

**Summer Training at
Narayana Multispeciality Hospital,
Jaipur**

**A Retrospective Study on Risk Assessment of Laboratory Complaints and
Root Cause Analysis of High Risk Complaints**

**By
Deepak Patial**

**Under the guidance of
Dr. Barun Kanjilal**

**MBA Hospital and Health Management
2015-2017**



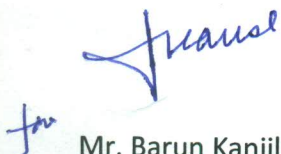
**The IIHMR University, Jaipur
2016**

CERTIFICATE

This is to certify that Dr. Deepak Patial has undergone Summer Training in Narayana Hospital, Jaipur from 1st April 2016 to 31st May 2016.

The candidate himself completed the project assigned to him during Summer Training. His approach to the project was sincere and proactive. This summer training is partial fulfillment of the course requirement recommended for the award of MBA in Health and Hospital Management.

I wish him success in all his future endeavors.



for
Mr. Barun Kanjilal
Professor
IIHMR, Jaipur



Col. (Dr.) Ashok Kaushik Professor
Dean (Academic & Student Affair)
IIHMR, Jaipur

NH/HRD-Off/2015/296

Date: 1st June 2016

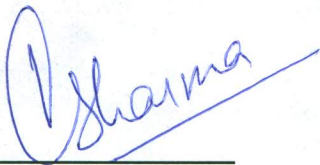
TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Dr. Deepak Patial** has completed his summer internship training in Quality on "A Retrospective study on risk assessment of laboratory complaints and root cause analysis of high risk complaints " Successfully in Narayana Multispecialty Hospital, Jaipur from 1st April 2016 to 31st May 2016.

His work during the Period was commendable and appreciable. His character and conduct was good.

We wish him success in his future endeavors.

For Narayana Multispecialty Hospital, Jaipur



Vishnupriya Sharma
Deputy General Manager-Human Resources



Acknowledgements:

The internship opportunity I had with **Narayana Multispeciality Hospital, Jaipur** was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of it. I am also grateful for having a chance to meet so many wonderful people and professionals who led me through this internship period.

I express my deepest thanks to my mentor Mrs. Nabanila Dutta, Senior Manager, NH, Jaipur for taking part in useful decision & giving necessary advices and guidance and arranged all facilities to make internship easier. I choose this moment to acknowledge his contribution gratefully.

It is my radiant sentiment to place on record my best regards, deepest sense of gratitude to Mr. Arunesh Punetha(Zonal Director), Dr Mala Airun (Clinical Director),Dr Manikant Jain (MS) and Mr. Subhasis Bhattacharya(General Manager) for their careful and precious guidance which were extremely valuable for my study both theoretically and practically.

My learning would not be all- inclusive without the help of Mr. Hemant - Senior Executive administration and Ms. Mayuri Lokre – Senior Executive administration. Their involvement and sharing of knowledge were of great help to my study as well in better understanding of the Radiology department.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desired career objectives. Hope to continue cooperation with all of you in the future,

Sincerely

Dr Deepak Patial

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Acronyms/Abbreviations:

- A&E: Accident and emergency.
- BTCT: Bleeding time Clotting time
- CSSD: Central sterile supply department.
- DAMA: Discharge against medical advice
- HIC: Hospital Infection Control
- HIS : Hospital Information System
- ICD: International coding of diseases
- ICU: Intensive care unit.
- IPD: Inpatient department
- LIS : Laboratory Information System
- MLC: Medico legal cases
- MOD: Manager on duty
- MRD: Medical record department.
- MRN: Medical Record Number
- NABL: National accreditation board of laboratories.
- RCA: Root cause analysis
- OPD: Outpatient department.
- OT: Operation Theater.
- TMT: Tread mill test

INTRODUCTION TO HOSPITAL

ABOUT NARAYANA HRUDAYALAYA HOSPITAL GROUP

Narayana Hrudayalaya has now, without a shadow of doubt been, the spark that has radically changed the scenario of accessibility, pricing and state of the art healthcare in India. Originally, Dr Devi Shetty's radical new concept, which started with the Spartan Narayana Hrudayalaya heart hospital Bangalore in the year 2001, we are now a truly global healthcare provider .Our current facilities allow 32 Hospitals, 6600 beds,20 Cities , 15000 Employees , 1800 Doctors and we positively look at being able to equip and service 30000 beds by 2018

Dr Devi Shetty has over the past three decades re affirmed his commitment to 'An equitable distribution of world class healthcare for the masses at an affordable cost'. Our group's firm belief in its core values and mission statement helps reinforce our everlasting commitment to the people of Rajasthan. Narayana Hrudayalaya Jaipur will bring this very same revolutionary concept to the state and its people with the promise of an affordable one-stop health-solution.

Narayana Health (formerly known as Narayana Hrudyalaya) is a multi-specialty hospital chain in India, headquartered in Bengaluru.

The company won the "Good Company" award for its quality, affordability and scale .The business model of Narayana Health became a Global Healthcare and Harvard Business School case study. The hospital chain is among the largest telemedicine networks in the world

The chain has 1500 full-time Doctors and 15,000 employees. On An average of 150 surgeries are performed every day and on an average of around 80,000 outpatients are seen every month.

Narayana Multispecialty Hospital, Jaipur is a multispecialty tertiary care hospital offering high quality affordable medical care to the people of Rajasthan and bordering states. It is the first hospital in Rajasthan to get Joint Commission International (JCI) accreditation for meeting the international benchmarks in healthcare. Key specialties offered include Cardiology & Cardiac surgery, Orthopedics, Neurology and Renal Sciences.

A leader in the field of Cardiac sciences, it performs complex congenital surgeries, Coronary bypass grafting with advanced techniques like Beating heart surgeries, Minimally Invasive Cardiac surgery and other valvular surgeries on adults and children. It is equipped with cardiac

OTs, state-of-the-art Cathlabs, 3D mapping of Electrophysiology, Cardiac Intensive Unit and Coronary care unit.

ABOUT NARAYANA HRUDAYALAYA HOSPITAL, JAIPUR

We are located on Hrudayalaya Avenue, of Kumbha marg at Pratapnagar in New Sanganer, Jaipur. This sprawling 6.7 acre campus has its commitment for all to view as you arrive at the campus; in a multi-faith place of worship .It reaffirms our commitment to society, with no distinction in classes, religion or faith. This is a 'Temple of healing 'and that sentiment echoes throughout a patient's experience at NH hospital.

You see a hospital that is functional with a capacity of 400 beds that includes tertiary intensive care beds with additional intermediate care areas and wards. We offer centers of excellence that have a unique multidimensional approach to patient care - The Heart centre, The center for Bone, Joint and Spine, The division of Renal sciences and Transplant Urology ,The Advanced center for Minimal Access surgeries and the Maternity and Child unit to name a few.

NH Jaipur runs a very successful Renal Transplant Program and has a dialysis unit performing 1400 sessions per month. It also offers one of the most comprehensive Orthopedics services in the region including Bone & Joint Surgeries, Knee and Hip replacement s, Spine Surgery, Arthroscopy & Sports medicine. It also has the expertise and infrastructure to treat neurological conditions like Stroke, AVMs, Tumors, and Epilepsy etc. It is leading centre for minimal Access Surgeries and Bariatric Surgery to treat metabolic disorders and weight loss.

It is a 290 bedded multispecialty tertiary care hospital, located at Pratap Nagar within a sprawling campus of 4.7 acres offering high quality affordable medical care to the people within Rajasthan and bordering states as well.

NH mission is to deliver high quality, affordable healthcare services to the broader population in India. Core values o f the group are represented by the acronym "iCare" , which encompasses Innovation and efficiency, Compassionate care, Accountability, Respect for all, and Excellence as a culture.

Ensuring quality medical treatment at Narayana Hrudyalaya Hospital Jaipur, are the most comprehensive facilities available in Rajasthan which includes a 64 slice CT scan machine, 1.5 tesla MRI, Nuclear medicine, touch screen monitors, world class dialysis facility , and a flat panel Cath lab, to name a few.

Narayana Multispecialty Hospital, Jaipur was awarded the International accreditation from Joint Commission International (JCI) on 21st July 2012 and re-accreditation on 18th August 2015 making it the first hospital in Rajasthan to receive this prestigious recognition. A JCI accreditation provides assurance that the standards, training and processes at the hospital meet the highest international benchmarks.

1.1 Vision: "Our vision is affordable quality healthcare to the masses worldwide."

1.2 Mission: "Our dream of making quality healthcare available to the masses worldwide"

1.3 Values: Core values are represented by the simple acronyms **iCARE**

- **i-** Innovation & efficiency
To continuously reduce the cost of delivery of high quality health care and improve our reach.
- **C-** Compassionate care
In providing accessible service that makes a difference to our patients.
- **A-** Accountability
To honour commitments to our patients, employees and investors with integrity and transparency.
- **R-** Respect for all
Recognise the contribution of every employee and respect the rights as well as the dignity of every patient and employee.
- **E-** Excellence

Where we individual excel to collectively ensure the highest quality of consistence and reliable services to our patients and sustainable values to all our stakeholders.

Quality Policy:

- Deliver world class patient care through medical excellence.
- Create a patient-centric environment:
- Ensure high standards and safety of treatment during the patient's stay
- Continuous Quality Improvement through implementation of robust clinical and non-clinical process and protocols
- Having world-class infrastructure and cutting edge technology utilized by highly skilled employees.
- Complying with statutory regulations

Service Standards:

- Courteous
- Attentive
- Compassionate service
- Teamwork
- Safe



Observational Learning:

Floor wise plan

Lower Ground Floor	Linen Room, Dialysis, Endoscopy, Pulmonology, Physiotherapy, Radiology, Emergency, CSSD, IT, Male General Ward, Main Store, Central Pharmacy, Purchase, Maintenance ,Fire control room
Ground Floor	Registration, OPD's, IP Billing, Admissions, TPA, Non Invasive Cardiology, Ultrasonography, Lab and Blood bank, OP pharmacy, Cathlabs, CCU,HDU,KTU, MRD
Mezzanine Floor	IP Pharmacy, Training rooms, Skill Lab, Administration
First Floor	ANC, Female general ward, Paediatric ward, Biomedical Engineering, Semi Private ward, PICU, NICU, 5 OT's, ITU
Second Floor	CTVS ward, 4 OT's, MICU, SICU, Private wards

Specific Objective: To describe the observational learning of different departments of the hospital.

Mode of data collection:

Every department of the hospital was observed carefully for its working, staff, hierarchy, physical set up and major challenges faced by it, if any.

Source of information:

a) Primary:

- Interaction with doctors , executives and other employees
- Interaction with patients and their attendants
- Direct observation

b) Secondary:

- Registered records
- Website of the hospital
- Pamphlets, magazines , brochures etc

Findings:

Scope of Services:

- Anaesthesia & Critical Care
- Department of Cardiac Science
 - Cardiac Anaesthesia
 - Cardiac Electrophysiology
 - Cardiothoracic & Vascular Surgery
 - Paediatric & Adult
 - Interventional Cardiology
 - Paediatric & Adult
 - Non Invasive Cardiology
 - ECG, ECHO, HOLTER, TMT
- Department of ENT
- Department of Gastro Science
 - Gastroenterology & Haematology
 - G.I & Laparoscopic Surgery
- Department of Neuro Sciences
 - Neurology
 - Neurosurgery
- Department of Paediatric
 - Neonatology
 - Paediatric
 - Paediatric Surgery
- Department of Plastic Surgery
- Department of Renal Sciences
 - Dialysis
 - Nephrology

- Urology
- Transplant Services
- General & Laparoscopic Surgery
- Institute of Bone, Joint & Spine
 - Hand & Upper Limb Surgery
 - Joint Replacement
 - Spine surgery
 - Sports Medicine & Arthroscopy
- Internal Medicine
- Obstetrics & Gynaecology
- Psychiatric
- Respiratory Medicine

ALLIED SERVICES

- Dietetics
- Emergency & Trauma
- Lap Medicine

DEPARTMENTAL SERVICES:

1. Outpatient Department:

There are 4 decentralised OPD:

1. North OOD
2. South OPD
3. Cardiac OPD
4. Nephrology OPD

OPD Timings: 9am to 5pm.

Average no. of OPD patients 450-500 per day (Including old and new patients)

2. In Patient Department:

- Male Medical Ward:
Location: Lower ground floor.
Bed Capacity: 19 Beds
- Male Surgical ward:

Location: Lower ground floor

Bed Capacity: 16 Beds

- CCU, HDU & KTU

Location: Ground floor

Bed Capacity: 40 Beds

- MICU

Location: Second floor

Bed Capacity: 18 Beds including 2 beds for isolation

- Female General ward

Location: 1st Floor

Bed Capacity: 34 Beds

- ANC Ward

Location: 1st Floor

Bed Capacity: 8 Beds with 2 Beds in Labour Room

- Paediatric Ward

Location: 1st Floor

Bed Capacity: 6 Beds

- PICU

Location: 1st Floor

Bed Capacity: 5 Beds

- NICU

Location: 1st Floor

Bed Capacity: 5 Cribs

- ITU

Location: 1st Floor

Bed Capacity: 21 beds plus 2 beds for isolation

- Semi Private Ward

Location: 1st Floor

Bed Capacity: 34 Beds including 4 day care beds.

- Private Ward

Location: 2nd Floor

Bed Capacity: 18 Beds

- CTVS Male & Female Ward

Location: 2nd Floor

Bed Capacity: 6 beds and 8 beds in each ward

- Ortho General Ward

Location: 2nd Floor

Bed Capacity: 6 Beds

- Neuro General Ward

Location: 2nd Floor

Bed Capacity: 5Beds

3. Emergency Services:

Location: Lower ground floor

Entrance: Separate entry from the main road

The Emergency Department is a well equipped 10 bedded department. 3 beds for each triage category Red, Yellow, Green and 1 bed for isolation

Staff: 1 Emergency Incharge, 3 MO, 1 Nursing Incharge, 10 Staff nurse.

Ambulance service is outsourced.

4. Operation Theatre:

There are total of 5 OTs in the 1st floor and 3 OTs in the 2nd floor

Location: 1st and 2nd Floor

Easy access to CCU, Blood Bank, Emergency and CSSD

ITU is attached to the OTs located in the 1st floor

Manpower: Head of the Department, 14 Anaesthetist, 1 OT Manager, 2 OT incharge , 2

Perfusionists,18 OT Technicians,48 Staff Nurse, 5 House Keeping Staff.

No of Surgeries: 300-350 surgeries per month.

5. Catheterisation Lab:

Location: Ground Floor

All Invasive cardiac Procedures are done in cath lab such as Angiography, Angioplasty, Cath Study and Electro Physiological Study.

6. CSSD

Location: Lower Ground Floor

Total Area is divided into 4 Zones:

- Zone I. (Dirty Utility) Reception , Inspection and Documentation
- Zone II. (Clean Area) Assembly and Packing
- Zone III (Sterile Area) Sterilisation
- Zone IV (Issue Area) Storage and distribution
- Check for proper sterilisation
- Bowie dick test
- Leak test
- Sterilisation test
- Batch monitoring test

7. Radiology Department:

Location: Lower Ground Floor

Area:

- Reception Area
- Console Room
- Imaging service room
- Changing room-2

Different rooms for X-Ray, Mammography, MRI, and CT scan.

Sonography:

Location: Ground floor

Area:

- Counter Area
- Procedure room: 2
- Reporting room

8. Laboratory:

Location: Ground floor

All laboratory services related to Biochemistry, Microbiology, Histopathology and Haematology.

Blood Bank is attached with the laboratory.

9. Physiotherapy and Rehabilitation Centre:

Location: Lower ground floor

Well trained team of 6 physiotherapists managing the department and providing rehabilitation therapy for joint disease, strokes, trauma etc.

Other facilities:

- Wax Therapy
- Hydro collator- hot pack
- Interferential Therapy
- IFT- Pain Relief
- Ultrasound therapy- piezoelectric effect
- TENZ
- Muscle Stimulator
- SWD etc

10. Medical Record Department:

Scope of Services:

- Maintenance of all medical record
- Storage of records
- Maintaining the integrity and confidentiality of all medical record
- Maintenance of MLC cases
- Numbering and filing
- Completion of all incomplete records.

11. Food and Beverages:

Location: Lower ground floor

Scope of services:

- To provide well balance nutritious food to all in patients as well as patients for dialysis as per their needs.
- To serve staff and patients attendants
- To helps in improving the patient's condition by providing hygienic , proper and nutritious food as prescribed by the dieticians.

Provide 5 servings for the general ward patients and 8 servings to the semi private and private ward patients.

Types of diet:

- Normal full diet
- Liquid diet
- Soft diet
- Diet for diabetic patients
- Diet for renal patients
- Diet post cardiac surgery patients.

12. Housekeeping:

Housekeeping department is outsourced

Services provide:

- Maintain hygiene of the patients and the hospital
- Helping in patients preparation
- Infection control
- Waste disposal

13. Linen and Laundry:

Linen and laundry department is outsourced



Availability of coloured coded bags in each department. Orange colour is for serology positive patients and green bags for serology negative patients.

14. Pharmacy:

The hospital 3 different types of pharmacy:

- OPD Pharmacy
- IPD Pharmacy
- OT Pharmacy

Functions:

Dispense of drugs to all the admitted patients.

Dispense of drugs for the OPD patients.

Demand estimation according to the formulary, in the absence of formulary, establishment of specification for drug procurement

Furnishing of new drug information to consultants and other professional staff

Quality control of drugs purchased

15. Diagnostic Services:

Location: Ground Floor

Scope of services:

- Ultrasonography
- TMT
- Electrocardiography
- Echocardiography
- Electroencephalography
- Uroflowmetry
- Electromyography
- Pulmonary function test

Operational timings: 9 am to 6 pm.

16. Dialysis Department:

Location: Lower ground floor

Bed Capacity: 30 beds including 4 beds for serology positive patients

No of procedures done per day: 45-50 dialyses per day

Shift of dialysis: 7 am to 12 noon, 12 noon to 5 pm and 5pm to 8 pm.

Every patient is provided with a meal, included in tariff and the meal is prescribed by the dietician.

17. Mortuary:

Location: Lower ground floor

Temperature: 5-6 degree Celsius

Capacity: At a time four dead bodies can be kept together

Function:

- To keep the dead bodies in the hospital until the relatives claim them.
- To keep the dead bodies for post mortem (MLC Cases).

18. Security Services:

Security service department of the hospital is outsourced.

Functions:

- To provide security services to all the staff, patients, relatives and visitors
- To protect the hospital property within the premises
- To analyse threats and vulnerability in conjugation with the managements , police and others
- To control the movement of vehicular traffic inside the premises.

19. Billing and Finance Department:

Location: Ground floor

Operational timings: 9am to 5 pm for the finance department

24 hr IP bill service.

Functions:

- To provide salary to all the staff in a timely manner
- To provide payment to all the vendors and contractors
- Tracking the expenses of in patients on daily basis

- Timely discharge of patients related to financial clearance
- To provide accurate and timely financial information for decision making.

20. Maintenance Department:

Location: Lower ground floor

Functions:

- To maintain continuous electric supply to the hospital.
- To maintain the chilling plant room of the hospital
- To maintain the supply of medical gases
- To maintain the proper functioning of STP

Operational timings: 24hr.

Infrastructure:

Low tension room

Generator panel: 2 generator of 750 ampere each

Diesel tank- 24 kilolitres capacity

Sewerage treatment plan

Desk panel- control air handling unit

Chilling plant room

Gas manifold room

21. Human Resource Department:

Location: Ground floor

Functions:

- Recruitment based on requisition form from respective department duly signed by incharge of the department, HR and facility director
- Induction and training programs- 3 days induction program for all new employees
- Performance appraisal ones in a year in the month of March
- Employee engagement activities such as birthday celebration, open house, and also on the job trainings such as fire safety. BLS training

- Grievance Handling
- Conduct employee exist interview

22. Fire safety Department:

Location: Lower ground floor

The hospital has 7 fire exist door in each floor. A total 26 functional fire exist doors

Sprinklers are located in the entire hospital with a distance of 6 meters between two sprinklers and burst at 68 degree Celsius

Smoke detectors are also located in the entire hospital.

Fire Safety Equipments:

- Horse Reel Drums 21
- Jockey Pump 01
- Alarm Valve 05
- Double Hydrant Valve 28

Hospital follows “PASS” and “RACE” protocols.

PASS: Pull Aim Squeeze Sweep for operating a fire extinguisher

RACE: Rescue Alarm Contain Extinguish, Evacuate.

Project Report

A retrospective study on Risk Assessment of Laboratory Complaints and Root Cause Analysis of High Risk Complaints

Project Guide:

Mrs. Nabanila Dutta

Senior Manager – Quality

INTRODUCTION

Risk Assessments - What is a Risk Rating?

What is risk assessment?

A risk assessment is simply a careful examination of what, in your work, could cause harm to people, so that you can weigh up whether you have taken enough precautions or should do more to prevent harm. The law does not expect you to eliminate all risk, but you are required to protect people as far as ‘reasonably practicable’.

The people you are required to protect are your employees and anyone likely to be affected by your business. This would include your guests and their visitors and any tradesmen or other people that you might reasonably expect to visit your premises, including, for example, sub-contractor or their staff, such as cleaners or gardeners or decorators. The word “employees” covers full time and part time employees, self employed workers, sub-contractors, casual workers and volunteers. It even covers work experience.

. Conducting a Risk Assessment

There are many ways to conduct a risk assessment. The most important thing is that you:

Identify the hazards

Decide who might be harmed and how

Evaluate the risks and decide on the precautions that need to be taken to eliminate or reduce the risk

Record your findings and implement them

Review your assessment and update it if necessary

You are only required to record “significant” findings. Don’t overcomplicate the process. In most businesses, the risks are well known and the necessary control measures are easy to apply and probably already in place.

You don’t have to be a health and safety expert to do a risk assessment. If you run a small organization and you are confident you understand what’s involved, you can do the assessment yourself or ask a competent employee or colleague to do it for you but remember, you are responsible for seeing that the assessment is carried out properly.

If you are not confident that you are competent to do the assessment yourself then we will be happy to help and we will provide a full quote in advance so that you know what you are going to have to pay.

In all cases, you should make sure that you involve your staff in the process. They will have useful information about how the work is done that will make your assessment of the risk more thorough and effective.

Rating a Risk

Once you have identified the hazards in your business you need to rate the risk. The rating will determine whether or not it is safe enough to continue with the work or whether you need to adopt additional Control Measures to reduce or eliminate the risk still further.

The rating depends upon the likelihood of an event occurring (from most unlikely to most likely) and the severity of the injuries that might arise if the event does occur (from trivial injuries to major injuries).

You can do what is called a **Qualitative Risk Rating** which means you can simply decide whether the risk is minimal, low, medium or high. Generally this short hand form of risk rating is used to determine which hazard should take priority over another in terms of deciding what to do and when.

To calculate a **Quantitative Risk Rate**, begin by allocating a number to the **Likelihood**(as shown in Table 1) of the risk arising and **Severity of Injury** and then multiply the Likelihood by the Severity to arrive at the **Rating**. The number to be allocated is set out in the table below.

Example:

A Most Unlikely Event [1] x Trivial Injuries if event occurs [1] = Risk Rating of [1] Minimal Risk (1x1=1)

A Likely Event [3] x Major Injuries if event occurs [4] = Risk Rating of [12] High Risk (3x4=12)

When you allocate the Rating you do so after taking into consideration any safety measures – called **Control Measures** – that you already have in place to reduce the hazard and any safety measure which you say you will put into place.

Table 1:

LIKELIHOOD DEFINITIONS	
Most Unlikely	• No known or recorded incidents of occurrence • Remote chance, may only occur in exceptional circumstance
Unlikely	• Very few known incidents of occurrence • Has not occurred yet, but it could occur sometime
Likely	• Incidents or hazards have occurred infrequently in the past
Most Likely	• Similar hazards have been recorded on a regular basis • Considered that it is likely that the hazard could occur

Assessed Rating Bands

Minimal Risk - Rating of 1 or 2

Low Risk - Rating of 3 or 4

Even if the risk is low, there may be things you can still do to bring the risk rating back down to Minimal.

Medium Risk - Rating of 6 or 8

If the Rating Action Band is greater than 3 or 4 then you should review your existing Safety/Control Measures and add whatever Additional Control Measures may be necessary to bring the risk back to a Low or Minimal Risk.

If you identify any hazard which, after applying any applicable control measures, is still rated as Medium, then speak to a professional health and safety advisor.

High Risk - Rating of 9, 12 or 16

Under no circumstances should you continue operations that have a high risk rating without speaking to a professional advisor with a view to re-examining the hazard, the system of work in operation, the training and protection of your employees and the information to be provided to them.

RATIONALE OF THE STUDY:

A risk assessment helps you focus on the risks that really matter in running your business – the ones with the potential to cause real harm. In many instances, straightforward measures can readily control risks, for example ensuring spillages are cleaned up promptly so people do not slip or cupboard drawers are kept closed to ensure people do not trip. For most businesses that means simple, cheap and effective measures to ensure your most valuable asset – your workforce and your guests – are protected.

When thinking about your risk assessment, remember:

A **hazard** is anything that may cause harm, such as trailing wires, electricity, working from ladders, changes in floor levels, stairs, blocked doorways etc.

The **risk** is the chance, high or low, that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be.

OBJECTIVE:

Broad objective:

- To study the work flow of laboratory department

Specific Objective:

- To assess risk of the retrospective complaints of laboratory department
- To conduct root cause analysis for high risk complaints

METHODOLOGY:

Study Type: The study is descriptive in nature. A comprehensive study has been conducted to measure the risk of complaints against laboratory department.

Sample Size: 178 complaints were assessed for risk

Sampling Technique: Non Probability convenience sampling technique

METHODS OF DATA COLLECTION:

Quantitative data:

- Negative feedbacks and complaints for laboratory department of last one year

Qualitative data:

- Informal interviews for failure in process flow
- Focused group discussion
- Observation

DATA ANALYSIS AND INTERPRETATION:

The data collected was analysed using Microsoft Excel

Table 2 shows the method used for assessing risk:

Table 2:

Risk Rating				Rating Action Bands	
Likelihood	X	Severity of Injury	=	Assessed Band	Control Measures
1. Most Unlikely		1. Trivial Injuries		Minimal Risk 1 or 2	Maintain Existing Measures
2. Unlikely		2. Slight Injuries		Low Risk 3 or 4	Review Control Measures
3. Likely		3. Serious Injuries		Medium Risk 6 or 8	Improve Control Measures
4. Most Likely		4. Major Injuries		High Risk 9, 12 or 16	Improve Control Measures immediately and consider stopping work activity until risk reduced
To establish Risk Rating multiply “Likelihood” by the “Severity”					

Total number of complaints: 178

High Risk Complaints: 3

Medium Risk Complaints: 173

Low risk complaints: 2

FINDINGS OF THE STUDY:

ROOT CAUSE ANALYSIS OF LABORATORY ERROR IN BTCT TEST

Unit Name: Laboratory

Date: 14-04-2016

Time: 4.45 pm

Description of the case: Patient *****, MRN: ***** admitted under Neurologist was advised to undergo Craniotomy. BTCT test was to be conducted as pre operative laboratory investigation. But it was conducted post surgery. Method of conducting test and documenting report was not appropriate.

Root cause Analysis was carried out by:

- Dr Deepak under guidance of Quality team, NH Jaipur.

Analysis: Bleeding Time – Duke & Ivy method

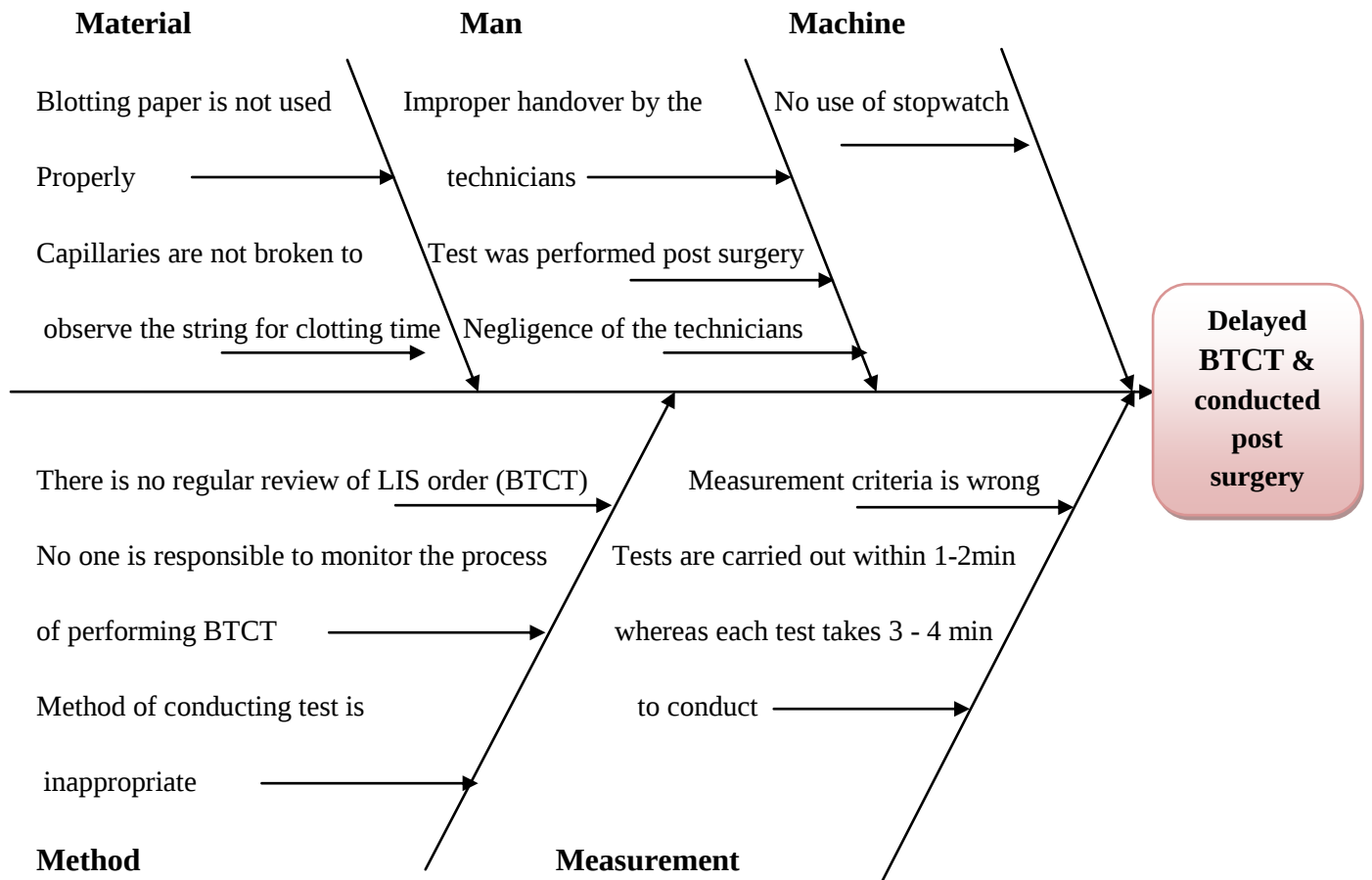
Sl. No	Criteria	Performed	Partial	Not Performed	Remarks
1	Place the sphygmomanometer cuff around the patients arm			*	
2	Inflate it to 40 mm Hg and keep the pressure throughout the test			*	
3	Choose an area of skin on the volar surface of the forearm which is devoid of visible superficial vein		*		
4	Clean the area with isopropyl swab	*			
5	Using disposable lancet make two separate punctures 5cms apart in quick succession			*	
6	With the edge of filter paper at 15 seconds intervals blot off the blood bleeding from the puncture site		*		
7	When bleeding has ceased note down the time		*		

Analysis: Clotting Time –

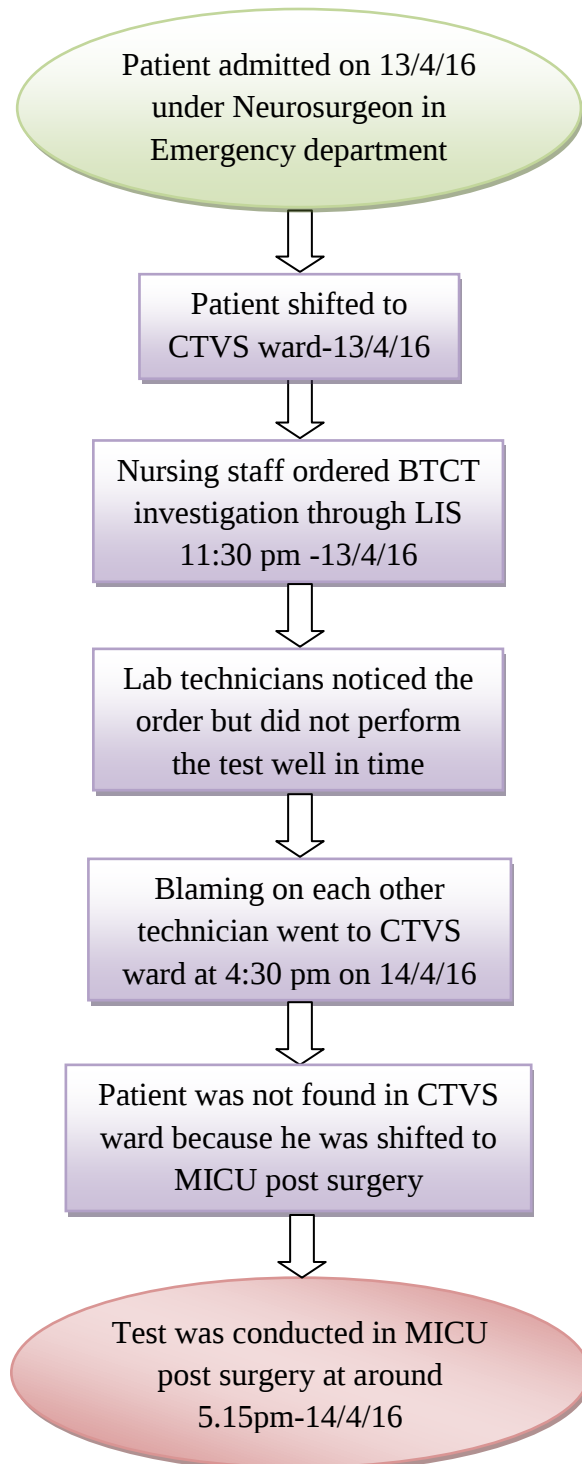
Sl. No	Criteria	Performed	Partial	Not Performed	Remarks
1	Make a clean puncture to the connective tissue between skin & vein with lancet	*			
2	Draw blood into the capillary tube & start the stopwatch	*			
3	Wait for 2-3 minutes and break the capillary tube			*	
4	Repeatedly break the tube after every 30 seconds to ensure the string formation			*	
5	Note the time of formation of string		*		

Tool Used: Root cause Analysis Matrix

FISH BONE ANALYSIS:



Observational Process Flow



A Framework for a Root Cause Analysis and Action Plan

Level of Analysis		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
What happened?	BTCT was performed post surgery incorrectly	What are the details of the event? (Brief description)	Patient name Mr. *****, MRN: ***** was admitted under Neurosurgeon was advised to undergo Craniotomy. BTCT test was to be conducted as pre operative laboratory investigation. But it was conducted post surgery. Method of conducting test and documenting report was not appropriate			
		When did the event occur? (Date, time)	14/4/2016			
		What area/service was impacted?	CTVS ward.			

Why did it happen?	The process or activity in which the event occurred	What are the steps in the process, as designed? (A flow diagram may be helpful here)	Refer to flow diagram. Attached at the last.			
What were the most proximate factors?	Man	What steps were involved in (contributed to) the event?	Negligence of lab staff Inappropriate method of conducting test	Irresponsible employee attitude.	1. Requisition Pending in LIS	Proper monitoring of pendency.
(Typically “special cause” variation)	Measurement	What is the measurement criteria	Result was certified within 1-2 minutes where as it need to be observed for 2-6mins to declare the results	Process did not include the steps.	Lab staff is not properly trained to perform test accurately	Training & Orientation of lab staff to follow SOP
	Material	How did the equipment performance affect the outcome?	Stop watch was not working hence mobile phone’s stopwatch is used after initiating the test	Time is not recorded properly	Negligence in replacing the stop watch.	Provide new stop watch

Control able environ mental factors	What factors directly affected the outcome?	Nil			
“Mother Nature”	Are they truly beyond the organization’s control?	Nil			
Method	Are there any other factors that have directly influenced this outcome?	Improper method of conducting test.	Lack of oversight.		Daily monitorin g of the process by responsibl e staff.

<u>Level of Analysis</u>	<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
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Why did that happen? What systems and processes underlie those proximate factors?	Human Resources issues	To what degree are staffs properly qualified and currently competent for their responsibilities?	Present staff s are qualified and competent.			
		How did actual staffing compare with ideal levels?	Actual staffing required is lesser than the required number for which requisition was raised.	Requisition pending.	Improper monitoring LIS	
		What are the plans for dealing with contingencies that would tend to reduce effective staffing levels?	Internal transfers.			

		To what degree is staff performance in the operant process (es) addressed?	Annual appraisals.			
<u>Level of Analysis</u>		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
		How can orientation and in-service training be improved?	Orientation to lab related manual tests.			
	Information management issues	To what degree is all necessary information available when needed? Accurate? Complete? Unambiguous?	Accurate.			
		To what degree is communication among participants adequate?	Adequate	Nil		

Environmental management issues	To what degree was the physical environment appropriate for the processes being carried out?	Nil			
	What systems are in place to identify environmental risks?	Nil			
	What emergency and failure-mode responses have been planned and tested?	Nil			
Leadership issues: - Corporate culture	To what degree is the culture conducive to risk identification and reduction?	Conducive			
- Encouragement of communication	What are the barriers to communication of potential risk factors?	None			

- Clear communication of priorities	To what degree is the prevention of adverse outcomes communicated as a high priority? How?	High			
Uncontrollable factors	What can be done to protect against the effects of these uncontrollable factors?	Nil			

Action Plan/ Recommendations:

<u>Action Plan</u>	<u>Risk Reduction Strategies</u>	<u>Measures of Effectiveness</u>
For each of the findings identified in the analysis as needing an action, indicate the planned action expected, implementation date and associated measure of	<u>Action Item #1:</u> Continuous monitoring of LIS to check pendency of BTCT and Reminder system should be followed from wards	Software modification

effectiveness. OR.

...

If after consideration of such a finding, a decision is made not to implement an associated risk reduction strategy, indicate the rationale for not taking action at this time.

Check to be sure that the selected measure will provide data that will permit assessment of the effectiveness of the action.

Action Item #2:

Educate the involved personnel.

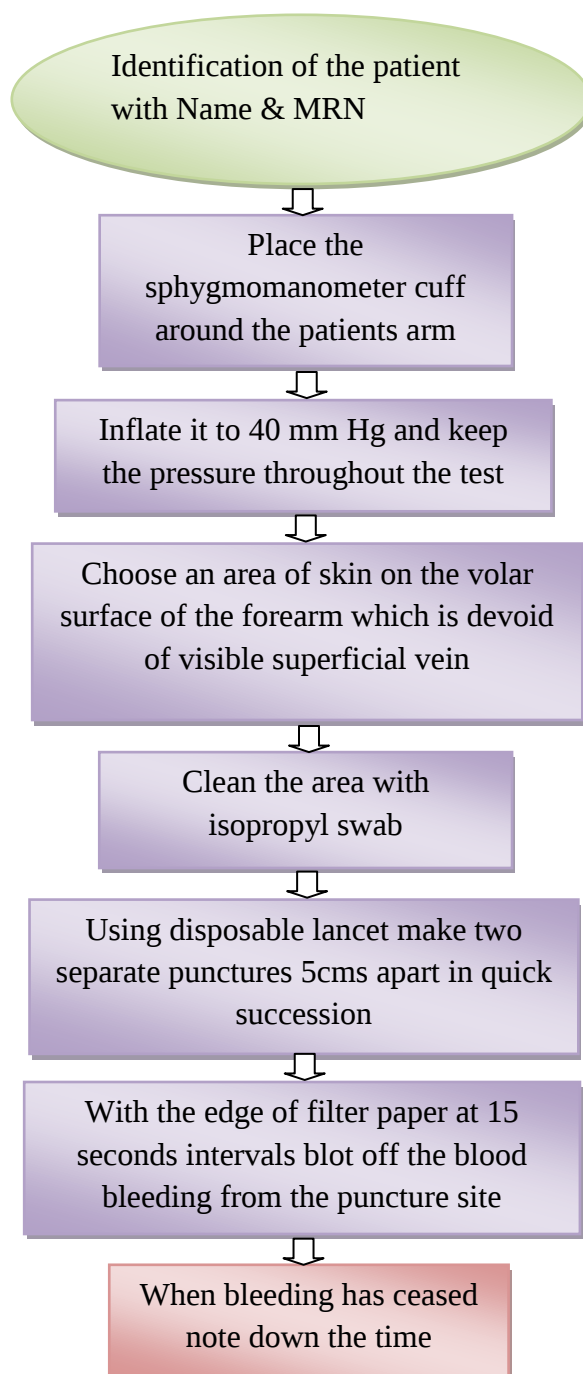
Rounds for bedside procedures

Action Item #3:

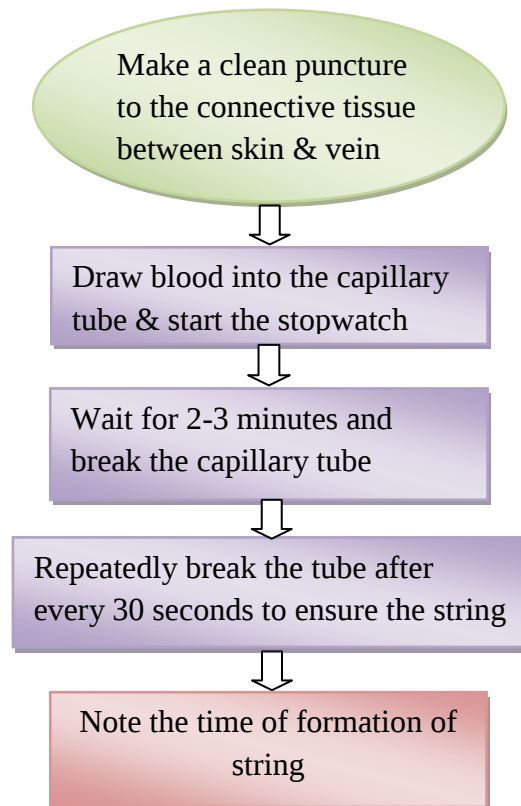
**Pre operative checklist should include
BTCT findings**

Revise the pre operative
checklist

Process flow: Bleeding Time



Process flow (SOP): Clotting Time



ROOT CAUSE ANALYSIS OF DELAY IN LABORATORY REPORTS

Unit Name: Laboratory

Duration: 2015-2016

Description of case: Delay in dispatching reports from laboratory is very common leading to delay in consultation, patient dissatisfaction, increase in refunds etc.

Root cause Analysis was carried out by:

- Dr Deepak under guidance of Quality team, NH Jaipur

Analysis: Delay in Lab reports

Sl. No	Criteria	Performed	Partial	Not Performed	Remarks
1	Determination of the identity of the patient from whom a primary sample is collected	*			
2	Verification that the patient meets pre-examination requirements [e.g. fasting status, medication status]	*			
3	Instructions for collection of primary		*		

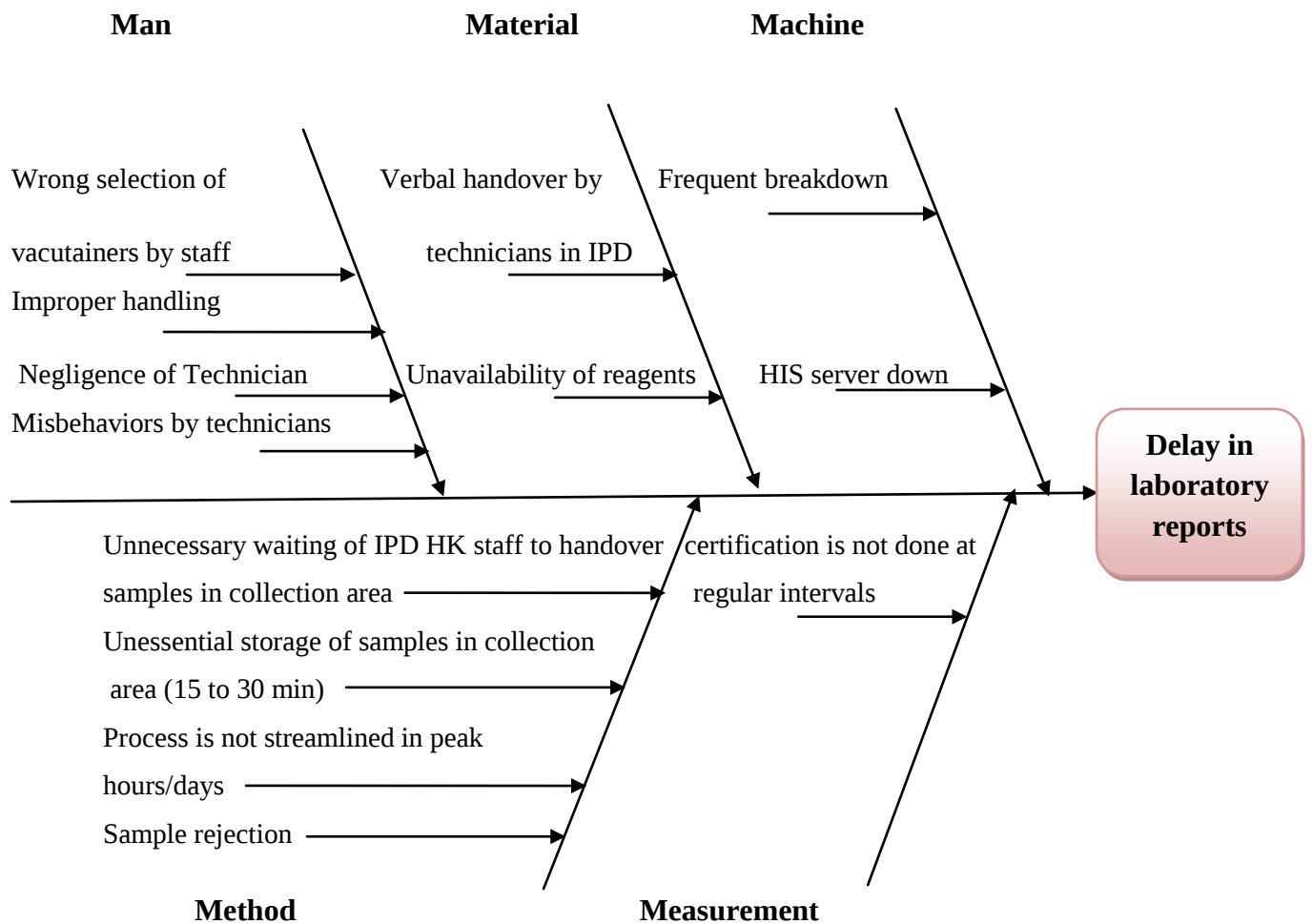
	blood and non-blood samples				
4	Instructions for labeling of primary samples in a manner that provides and unequivocal link with the patients from which they are collected	*			
5	Recording of the identity of the person collecting the primary sample and the and collection time	*			
6	Instructions for proper storage conditions before collected samples are delivered to the laboratory		*		
7	Disposal of materials used in the collection	*			
8	The laboratory shall have a documented procedure for monitoring the transportations of samples to ensure they are transported		*		
9	Documentation of acceptance or		*		

	rejection of samples				
10	Authorized personnel shall evaluate received samples	*			
11	The laboratory shall select examination procedures which have been validated for their intended use. The identity of persons performing activities in examination processes shall be recorded	*			

12	Validation of examination procedures	*			
13	Examination procedures shall be documented and be available in appropriate locations.	*			
14	Run the procedures on respected machines	*			
15	Report certification	*			
16	Report dispatch	*			

Tool Used: Root cause Analysis Matrix

FISH BONE ANALYSIS:



A Framework for a Root Cause Analysis and Action Plan

Level of Analysis		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
What happened?	Delay in lab reports	What are the details of the event? (Brief description)	Delay in dispatching reports from laboratory is very common leading to delay in consultation, patient dissatisfaction , increase in refunds etc.			
		When did the event occur? (Date, time)	Complaints of 2015-2016			
		What area/service was impacted?	All IPD and OPD areas			

Why did it happen?	The process or activity in which the event occurred	What are the steps in the process, as designed? (A flow diagram may be helpful here)	Refer to flow diagram. Attached at the last.			
What were the most proximate factors?	Man	What steps were involved in (contributed to) the event?	Delay in transportation of sample from collection room to lab	Staff wait till 15-20 samples are collected to transport them to lab.	No runner staff to transport after every sample collection	Immediate movement of samples
(Typically “special cause” variation)	Measurement	What is the measurement criteria	Delay in segregation of samples and run the test in respective machines	Staff busy in other work	Overload of work	Assign a staff for segregation in peak hours
	Material	How did the equipment performance affect the outcome?	Unavailability of reagents Machine breakdown	PM and calibration not done at regular interval		Reagents should not stock out

Control able environ mental factors	What factors directly affected the outcome?	Nil			
“Mother Nature”	Are they truly beyond the organization’s control?	Nil			
Method	Are there any other factors that have directly influenced this outcome?	Nil			

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<u>Level of Analysis</u>	<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
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Why did that happen? What systems and processes underlie those proximate factors?	Human Resources issues	To what degree are staffs properly qualified and currently competent for their responsibilities?	Present staff s are qualified and competent.			
		How did actual staffing compare with ideal levels?	Actual staffing required is lesser than the required number for which requisition was raised.	Requisition pending.		
		What are the plans for dealing with contingencies that would tend to reduce effective staffing levels?	Internal transfers.			

		To what degree is staff performance in the operant process(es) addressed?	Annual appraisals.			
<u>Level of Analysis</u>		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
		How can orientation and in-service training be improved?	Orientation to lab related manual tests.			
	Information management issues	To what degree is all necessary information available when needed? Accurate? Complete? Unambiguous?	Accurate.			
		To what degree is communication among participants adequate?	Adequate	Nil		

Environmental management issues	To what degree was the physical environment appropriate for the processes being carried out?	Nil			
	What systems are in place to identify environmental risks?	Nil			
	What emergency and failure-mode responses have been planned and tested?	Nil			
Leadership issues: - Corporate culture	To what degree is the culture conducive to risk identification and reduction?	Conducive			
- Encouragement of communication	What are the barriers to communication of potential risk factors?	None			

	- Clear communication of priorities	To what degree is the prevention of adverse outcomes communicated as a high priority? How?	High			
	Uncontrollable factors	What can be done to protect against the effects of these uncontrollable factors?	Nil			

Action Plan/ Recommendations:

<u>Action Plan</u>	<u>Risk Reduction Strategies</u>	<u>Measures of Effectiveness</u>
For each of the findings identified in the analysis as needing an action, indicate the planned action expected, implementation date	<u>Action Item #1:</u> Stock monitoring process	

and associated
measure of
effectiveness. OR.

...

If after consideration
of such a finding, a
decision is made not
to implement an
associated risk
reduction strategy,
indicate the rationale
for not taking action
at this time.

Check to be sure
that the selected
measure will
provide data that
will permit
assessment of the
effectiveness of the
action.

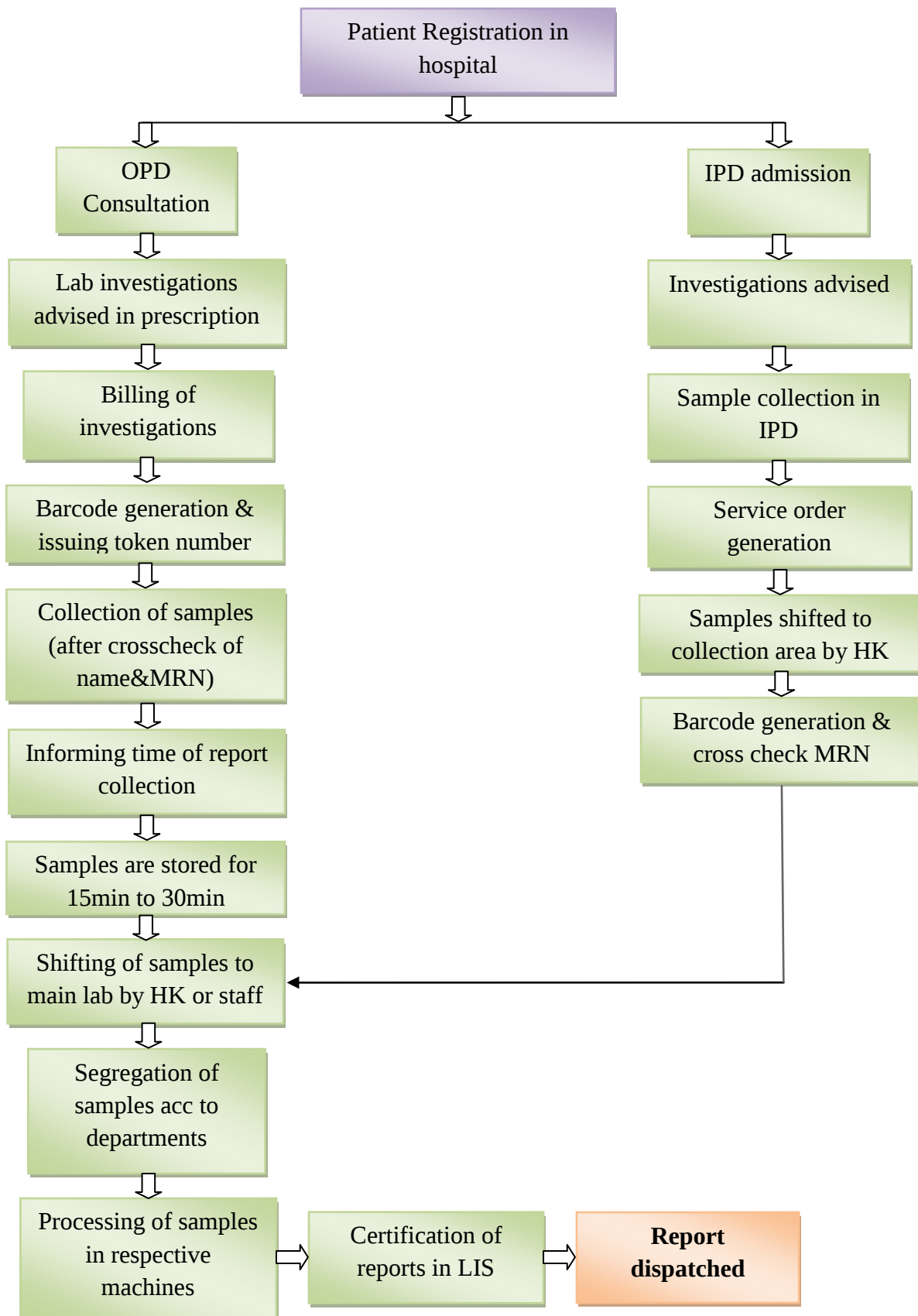
Action Item #2:

- **Equipment back up & Increase sample collection area**

Action Item #3:

Proper calibration & maintenance of equipments
Improve HIS server speed

Process Flow:



ROOT CAUSE ANALYSIS OF NEAR – MISS : BLOOD GROUPING ERROR

Unit Name: Blood Bank

Date: 22-01-2015

Time: 14:28

Description of the case:

Blood group reporting error. A patient with blood group B+ve was reported as A+ve.

Root cause Analysis was carried out by

- Dr Deepak under guidance of Quality team, NH Jaipur.

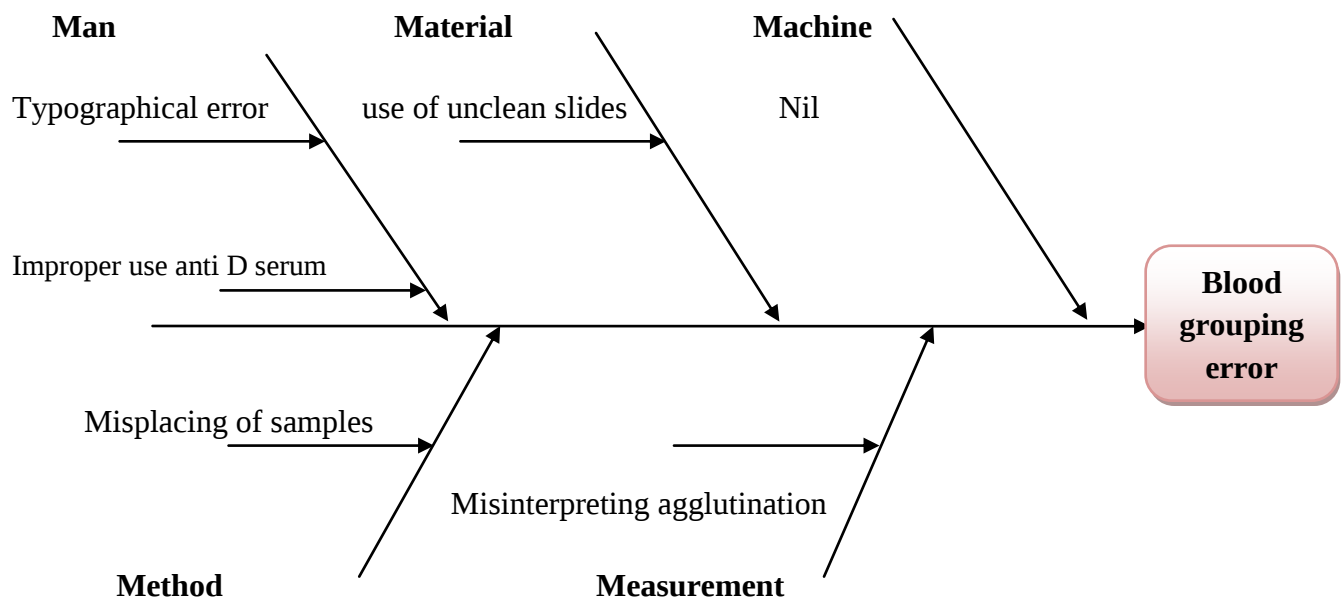
Analysis:

Sl. No	Criteria	Performed	Partial	Not Performed	Remarks
1	Confirm MRN with name of patient and	*			

	donor				
2	Label tubes with donor – patient and test identification	*			
3	2 drops of test serum added in all tubes in the corresponding column	*			
4	Prepare cells for testing of A,B & O groups by pooling 3 samples of each group	*			
5	1 drop of 2% pooled A red cell suspension added in the tube labeled A	*			
6	1 drop of 2% pooled B red cell suspension added in the tube labeled B	*			
7	1 drop of 2% pooled O red cell suspension added in the tube labeled O	*			
8	Mix the components in tube	*			
9	Examine for agglutination	*			

Tool Used: Root cause Analysis Matrix

FISH BONE ANALYSIS:



INCIDENT TYPE: NEAR MISS

A Framework for a Root Cause Analysis and Action Plan

Level of Analysis		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>
What happened?	Reporting of wrong blood group	What are the details of the event? (Brief description)	Blood group reporting error. A patient with blood group B+ve was reported as A+ve.			
		When did the event occur? (Date, time)	22/1/2015 2.48 pm			
		What area/service was impacted?	Blood bank			

Why did it happen?	The process or activity in which the event occurred	What are the steps in the process, as designed? (A flow diagram may be helpful here)	Refer to flow diagram. Attached at the last.			
What were the most proximate factors?	Man	What steps were involved in (contributed to) the event?	Before dispatch they did not check for typographical errors.	Negligent attitude of staff.		Counsel the staff to avoid future errors
(Typically “special cause” variation)	Measurement		There is no system of tracking to check the errors.	Process did not include the steps.		Process implemented
	Material	How did the equipment performance affect the outcome?	Nil			

	Control able environ mental factors	What factors directly affected the outcome?	Nil			
	“Mother Nature”	Are they truly beyond the organization’s control?	Nil			
	Method	Are there any other factors that have directly influenced this outcome?	There is no check point before result dispatch.	Lack of oversight.		
		What other areas or services are impacted	Nil			
<u>Level of Analysis</u>		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask “Why?”</u>	<u>Take Action</u>

Why did that happen? What systems and processes underlie those proximate factors?	Human Resources issues	To what degree are staffs properly qualified and currently competent for their responsibilities?	Present staff s are qualified and competent.			
		How did actual staffing compare with ideal levels?	Actual staffing required is lesser than the required number for which requisition was raised.	Requisition pending.	Corporate HR is in Bangalore.	Management Empowered.
		What are the plans for dealing with contingencies that would tend to reduce effective staffing levels?	Internal transfers.			

		To what degree is staff performance in the operant process(es) addressed?	Annual appraisals.			
<u>Level of Analysis</u>		<u>Questions</u>	<u>Findings</u>	<u>Root Cause?</u>	<u>Ask</u> <u>“Why?”</u>	<u>Take</u> <u>Action</u>
		How can orientation and in-service training be improved?	Orientation to Blood Bank.			
	Information management issues	To what degree is all necessary information available when needed? Accurate? Complete? Unambiguous?	Accurate.			
		To what degree is communication among participants adequate?	Adequate	Nil		

Environmental management issues	To what degree was the physical environment appropriate for the processes being carried out?	Nil			
	What systems are in place to identify environmental risks?	Nil			
	What emergency and failure-mode responses have been planned and tested?	Nil			
Leadership issues: - Corporate culture	To what degree is the culture conducive to risk identification and reduction?	Conducive			
- Encouragement of communication	What are the barriers to communication of potential risk factors?	None			

- Clear communication of priorities	To what degree is the prevention of adverse outcomes communicated as a high priority? How?	High			
Uncontrollable factors	What can be done to protect against the effects of these uncontrollable factors?	Nil			

<u>Action Plan</u>	<u>Risk Reduction Strategies</u>	<u>Measures of Effectiveness</u>
For each of the findings identified in the analysis as needing an action, indicate the planned action expected, implementation date and associated measure of effectiveness. OR. ...	<u>Action Item #1:</u> Proper tracking of samples (match with name & MRN)	
If after consideration of such a finding, a	<u>Action Item #2:</u> Cross checking of typed reports with the	

decision is made not to implement an associated risk reduction strategy, indicate the rationale for not taking action at this time.

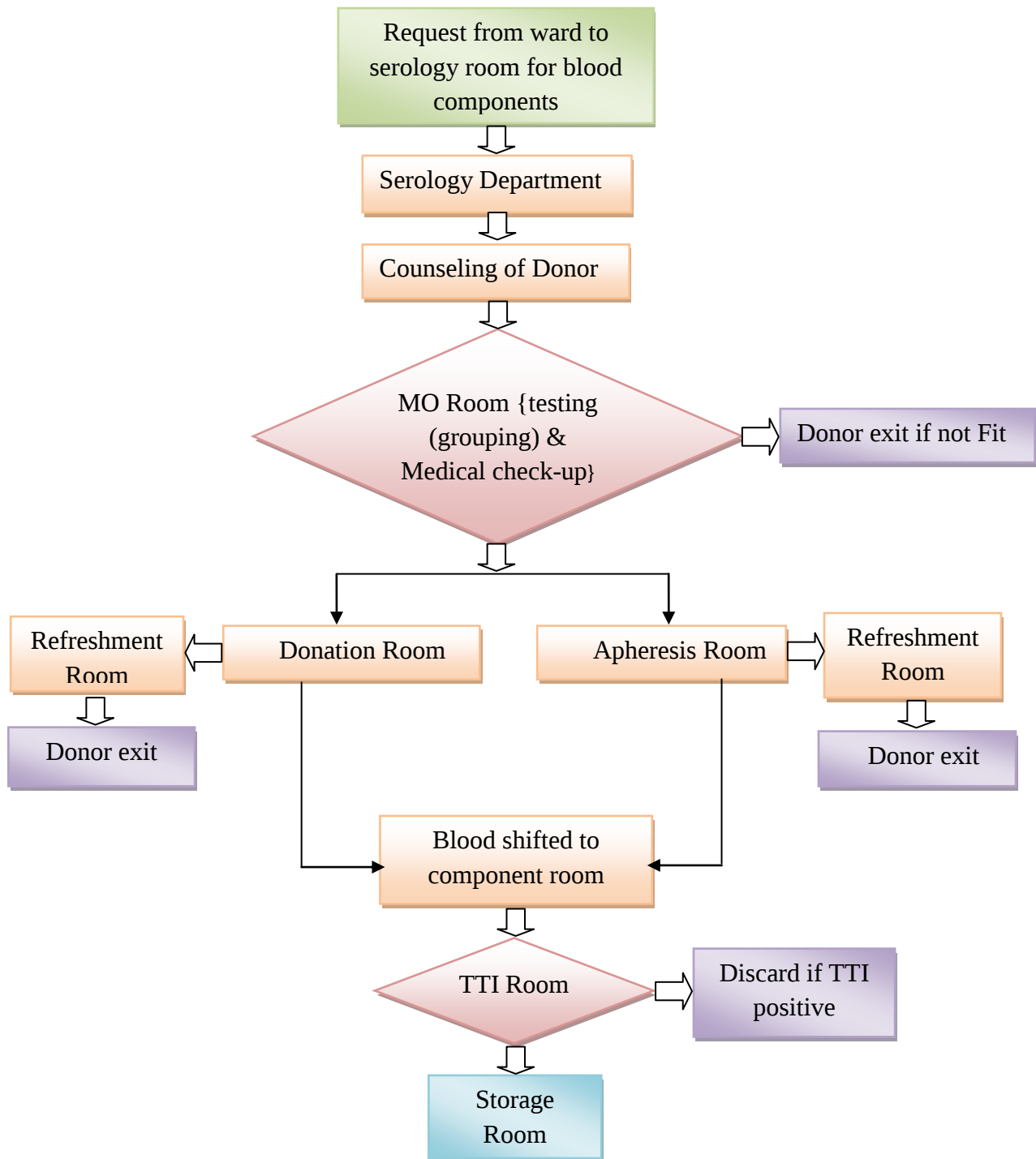
Check to be sure that the selected measure will provide data that will permit assessment of the effectiveness of the action.

processed sample (Agglutination)

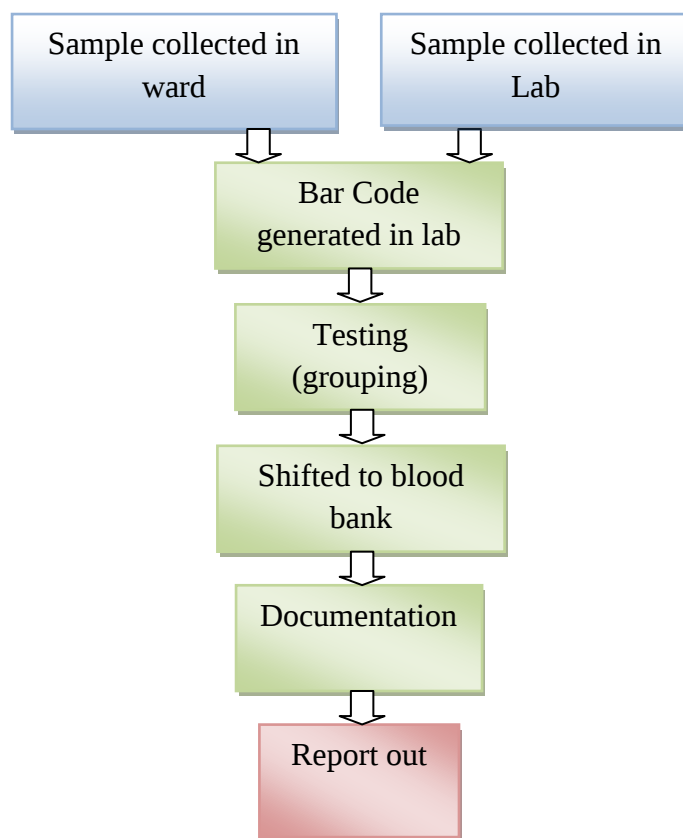
Action Item #3:

**Deploy trained staff for transcriptions(
to avoid typographic error)**

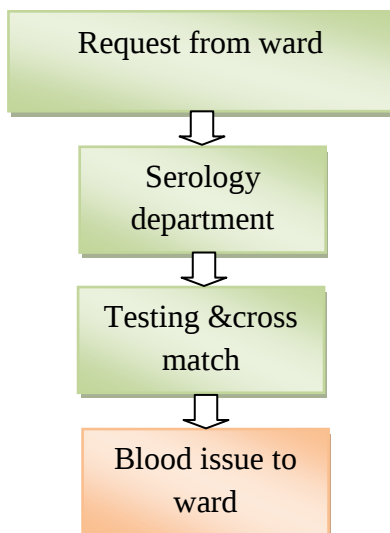
Process flow: - Blood Bank:



Process flow: - Blood grouping



Process flow: - Blood Receiving:



ROOT CAUSE ANALYSIS OF UNAVAILABILITY OF GLUCON D

Unit Name: Laboratory

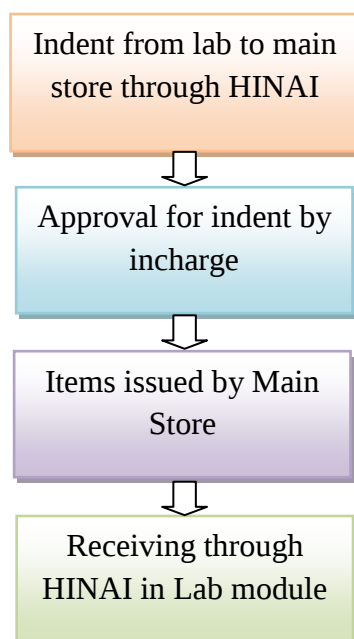
Description of case: Unavailability of Glucon D for Glucose Tolerance Test.

Root cause Analysis was carried out by:

- Dr Deepak under guidance of Quality team, NH Jaipur.

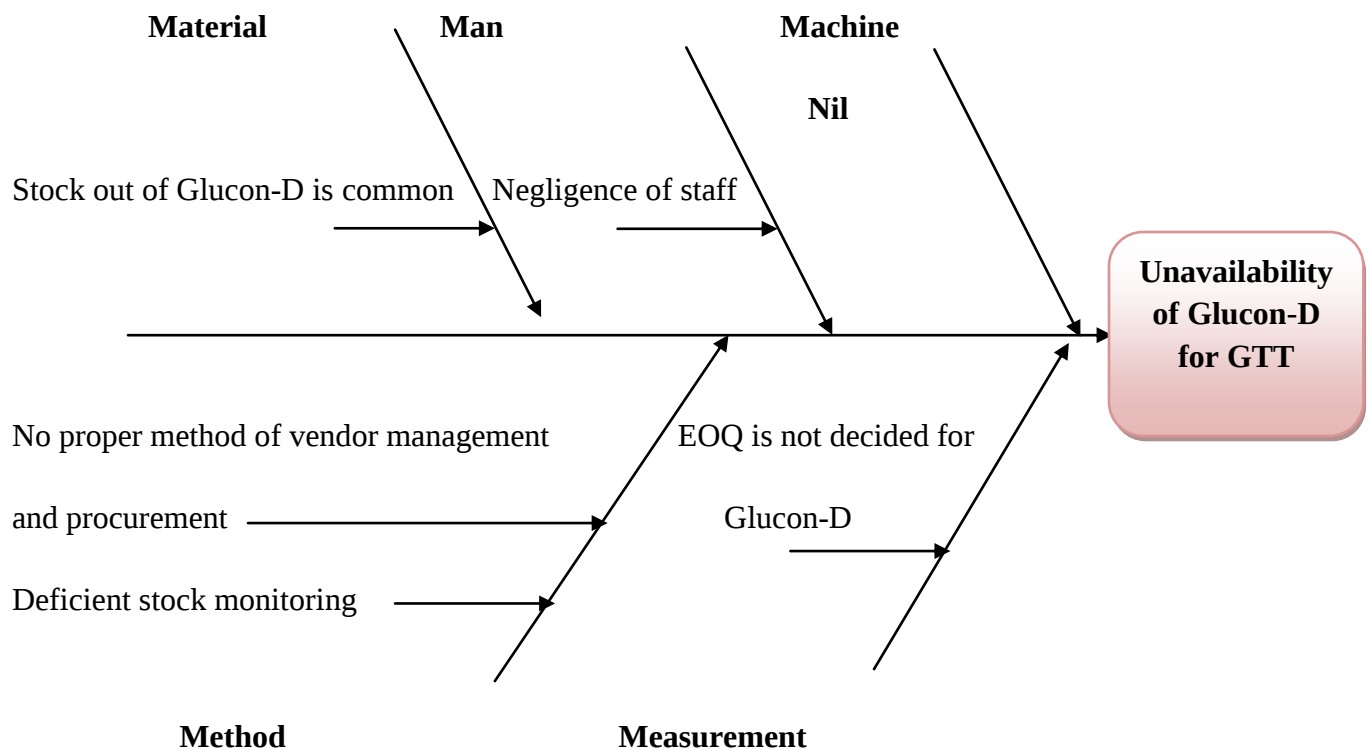
Analysis:

Process Flow of Indenting & receiving Glucon D



Tool Used: Root causes Analysis Matrix:

FISH BONE ANALYSIS:



Recommendations/ Action Plan:

- Daily stock monitoring for Glucon D in collection area of lab & pharmacy
- As discussed with Mr. Sanjay Agarwal, there was a regular request for Glucon-D in regular intervals of time by lab staff but main store was failed to provide. There was a negligence of main store staff to procure the Glucon-D from outside vendors.
- OP pharmacy should take care of stock out.
- Instead of providing glucon D from lab for GTT patients, it should be made available in OP pharmacy from where patient can purchase themselves.
- The stock in main store should maintain properly.

Reference:

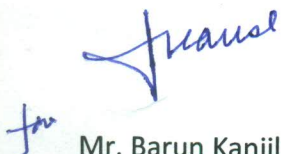
- Quality Manual of Laboratory department
- Standard operating procedure of haematology
- www.jointcommissioninternational.org

CERTIFICATE

This is to certify that Dr. Deepak Patial has undergone Summer Training in Narayana Hospital, Jaipur from 1st April 2016 to 31st May 2016.

The candidate himself completed the project assigned to him during Summer Training. His approach to the project was sincere and proactive. This summer training is partial fulfillment of the course requirement recommended for the award of MBA in Health and Hospital Management.

I wish him success in all his future endeavors.



for
Mr. Barun Kanjilal
Professor
IIHMR, Jaipur



Col. (Dr.) Ashok Kaushik Professor
Dean (Academic & Student Affair)
IIHMR, Jaipur