

**Summer Training at
Kokilaben Dhirubhai Ambani Hospital and Medical Research Institute,
Mumbai
(April 3 to June 2, 2017)**

**Improvement of Process Flow in Catheterization Lab Using Six Sigma
Principles**

**By
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**Under the guidance of
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**MBA Hospital & Health Management
2016-2018**


**Institute of Health Management Research
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2017**

CERTIFICATE

This is to certify that Mr. Satadru De has undergone summer training at Kokilaben Dhirubhai Ambani Hospital, Mumbai, from 3rd April to 2nd June 2017.

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

We wish him success in all his future endeavors.



Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affairs)

The IIHMR University, Jaipur

Date: June 2017



Dr. Neetu Purohit, PhD

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The IIHMR University, Jaipur

Date: June 2017



Kokilaben Dhirubhai Ambani
hospital & medical research institute

Every Life Matters

02nd June 2017

To whomsoever it may concern

This is to certify Mr. Satadru De from IIHMR Jaipur has successfully completed an internship with the clinical administration department at Kokilaben Dhirubhai Ambani Hospital from 01/04/2017 to 02/06/2017.

During his tenure, he has worked on the following projects:

- "Improvement of process flow in Catheterization Lab using Six Sigma Principles"
- "Study on inventory management in Catheterization Lab"

His performance was satisfactory and we wish him success in his future endeavors.

Dr Ram Narain
Executive Director

Dr. Milind Khadke
GM (Clinical Administration)



ACKNOWLEDGEMENT

With immense pleasure, I express my heart full gratitude to the director of IIHMR Jaipur, Dr. Vivek Bhandari, & Dean, and my mentor Dr. Neetu Purohit for having given me this opportunity to undergo training.

I am thankful to the administrative staffs of Kokilaben Dhirubhai Ambani Hospital for their great support and love. I am also thankful to chief executive office for providing me an opportunity to work as a trainee in their organization. I would like to thank Dr. Ram Narain & Dr. Milind Khadke General Manager (Clinical Administration) our mentor for the summer training in KDAH, without their help it would not have been possible for me to understand the hospital to the extent as I have now.

The staffs of Cath Lab have helped me for my entire time span in that department and Cath lab store for my project purpose. I have learnt a lot from the departmental procedures.

It was my great opportunity to work beyond my department and assisting other clinical administrators, at the same time they have helped me to learn about other auxiliary services and process improvement functions.

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Acronyms/Abbreviations

- CATH LAB: Catheterization Laboratory
- PTBD: Percutaneous Transhepatic Biliary Drainage
- DSA: Digital Subtraction Angiography
- CAG: Coronary angiography
- ASD: Atrial Septal Defect
- PTCA: Percutaneous Transluminal Coronary Angioplasty
- CCU: Coronary Care Unit
- CABG: Coronary Artery Bypass Grafting
- PICC Line: Peripherally Inserted Central catheter.
- PDA Stenting: Patent Ductus Arteriosus information

OBSERVATIONAL LEARNING

HISTORY OF KOKILABEN DHIRUBHAI AMBANI HOSPITAL

In January 2007, Kokilaben Dhirubhai Ambani Hospital started its historical journey with the aim to provide accessible, affordable healthcare facility to the people of India. The Kokilaben Dhirubhai Ambani hospital is a tribute to Dhirubhai Ambani by Anil Ambani and Neeta Ambani and to their mother-in-law Kokilaben.

This concept of developing a super-specialty hospital and medical research centre was dreamt by Dr. Nitu Mandke in 1999. Dr. Nitu Mandke was born in 1948 with a dream to become a cardiac surgeon in future and he was the first member in his family who took this as a profession.

Dr. Nitu Mandke worked with many famous personalities such as Dr. Magdi Yacoub, Dr. Kriklin and Dr. Pacifica at the university of Alabama, USA.

He built a substantial portion of the hospital with a great passion but in 2003 suddenly his dream was cut short by fate due to a massive heart attack.

After that the management of Mandke foundation approached to Reliance group who graciously took this project and developed it in a such way that it can be easily accessible by the Indian.

PROFILE OF KOKILABEN DHIRUBHAI AMBANI HOSPITAL

Kokilaben Dhirubhai Ambani hospital is one of the best tertiary care level hospital in Mumbai. It aims to provide a most advanced tertiary care facility to the people. It is a social initiative by the Reliance group for the improvement of health status of the people.

This hospital has the Full-Time specialist service protocol in their system which ensures doctor's availability in all situations. It is a 750-bedded hospital with 103 doctors, paramedical staffs, and other supportive staffs.

It is the only hospital which has four types of quality accreditation in Mumbai. This quality accreditations ensures a good investigation service, a good management system and a hospital which maintains standard protocols given by the national and international agencies.

Kokilaben Dhirubhai Ambani hospital is also associated with the CSR activities. They have an active wing which ensure to raise funds for the BPL category people and provides treatment facility.

VISSION

“We aim to be a global healthcare institution that combines the best in medical treatment with strong ethical principles and a culture of care and compassion. ”

MISSION

" To be an institution that offers comprehensive quality healthcare services under one roof through transparent patient-centric care ensuring patient safety, privacy and dignity. An institution where Every Life Indeed Matters. "

QUALITY COMMITMENT

The Kokilaben Dhirubhai Ambani Hospital is accredited by the Joint Commission International (JCI) and the National Accreditation Board for Hospitals & Healthcare Providers (NABH) as a commitment to quality and safety, which are the core mission and vision.

Under the direction of the Executive Director, the Office of Clinical Quality designs and leads safety and quality programmes throughout the hospital. KDAH authority uniquely aim to achieve highest levels of quality and safety by engaging doctors, nurses, therapists, and other staff as well as partnership with the patient and their family members. A culture of continuous quality improvement is cultivated and encouraged to provide the patients a safe environment to receive the highest quality care. The methodology used to achieve this includes:

- Identification, development and strengthening of policies, procedures, and protocols
- Maintenance of ethical medical and nursing practices
- Practice of evidence-based medicine of the highest standard
- Practice of safe medication practices
- Identification and prevention of errors
- Performance review through well-defined key indicators
- Respect and protection of patient rights.
- Quantification and measurement of patient satisfaction
- Stringent hospital infection control guidelines'
- Compliance with bio-medical waste management rules
- Constructive dialogues with the patients and their families to encourage participation and compliance in the treatment process
- Engagement of the patients and their families in safety
- Effective use of resources
- Cost-effectiveness management
- Antimicrobial stewardship programmes and monitoring antibiotic use

The Kokilaben Dhirubhai Ambani Hospital are committed to the patient as well as the community at large, by delivering the best possible care every time while dedicating themselves to continuously improving the way to do things driven by evolving data, benchmarks, and best practices.

INFRASTRUCTURE OF KOKILABEN DHIRUBHAI AMBANI HOSPITAL

❖ LOWER BASEMENT

- Biomedical engineering
- CSSD
- Nuclear medicine
- PET CT
- Radiation oncology
- SRS

❖ UPPER BASEMENT

- Car parking
- Central Security Office
- Mortuary

❖ GROUND FLOOR

- Main reception
- Admission counter
- Discharge and billing
- Pharmacy and medical mall
- Gift shop
- Prayer hall
- Business center
- Fine dining
- Food court
- ATM
- Central report collection center
- Beauty salon
- Accident and emergency

❖ Mezzanine floor

- Administration
- Library
- Staff dining

❖ FIRST FLOOR

- Clinical administration
- Radiology and imaging (X-ray, MRI, Ultrasound, CT scan)
- Health checkup program
- Sample collection
- Centre for cardiac sciences

- Centre for bone and joint
- Centre for pulmonary and lung medicine
- Multi-specialty OPD

❖ **SECOND FLOOR**

- Centre for children
- Centre for brain and nervous center
- Dental clinic
- Centre for cancer
- ophthalmology clinic
- ENT clinic
- Gastroenterology Clinic
- Dialysis Centre
- Blood Bank
- Urology Clinic
- Nephrology Clinic

❖ **THIRD FLOOR**

- OT complex 1 (8 theatres)
- Catherization lab
- ICU (Neuro and Surgical)
- Interventional radiology

❖ **FOURTH FLOOR**

❖ **FIFTH FLOOR**

- Ambulatory Surgery
- Day Surgery
- ICU (cardiac)
- OT complex 2 (7 theatre)
- Refuge Area

❖ **SIXTH FLOOR**

- Rehabilitation center
- Convention and exhibition center

❖ **SEVEN FLOOR**

- IVF center
- Cosmetology and aesthetic surgery
- Nursing college
- Tissue and Bone Bank

❖ EIGHT FLOORS

- Birthing complex (labor and delivery)
- ICU (pediatric and neonatal)
- Birthing suites
- OT (obstetric)
- Wards

❖ NINTH FLOOR

- Inpatients (pediatric)

❖ TENTH FLOOR

- High dependency
- ICU (medical)
- Refuge area

❖ 15) ELEVENTH FLOOR

- General ward
- Nursing college

❖ 16) TWELVE TO SIXTEEN FLOORS

- Inpatient department

FUNCTIONAL DEPARTMENTS IN KDAH:

Clinical services	Clinical support services	Clinical Administrative Services	Administrative Services
Accident and emergency	Laboratory medicines	Ambulance services	Human resources
OPD	Imaging	Nursing department	Materials
Anesthesia	CSSD	Food and beverages	Marketing
Critical care	Biomedical waste	Security	Finance
OT	Housekeeping	Mortuary	Engineering
IPD	Pharmacy	Laundry	IT

Improvement of process flow in Catheterization Lab using Six Sigma Principles

INTRODUCTION:

A catheterization laboratory or Cath lab is an examination room in a hospital or clinic with diagnostic imaging equipment used to visualize the arteries of the heart and the chambers of the heart and treat any stenosis or abnormality found.

Delays in Cath lab leads to the underutilization of Cath lab and manpower too. Delay also leads patient dissatisfaction and wastage of man, material, machine & money.

TAT is a very useful tool to find out possible problem areas of a specific department. Based upon the study one can easily come to know about the gaps of service and possible alternatives to overcome the situation. Tracking delays in Cath Lab is a system to find the gaps in existing flow process helps in reducing underutilization rate. Also reduces patient waiting time & overtime of technicians.

BACKGROUND:

Cardiac catheterization labs represent a significant capital investment for many hospitals. Realizing a return on this investment is increasingly challenging, given the introduction of advanced technologies and limitations in reimbursement. To meet the challenges and maintain fiscal health, hospitals are pursuing strategies to improve throughput, maximize equipment utilization and increase efficiency. Inefficient use of this limited resource increases costs and can compromise patient care

Literature Review

A Six Sigma approach is six step process, introduced by the Motorola Company in 1988(Watson and DeYong, 2010). Six Sigma has evolved to become an extension to total quality management.

As a project-driven management approach, the range of Six Sigma applications is also growing from reduction of defects in an organization's processes, product, and services, to become a business strategy that focuses on improving understanding of customer requirements, business productivity and financial performance (Kwak and Anbari, 2006). Six Sigma has branched out initially from the electronics industries (e.g. Motorola and Texas Instruments) to many other sectors. In the last two decades, this growth has become more prevalent as Six Sigma principles have also been implemented in service industries in the context of supply chain (Arnheiter & Maleyeff, 2005; Wei et al, 2010), as well as hospitals (Sehwail & DeYong, 2003; van den Heuvel at all, 2005), local government (Furterer & Elshennawy, 2005) and public sectors (Patel, S.C. and Zu, 2009; Kumar & Bauer, 2010).

DMAIC (an acronym for Define, Measure, Analyse, Improve and Control) (pronounced *də-MAY-ick*) refers to a data-driven improvement cycle used for improving, optimizing and stabilizing business processes and designs. The DMAIC improvement cycle is the core tool used to drive Six Sigma projects. However, DMAIC is not exclusive to Six Sigma and can be used as the framework for other improvement applications.

Cath Lab or Catheterization Laboratory are specially equipped with latest technology and well ventilated as lifesaving procedures perform here in daily basis which involves a great amount of investment. It includes a designated and highly promising group of doctors, technicians, nursing staffs and a good material management system.

So, from the hospitals earning point of view this setup should be utilized well for a better performance. DMAIC is here introduced to find out process gap which may be a barrier of utilization.

Rationale:

The healthcare scenario in today's corporate world has become the point of discussion to healthcare professionals, researchers, owing the changing corporate profile of the as well as due to the transition in disease profile of the country. The purpose of this study is to reduce delays from the first case of a day to increase productivity and to ensure patient satisfaction in Cath lab procedures.

RESEARCH QUESTION

- ✓ Does patient shift-in & shift-out delays affect in Cath lab utilization rate?
- ✓ Is there any way to decrease Over-time & On-call process?

GOAL & AIM:

- To know the process flow of Cath Lab.
- Addressing delays in Cath lab daily day to day process flow.
- Reducing shift in & shift out timing of patients in Cath Lab.
- Reducing On-call & over time scheduling.

OBJECTIVES:

- Gaining knowledge about Cath Lab procedures.
- To find out possible delaying areas in Cath Lab.
- To know patient shift in & shift out timings.
- Improve patient timings which can help in reducing on-call & overtime problem.
- To find out possible gaps & recommendation.

RESEARCH DESIGN:

- TYPE OF STUDY:
- ✓ A two-way descriptive & observational study.
- LOCATION:
- ✓ Kokilaben Dhirubhai Ambani Hospital, Mumbai.

- STUDY SUBJECT
- ✓ Cath Lab work flow process

SAMPLING:

- ✓ Sample area: KDAH, Mumbai,
- ✓ Sample population: Patients coming from day-care, admitted or in emergency, for Peripheral, Paediatric Cardio & Adult Cardiac catheterization purposes.

- ✓ Duration: 2 months
- ✓ Sample Size: 300
- ✓ Sample selection: Sample was collected on daily basis as per planned and unplanned all the patient who has Catheterization procedures in Cath lab.

Data Collection:

Quantitative data was collected from the Cath lab of KDAH. Patient's name, UHID No, Doctor's name, procedures, tentative in-timings, actual in-time, delay time and reason for delays.

- ✓ The timings of collecting sample size was from 9:00AM to 6:30PM for one and half month.
- ✓ Planned list of Cath Lab procedures per day was taken in the morning from the nursing in charge.
- ✓ Patient tracking was done as per patient's arrival to Cath lab recovery room, in-time, addressing delays in reporting, etc.
- ✓ The exact timings of entry of the patient to the Cath lab.
- ✓ Timing is matched with the tentative in-time and the time gap between planned timings and actual in-timing.
- ✓ With the help of delay timing, average delay timing is calculated for 300 patients with reasons for delay.

Analysis Plan:

Analysis plan was done by the help of DMAIC (Define, Measure, Analysis, Improve, and Control) approach a lean six sigma approach. Due to time constraint DMAIC approach is done till Analyse phase.

Methodology in detail:

DMAIC approach on reducing delays in Cath lab process flow of Kokilaben Dhirubhai Ambani Hospital.

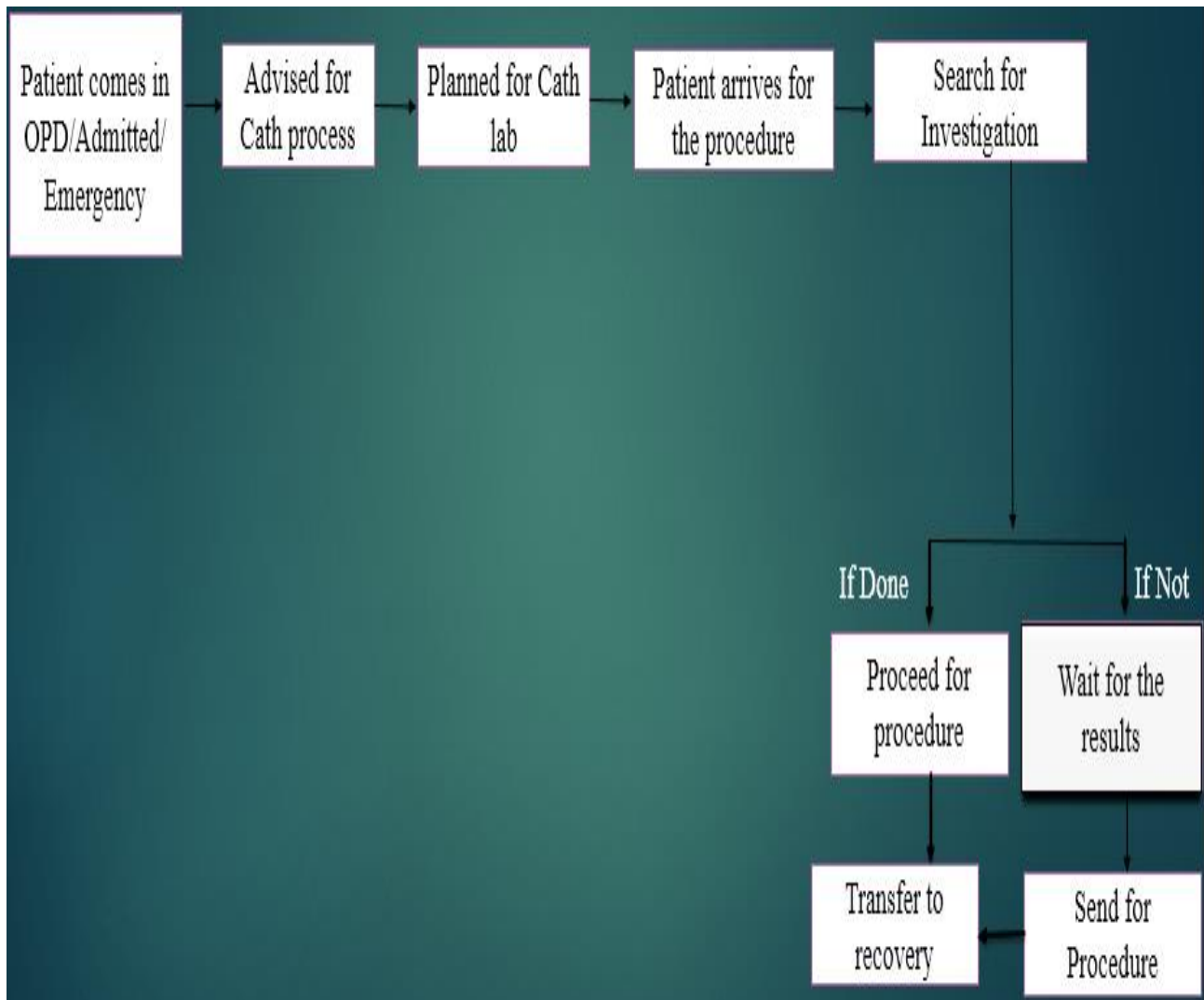
DMAIC approach includes:

- Define
- Measure
- Analysis
- Improve
- Control

✓ **Define Phase:**

Reducing delays in Cath Lab was selected as a project by Dr. Milind Khadke, General Manager of Kokilaben Dhirubhai Ambani Hospital, Mumbai and given to me to carry out a follow-up process upon it. It contributed to a significant amount of lost productivity and failure of the first case to start on time was delaying subsequently scheduled cases. This variability in start time and lack of schedule predictability also was contributing to staff, physician, and patient dissatisfaction.

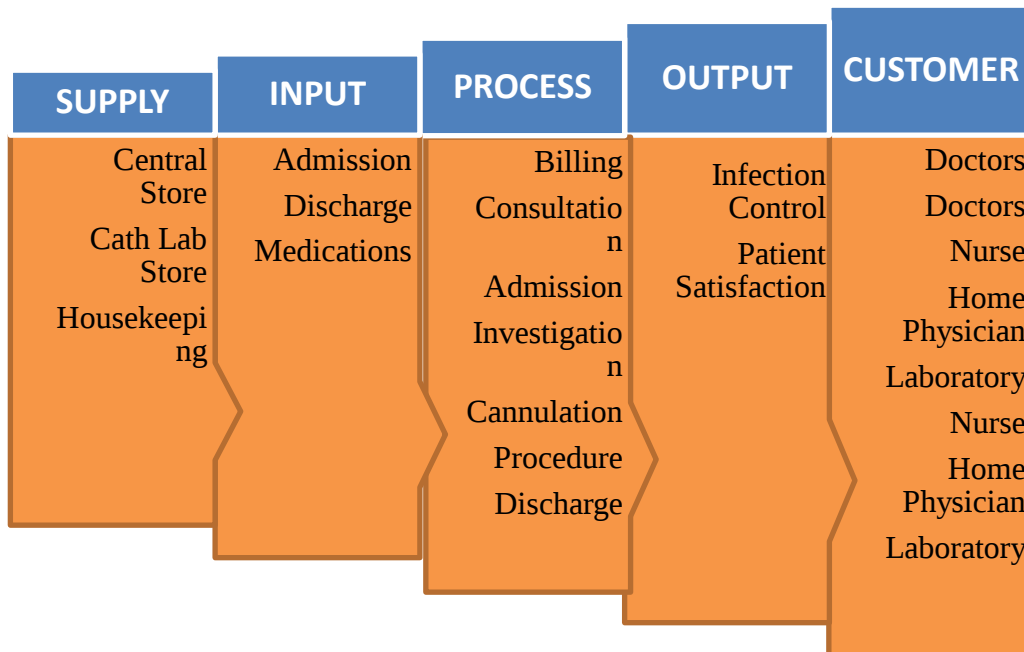
Process flow in Cath lab:



Problem Description:

PROJECT TITLE: A six sigma approach to reduce delays in Cath Lab Process.		
Problem	Customer Impact	Business Impact
Delay in Cath Lab procedure	➤ Patient Dissatisfaction ➤ Patient waiting time increases. ➤ Next procedures automatically get delayed	➤ Number of patient gets reduce because of earlier procedures delayed. ➤ Cath lab is under utilized ➤ Technician's overtime increases

• SIPOC:



- **SIPOC** (suppliers, inputs, process, outputs, customers) is a visual tool for documenting a business process from beginning to end. **SIPOC** (pronounced sigh-pock) diagrams are also referred to as high level process maps because they do not contain much detail

Project Charter:

Project Title: A six sigma approach to reduce delays in Cath Lab			
Problem statement			Opportunity statement
➤ Scheduling of patients for Cath lab. ➤ Time to shift-in & shift-out is huge. ➤ Availability of technicians that determines over time and on-call payments.			➤ Number of patient gets reduce because of earlier procedures delayed. ➤ Sometimes Cath lab remains vacant due to lack of patients. ➤ Technician's overtime increases.
Goal Statement			Project scope
Current Level	Goal/Target	Target Date	Process under improvement: Starts with: 4.04.17 Ends with :05.05.17
42.507	10 minutes	5.05.17	
Project Plan			
Phase	Start	End	Remarks
Define	04.04.17	05.05.17	Completed within time
Measure	06.05.17	07.05.15	Completed within time
Analyse	8.05.17	10.05.17	Completed within time
Improve			
Control			

- **Measurement Phase:**

The 'Measure' phase involves more numerical studies and data analysis than the define phase. This phase focuses on measurement system validation and gathering root causes.

Process/Input	Data source & Location	Sample size	Who will collect the data	Data collection	How will be data collected	Other data that should be collected at the same time
Cath Lab Process	Cath lab of KDAH	300	SATADR U DE	04.04.17 to 5.05.17	Manual	None

Data collection procedure:

Data was collected directly from the Cath lab day to day patient scheduling list & entered in an excel sheet containing patient name, age/sex, consultant name, time of procedure & actual in-time of the patient. This shows actual delay timings & reason behind the delay.

Table 1: Showing data collection procedure

NAME	AGE/SEX	PROCEDURE	PLANNED TIME	INTIME	DELAYED BY
MR.JOY SAHA	75Y/M	CAG PTCA	17:20	17:35	0:15:00
MR. RAJAT CHATTERJEE	54Y/M	PTCA	9:30	10:12	0:42:00
MRS.ARUNIMA GHOSH	58Y/F	CAG SOS PTCA	11:30	11:40	0:10:00
MR. RAMNIKLAL KESHHAVJI GANGAR	70Y/M	CAG SOS PTCA	13:00	13:20	0:20:00
MR. MICHAEL D BROWN	47Y/M	CAG SOS PTCA	14:30	14:40	0:10:00
MRS.JADAV ASHA		CAG SOS PTCA	16:00	16:35	0:35:00
MRS.SHUBHANGI	66Y/F	CAG SOS PTCA	17:30	17:35	0:05:00
MR. KESHAV CHOUDHARY	50Y/M	CAG SOS PTCA	9:00	9:40	0:40:00
MRS.LALITA PARMAR	58Y/F	CAG SOS PTCA	10:30	10:50	0:20:00
MRS.ASHA JADAV	51Y/F	CAG	12:00	12:40	0:40:00
MR. NILESH NIRMAL	45Y/M	PTCA	13:00	13:20	0:20:00
MR. PAWAN SHAH	59Y/M	CAG SOS PTCA	14:30	14:45	0:15:00
MR. MUBARAK SHAIKH	60Y/M	CAG SOS PTCA	16:00	16:15	0:15:00
MR. DMELLO	55Y/M	CAG SOS PTCA	17:30	17:40	0:10:00
MR. HARISH	50Y/M	CAG SOS PTCA	19:00	19:20	0:20:00

- **DATA MEASUREMENT CHART**

Table 2: Sample of data measurement chart

MESUREMENT (Times in hours)	MINUTES (Converted to minutes)	MEAN	UCL(3σ)(Assumed based on observation)	LCL(3σ)(Assumed based on observation)
1:10:00	70	42.50718	30	10
1:00:00	60	42.50718	30	10
2:30:00	150	42.50718	30	10
2:00:00	120	42.50718	30	10
1:05:00	65	42.50718	30	10
1:05:00	65	42.50718	30	10
1:45:00	105	42.50718	30	10
4:00:00	240	42.50718	30	10
2:30:00	150	42.50718	30	10
2:45:00	165	42.50718	30	10
4:44:00	284	42.50718	30	10
1:30:00	90	42.50718	30	10
1:05:00	65	42.50718	30	10
1:30:00	90	42.50718	30	10
1:00:00	60	42.50718	30	10
1:25:00	85	42.50718	30	10
1:15:00	75	42.50718	30	10
4:00:00	240	42.50718	30	10
2:15:00	135	42.50718	30	10
2:20:00	140	42.50718	30	10

Data Summarization:

- ✓ For Continuous (x)

Output indicator	Average	Standard deviation	CP
X1	42.507	47.09	0.07
			CP<1 indicates the process variation is less than the tolerance.

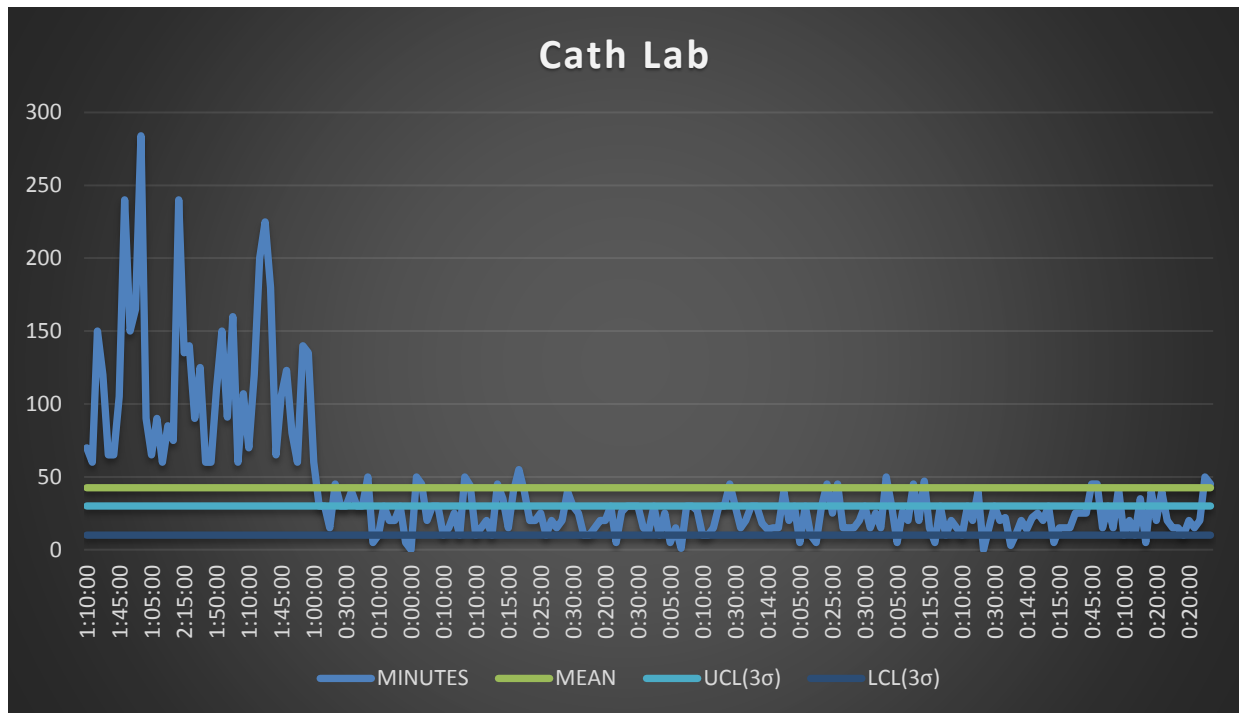
- ✓ For Discrete (x)

Output indicator	No. of. units	No. of opportunities/unit	No of defects	DPMO	SIGMA LEVEL
X1	300	7	188	89523.81	2.81

Result:

- ✓ Average shows 42 minutes are the highest time delayed, taking a patient in procedure room.
- ✓ When cp is equal to 1 that means the process variation exactly equals the tolerance.
- ✓ Here the value of cp is less than 1. That indicates the allowable variation (the tolerance) is less than the process variation

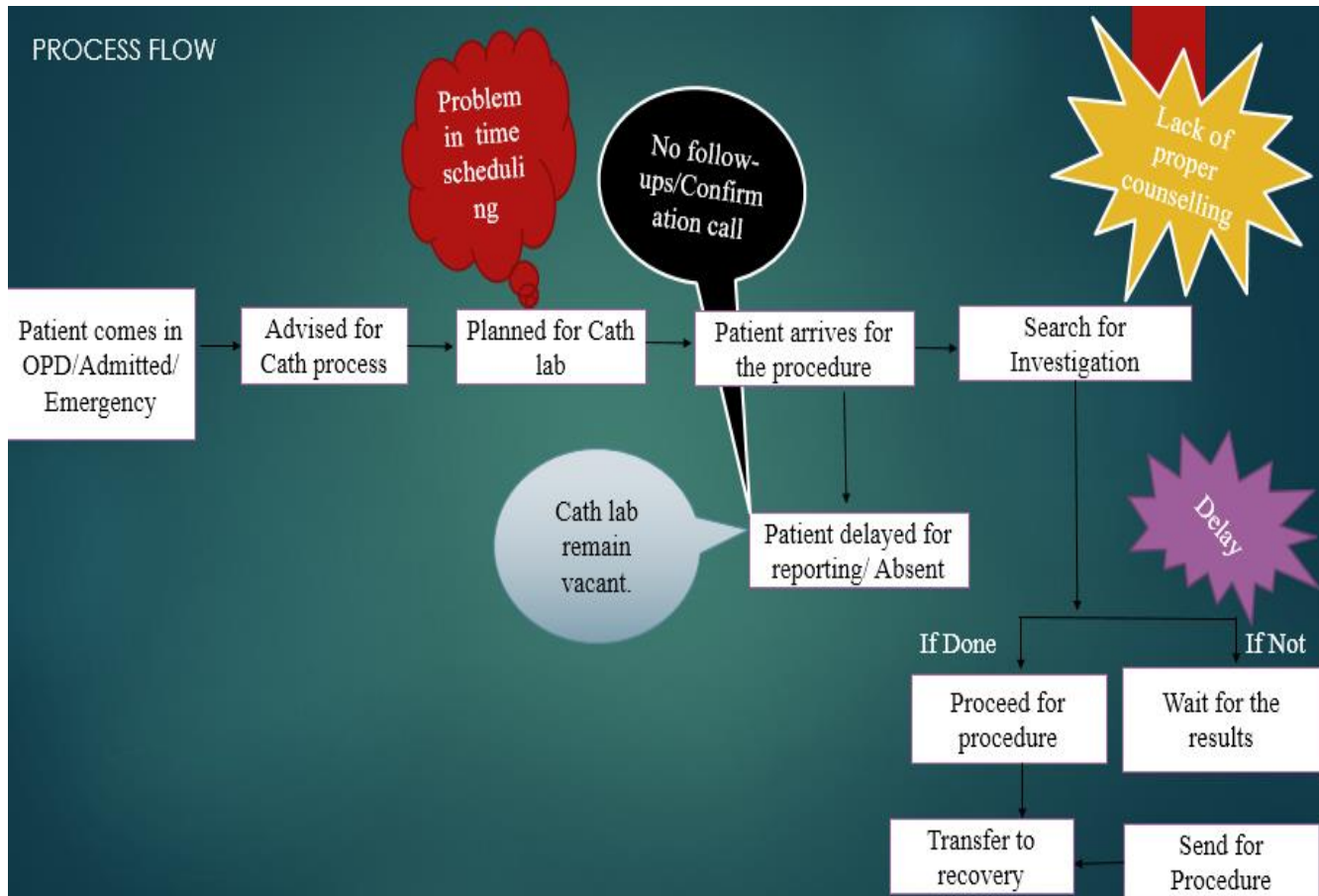
Control Chart:



- ✓ Here, blue lines show the timing variations of the procedures whereas upper line shows upper time limit of the process, middle line shows the mean timing, and third and lower line shows the lower time limit of the process

ROOT CAUSE ANALYSIS

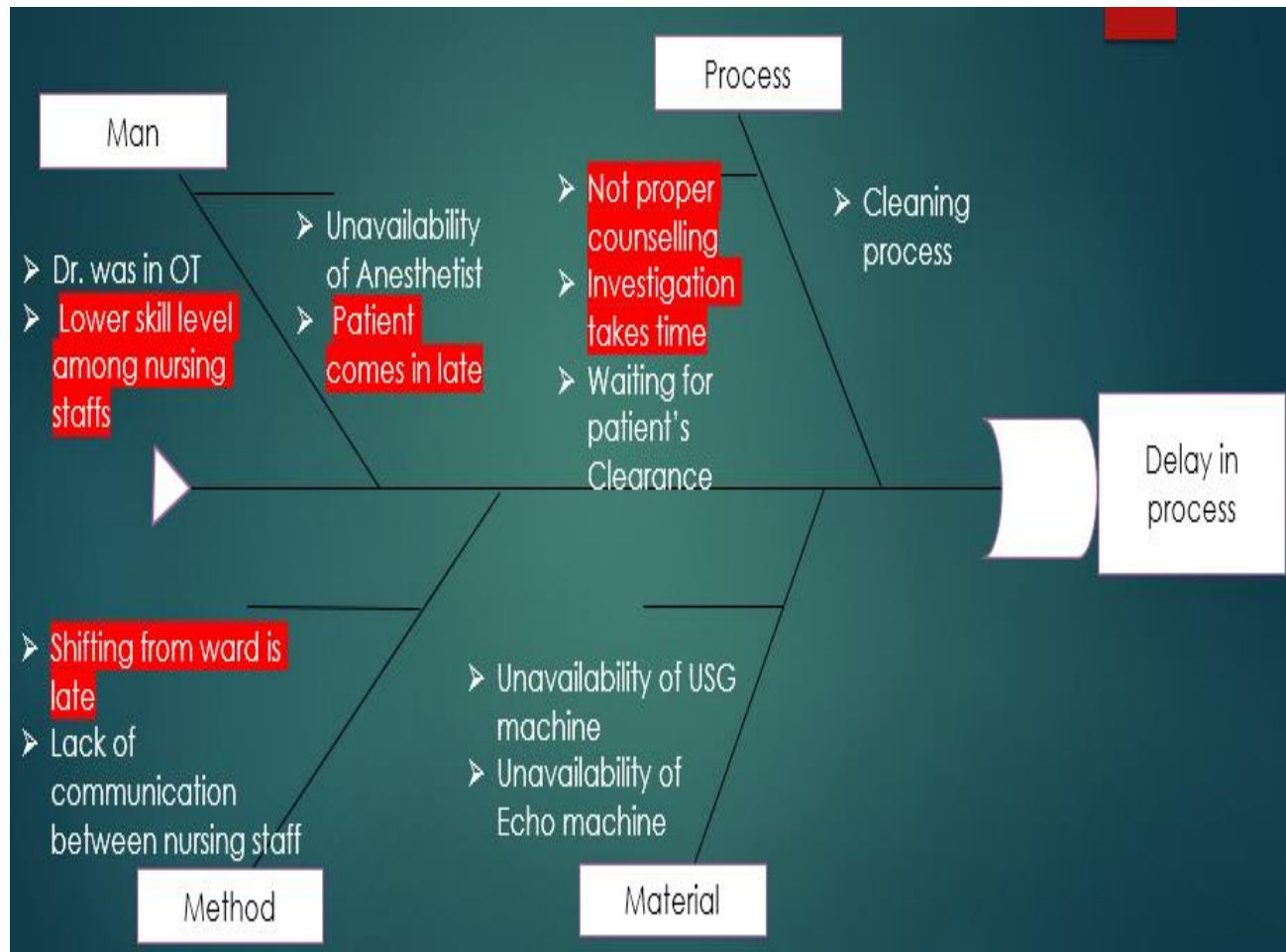
- ✓ RCA or Root Cause Analysis is a process to find out causes of delays in every step of process. Here it is described through a flow chart process:



- In the process flow map, bubbles are showing the defects that causes delay and here are the scopes of improvement.

- **Fishbone Analysis:**

The fishbone diagram identifies many possible causes for an effect or problem. It can be used to structure a brainstorming session. It immediately sorts ideas into useful categories.



Coding against the problems

D1	PREVIOUS PROCEDURE WAS GOING ON
D2	SHIFTED IN LATE
D3	PREPARATION WAS TIME TAKEN
D4	PATIENT'S CLEARANC NOT DONE
D5	NON-AVAILABILITY OF USG MACHINE
D6	SHIFTED FOR NEXT DAY
D7	INVESTIGATION WAS NOT PROPER
D8	PATIENT CAME IN LATE
D9	RELATIVES WERE UNWILLING FOR THE PROCEDURE DUE TO MONETARY PROBLMES
D10	CLEANING
D11	DR.WAS IN OT
D12	UNAVAILABILITY OF ANASTHETIST
OT 13	ON TIME
BT 14	BEFORE TIME
C 15	PATIENT DIDN'T CAME
UP 16	UNPLANNED
D 17	TAKEN AS PER CONSULTANT'S CHOICE

Problem Chart:

This is the chart which shows the number of occurrence of the problems in total sample size.

REASONS	NUMBER OF OCCARANCE
Lower skill level among nursing staff	NA
Patient comes in late(D8)	36
Not proper counselling(D4+D7+D8+D9+C15)	94
Investigation takes time(D7)	27
Shifting from ward is late(D2)	29
Dr. Was in OT(D11)	6

CONCLUSION

<u>Problem areas</u>	<u>Recommendations</u>	<u>Expected Outcome</u>
Lower skill level among nursing staff	Needs continuous training & performance appraisal	✓ Skills level will develop ✓ Table preparation for the procedure will take less time. ✓ Patient waiting time will decrease.
Patient comes in late	Confirmation calls should be done before the day of procedure	✓ Patient schedule list will be truly updated ✓ Patients can know more about the procedures or investigations ✓ Patient can feel that hospital authority has helpful or caring attitude about their patients. ✓ Proper time scheduling will be maintained & other unplanned patients can easily be accommodated.
Not proper counselling by the concerned authority	Proper counselling about charges, investigations, post CAG procedures, length of stay, etc.	✓ Patient can do their proper monetary planning for the procedure. ✓ They will know about the expenditure. ✓ Less confusion for billing ✓ Patient relatives will aware about the course of action.

Investigation takes time	All investigation should be clear before the day of Cath procedure	✓ It will decrease the patient waiting time in Cath lab waiting area. ✓ More number of patients can be accommodated in the list. ✓ Procedures can be carried out easily and in a faster & better way.
Shifting from ward is late	A patient list should be circulated from Cath Lab to every ward areas on the previous day of procedure, containing patient details, time, and date for the Cath procedure.	✓ Timely shifting of patient ensures good communication between the inter related departments. ✓ Patients have expectation for timeliness of the procedures. ✓ Reduces overcrowding in recovery room. ✓ Post procedure patient feel comfort.
Unavailability of doctors	Proper scheduling	✓ Proper scheduling of cases makes aware to doctors about their procedure timings. ✓ It allows them to give priority on the timing of their procedure. ✓ It makes a discipline within the professionals. ✓ Increases working efficiency Which ensures the optimum utilization of Cath lab.