

**Summer Training at
Apollo BSR Hospitals, Bhilai, Chhattisgarh
(April 1–May 31, 2014)**

Total Quality Management in Pathology and Radiology

**By
Aditi Vaidya**

**Under the guidance of
Dr. P.R. Sodani**

**MBA- Hospital & Health Management (MBA-HM)
2013-2015**



**The IIHMR University, Jaipur
2014**

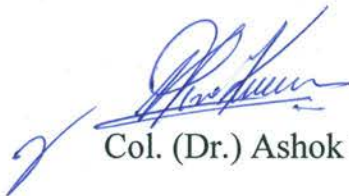
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CERTIFICATE

This is to certify that **Dr. Aditi Vaidya** has undergone her summer training in **Apollo BSR Hospital, Bhilai** from 1st April 2014 to 31st May 2014. The candidate herself carried out all the studies related to her summer training. Her approach to the study has been scientific and analytical. This summer training is in the partial fulfilment of the course requirement recommended for the award of Post Graduate Diploma in Hospital and Health Management with specialisation in Hospital Management.

I wish her success in all her future endeavours.



Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affairs)

IIHMR Jaipur



Dr. P.R. Sodani

Professor and

Dean(Training)

IIHMR Jaipur



ABSRH / INT / ICT

DATE: 06.06.2014

TO WHOM SO EVER IT MAY CONCERN

CERTIFICATE OF INTERNSHIP

This is to certify that **Dr. Aditi Vaidya** student of “**Institute of Health Management & Research, Jaipur, Rajasthan**” has done 2 months internship from **01st April 2014 to 31st May 2014** in our Pathology & Radiology Department of Apollo BSR Hospitals – Bhilai on the topic “**Total quality management in Pathology and Radiology**”.

She was punctual and found to be sincere during her internship.

For Apollo BSR Hospital
(A Unit of BSR Superspeciality Hospitals Ltd.)

Guided By: -


Sreekala C.S
(Manager – Quality&Operations)

Directed By:-


Sanjay Shrivastava
(Chief Administrative Officer)

ACKNOWLEDGEMENT

I extend my sincere gratitude to **Mr. Sanjay Shrivastav**, for giving me the opportunity to do this study and undergoing the process of learning at APOLLO BSR BHILAI. I thank them for all the trust and faith they posed in me and I only hope that I have been able to live up to their expectations. Their guidance and support was helpful in enhancing my work.

I extend sincere gratitude towards **Dr Siddharth Mishra**(Alumni-17th batch) for helping me out and guiding me during my summer training.

I would also like to thank **Mr. Sanjay Borkar** and **Mrs Shreekala of** Quality department who have been instrumental in the successful completion of this project. I would also like to extend my thanks to **Mr. David(quality in charge pathology department), and all the staff of pathology and radiology of Apollo BSR , Bhilai** for helping me through my study.

Last but not the least; I would like to thank the entire **staff of APOLLO BSR HOSPITALS BHILAI** for their support and guidance.

I would like to express my sincere thanks to **Dr. S.D. Gupta**, Director, IIHMR, **Dr. P.R. Sodani**(mentor) and all my faculty members for the proper guidance and cooperation extended by them. I am also grateful to my parents, my family and my friends for giving me moral support.

However, I accept the sole responsibility for any possible error of omission and would be extremely grateful to the readers of this project report if they bring such mistakes to my notice.

Date –5th June, 2014

Dr. Aditi Vaidya

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PREFACE

Summer internship is an integral part of the PGDHM curriculum. As a part of the course; students of first year are required to undergo summer placement at any reputed organization to get in depth exposure of various departments in the organization and better understanding of the health care delivery system and its functions.

The major objectives of the summer training programme are as follows:

- 1) To understand and learn day to day operational management of a Hospital / Health Care Organization and its service centers.
- 2) To study identified issues/ problems associated with some specific operational area programme.
- 3) To acquire more knowledge on roles and responsibilities of key players and stakeholders in the hospital. To understand various functions in hospital by interactions with key stakeholders, policy makers, academicians and researchers.
- 4) To work on the project/task assigned by summer training organization.

During the training period I had an **Overview of various departments of the hospital**. I also carried out a study titled “**total quality management in pathology and radiology department**”

The aim of the study was to assess quality management system in the pathology and radiology and to assess its compliance with the standards, to assess the quality assurance in preanalytical, analytical and post analytical phases of lab testing, to assess the turnaround time (TAT) and to whether they are available within defined time frame, to assess the accuracy and reliability of test results and to assess whether all the staff follow policies and procedures at all the times.

ABOUT THE ORGANISATION

Apollo BSR is a multi specialty hospital with a motto to provide quality healthcare at affordable cost. It has a fully equipped centre of international standard for cardiac intervention and surgeries.

VISION:

“To be the most preferred Health care service provider in the community by continuously improving the existing standard of Medicare”

MISSION:

“Apollo BSR Hospitals always provide comprehensive and modern healthcare solutions to patients with a humane approach”

The Journey:

The group started with a diagnostic centre in the year 1993 at Bhilai. Over a period of time all modern diagnostic facilities like 1.5 T MRI, 64 slice cardiac CT, Multi slice spiral CT scan, 4-D real time color Doppler, Ultra modern Pathology, Endoscopy, Bronchoscope, mammography, echocardiography, UltraSonography , Digital X-Ray etc. have been installed at our various centers. Thereafter similar centers have been established at other locations such as Nagpur, Raipur, Korba and Rajnandgaon.

In the year 2000 the group ventured into establishing ultra modern super specialty cancer hospital in Bhilai- BSR Cancer hospital which is the only comprehensive cancer management centre in Chhattisgarh. After 17 year into being called a pioneer and leader in diagnostics in central India and 8 years in comprehensive cancer management, BSR health care is now well known name in healthcare sector.

BSR realized the need for a multispecialty Tertiary care hospital in Central India and prompted by desire to extend high quality Medicare beyond the confines of the rich class . BSR Healthcare has set up Super specialty Hospital at Bhilai, Apollo BSR hospital, Bhilai became operational from September 2007.

“Commitment to the community”

“Caring for the community”

Those simple words describe the past, present, and future of Apollo BSR hospitals Bhilai. Their roots run deep in the community, starting with the 1st high tech diagnostic centre in 1993. After 15 years of being pioneer in diagnostics in entire central India , BSR healthcare started comprehensive cancer management hospital- BSR Cancer hospital and Research centre at Bhilai in June 2001. Apollo BSR is 175 bedded Super Specialty Hospital(NABH accredited) providing secondary and tertiary level healthcare at affordable cost in association with Apollo Hospitals Chennai. The inpatient beds are classified into deluxe suite, private room, double bed wards, shared wards and dedicated cancer wards.

The hospital enjoys the reputation of being the first and only hospital to have a digital flat panel Cath lab and 4 modular OTs with laminar air flow and HEPA filters for coronary Bypass surgeries, Coronary Angioplasty and other special surgeries. They are having 42 bedded ICU including cardiac, surgical, Medical, neonatal and pediatric ICU.

Apollo BSR at Bhilai is an attempt to integrate the best and most qualified medical professionals and doctors by providing them the best infrastructure, latest technologies in Biomedical engineering and health care services along with a dedicated team of nurses, technicians, staff and professional management in such a way that our super specialty hospital can provide the best health care services so that the patients in C.G. as well as neighboring states could be benefited.

Already they have got a very good response from the patients in this region and they are regularly getting the patients not only from C.G. but also from neighboring states. They are recognized and empanelled by Govt. Of Chhattisgarh, CSEB, NSPCL, FCI, BSNL, CISF, NMDC, SECL, and various insurance companies\TPAs. They have also started more departments like Infertility clinic, , cosmetology, joint replacement surgery, high end ophthalmology etc.

They have plans to increase beds from 175 beds to 200 beds which will include 10 more beds in ICU, since Bhilai is very well connected by air (nearest airport Raipur 40 kms), Rail (nearest Railway station Drug 5 kms), and Road (on main National Highway NH6).

Various departments in the hospital are

Clinical Services:

- 24-hour Accident &Emergency Services (Trauma Unit)
- Anaesthesia
- Cardiology
- Cardiothoracic Surgery
- Dental

- Dermatology and Venrology
- Endocrinology & Diabetology
- ENT
- Gastroenterology
- General & Laparoscopic Surgery
- Health Check-Ups
- Infertility Clinic-(IVF,IUI)
- Internal Medicine
- Medical Oncology
- Nephrology
- Neurology
- Neurosurgery
- Obs. & Gyanaecology
- Ophthalmology
- Orthopaedics
- Paediatrics/ Neonatology
- Pain Management
- Plastic Surgery/Cosmetic Surgery
- Psychiatry & Psychotherapy
- Respiratory Medicine
- Surgical oncology
- Urology

Critical Care Units

- Medical Intensive care unit
- Cardiac Intensive unit
- Surgical intensive care unit
- Neonatal Intensive care unit
- Intensive Cardiac care unit

Diagnostic Services

- Laboratory
- Radiology (MRI Service delivery at BSR Diagnostic centre)
- Radiotherapy Department (Service delivery at BSR Cancer Hospital)
- Nuclear Medicine Department (Service delivery at BSR Cancer Hospital)

Therapeutic services

- Clinical consultation services
- Clinical inpatient service
- Operation theatres
- Labour room
- Digital Cath Lab
- Dialysis Unit

- Bronchoscopy
- Endoscopy
- ECG, Echo, TMT, EEG, EMG, PSG, Spirometry

Ambulatory Care Area

- Outpatient services
- Emergency services
- Pharmacy services (IP- 24 Hrs, OP Pharmacy)
- Physiotherapy Department

Auxiliary Services

- Dietary services
- Central Sterile and Supplies Department
- Laundry
- Stores (general, medical) & Substores
- Mortuary
- MGPS (Cylinders and piped medical gases)
- Engineering services
- Housekeeping
- Security
- Medical record department
- Hospital Management Information System
- Administrative Office
- Ambulance & Non ambulances

SPECIFIC PROJECT:

TOTAL QUALITY MANAGEMENT IN PATHOLOGY:

OBJECTIVES

- To assess compliance of quality management system in accordance to standards.
- To assess the lab performance on the basis of quality indicators . and corrective and preventive actions taken for quality improvement.
- To understand standard operating procedure(SOP) for each step of lab testing
- To assess quality assurance in all the three phases of lab testing and identify areas for further improvement.
- To understand report generation process and to assess turnaround time(TAT)

The area covered for this project is as follows:

1) Pathology

INTRODUCTION

A medical laboratory is a place where tests are done on clinical specimens and samples in order to get information about the health of a patient as pertaining to the diagnosis, treatment, and prevention of disease.

Laboratory Services play a critical role in the detection, diagnosis and treatment of disease. Samples are collected and examination and analysis of body fluids, tissue and cells are carried out. Main services are:

- To Perform diagnostic tests
- To Identify organisms, like E-coli bacteria
- To Count and classify blood cells to identify infection or disease
- To Operate complex diagnostic equipment
- To Perform immunological tests to check for antibodies
- To Type and cross-match blood samples for transfusions
- To Analyze DNA

SCOPE OF SERVICES

Good Clinical Laboratory Practices should be used by all laboratories where tests are done on biological specimens for diagnosis, patient care, disease control and research such as:

- Microbiology & Serology
- Haematology & Blood Banking
- Molecular Biology and Molecular Pathology
- Clinical Pathology
- Clinical Biochemistry
- Immunology (Immunohematology and Immunobiochemistry)
- Histopathology/Pathology and Cytology

The functional components of the clinical Laboratory

- **Hematology**:-The study of blood. This section counts and qualifies the different types of blood cells and other components found in blood
- **Serology** - The study of serum for its antibody content. Certain microorganisms (antigens) stimulate the body to produce antibodies during an infection. In the Serology lab, the antibodies react with antigens in specific ways that can be used to confirm the identity of the specific microorganism
- **Clinical Chemistry/biochemistry** - Performs most chemical analyses including glucose, sodium, potassium, and cholesterol.
- **Urinalysis** - *The study of urine for the purpose of medical diagnosis. Urine is initially examined for such characteristics as color, odor, and specific gravity (density relative to water). It is routinely tested for its acidity level, as indicated by its pH reading, and screened for glucose (sugar).*
- **Microbiology** - The study of microorganisms, including viruses, that can only be seen with a microscope.
- **Blood Bank** - Collects, tests, types and stores blood donations used for blood transfusions

QUALITY ASSURANCE

- Quality Assurance (QA) is the total process whereby the quality of laboratory reports can be guaranteed
- Incorrect Laboratory results may be due to errors occurring during pre-analytical stage, analytical stage/post-analytical stage
- QA encompasses procedures adopted for minimizing errors that may occur at any stage. Provision of precise and accurate laboratory results optimize medical management

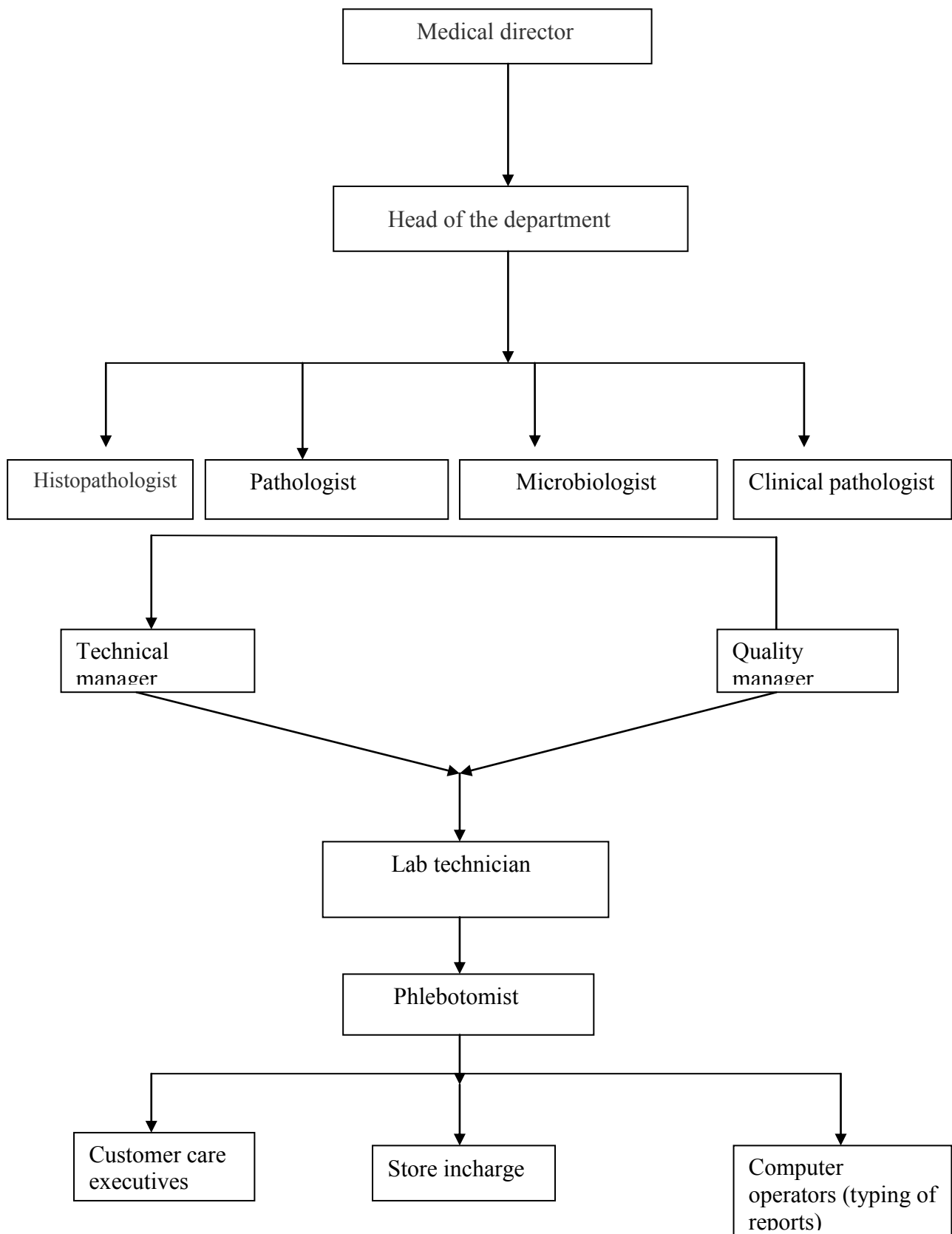
QUALITY ASSURANCE PROGRAMME (QAP)

- QAP is a managerial process of maintaining high standards of performance and of improving standards where necessary
- While planning a QAP it is important to put effort at each step to prevent, detect and correct errors
- Quality Manager or designee or competent authorized person should review the quality control data and maintain record of evaluation
- The two important tools toward maintaining laboratory quality are-
 - Internal Quality Control (IQC) - for detection and minimization of immediate errors
 - External Quality Assessment (EQA) - for monitoring long term precision and accuracy of results

Factors influencing quality

Pre analytical	Analytical	Post analytical
Right Specimen	Laboratory professionals	Recording
Right collection	Reagents	Interpretation
Right labeling	Equipment	Turnaround time
Right quantity	Selection of test - SOP	Report to right user
Right transport	Records	
Right storage	Bio-Safety	

ORGANOGRAM:



DATA COLLECTION & METHODOLOGY

RATIONALE OF STUDY

FUNDAMENTAL MEASUREMENT OF QUALITY ARE

1. Accuracy
2. Precision
3. Resolution
4. Reproducibility

Reasons for adapting quality approach-

1. Improves patient care efficiency and effectiveness
2. Improves patient satisfaction
3. Reduces costs and increases productivity
4. Increase profits
5. Gain competitive advantage

Methodology:

Study Type – Cross-sectional study.

Study Area - Pathology, Radiology

Study Participants: all the staff of the respective departments.

Sample size – 22 staff of pathology and 6 staff of radiology department.

Study Technique – Interview, checklist.

Study Tool – Semi- structured questionnaire, Checklist.

Data Collection Plan – This study surveyed 28 staff members. For collecting the data interviews and observation of the quality management system followed by the staff was carried out after taking authorization from concerned authorities of these departments.

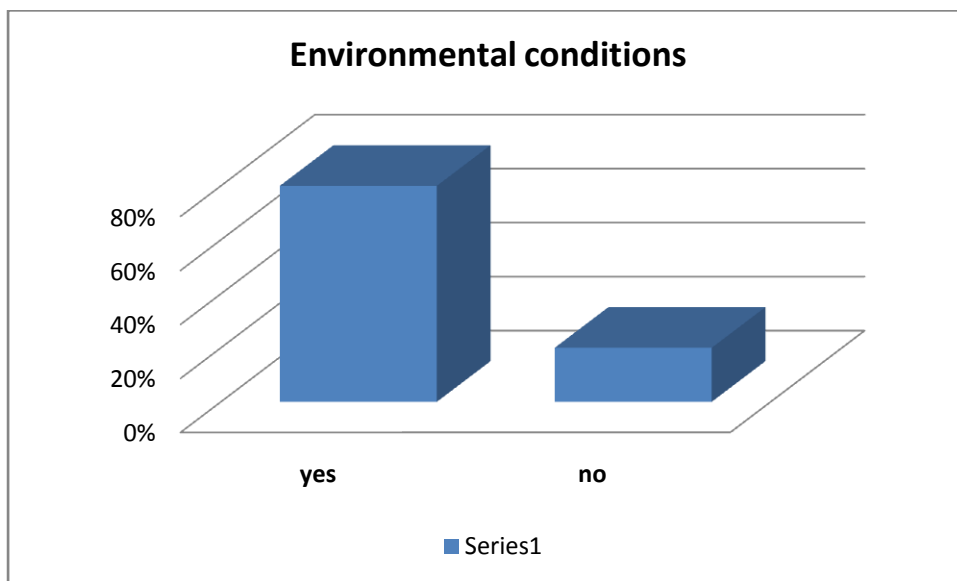
Data analysis – done with the aid of MS-Excel sheets. The data was entered in sheets and then analyzed with the help of graphs and pie charts.

Ethical Considerations- purpose of the study was clearly explained. The respondents were assured of the data confidentiality.

DATA ANALYSIS, COMPILATION AND INTERPRETATION:

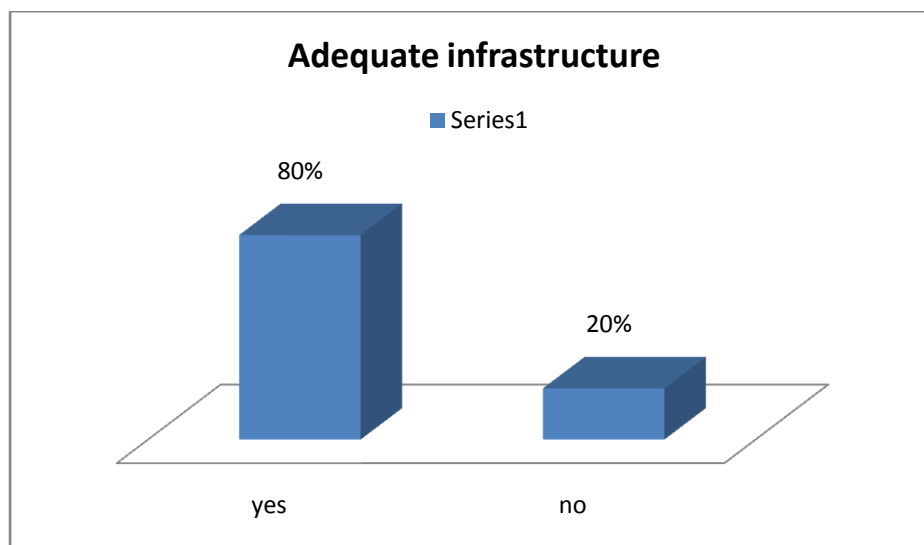
Accommodation and environmental conditions

1. Are the environmental conditions (lighting, electricity, temperature, ventilation, space) appropriate for the work performed?



Findings- According to the observation, 80% environmental conditions are appropriate for the work performed and 20% are still not appropriate as there is not proper space and separation to avoid cross contamination.

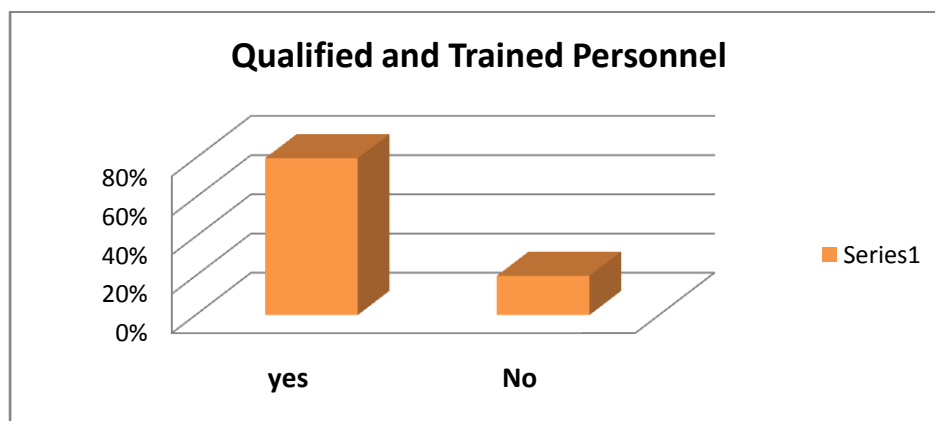
2. Adequate infrastructure as per the services provided by the lab?



Findings- 80% adequate infrastructure is present as per the services provided while 20% is not adequate according to details in the checklist like separate facility for cleaning of glassware and staff eating food in the premises instead of eating in the canteen.

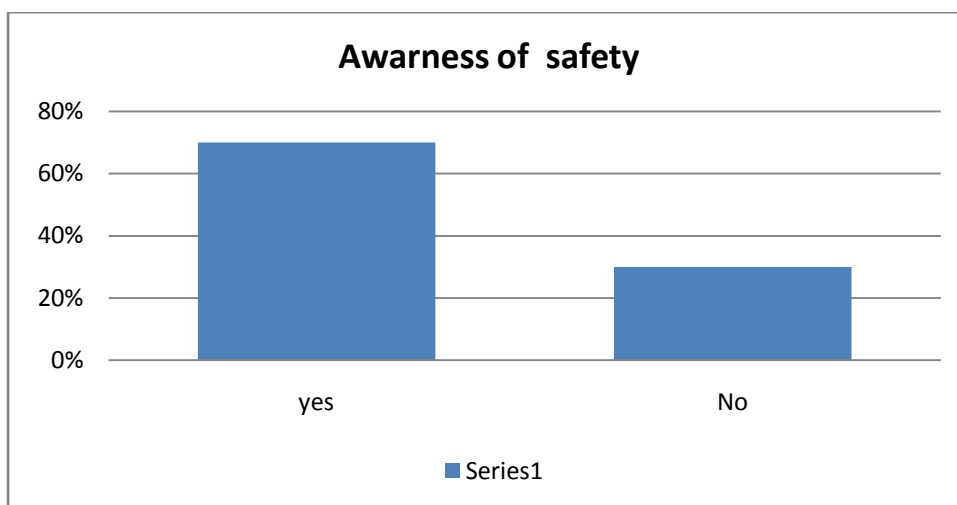
PERSONNEL

1. Is there adequate qualified and trained personnel?



Findings- Out of the 22 staff members, all are qualified but 80 %(18) are trained and rest 20 %(4) who are new joinees are not adequately trained.

1. Is there awareness of safety among employees and is the staff trained in safe practice?

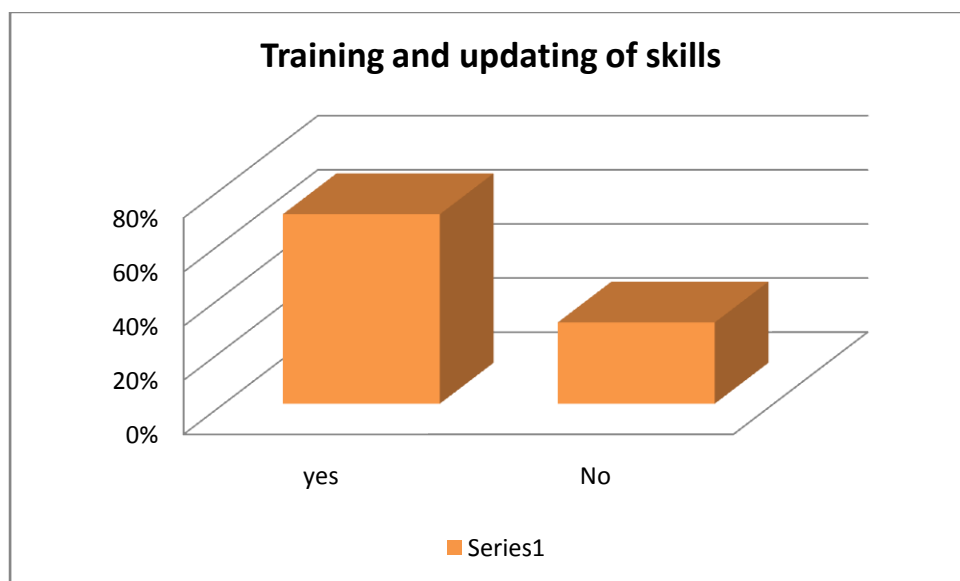


Findings-Out of 22 staff members, 16(70%) are aware about the safety (employee and patient safety) while 30%(5) who have newly joined are not much aware about the safety like fire safety, management of spills etc.



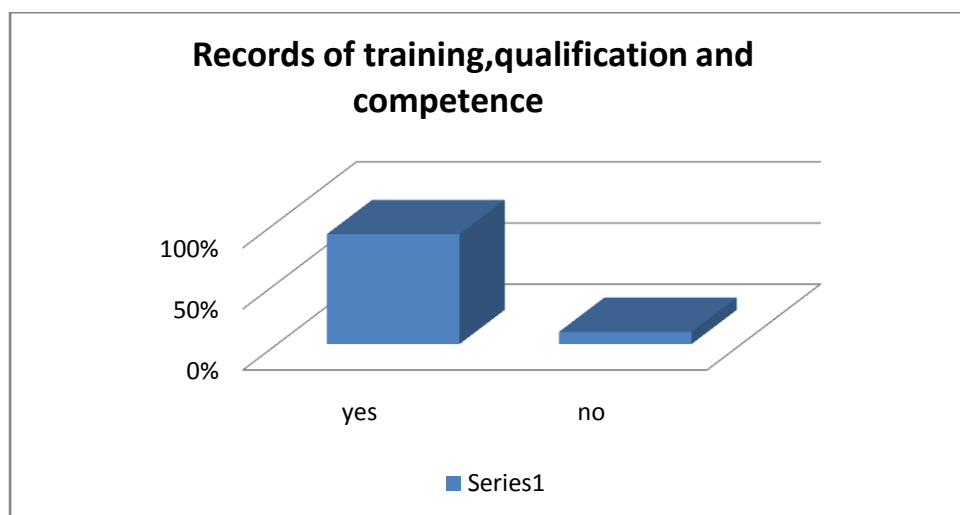
Findings-Out of 22 staff members, 18(80%) are trained in safe practices while 4(20%) who are new joiners are not adequately trained.

2. Is there a program me for technical training and updating of skills done on a regular basis?



Findings-According to the information given, training and updating of skills was done on the regular basis as found in the HR records upto March. But in April and May training was not conducted due to some internal problems.

3. Are the training, qualification and competence records maintained of all personnel?



Findings-According to the information received, there are training records of all the employees till the month of March in the HR department.

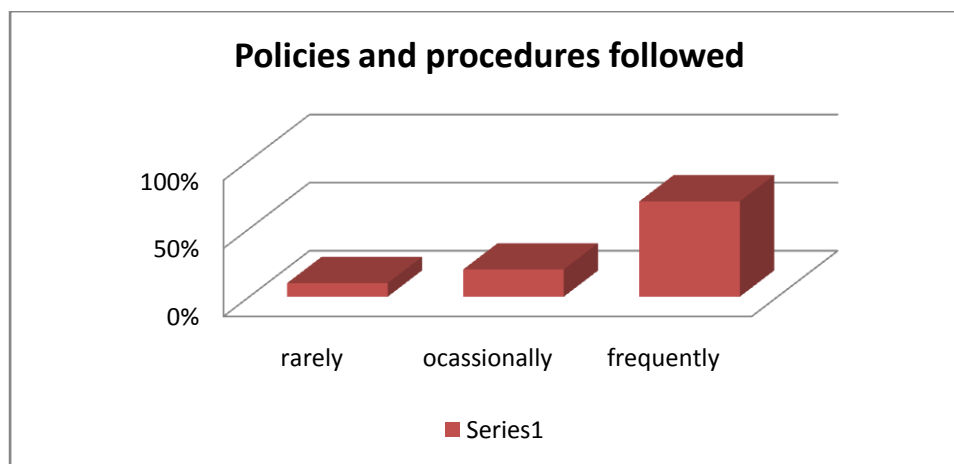
4. Is the staff available round the clock (24 hr service)?



Findings- There is 24 hr staff availability in the lab as mentioned in the duty roster.

STANDARD OPERATING PROCEDURES (SOP)

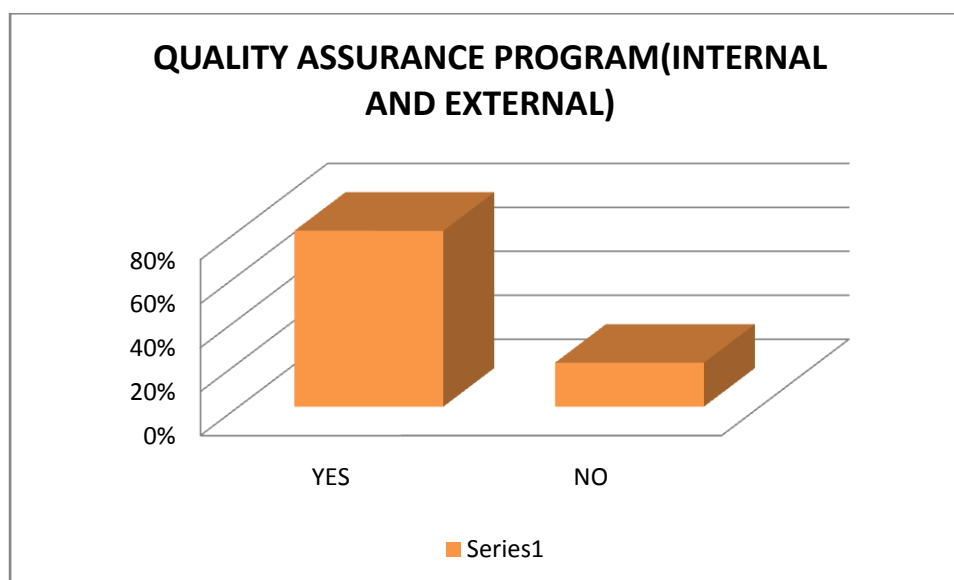
1. Is the policies and procedures for ordering of test, collection, identification, handling, safe ,transportation, processing and disposal of specimens followed?



Findings-Out of 22 staff members, only 16(70%) follow policies and procedures all the time and rest 5(30%) follow occasionally or rarely as they have newly joined and are not much aware about the policies and procedures.

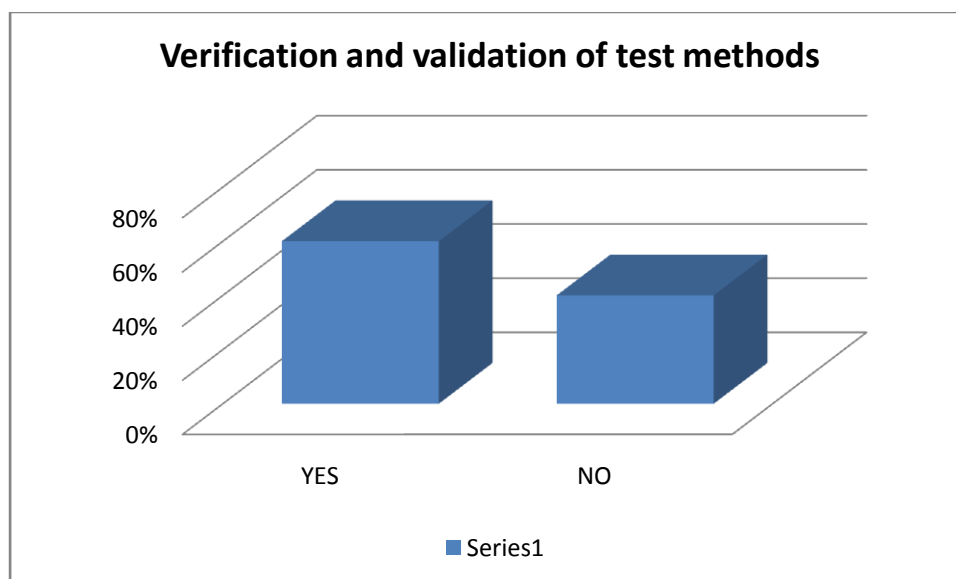
QUALITY ASSURANCE

1. Is the laboratory quality assurance programme documented?



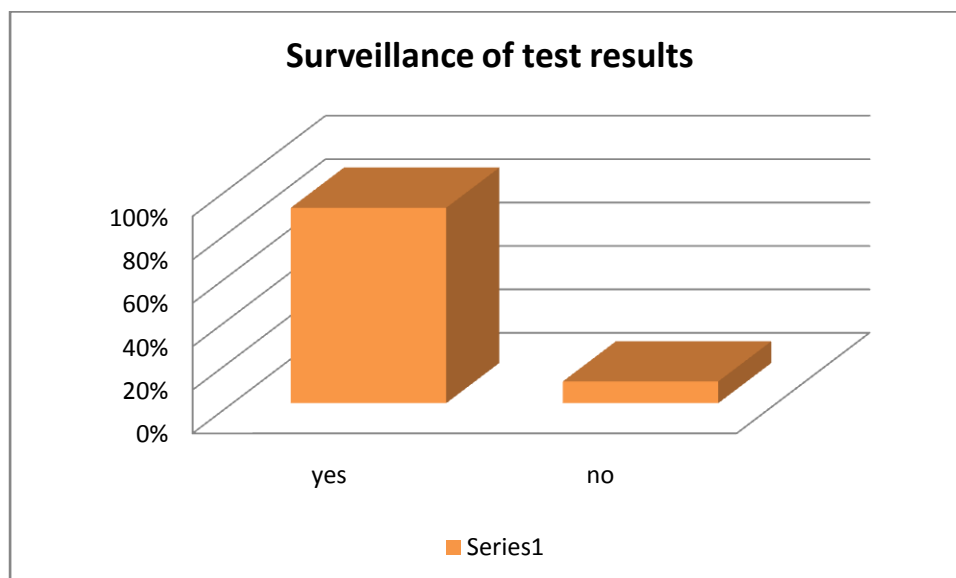
Findings- There is an comprehensive quality assurance program in the lab which includes internal quality assurance (IQA), daily Quality control(QC) are performed in all the departments of lab and external quality assurance(EQA) In which lab participate in quality control programs with nodal agencies approved by NABL. 80% of the internal and external quality assurance is done in all the departments of the lab, while 20% are not done on the regular basis. It was found out that EQA was not performed since 2 months in the hematology.

2. Does the the programme addresses verification and validation of test methods?



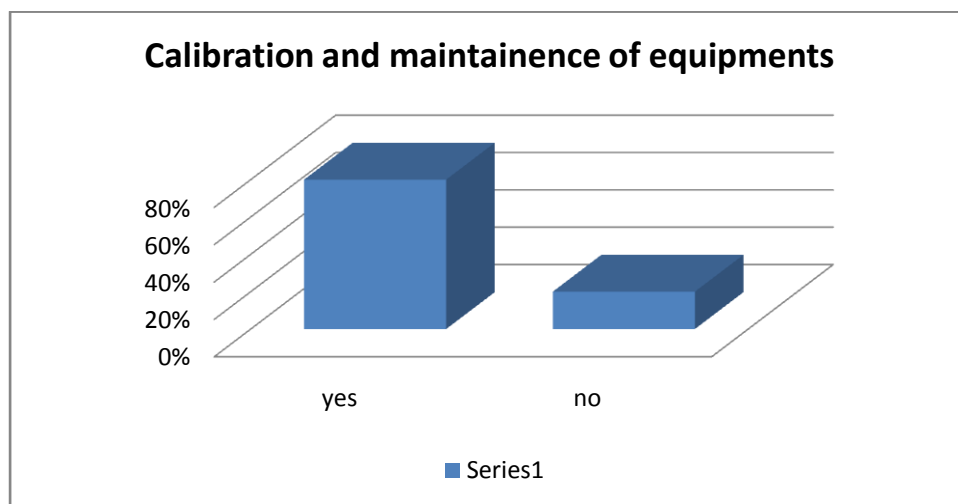
Findings- 60% of the test methods are verified and validated while 40% are not because all the test methods do not comply with the regulation, requirement and specification.

3. Does the programme address surveillance of test results?



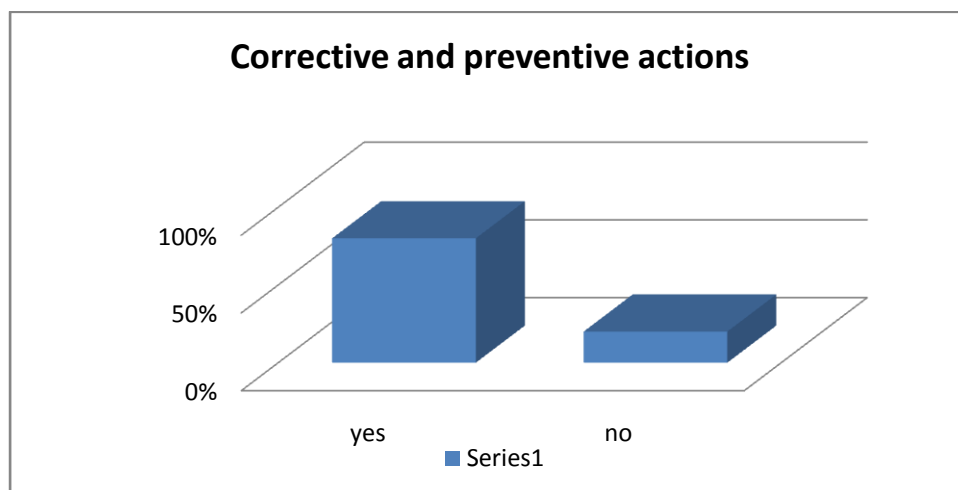
Findings- There is a documentation of it in the quality manual but the staff is not following and recording it.

4. Does the programme include periodic calibration and maintenance of all equipments?



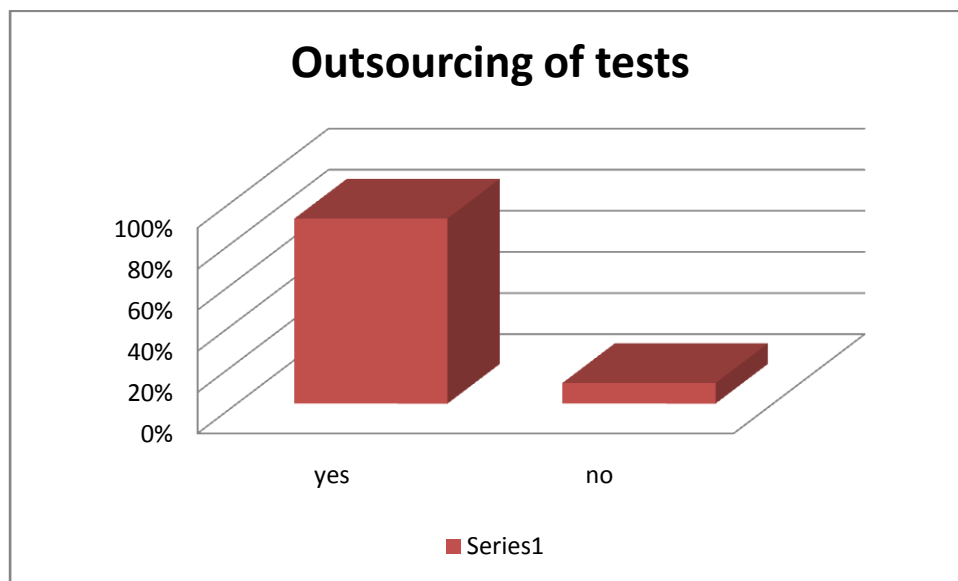
Findings-80% preventive maintenance and calibration is done periodically by the biomedical department while 20% calibration of the equipments which are done by the lab itself is not done according to the calibration requirements like temperature controlled equipments.

5. Does the programme include the documentation of corrective and preventive actions taken?



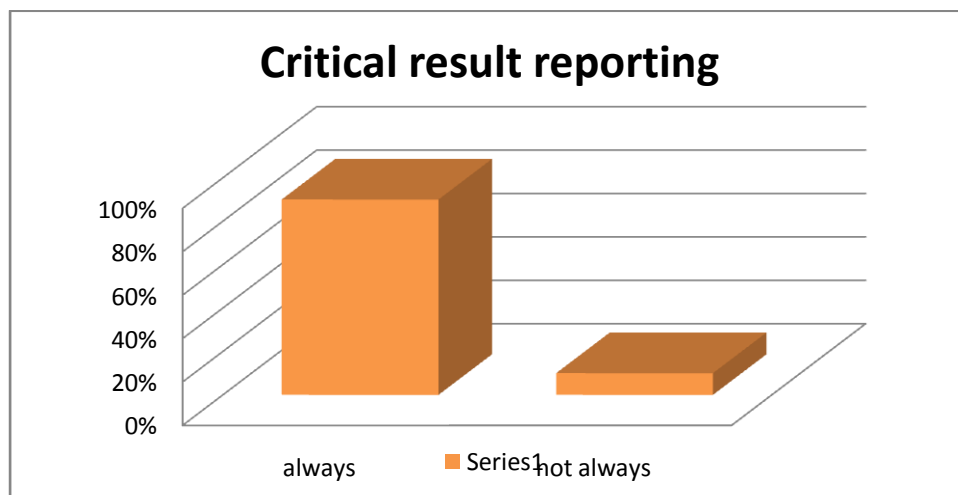
Findings-80% records of corrective and preventive actions are regularly updated while 20% are not while includes turnaround time (TAT) records.

6. Is Laboratory tests not available in the organization are outsourced to organization(s) based on their quality assurance system?



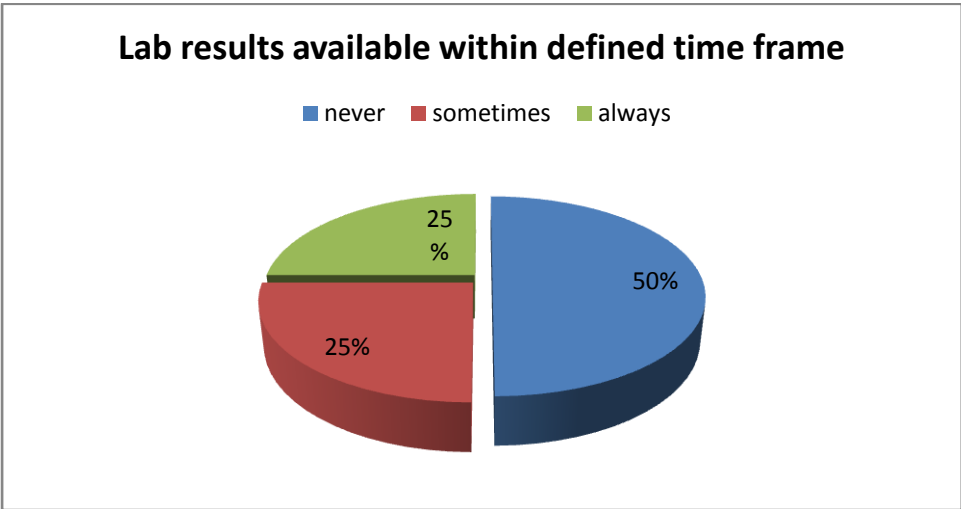
Findings-The tests which are not available in the lab are outsourced to the NABL/ISO accreditation labs based on the quality requirements but the records are not available.

7. Are Critical results are intimated immediately to the concerned personnel?



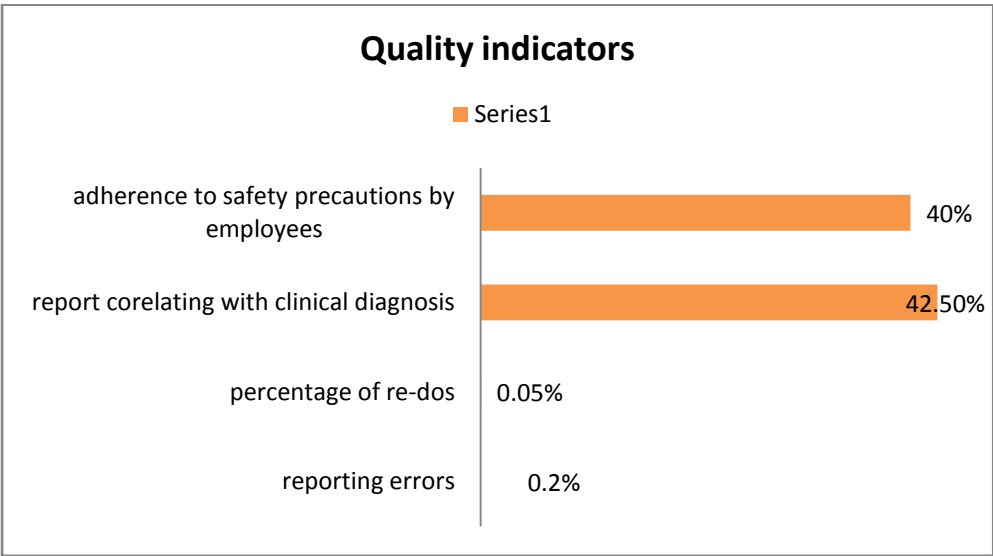
Findings-90% critical values of the test performed are reported immediately to the concerned personnel while 10% are still not reported according to the information received but there is no record available.

8. Are the lab results available within the defined time frame?



Out of the 200 samples analyzed, 100 (50%) were not available in stipulated time frame while 50(25%) are sometimes available on time and 50(25%) are always available within the defined time frame. The average of all the samples recorded for 5 days was-1st day-9 hrs,2nd day- 3 hrs,3rd day- 16 hrs,4th day-4 hrs, 5th day- 20 hrs. The average defined time frame for most of the tests is 4 hrs(excluding microbiology and histopathology).

9. Are there quality indicators to monitor quality improvement?

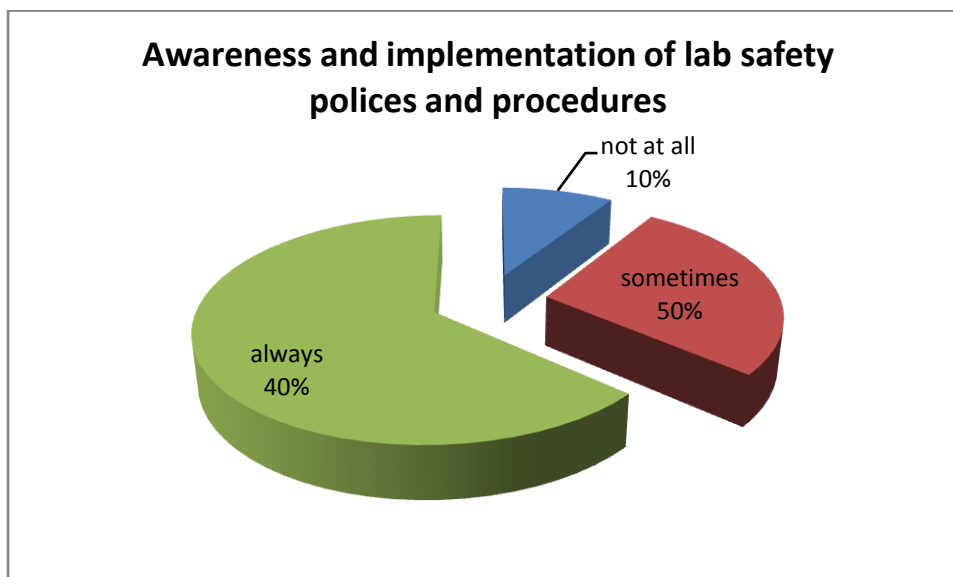


Findings- 9286 samples were analyzed and following quality indicators used by the lab to assess lab performance-

1. Adherence to safety precautions by employees was found to be 40% as out of 22 staff, 9 were not using PPEs most of the time.
2. Reports correlating with the clinical diagnosis were found to be 42.5 % (14 out of 34) as most of the results were negative. The cases were taken of sepsis of which procalcitonin was done, CRF of which urea and creatinine was done and MI and chest pain of which Troponin-1 was done.
3. Percentage of re-dos was found out to be 0.05 % (5 out of 9286) as few samples were not processed.
4. Percentage of reporting errors was found to be 0.2 % (2 out of 9286).

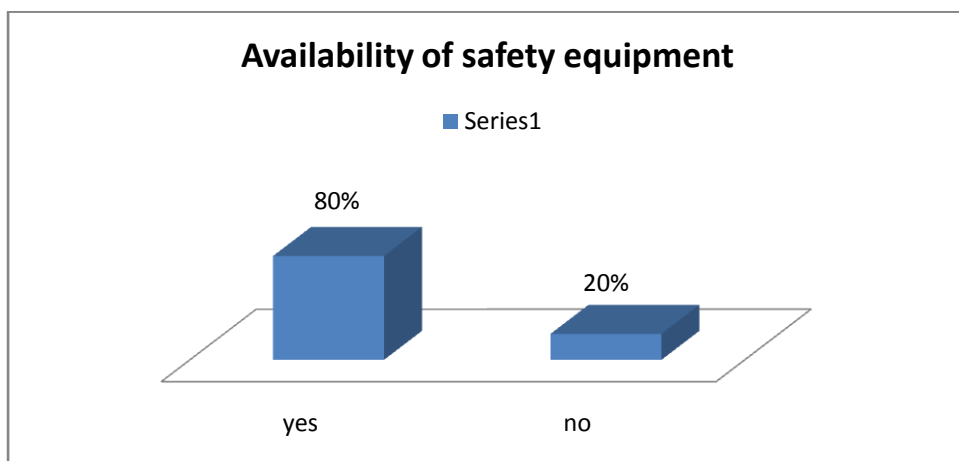
LAB SAFETY

1. Are all laboratory personnel aware about the laboratory safety policies and procedures and follow these at all times?



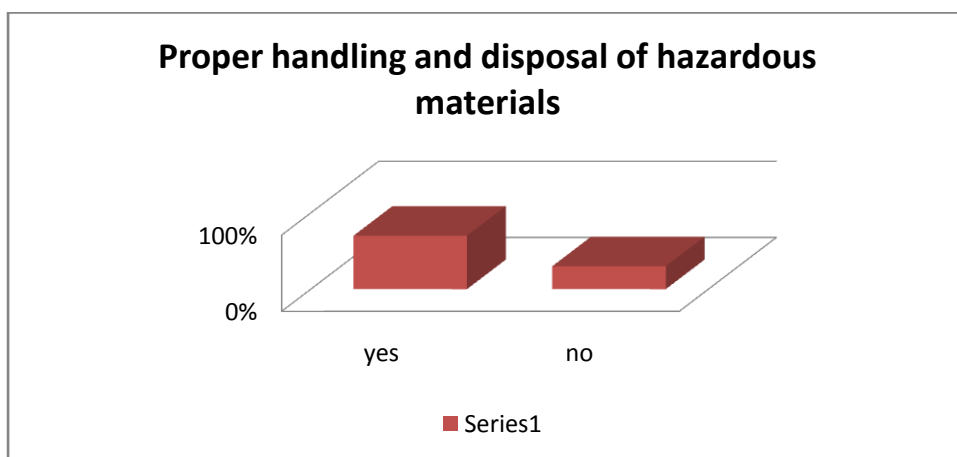
Findings- Out of 22 staff members, 11 (50%) are aware and implement policies and procedures sometimes, 8 (40%) always are aware and implement it while 3 (10%) not at all are aware and implement lab safety policies and procedures.

2. Is the Laboratory personnel are provided with appropriate safety equipment / devices?



Findings- There is 80% availability of safety equipment like firefighting equipment, spill kit, first aid kit etc while 20% like safety showers and eyewash stations are not present.

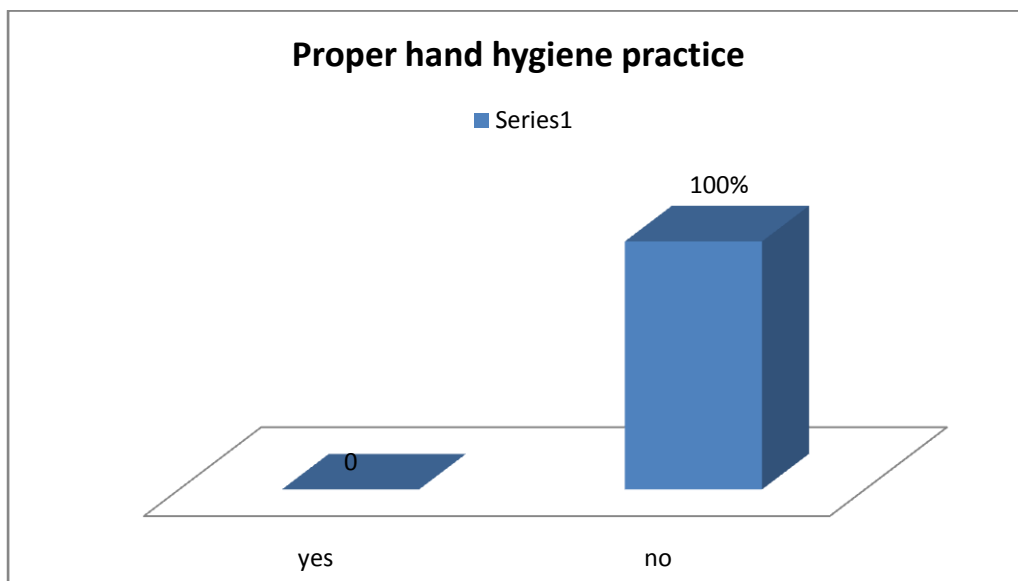
3. Proper handling and disposal of infectious and hazardous materials?



Findings- Out of 22 staff, 16(70%) follow guidelines for proper handling and disposal of hazardous materials while 6(30%) do not follow because they have not been given training on management of hazardous materials.

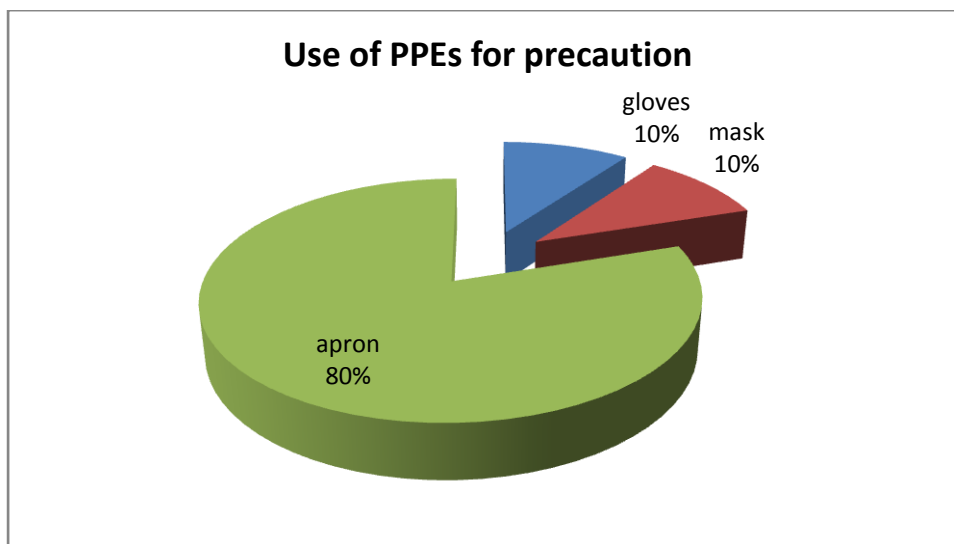
INFECTION CONTROL

1. Does the staff practice proper hand hygiene practices?



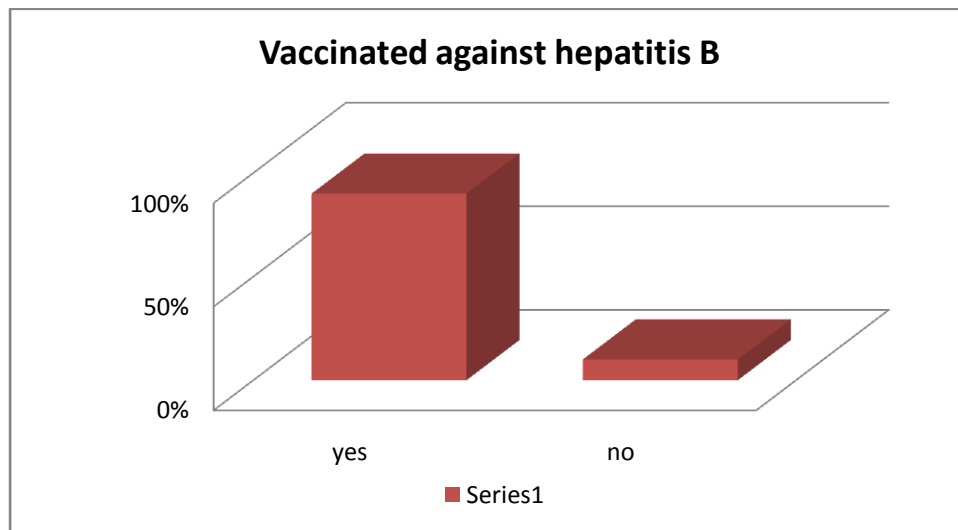
Findings- All the 22 staff do not follow proper hand hygiene steps.

2. Does the staff use PPEs (gloves, mask, and apron) for their precaution?



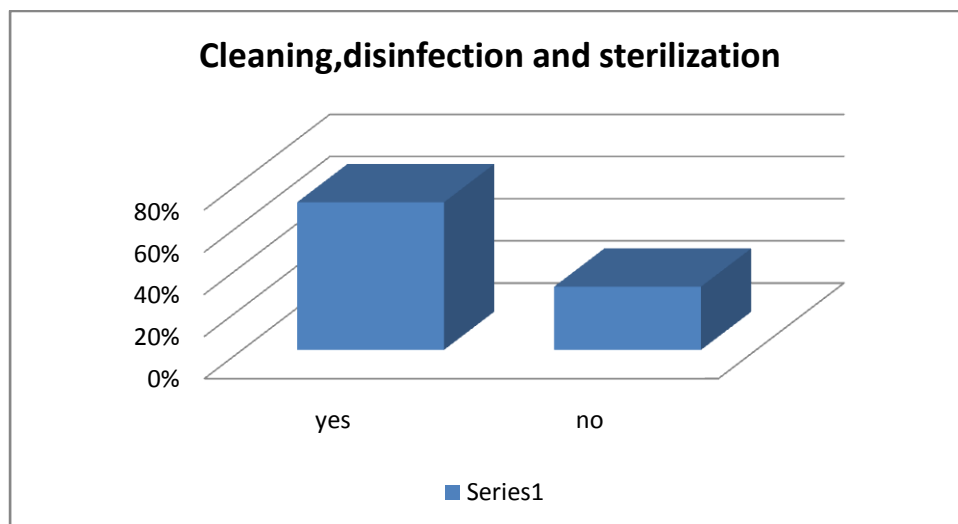
Findings- Out of 22 staff members, 17(80%) wear apron for their safety, while only 2(10%) wear gloves and 2(10%) wear mask and that also sometimes.

3. Are the staffs vaccinated against hepatitis B and other preventive diseases?



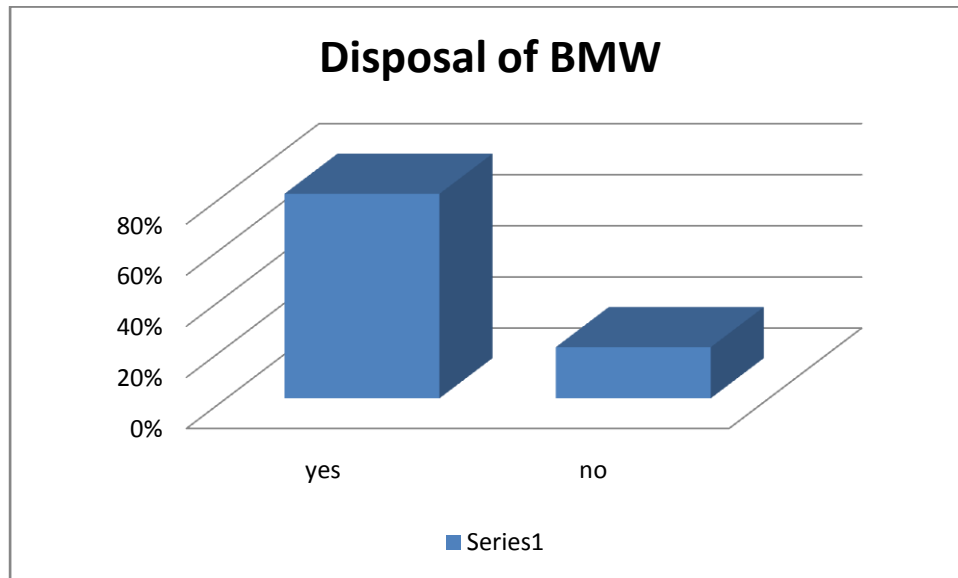
Findings-Almost 90% of the staff are vaccinated against hepatitis B while 10% have still not taken vaccination who have newly joined.

4. Does the staff follow proper cleaning, disinfection and sterilization practices?



Findings- The staff follow 70% of cleaning, disinfection and sterilization while 30% is not followed as the cleaning and disinfection of equipments is not done regularly and also the bench tops are not cleaned regularly.

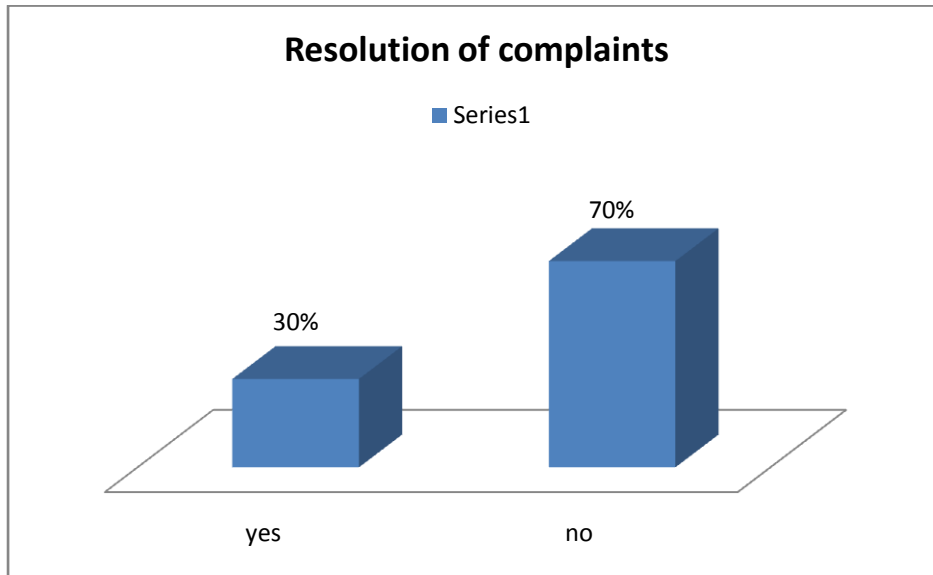
5. Are the biomedical waste properly segregated?



Findings- Out of 22 staff members, 18(80%) follow color coding guidelines for disposal of biomedical waste while 4(20%) of them do not follow guidelines for segregation of BMW as it was found that it was flushed out directly in the sink used for hand washing.

COMPLAINTS/FEEDBACK

Does the lab have provision for receiving of complaints / feedback by the customers and the doctors and are the complaints / feedback reviewed and resolved by the laboratory?



Findings- 70% of the customer complaints (grievances) are not resolved by the lab and lab does not have provision of receiving feedback/complaints separately and all the complaints and feedback are received at the helpdesk counter only while 30% still remains unattended while there is a process of feedback system but it is not recorded now.

TOTAL QUALITY MANAGEMENT IN RADIOLOGY

OBJECTIVES

- To assess compliance of imaging service with the AERB standards
- To assess the Radiology performance on the basis of quality indicators and corrective and preventive actions taken.
- To assess quality assurance in the radiology and identify avenues for further improvement.
- To understand report generation process and to assess turnaround time(TAT)

The areas covered for this project are as follows:

1. Radiology

INTRODUCTION

Radiology is a medical specialty that employs the use of imaging to both diagnose and treat disease visualized within the body. Radiologists use an array of imaging technologies such as X-ray radiography, ultrasound, computed tomography (CT), nuclear medicine, positron emission tomography (PET) and magnetic resonance imaging (MRI) to diagnose or treat diseases. Interventional radiology is the performance of (usually minimally invasive) medical procedures with the guidance of imaging technologies. The acquisition of medical imaging is usually carried out by the radiographer or radiologic technologist. The radiologist then interprets or "reads" the images and produces a report of their findings and impression or diagnosis. This report is then transmitted to the ordering physician, either routinely or emergently.

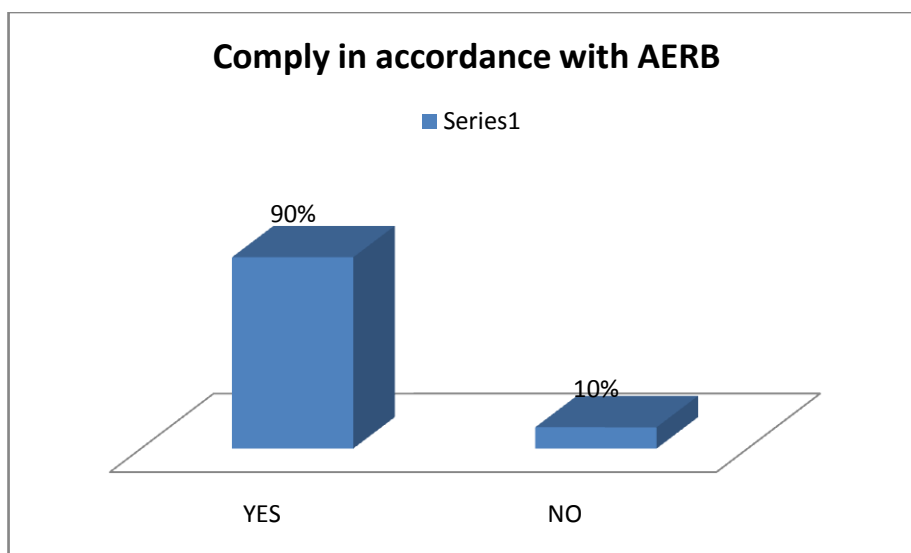
SCOPE OF SERVICES

1. X RAY MACHINE
2. ULTRASOUND MACHINE
3. DOPPLER MACHINE
4. COMPUTER ASSISTED TOMOGRAPHY
5. MAGNETIC RESONANCE IMAGING
6. POSITRON EMISSION TOMOGRAPHY(PET)
7. MAMMOGRAPHY
8. NUCLEAR IMAGING SYSTEM

DATA ANALYSIS,COMPILATION AND INTERPRETATION

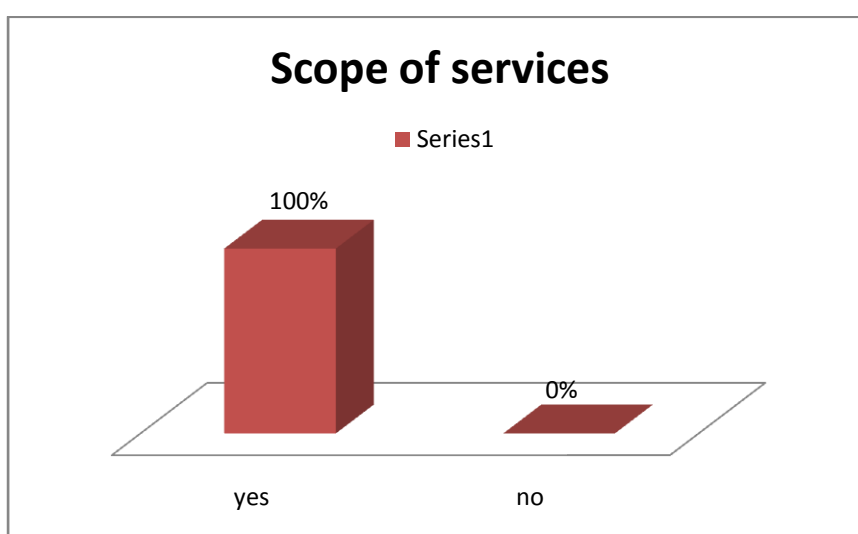
INFRASTRUCTURE

1. Does imaging services comply with BARC/AERB legal requirements and is the license displayed?



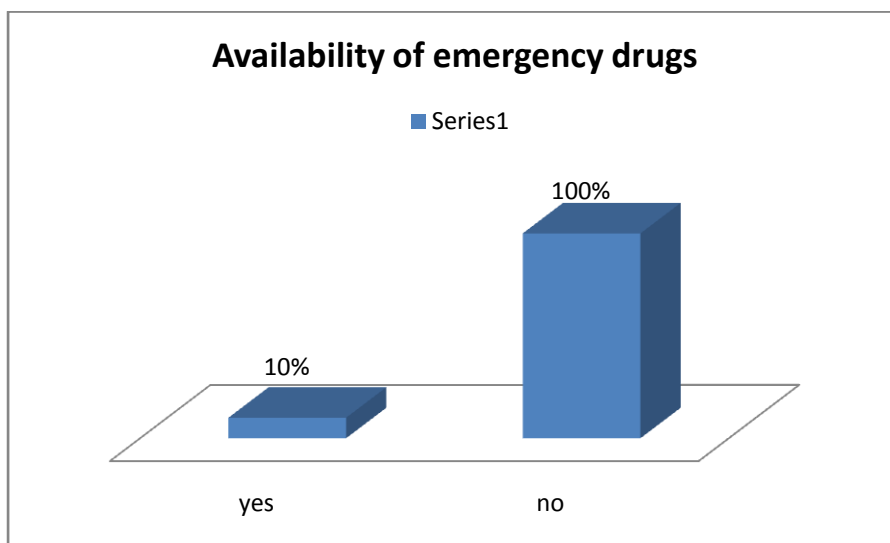
Findings-90% of the imaging services comply with the AERB and the license is displayed while 10% does not comply as the portable X ray equipment does not have AERB license.

2. Availability of appropriate facility as per the scope of imaging services?



Findings- 100% appropriate facilities are present as per the scope of services provided by the radiology.

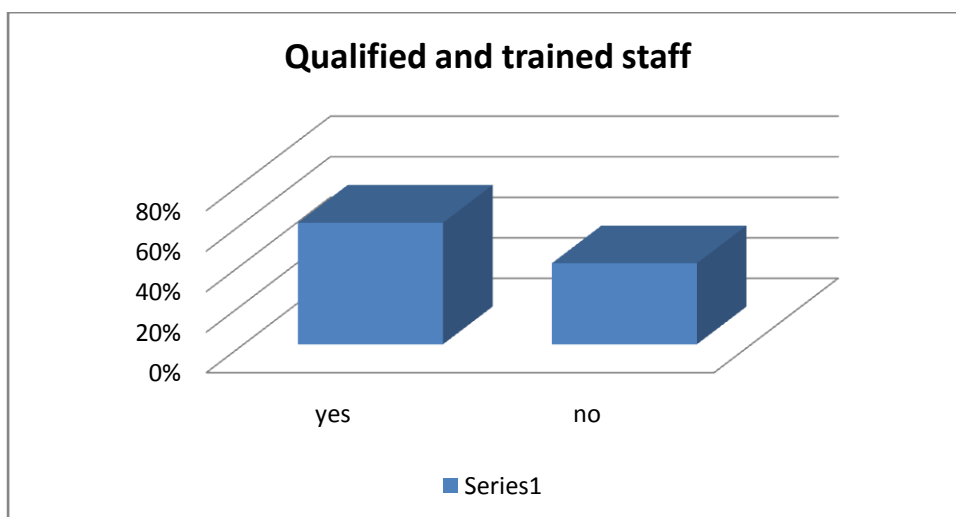
3. Availability of Emergency medications all the time?



Findings- 90% of emergency drugs are not available all the time like avil, atropine etc.

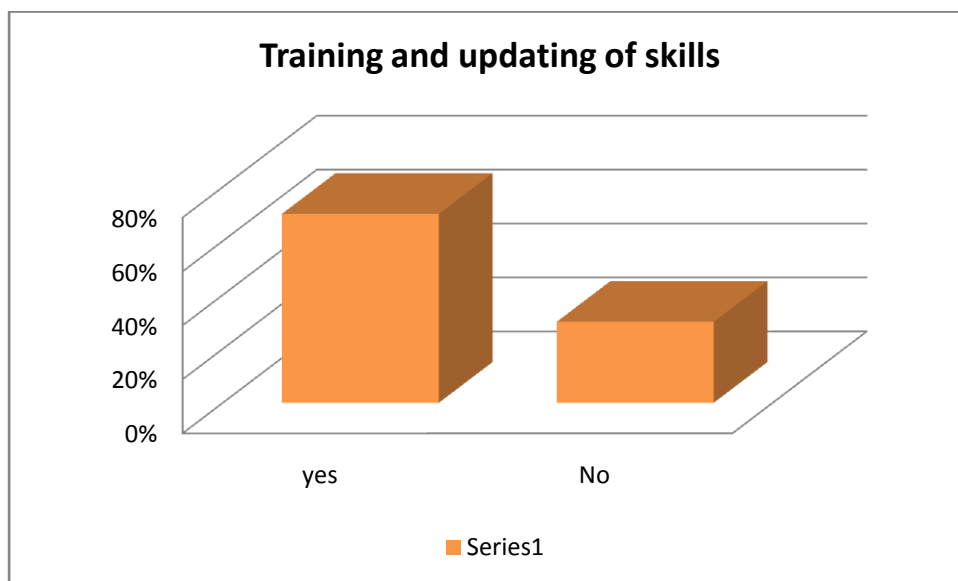
PERSONNEL:

1. Adequately qualified and trained personnel as per AERB?



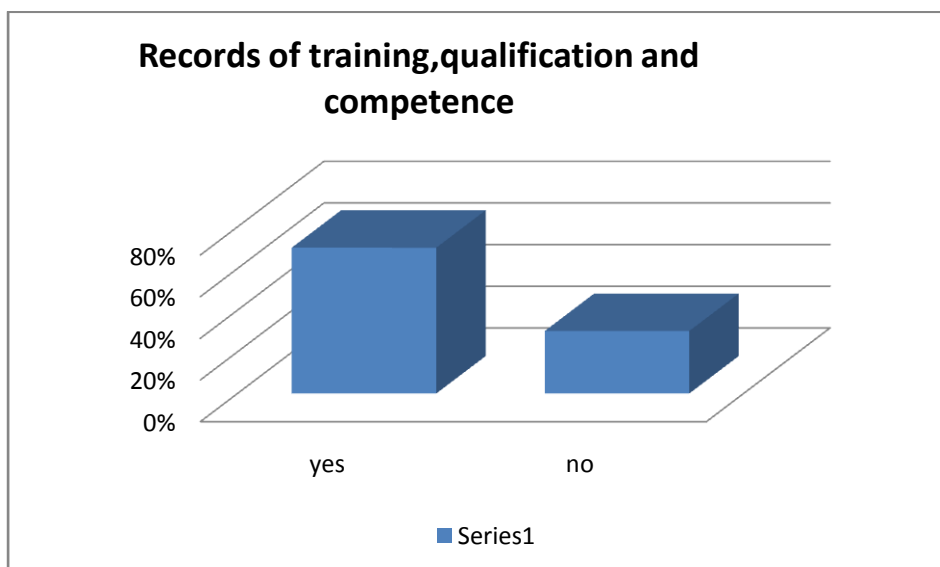
Findings- Out of the 6 staff, 60% of the staff was found to be adequately trained but not qualified while 40% were not qualified and trained.

2. Has all the staff been given on the job training in radiation safety, fire safety and patient safety?



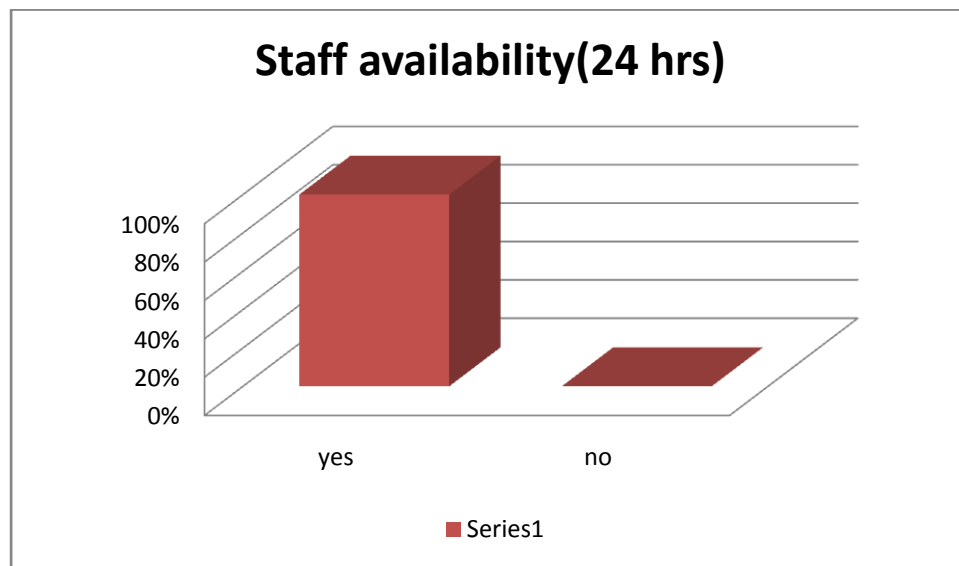
Findings- Training and updating of skills was done on the regular basis till the month of March and in the month of April-may training was not conducted present in the HR department.

3. Detail records of the qualification, training and competence of all the staff members?



Findings- There is all the training records of employees till the month of March in the HR department.

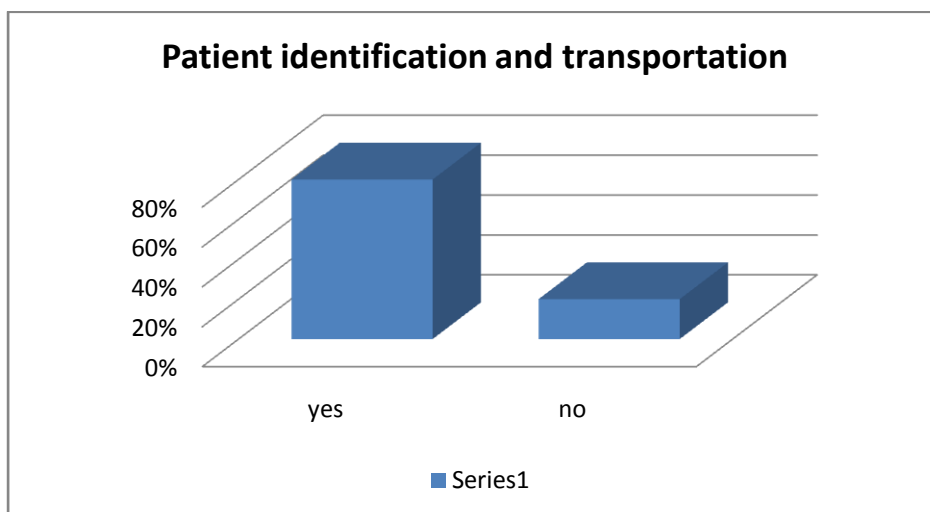
4. Staff availability round the clock (24 hr service)?



Findings- There is 24 hrs availability of the staff as mentioned in the duty roster.

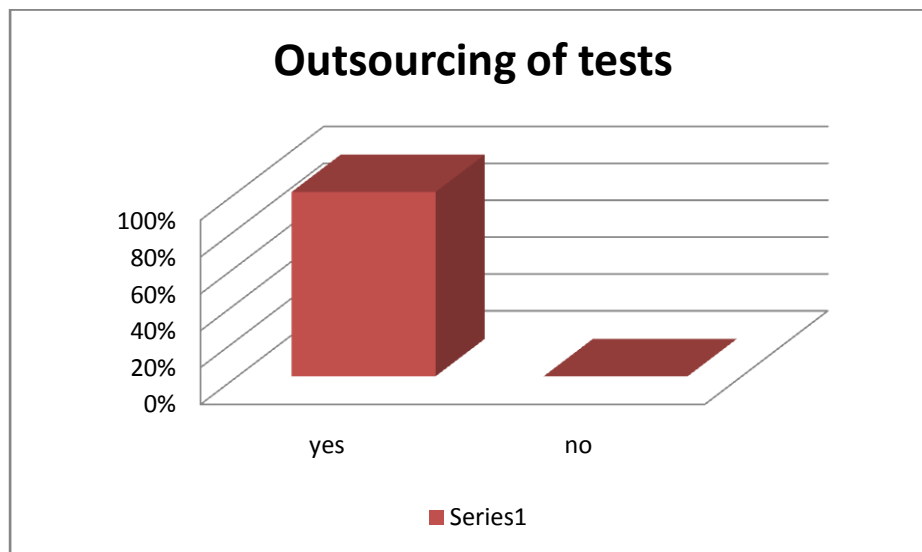
STANDARD OPERATING PROCEDURES:

5. Are the Policies and procedures for identification and safe transportation of patients to the imaging services followed?



Findings- 80% of the policies are only followed for safe transportation of patients while 20% measures are not followed for the safe transfer of patients like use of safety belts and breaks in wheel chairs etc.

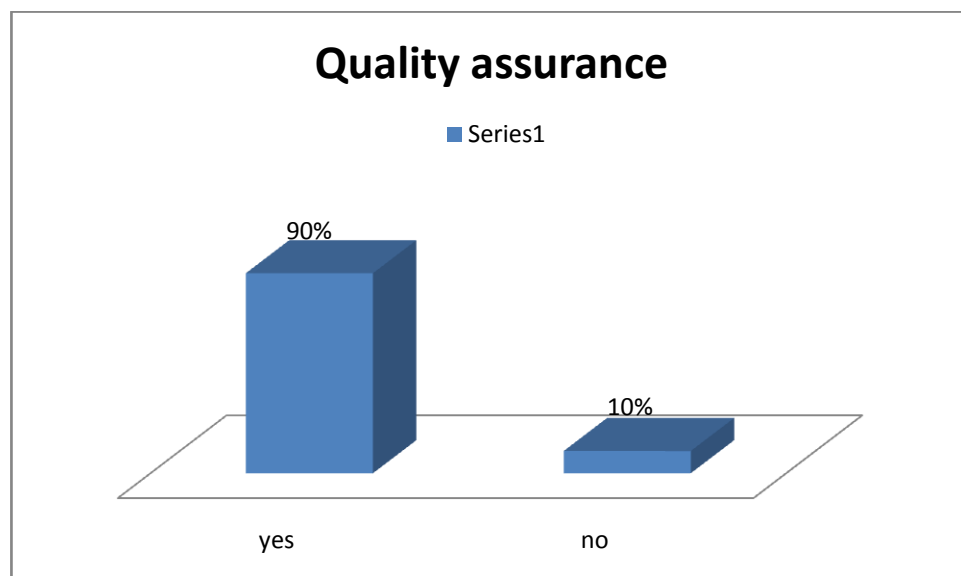
6. Documented procedures for outsourcing tests?



Findings- The tests which are not available are outsourced to the diagnostic centre which follow stringent quality requirements as told by the staff but no records are available.

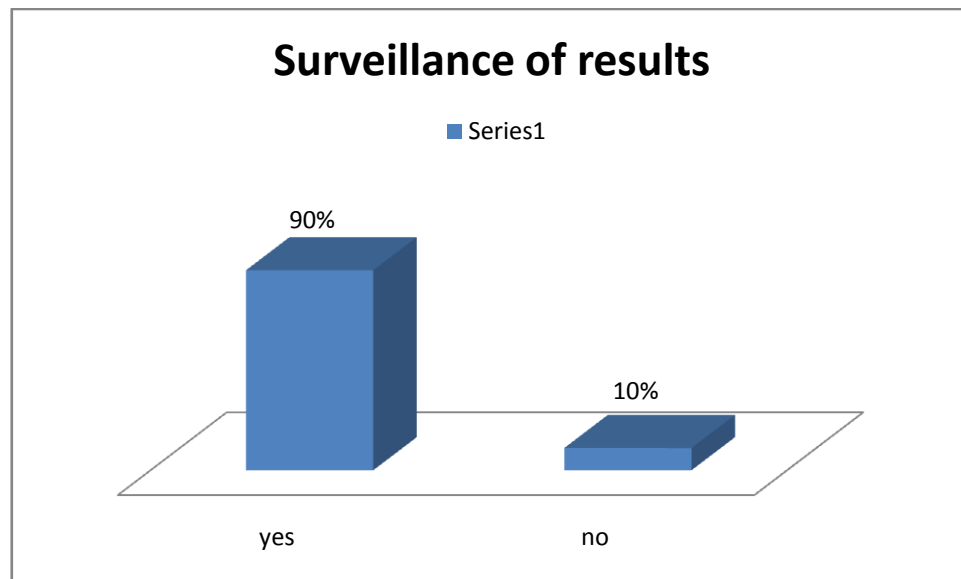
QUALITY ASSURANCE

7. Is the quality assurance programme for imaging services is documented?



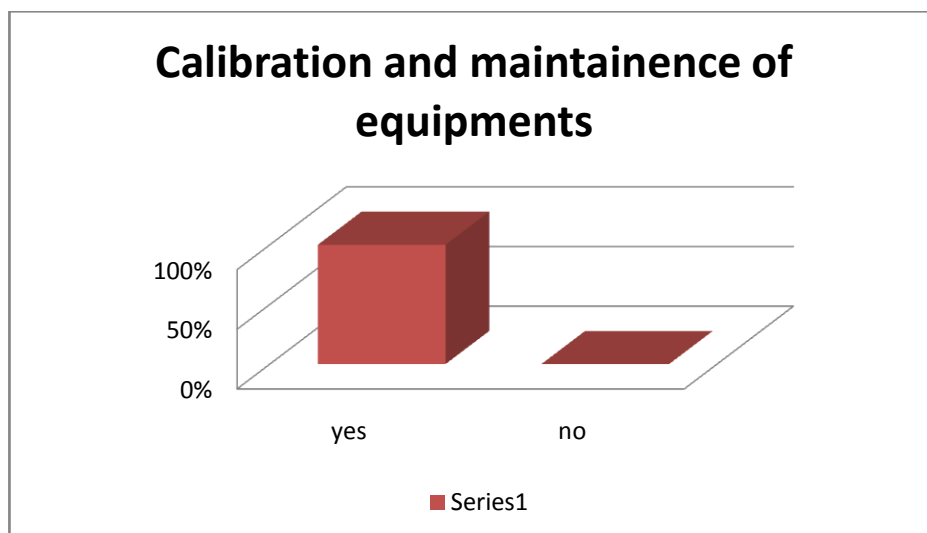
Findings- The quality assurance of imaging service is documented in the quality manual but it is not followed and recorded properly.

8. Does the the programme addresses surveillance of imaging results?



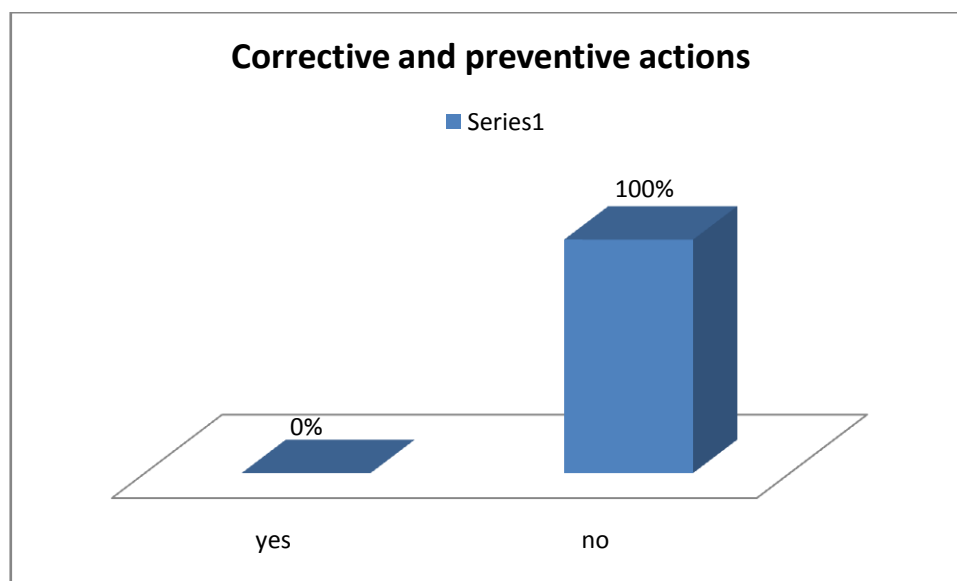
Findings-There is a program for surveillance of results in the quality manual but there are no records available.

9. Does the programme include periodic calibration and maintenance of all equipments?



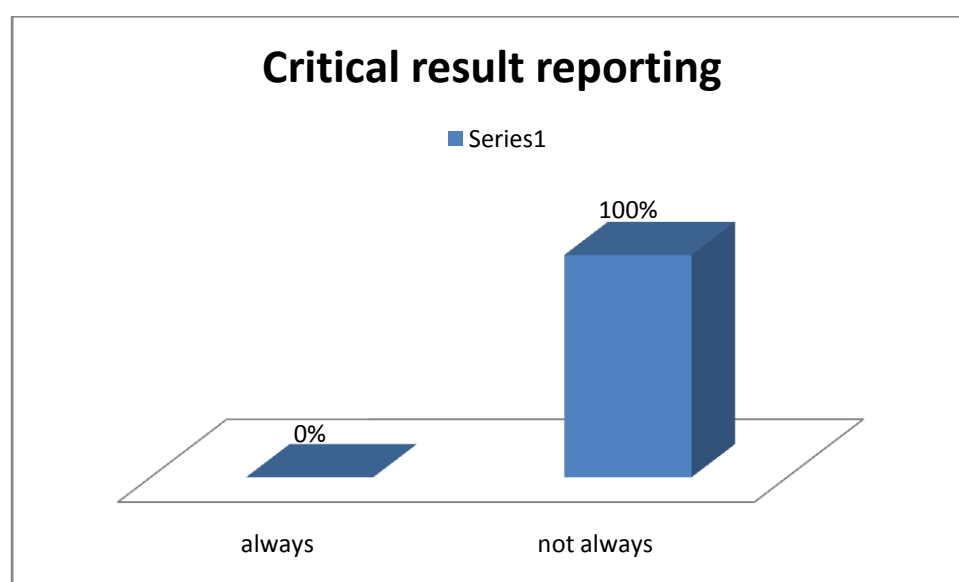
Findings- Calibration and maintenance of the equipments are done as per the schedule and the SOP of the machine manual by the biomedical department.

10. Is there a documentation of corrective and preventive actions?



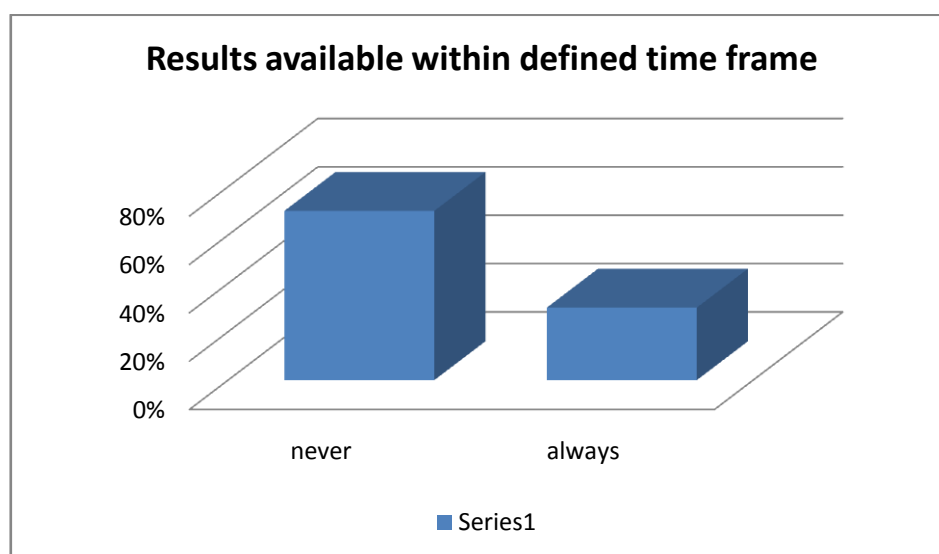
Findings- There is no up to date records of corrective and preventive actions from last 6 months.

11. Are the Critical results are intimated immediately to the concerned personnel?



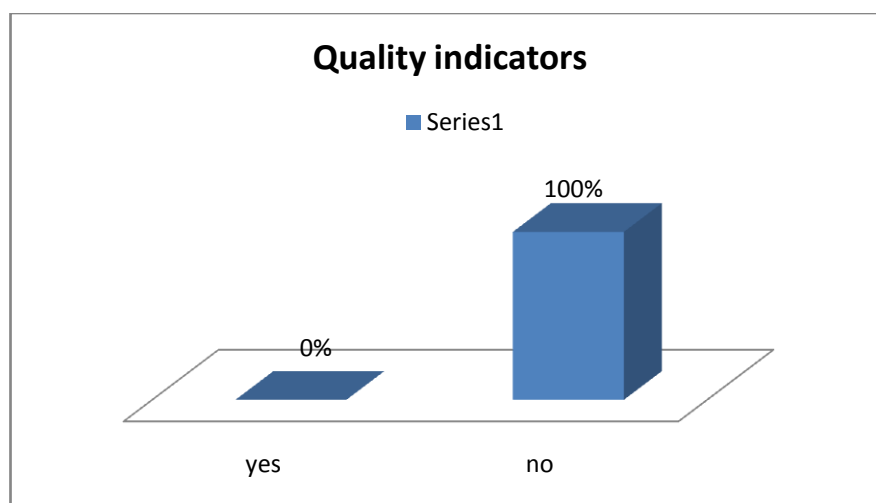
Findings- The critical results are not always intimated to the concerned authority as the staff is unaware about it though it is displayed in the department.

12. Are the imaging results available within a defined time frame?



Findings – 200 samples were analyzed in X ray and CT scan of OPD patients and it was found out that average no of TAT was around 24-48 hrs which was exceeding the stipulated time frame(4 hrs).It was found that only 30% of the reports are always available on time while 70% were never available on time.

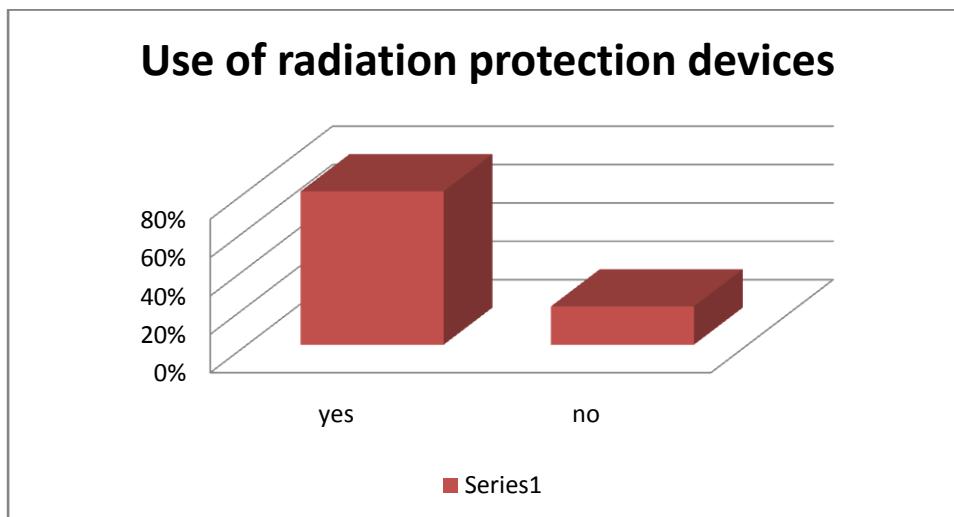
13. Are there quality indicators records for quality improvement?



Findings- No records are available of the quality indicators used by the radiology from the month of Feb but there is a register available for tracking of quality indicator.

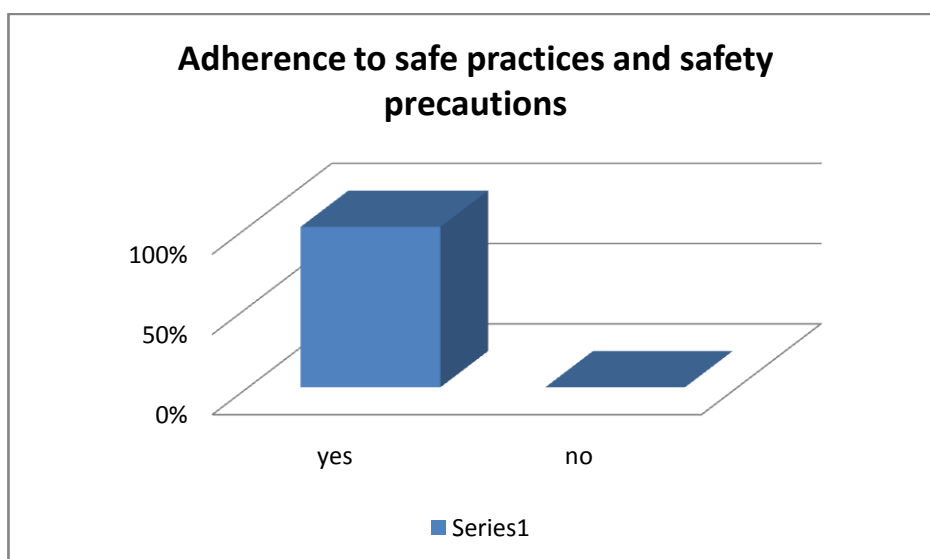
RADIATION SAFETY

14. Is there a radiation safety programme including usage of safety equipment and TLD badges?



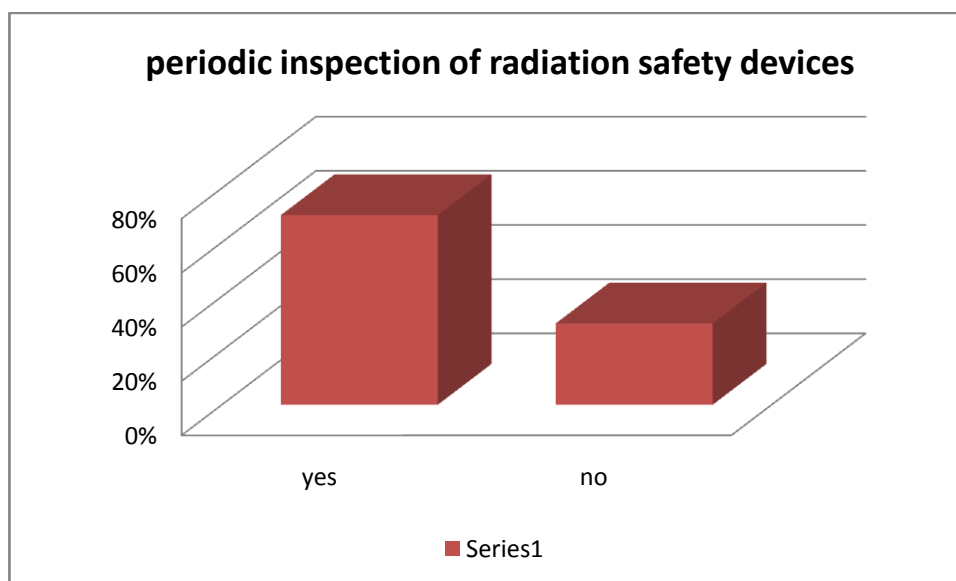
Findings- Out of 6 staff members, 80% use TLD badges and radiation protection devices like lead apron, lead gloves and goggles for their precaution while 20% do not use TLD badges sometimes as they are not available on time after inspection.

15. Adherence to standard precautions and safe practices?



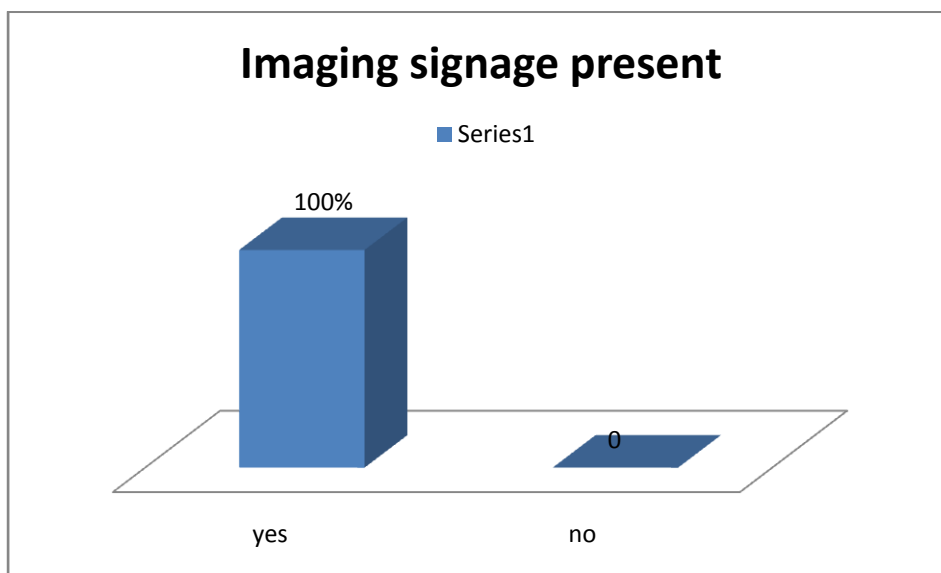
Findings-All the 6 staff members follow safe practices and safety precautions.

16. Are the radiation safety devices periodically tested and results documented?



Findings- 70% of the periodic inspection of radiation safety devices is done(TLD badges are monitored after every 3 months for the radiation exposure) while 30% is not done as TLD badges are not available after inspection on time by RSO and no records was found to be documented and also expired badges were not send on time.

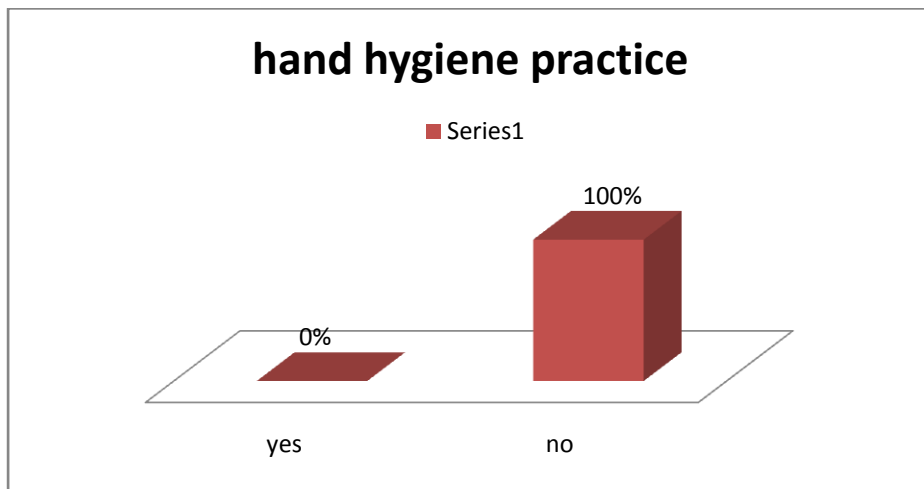
17. Imaging signage-radiation hazard, PNDT act etc present?



Findings- All the imaging signage is present for warning and restriction.

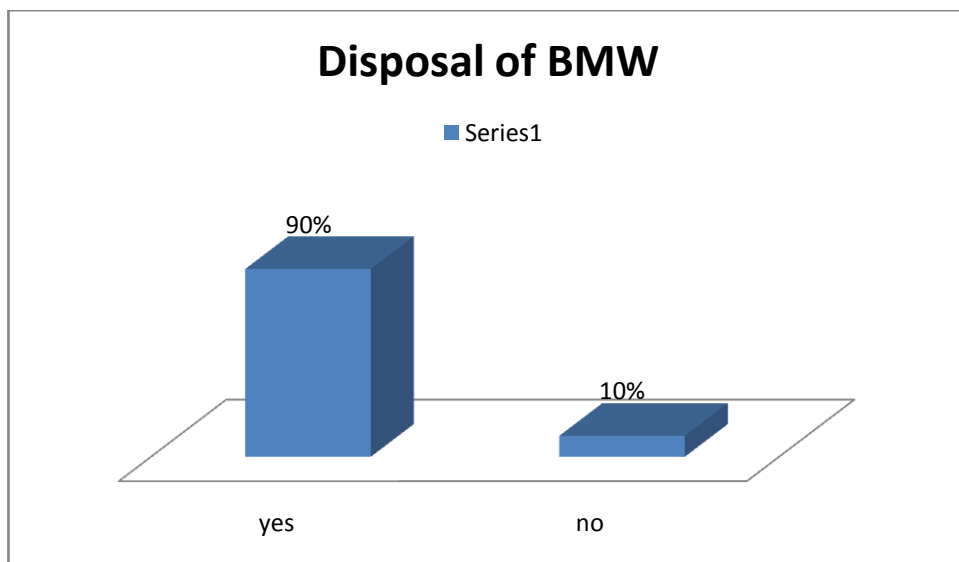
INFECTION CONTROL

18. Does the staff practice proper hand hygiene practices?



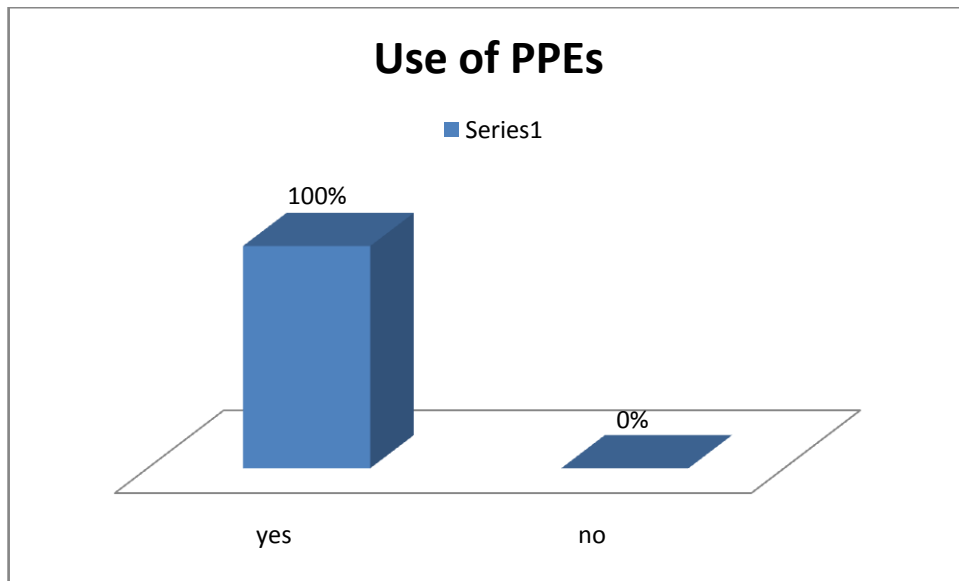
Findings - None of the 6 staff members followed proper hand hygiene steps.

19. Are the biomedical waste properly segregated?



Findings- Out the 6 staff member, 1 was not found to follow color coding guidelines for disposal of biomedical waste.

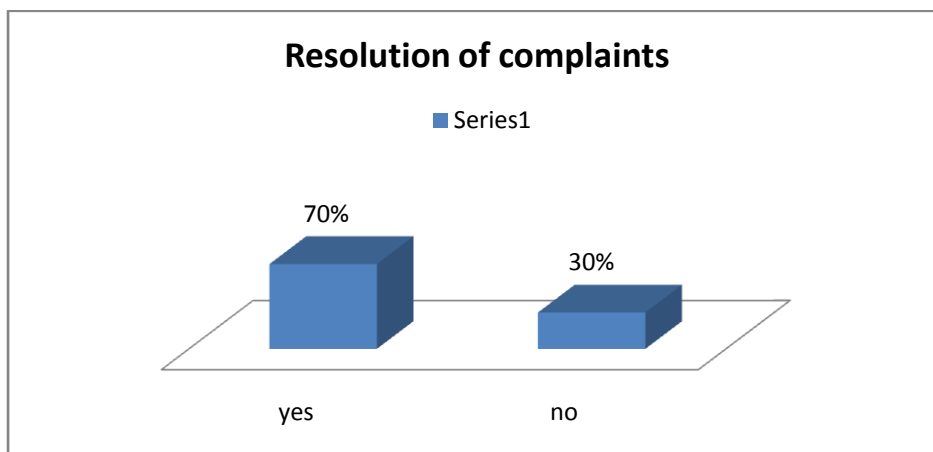
20. Use of Personal protective equipment (PPEs) for their precaution?



Findings- All the 6 staff members use PPEs like lab coat, lead apron etc for their precaution.

COMPLAINTS/FEEDBACK

Does the radiology has provision for receiving of complaints / feedback by the customers and doctors and is it reviewed and resolved by the radiology?



Findings- 70% of the customer complaints (grievances) are not resolved by the radiology and it does not have provision of receiving feedback/complaints separately and all the complaints and feedback are received at the helpdesk counter only while 30% still remains unattended. There is a provision of receiving of feedback from doctor but it is not being done now.

CONCLUSION AND RECOMMENDATIONS:

Radiology

1. Training and updating of skills of the staff should be done on the regular basis.
2. Staff should be encouraged to implement quality assurance effectively to ensure high quality standards.
3. Staff should be encouraged to monitor and improve TAT and quality indicators.
4. TLD badges should be periodically monitored and made available to the staff.

Pathology

1. The staff needs to be trained for use of PPEs and safe disposal of Biomedical Waste.
2. The quality and frequency of training given to the staff should be checked and if the training is found lacking then it should be improved and trainers should also be trained. Trainings should be closely monitored to ensure trainers adhered to the training schedule.
3. Quality Indicators like turnaround time(TAT) and critical reporting should be monitored regularly and steps should be taken to improve TAT of reports.
4. Staff should be given On-the-Job training on regular basis regarding policies and procedures.
5. Staff should be encouraged to implement quality assurance effectively to ensure high quality standards.
6. Performance evaluation of the staff should be regularly monitored.
7. Staff should be encouraged to follow proper hand hygiene.
8. Decentralized testing by Point of care testing (POCT) device should be done to minimize turnaround time and shorten the length of stay of the patients and result in more appropriate and early diagnosis.
9. Suggestions to improve TAT are listed in the next page :

Step	Element	Action Reported to Improve TAT
Test selection and order entry	Test request	- Standardized nomenclature for easy look up - Customized screens for rapid ordering - Enable providers to order electronically
Specimen collection and delivery	Appropriate information and handling	- Ensure accuracy of admission, discharge and transfer data updates - Consider patient location tracking - Automate lookup of information on volume, container, and special precautions for handling specimens
	Phlebotomy	-Scrutinize phlebotomy practices
	Specimen labeling	-Use barcodes
	Specimen delivery	-Consider pneumatic tube, robots, dumbwaiter or conveyor belt- type system
	Specimen type	-Review use of plasma and serum separator tubes and whole blood
Accessioning		
	Specimen arrival	- Use barcode readers

Step	Element	Action Reported to Improve TAT
	Specimen transport within laboratory	- Consider pneumatic tube, robots, dumbwaiter or conveyor belt- type system
	Specimen sorting	- Sample directly from specimen container (as appropriate)
Testing	Instrumentation	- Consider total laboratory automation - Evaluate throughput - Ensure minimal downtime and adequacy of backup - Use automatic repeats (for abnormal results) and dilutions for results exceeding linearity - Consider automatic verification of results within reference limits - Use incomplete test list frequently
	Quality control	- Adopt efficient quality control procedures
Reporting	Posting of reports	-Interface instrumentation to computer - Generate preliminary reports (e.g. microbiology, anatomical pathology) - Transmit results via computer, electronic broadcast, pager and/or - Blackberry - Consider automatic printing for locations such as intensive care

Step**Element****Action Reported to Improve TAT**

- Provide assistance with results and interpretation (help desk, interpretative reporting, reflex testing)

For each step

- Monitor and improve TAT (mean, median, percentage meeting criteria and/or outliers)
- Evaluate specimen flow to maximize efficiency
- Track and eliminate errors

REFERENCES

1. Essentials of hospital services by Dr. Ashok Kaushik- IIHMR, Jaipur.
2. AERB safety code no. AERB/sc/med-2
3. www.aerb.gov.in
4. ISO 15189:2007 medical laboratories– particular requirements for quality and competence
5. NABL 112 specific criteria for accreditation of medical laboratories
6. <http://icmr.nic.in/guidelines/gclp.pdf>

ANNEXURE

List of activities carried out in the hospital:

Date	Departments
1/04/2014-8/4/2014	Observation of various departments of hospital and their working.
10/4/2014-15/4/2014	Preparation of questionnaires and checklist to assess quality of services
16/4/2014-30/4/2014	Interview and observation of the the pathology staff
1/5/2014-15/5/2014	Interview and observation of the radiology staff
16/5/2014-31/5/2014	Data analysis, Interpretation and preparation of report.

ACRONYMS AND ABBREVIATIONS:

NABL	NATIONAL ACCREDITATION BOARD FOR TESTING AND CALIBRATION LABORATORIES
QAP	QUALITY ASSURANCE PROGRAM
QMS	QUALITY MANAGEMENT SYSTEM
TAT	TURN AROUND TIME
SOP	STANDARD OPERATING PROCEDURE
PPE	PERSONAL PROTECTIVE EQUIPMENTS
IQC	INTERNAL QUALITY CONTROL
EQA	EXTERNAL QUALITY ASSURANCE
AERB	ATOMIC ENERGY REGULATORY BOARD
BARC	BHABHA ATOMIC RESEARCH CENTRE
TLD	THERMOLUMINESCENT DOSIMETER

PNDT	PRENATAL SEX DETERMINATION
BMW	BIOMEDICAL WASTE
CT/MRI	COMPUTED TOMOGRAPHY/MAGNETIC RESONANCE IMAGING

Questionnaire and checklists used:

GENERAL CHECKLIST

CRITERIA:	YES	NO	N/A	COMMENTS
<u>INFRASTRUCTURE</u>				
Does it have adequate space & separation to avoid cross contamination				
Is the house keeping adequate				
Reception and waiting area separate from the sample collection area?				
Provision of privacy during collections?				
Uninterrupted power supply(UPS)				
Adequate environmental conditions?				
Proper storage of supplies?				
Quality water supply for analytical purpose				
Fire-safety equipment				
Facility for cleaning of glassware, sterilization disinfection				
Separate area for staff for hand washing, eating and storing food, drinks etc				
<u>EQUIPMENT</u>				

Equipments log book				
Periodic inspection, cleaning, maintenance of equipment(AMC)				
Operation manual for equipments				
The reagents, chemicals and consumables stored under appropriate environmental conditions.				
Are reagents properly labelled? (name, concentration, storage requirements, date received/prepared, date in use, expiration date)				
Are temperature recorded and monitored daily for refrigerators, incubators?				
<u>RECORDS AND DOCUMENTATION</u>				
Policy for retention time for records?				
Policy for retaining tested specimen?				
List of service provided and excluded?				
Records of internal audit?				
<u>LAB SAFETY</u>				
Emergency showers, eye wash stations and fire extinguishers accessible?				
Aisles clear and unobstructed?				
Spill kit available?				
First aid kit available?				
No eating and drinking in the lab?				
Lab signs like biohazard sign etc				
MSDS available?				

Proper storage of volatile and inflammable reagents?				
<u>QUALITY ASSURANCE</u>				
Daily quality control of equipments				
External quality assurance				
Calibration and maintenance of equipments				
Quality indicators monitored				
Corrective and preventive actions recorded				
Turn around time monitored.				

RADIOLOGY

CRITERIA:	YES	NO	N/A	COMMENTS
<u>INFRASTRUCTURE</u>				
<u>Adequate infrastructure as per the scope of services</u>				
<u>Adequate manpower</u>				
<u>Compliance with AERB standards</u>				
<u>QUALITY ASSURANCE</u>				
<u>Daily quality checks</u>				
<u>Calibration and maintenance of equipments(AMC)</u>				
<u>Outsourcing of tests</u>				
<u>Corrective and preventive actions recorded</u>				
<u>Critical results reported immediately</u>				
<u>Quality indicators monitored</u>				
<u>Turnaround time monitored</u>				
<u>RADIATION SAFETY</u>				
<u>Radiation protection devices</u>				
<u>TLD badges for personnel monitoring</u>				
<u>Adherence to safety precautions</u>				
<u>Periodic inspection of safety devices</u>				

Thank you