripheral areas and need of radiologists, tele radiology will play important role in revenue generation for established imaging centre. It will be a good business model for imaging centres.

Tele radiology is boon for peripheral hospitals because it provides essential imaging services to the community without paying hefty amount to full time radiologist. For hospitals, tele radiology has reduced the cost of radiology services by reducing night staffing, using economy of scale and streamlining workflow.

Recently, USA food and drug administration has approved two mobile based applications for tele radiology with limited use. Mobile based applications will be a game changer for tele radiology.

To improve outcome , patient data and history should be shared before doing imaging test. It helps in formulating examination process and thus outcome.



(b) Covid and radiology

Due to Corona pandemic, there is impact on business of healthcare. Radio imaging is also affected by Corona pandemic. CT chest examination and X ray chest increased drastically .Numbers of planned MRI, Mammography and Ultrasonography has decreased slightly in comparison to of 2019.

As per radiologist's views:

- So many of corona positive patients have false negative RT-PCR test. They suffer from severe breathlessness due to lung involvement. Initially, chest X-ray fails to pick up changes in lungs due to corona infection. CT scan can suggest lung involvement even in

initial preliminary stage with RTPCR negative reporting. Though changes mimic pneumonia , it gives a diagnostic and prognostic value for line of treatment.

- Because COVID-19 is highly contagious, using imaging equipment on COVID-19 patients is a serious hazard for healthcare providers and other patients. CT scanners are large and complex pieces of machinery. They need to be thoroughly cleaned between each potential COVID-19 patient. But even with careful cleaning, there is a risk that the virus could remain on a surface in a CT scanner room. Additionally, moving potential COVID-19 patients to and from a CT scanner room increases the risk of spreading the virus inside of healthcare facilities. Just allocation of two different time slots of CT scan services to covid negative and positive patients, decreases scheduling problems with limited resources.

>General Instructions followed in CT scan room

CT scan used only if considered essential in clinical decision making for management.

All communication between technician- Radiologist, Tech/ Radiologist – Referring doctor, radiology staff – admin should be strictly via telecommunication.

Ensuring minimum contact to staff with patient.

Ensuring minimum time spent by patient in imaging complex.

All movable equipment in scan room shifted out.

Covered all non-movable equipment covered with transparent plastic sheet prior to patient arrival and removed post procedure.

Thorough cleaning of surfaces especially contact areas with disinfectants as per protocol.

Only minimal staff posted for taking care of such cases, with staff preferably on shift duties .

Accompanying staff coming with the patient not allowed to enter the CT console room. They wait in the corridor outside the console while the scan is going on and till it is finished. Once scan is finished, they can re-enter the scan room and shift patient back to the bed.

There is separate waiting area for covid positive patients and passage in and out of hospital.

If any emergency covid negative patient is to be taken. After end of Corona positive CT scans, thorough cleaning of Scanners with alcohol based sanitizers done with wearing PPE. From 6 am to 10 am, CT scan is reserved for non-covid patients, from 10 am to 5 am next day, CT scan facility serves to covid patients. For one hour in morning, there is cleaning process.

In radiology diagnostic suites, with a minimum recommended 6 total air exchanges per hour (ACH), 99% efficiency in particle removal is 46 minutes and 99.9% removal is 69 minutes.

(c) Artificial Intelligence in Radiology

Artificial intelligence (AI) is a disruptive technology that involves the use of computerised algorithms to dissect complicated data. Among the most promising clinical applications of AI is diagnostic imaging,

Potential applications of machine learning in radiology

- Before imaging examinations or procedures

Clinical decision support. Patient scheduling and screening protocol

- During imaging examinations or procedures

Image acquisition Image optimization (e.g. .motion artefact, noise reduction) Image generation (e.g., low-dose gadolinium, 32 synthetic MR imaging) Supplementary magnetic resonance (MR) imaging sequence suggestions based on findings

- After imaging examinations or procedures (before interpretation)

Automated radiation dose estimation Image post processing (reformations, segmentations, quantifications) Advanced image analysis, including radiomics and delta-radiomics extraction DICOM routing and workflow orchestration Worklist prioritization Preliminary interpretation Pre-dictation

- After imaging examinations or procedures (during interpretation)

Contextual report template recommendation, electronic medical record extraction and correlation with other relevant data for interpretation prognostic inference quality (including peer review) and safety

- After interpretation

International Classification of Diseases (ICD) code extraction for report, billing , fraud detection

(d) Dealing with sickness absenteeism

Standard for comparing the rate of absenteeism within organization or with other organizations. The rate is equal to the number of days absent times 100, divided by the number of days worked. Four percent or more is considered excessive.

Involvement of all stakeholders for to establish safe, healthy and more productive workplace with applying principles of ergonomics and preplacement examination.

HR Policy involves finding a balance between supporting employees with health problems to stay in, or return to work. HR Policy makes it sure than Radiscan Diagnostics' business objectives are not compromised by repeated short term absence.

There are standards of attendance expected of the employee and provide employees with information on any terms and conditions relating to incapacity for work due to sickness or injury.

In Radiscan Diagnostics, there is attendance software, employees can assess their employee profile and see monthly attendance, red flags on app. Employees can remain aware about hours of work done by them, and leaves availed. Most effective tool to reduce sick leave and absenteeism is a robust attendance policy. As per policy, service contract making it imperative for every employee to put in the contractual number of hours of work per year. Any employee can take one sick leaves per month. Absence due to sickness for single day in a month is covered under paid leave. If employee avails more than one sick leave per month then employee will have to compensate duty hours later on.

Employee can do self-certification for continuous two days of sick leaves, for extended sick leaves employees is needed to produce doctor's certificate.

Policy of periodical medical examination to detect diseases at the earliest. This policy helps in quickly diagnosing health hazards due to radiation and averts further bodily harm due to radiation. To manage sickness absenteeism, employees are allowed to

change duty roster with consent of superior authority for to maintain work flow. For frequent and prolonged sickness absences, Radiscan has adopted a policy for periodic medical examination by appointed panel of doctors and can ask report from the employee's doctor with employee's consent.

Policy of health education and counselling services has also helped in dealing with sickness absenteeism.

For corona infection, employees who are suspected of having infection are tested in pathology laboratory and given home quarantine for stipulated time period. Before returning to work, negative corona report made mandatory. Employees who contract corona infection given full pay for the leave period.

Even during corona pandemic .during peak hours , strength of the work force was maintained by shifting duties and during night time , locum staff put to work in case of staff shortage due to sickness absenteeism.

Records of all the leaves, meetings, correspondence, telephonic message is maintained in HR file of the employee. Employees who don't take much leaves are given motivational reward for their service.

(e)Routine quality indicators used in imaging centre as a part of quality assurance programme.

Safety

Radiation Safety practices compliance done through sample monitoring

Infection Control practices compliance

Patient Safety practices compliance

Process Improvement

Appropriateness of the procedure

Average waiting time for each modality

Delay from standard turnaround time

Percentage of repeat procedure

Variation from standard protocol deviation

Professional Outcome

Peer review findings of report

Procedural outcome

Percentage of variation of test results from clinical finding

Percentage of critical results reported to concerned consultant within the given time frame

Satisfaction

Patient satisfaction

Employee satisfaction

Client satisfaction

Student satisfaction

6. Key activities for managerial role

P- Planning – Infrastructure, Manpower, Equipment

O- Organizing- Hierarchy, Job Responsibility

L- Leading- Standard Operating Procedure

I-Integrating-With other health care services

C-Controlling-Maintenance, Staff discipline

E- Evaluation – Level of staff performance, patient satisfaction and any change in policy required

Managerial Issues: INPUT → PROCESS→OUTPUT

--Issues at input

Registration Timing

Any restriction in process

Prior appointment

Reception and information

--Issues at process

Ensure trained manpower at machines

Ensure functional status

Correction of error in processing

Ensure uniformity in operations

Prevent malpractice and pilferage

Training of staff

Follow safety protocol for patient and staff

Developing solutions

--Issues at output

Quality of images

Reporting accuracy

Misinterpretation of report, Correction of report

Machine number in image and record

Level of patient satisfaction

7. Project Undertaken Other than Dissertation

--Assessment of Patient satisfaction at Radiscan Imaging Centre--

Abstract

Background: Patient satisfaction is an important indicator of quality in healthcare services. It is related with service quality and clinical outcome of the patient. In Radiology /Imaging Centre, patient satisfaction is related with process quality and diagnostic accuracy.

Methodology: An observational study carried out at Radiscan Imaging. Pretested structured exit interview questionnaire was used to assess patient's satisfaction about the service given in imaging centre

Result: Overall satisfaction level towards radiological services was high. Diagnostic accuracy, behaviour of the staff, charges levied-value for money, privacy of service had highest satisfaction ratings. Lowest satisfaction among patients was for registration process delay, waiting time for CT scan, and delay in getting report due to workload. A smaller portion of patients complained about giving insufficient information about the procedure. Patients who had visited imaging centre for medical emergency and scheduled patients were more satisfied than non-emergency walk-in patients as emergency patients and scheduled patients had got priority over others.

Conclusion: Majority of patients were satisfied with radiological services. For few patients delay was matter of concern,

The questionnaire consists of the following items:

1. Age, gender, residence, education, and occupation and questions about health status of the patients
2. Type of radiological imaging

3. Registration – Efficiency of Scheduling an appointment, efficiency and easiness of the registration process, waiting time, helpfulness of the front desk, explanation of payment and billing procedures.

4. Waiting area comfort and cleanliness, waiting time

4. Imaging test- Information regarding the examination to be received in the radiology department, explaining test, receiving friendly greetings from every staff member, satisfactory-adequate answers from the doctor or staff and concern for patient's comfort and safety, general appearance and comfort of radiology examination room, any delay or complication in imaging area, identification of the name and professional category of the professional attending the patient

4. Diagnostic decision. Time for handing over report

5. Confidentiality and privacy of service and the information provided.

6. Question regarding whether patient will recommend Radiscan Imaging to another patient.

