

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

**Turn Around Time of Accident and Emergency Shifting of Patient from
A&E to Ward/ICU**

**By
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**Under the guidance of
Dr. D.K. Mangal**

**MBA Hospital & Health Management
2016-2018**


**Institute of Health Management Research
The IIHMR University, Jaipur
2017**

CERTIFICATE

This is to certify that Ms Harshita Sharma has undergone summer training in Kokilaben Dhirubhai Ambani Hospital, Mumbai from 3rd April to 2nd June 2017.

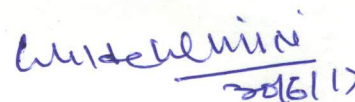
The candidate herself completed the project assigned to her during summer training. Her approach to the project was sincere and proactive. This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish her success in all her future endeavors.



Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affair)
The IIHMR University, Jaipur



Dr. Daya Krishan Mangal

Dean (Research)
The IIHMR University



Kokilaben Dhirubhai Ambani
hospital & medical research institute

Every Life Matters

02nd June 2017

To whomsoever it may concern

This is to certify Ms. Harshita Sharma 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 her tenure, she has worked on the following projects:

- "Improving Turn Around Time during transferring patients from A&E to ICU/Ward using Six Sigma Principles"
- "Study of Turn Around Time of patient transfer from ICU to Ward"

Her performance was satisfactory and we wish her success in her future endeavors.

Dr Ram Narain
Executive Director

Dr. Milind Khadke
GM (Clinical Administration)



Acknowledgment

It would not have been possible without the mentor Dr. D.K. Mangal and the director of IIHMR Jaipur, Dr. S.D. Gupta, and Dean, and for giving me this opportunity to undergo training.

I am highly indebted to all the professionals at Kokilaben Dhirubhai Ambani Hospital for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

I would like to show my gratitude toward KDAH for their kind co-operation and encouragement which help me in completion of this project.

I would like to show my thank all the department members of KDHM

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Acronyms/Abbreviations:

A&E- Accident and Emergency

DAMA-Discharge against Medical Advice

ICU-Intensive Care Unit

SICU-Surgical Intensive Care Unit

MICU-Medical Intensive Care Unit

HDU-High Dependency Unit

PICU-Pediatric Intensive Care Unit

NICU-Neonatal Intensive Care Unit

IPD- In-Patient Department

KDAH-Kokilaben Dhirubhai Ambani Hospital

MRD-Medical Records Department

About Summer Training:

The Master in hospital and health management (MBAHM) Program of Institute of Health Management Research (IIHMR) aims at preparing professionally trained managers of health care organization and hospitals to meet the increasing need for managerial skill. It involves a eight week summer placement for the first year students to provide them with a firsthand experience of the hospital system or environment. As a part of the program I had privilege to undergo my practical training at Kokilaben Dhirubhai Ambani Hospital, Mumbai to get a firsthand Knowledge and Experience about the functioning of the hospital. I worked all through under the Clinical administration there from 1st April 2016 to 31st May 2016. The main aim of the summer training was to get exposed to operation of all the hospital in general, and an in –depth insight of the Intensive Care unit & Admission Department in the hospital in particular.

Objective

The summer training program had the following Objectives:

- To have a basic orientation of the hospital set up.
- To study the functioning of the hospital as a system and its departments as subsystems of the hospital.
- To observe the entire department in terms of their location, work plan and Staffing pattern.
- To Study about staffing pattern and job responsibility of staff.
- Doing a project which is helpful to me in understanding hospital working in a better way and to the organization.

PROFILE OF KOKILABEN DHIRUBHAI AMBANI HOSPITAL

Kokilaben Dhirubhai Ambani hospital is the and the medical research is the newest and most advanced tertiary care facility. it is design to raise India global standing as health care hub

Hospital was inaugurated in 2009 it is a full time specialist system ensuring easy availability and access to dedicated specialist system that ensure specialist exclusively attached to the hospital

It is 750 bed hospital with 150 full time doctors 520 nursing staff and 200 paramedical staff

VISION

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.

VALUES

Integrity: To deal with all stakeholders –patients, partners, employees, vendors and the community – in a spirit of fairness and integrity.

Transparency: To respect the patient’s right to know at every touch point by providing information that is clear, concise relevant and easy to understand.

Maximum Care: To re-evaluate every hospital system, process and procedure to ensure the patients and their loved ones receive maximum care and comfort.

Self – improvement: To instill a process of learning and self – improvement at every level through continuous training, focused research and peer review.

Patient Dignity: To safeguard the dignity of patients by protecting their individuality and privacy at all times.

KEY STATISTICS OF HOSPITAL:

Encompassing 10 lakhs sq, ft of space over 12 floors and two basements. It allows optimum utilization of space and resources.

Accommodates over 750 in patient bed,allows optimal utilization of resources and ensures privacy ,comfort and best healthcare services to every patient

Critical care unit is the largest number of critical care beds in Mumbai, with 130 ICU beds. Special technical features in ICU including ceiling mounted, dual arm pendant which ensures that the space around the patient is not cluttered. Another unique feature is dedicated air supply

It has a total of over 140 full time consulting clinics with the capacity to handle over 6000 outpatient

Consulting every day

Movement in hospital is managed by 3 elevators- largest elevator bank for any hospital in India capable of transforming 7500 person per hour

Hospital laboratory is housed on a single floor over an area of over 40,000 sqft offers over 3000 routine and highly advanced diagnostic, genetics and molecular biology test and will serve as a referral center for second opinions

HOSPITAL INFRASTRUCTURE

1. Lower Basement

- Biomedical Engineering
- CSSD
- Nuclear medicine
- PET CT
- Radiation Oncology
- SRS

2. Upper Basement

- Car Parking
- Central Security Office
- Mortuary.

3. Ground Floor

- Main Reception
- Admission counter
- Discharge and billing
- Pharmacy & Medical mall
- Gift Shop
- Prayer hall
- Business Centre
- Fine dining
- Food court
- ATM
- Central report collection centre
- Beauty Salon
- Accident and Emergency.

4. Mezzanine Floor

- Administration
- Library
- Staff dining

5. First Floor

- Clinical administration
- Radiology & 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

6. Second Floor

- Centre for children
- Centre for brain and nervous centre
- Dental clinic
- Centre for cancer
- Ophthalmology Clinic
- ENT Clinic
- Gastroenterology Clinic
- Dialysis Centre
- Blood bank
- Urology Clinic
- Nephrology Clinic

7. Third Floor

- OT complex 1 (8 theatres)
- Catheterization lab
- ICU (Neuro and Surgical)
- Interventional Radiology

8. Fourth Floor

9. Fifth Floor

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

10. Sixth Floor

- Rehabilitation Centre
- Convention and Exhibition Centre

11. Seventh Floor

- IVF Centre
- Cosmetology and aesthetic Surgery
- Laboratory medicine and pathology
- Nursing College
- Tissue and bone bank

12. Eighth Floor

- Birthing Complex (labor and delivery)
- ICU (Pediatric and Neonatal)
- Birthing suites
- OT (Obstetric)
- Wards

13. Ninth Floor

- Inpatients (Pediatric)

14. Tenth Floor

- High Dependency Unit
- ICU (Medical)
- Refuge area

15. Eleventh Floor

- General ward
- Nursing College

15. twelfth To Sixteenth Floor

- Inpatient.

DEPARTMENTS IN THE HOSPITAL

The following departments function in the hospital:

Clinical Services	Clinical support services	Clinical Administrative services	Administrative Services
Accident & Emergency	Laboratory Medicine	Ambulance Services	Human resources
OPD	Imaging	Nursing department	Materials
Anesthesia	CSSD	Food & Beverages	Marketing
Critical Care	Biomedical Waste	Security	Finance
OT	Housekeeping	Mortuary	Engineering
IPD	Pharmacy	Laundry	IT

CLINICAL SERVICES

ACCIDENT & EMERGENCY

Emergency department is also known as Accident & emergency department (A&E), Emergency room ,Emergency ward, or Casualty department is a Medical treatment facility, specializing in acute care of patient . The department must provide initial treatment for a broad spectrum of illness and injuries some of which may be life threatening and require immediate attention

Layout

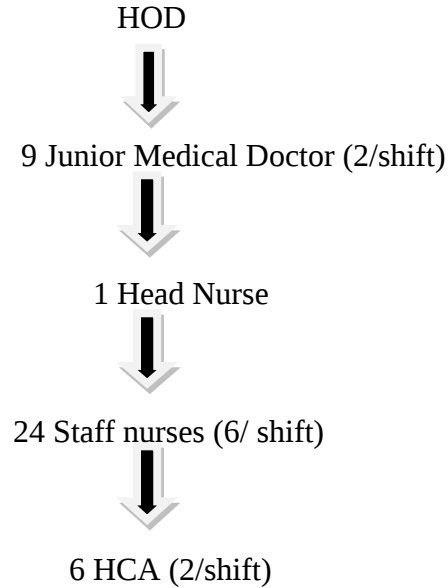
- 11 bedded (6+3 triage + 2 isolation)
- Each bed is separated with curtains to maintain patient privacy and is equipped with the following:
 - ✓ Oxygen supply
 - ✓ Suction pump
 - ✓ Syringe pump
 - ✓ Cardiac monitor

Minor Operation Theatre

- Machines in minor OT are as follows: -
 - ✓ Anesthesia machine
 - ✓ ETCO2 machine
 - ✓ Cautery machine
 - ✓ OT table
- Procedure done in minor OT
 - ✓ Lumbar puncture
 - ✓ Biopsy
 - ✓ Bone marrow aspiration
 - ✓ Suturing

This department has got its own billing and discharge counter.

Staffs: -



Equipment

- Defibrillator-2
- Portable ECG-2
- Nebulisation machine -2
- Portable sonography machine -1
- Trolleys:
 - ✓ Procedure trolley
 - ✓ Induction trolley
 - ✓ Adult crash trolley
 - ✓ Dressing trolley

Ambulance

There are 2 types of ambulance:

- a) Non-cardiac ambulance
- b) Cardiac ambulance

Equipment in the ambulance are as follows: -

- Ambulance Set
 - Portable ventilator (cardiac ambulance)
 - Portable oxygen unit
 - Portable suction unit
 - First aid kit
 - Traction splint
 - Auxiliary stretcher
 - Transfer sheet
 - Airways (nasal, oropharyngeal)
 - Obstetrical kit
 - Sphygmomanometer
 - Stethoscope
 - Fire extinguisher
 - Burn kit
 - Others
 - ✓ Sterile and non-sterile gloves
 - ✓ Face mask
 - ✓ Blankets
 - ✓ Towels
 - ✓ Bed pan
 - ✓ Tongue depressors
 - ✓ Cold packs instant chemical type
-
- 1 HCA in non-cardiac ambulance
 - 1 HCA + 1 nurse + 1 cardiac consultant in cardiac ambulance

OUTPATIENT DEPARTMENT

Kokilaben Dhirubhai Ambani Hospital has 140 independent consultant clinics with a capacity to handle over 6000 outpatient consultation every day. These clinics are organized as functional clusters representing a specialty, with each cluster containing its own examination room, phlebotomy room, and in instances, rooms for specialized medical equipment unique to the cluster. A day care dialysis unit, an endoscopy theatre complex, radiology suites and a blood bank support outpatient service are co-located on the same floors as the self-contained outpatient area. The hospital outpatient services offer specialist consultation services across 42 different specialties including six centers of excellence.

The six centre of excellence are as follows: -

- Center for neurosciences
- Center for cancer
- Center for physical medicine and rehabilitation
- Center for cardiac sciences
- Center for bone and joint
- Center for children

The specialists included are Anesthesiologist, Critical Care Medical, accident and emergency, gynecology and obstetrics, imaging, laboratory medicine and pathology including biochemistry, molecular biology, hematology, histopathology, microbiology, clinical pathology, transfusion, medicine, rheumatology, geriatric medicine, surgery including dentistry, ENT, general surgery, ophthalmology, plastic and reconstructive surgery, urology, surgical oncology, cosmetology.

A) Access to OPD services:

All patients who visit KDAH or free OPD for the first time for consultation/ other services are issued a card which gives each patient a UHID number. This UHID card is attached to the registration form. With the help of this number, medical records of patients can be assessed. Allotment and control of UHID number is the responsibility of the admission staff desk.

B) OPD Appointment:

Appointments can be fixed over telephone to all from the call centre or personally across the reception counter. Fax and email facilities are also available.

Following services are offered in the OPD.

- Medical/ surgical consultations
- Preventive health check-up packages
- Laboratory investigations
- Imaging services
- Cardiology investigations
- Neurology investigations

- Pulmonary investigations
- Pain management
- AKD
- Gamma knife
- Endoscopy
- Bronchoscopy
- Urodynamic study
- Physiotherapy
- CDC
- ENT
- Ophthalmology
- Dental procedures
- Oncology
- Radiation oncology

HEALTH CHECK UP

- The executive checkup department, a part of OPD services, is a wing of this multispecialty hospital dedicated to the diagnostic and preventive side of patient care. It is a place where healthy patients come for prognosis of disease or to know about the preventive and curative aspect of conditions they may already have.
- This system facilitates the patient to get all the required investigations/ consultations done without having to pay for either consultation and/or for each individual item of pathological or imaging investigations. It is the centre point where the potential customers come directly in contact with hospital services. This department can therefore be a point to draw in patients to become in-patients or for them to come even for follow-up OPD consultation.
- The packages in the program have been developed by a team of highly qualified and experienced medical personnel and are designed to offer a complete medical checkup and within their limitations detect any latent health problems. In addition, these packages are offered at special discounted rates that make them truly worthwhile. At the end of the day, candidates leave the hospital with all their reports.
- This department is dependent on various other hospital departments and consultants to ensure a smooth process flow. Therefore, co-ordination is a key factor in smoothly running the department. The departments in co-ordination are, pathology, radiology, following department, medicine, surgery and gynecology.

OPERATION THEATRE:

The aim of department of anesthesiology and OT facility is to provide the highest quality of care to patients undergoing various types of surgeries. The OT facility is positioned as a tertiary care center of excellence providing complete services for various surgical specialties. The department is staffed with highly experienced and trained anesthesiologist, surgeons, technicians, nurses and other support staff. Their services have state of the art technology and equipment with highest level environment and quality controls. For each OT there are two scrub nurses and one circulating nurse. Protocols based on approach for quality pre-operative, intra- operative and post-operative and follow-up care of the patients. The complex is divided into three zones: sterile, semi sterile and non-sterile zones. Complete services to the following surgical specialties are provided.

- Cardiac surgery
- Neuro surgery
- Onco surgery
- Orthopedic surgery
- General surgery
- Gynecology and obstetrics surgery
- Pediatric surgery
- GI surgery
- Uro surgery
- Plastic surgery
- Ophthalmic and ENT surgery
- Transplantation surgeries

The OT complex has a pre-and post-operative monitoring room for continuous monitoring of patients. The facility includes 22 OTs, 600 square feet area, pendants in all OTs and surgical control panels.

IN PATIENT DEPARTMENT

The IPD provides the detailed pre-procedure needs their completion and coordination with the diagnostic to arrive at the diagnosis and completion of treatment regimens, comprehensive care in the pre-operative and follow-up care, rehabilitative, and nutritional regimented their scientific amalgamation as per the progressive patient care need. IPD wards are located on floor numbers 9,10,11,12, 13, 14, 15 & 16. The IPD rooms are of the following types: single room, twin sharing, deluxe room and suites. Each floor has three zones, east, west and central and each wing has a separate nursing station. The various types of rooms with their features as follows:

- **GENERAL WARDS**
 - 5 beds/room
 - Air conditioned
 - Bed heads panels with medical gases
 - Nurse call systems with two-way communication
- **SINGLE ROOMS**
 - Area of 320 sq. ft.
 - Separate patient zone and attendant zone
 - Nurse call system with two-way communication.
- **TWIN SHARING**
 - Bed head panels with medical gasses
 - Television sets
 - Couch for each patient relative
 - Nurse call system with two-way communication.
- **SUITS**
 - Area of 750 sq. ft.
 - Terrace garden
 - Exclusive visitor area and guest rooms
 - Nurse call system with two-way communication.

Nurse bed ratio is 1:5 for general ward, 1:2 for single rooms, 1:3 for twin sharing, 1:1 for suits. The various other rooms are clean utility, dirty utility, janitor room, AHU (air handling unit), sluice room, pharmacy room, I.T. room and service elevator

THE ICU HAS HIGHLY DEDICATED AND TRAINED MEDICAL, NURSING AND ALLIED STAFF. THERE IS A SYSTEM OF CLOSED ICU IN KDAH. THE SPACE PER BED IS 320SQ FEET IN THE PATIENT CARE AREA

BED CAPACITY IN EACH ICU

ICU	Bed capacity
SICU1	11
SICU2	10
PCICU	11
PCICU-HDU	2
PICU	7
TRANSPLANT ICU	7
NICU	8
NICU-HDU	5
MICU	28
MICU	25

Human resource of the ICU

Intensive care doctors

- 1chief intensivist for all ICU
- Junior consultants (**12 hour shift**)
- Clinical registrars (8-hour shift)

Intensive care nursing staff

- 1 director general manager for ICU
- Nurse in charge (8-hour shift)
- Team leader (8-hour shift)
- Senior nurse officers
- Junior nurse officers

Allied staff

- Physiotherapists
- Dieticians
- Biomedical engineers
- Health care assistants

SHIFT TIMINGS:**For doctors**

Morning: 8am – 4pm

Afternoon: 2pm – 10pm

Evening: 10pm – 8am

Overlapping hours: 2pm – 4pm

For nurses, HCA and housekeeping staff

Morning: 7am – 3pm

Evening: 3pm – 11pm

Afternoon: 11pm – 7am

Visiting hours: 11am – 1pm

5pm – 7pm

Only 1 relative at a time is allowed

Records and registers

Admission and discharge register

Handling and taking over/team leader sheet

Assignment sheet

Leave book

OT booking register

Critical care flow sheet

Narcotic drug register

EQUIPMENTS:

MONITORING EQUIPMENT	CARDIOVASCULAR THERAPY	RESPIRATORY THERAPY	LABORATORY EQUIPMENT
Bed side and central monitors	CPR Trolley	Ventilators	Blood gas analyser
ECG recorder	Defibrillators	Incubation / tracheotomy trolley	Electrolyte analyser
Pulse oximeter	Infusion pumps and syringes	Nebulisers	
Spiro meter			
ECG monitor			
Temperature monitors			
Blood glucose meter			

Miscellaneous equipment

- Crash cart
- Dressing trolley
- Procedure trolley

Management information system

ICU	LOS (days)
Adult ICU	4
PCICU	6.5
PICU	5.6
NICU	6.4

PAEDIATRIC INTENSIVE CARE UNIT

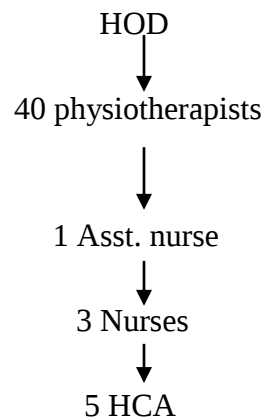
The PICU looks after all critical paediatric patients. It is located on 8th floor. The ICU is split into 2 zones for outpatients and inpatients. The various other rooms include Ante room, equipment room, clean utility and dirty utility room. The average length of stay of each patient is approximately 1 week.

NEONATAL INTENSIVE CARE UNIT

The NICU is 18 bedded and located on 8th floor. The department is divided into 2 zones outpatients and inpatients. There are 2 isolation rooms. The nurse ratio is 1:1.

CENTER FOR REHABILITATION: -

- the center is located on the dedicated floor with 30000 square feet area and exclusive inpatient service, first of its kind.
 - The department is located in 7th and 8th floor of hospital.
 - It has got its own billing desk.
 - It also consists of a day-care center for those patients who need 4-5 sessions in a day.
- **Staff of the department consists of:**



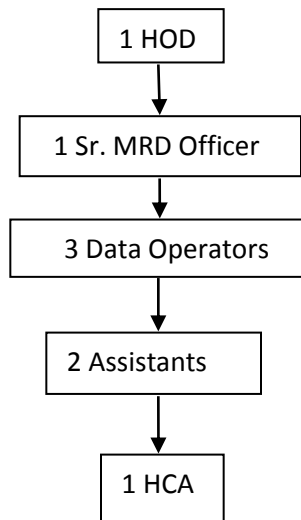
Following therapy services are available: -

1. Neurological Rehabilitation
2. Musculoskeletal Rehabilitation
3. Cardiac Rehabilitation
4. Pulmonary Rehabilitation
5. Pediatric Rehabilitation

CLINICAL SUPPORT SERVICES

MEDICAL RECORDS DEPARTMENT

- The main functions of the department are:
 - 1) Storing file for future reference.
 - 2) Research
- Staff



- Open and closed audit is done of all files before keeping them for storage.
- The arrangement of files is done in following ways:
 - ✓ Year wise and UHID wise
 - ✓ Also on the basis of their type:
 - a. Regular files
 - b. DAMA files
 - c. MLC files
 - d. OT recovery files
 - e. Chemotherapy files
 - f. Dialysis files
- Apart from files few forms, and records are also store in this department:
 - ✓ Consent forms
 - ✓ OT papers
 - ✓ A&E Papers
- Certificates issued from the department:
 - ✓ Patient fitness certificate
 - ✓ Fit to fly certificate

- ✓ Leave certificate
- All files are stored in the department for the following time-period:
 - ✓ Report-1.5 year
 - ✓ Death, DAMA and MLC files 20 years
 - ✓ Regular files-5years
- ICD-10 coding is done for storing files:
 - ✓ Red-Death, DAMA, MLC
 - ✓ Black-Oncology
 - ✓ Yellow-Gynaecology, & obstetrics, IVF files
 - ✓ Dark blue- general medicine, critical care, Nephrology, Endocrinology, Gastroenterology, Pulmonary medicine, Dermatology, Dental, Psychiatry, rehabilitation, Rheumatology.
 - ✓ Light blue- Paediatrics
 - ✓ Orange- Neurology, CVTS, Cardiology, Orthopaedics.
 - ✓ Green- ENT, general surgery, ophthalmology, Urology, Cosmetology, Interventional radiology.
- This department has to notify Bombay Municipal Corporation (BMC) about following things on regular basis:
 - ✓ About Birth & Death report (once in a week)
 - ✓ Notifiable diseases which includes cholera, dengue, plague, yellow-fever, TB, polio, meningococcal meningitis, leptospirosis, viral encephalitis(once in a week).
 - ✓ Maternal mortality (once in a week)
 - ✓ MTP & PNDT (once in a month)
 - ✓ Retrieval- for easy retrieval of files tracer cards are used when files are given to patients or sent outside the department.

LABORATORY: -

The salient features of the department are as follows-

- CAP (College of American Pathology) accreditation
- Central processing laboratory is spread over 40,000sq.Ft. which follows strict internal quality compliance for all analyzer.
- Excellent laboratory management system which handles both pre-analytical and post-analytical aspects
- Dedicated courier and logistic services
- 24 hrs. sample collection facility
- Stringent quality control monitoring which satisfy the quality assurance elements elaborated by GLP and GCP and readily available documented evidence of quality assurance and quality proficiency schemes

- Constant improvisation and technology innovation using over 150 states of the art equipment.
- Quality control and quality assurance executive that monitors pre-analytical and post-analytical processing of the samples.
- Customized management report (MIS-management information system)
- An active IRB and ethics committee which oversees clinical trials proposed when required.

IMAGING: -

The imaging department consists of radiology services. The investigations performed in these departments includes:

- CT Scan
- MRI
- X-RAY
- Ultrasound
- Mammography

The HIS has a system for appointment scheduling for each of these investigations. The appointments are given by Call Centre. There are 4 X-ray machines, 5 ultrasonography machines, 1 mammography machine, 1 CT Scan machine, & 2 MRI machine of which one is 3 Tesla located in the radiology department and the other is 1.5 Tesla IMRIS (intraoperative magnetic resonance imaging suit) is a movable machine attached to the ceiling that is located in the OT. It is basically used for MRI scanning during a surgery. They are working on its complete utilization.

INFRASTRUCTURE: -

It is divided into 3 zones

1. Decontamination area
2. Assembly area
3. Sterile storage area

STAFF: -

- 1 manager/department head
- 1 executive
- 1 senior technical officer
- 4 technical officers
- 6 junior technical officers
- 10 trainees
- 16 health care attendants

MAJOR TECHNOLOGIES: -

- Ultra-sonic cleaner
- Washer disinfectant
- Dryer
- Steam sterilizers
- Plasma sterilizers
- ETO (ethylene oxide gas sterilizer)
- Dry heat sterilizer

RECORD MAINTAINED: -

- Manual issue and receiving OT
- Manual issue and receiving all departments
- Sterilization records

PHARMACY: -

Central pharmacy indents to IP, OP and LB. it is of 2 categories: capital and consumables.

SCOPE OF INVENTORY MANAGEMNET:

- INDENTATION
- RECEIVING
- STORING
- DISTRIBUTION

The staff consists of: -

- 5 managers
- 1 executive
- 8 senior officers
- 24 officers
- 7 junior officers
- 6 trainee assistants
- 1 trainee HCA
- 16 attendants
- 21 HCA

HOUSE KEEPING:

The objective of housekeeping is exceptional standards of cleanliness, sanitation and hygiene of the entire hospital. Housekeeping services are outsourced to ARA MARK services

The staffs include: -

- Housekeeping manager
- Assistant manager
- Housekeeping executives
- Supervisors
- Houseboys & house girls

Function of housekeeping department are: -

- General facility cleaning
 - ✓ Routine cleaning of patient's rooms
 - ✓ Patient's common areas
 - ✓ Washrooms
 - ✓ OT
 - ✓ Laboratory
 - ✓ Consultant's office
 - ✓ Glass windows and doors
 - ✓ Ceiling etc.
- Handling of biomedical waste.
- Pest control-It includes spraying every 24 hours for mosquitoes, cockroaches, flies, rats, lizards and termites.
- Garbage disposal-The housekeeping staff collects garbage bins existing inside the hospital premises and disposes the garbage at the designated area within the hospital, which is the biomedical waste room. The general waste is sold to the junk dealer and

healthcare waste is handed over to government approved vendor “synergy waste management”.

- Horticulture-It is responsible for maintenance of house plans & terrace gardens, flower arrangement during hospital functions.

The performance indicators are B.M.W color code compliance, B.M.W collection, pest control efficiency and sanitization of the hospital premises.

CLINICAL ADMINISTRATION SERVICES

STORES

Material stores functions in order to supply the right material in right quantities at the right time at the right price. The IP departments put up requests for the required materials by uploading indents in the HIS. The store manager raises a purchase order to be sent at the central procurement stores. The supplies received are inspected on the basis of quantity and expiry in the incoming material inspection area. The items are stored as per the storage norms. Departmental issues are made for non – medical consumable as per requirement. Stock is reviewed periodically for nonmoving items and short expiry items. Stock audits are carried out twice/year. Any variance is reported to the higher management. For inventory control, ABC and VED analysis is carried out. FIFO (first expiry first out) is followed. The staff includes:

- Assistant Manager
- Executive store
- Assistants
- 2 Health care assistants

The key performance indicators are no stock outs, zero errors in maintenance of accounts, zero error in billing processing maintain minimum inventory maximum efficiency, maintaining stores as per the NABH – ISO standards, submission of bills accounts within 4 working days, expired items on the shelves should be zero, minimize emergency purchase, TAT suture and lab kits (19 days), instruments (8 weeks) and other items (2 days)

LINEN AND LAUNDRY

The objective of linen and laundry is the availability of clean uniforms for patients and staff. Soiled linen when collected is kept in the dirty utility room in a hamper trolley. Infected linen are collected and put in a red bag at the source of generation. The red bag is sealed and labeled for infection. At the end of each shift, the dirty utility linen is carried in the hamper trolley to the collection room. At the collection point, it is segregated, counted and sent to the laundry for washing. The performance indicators are laundry pending, turnaround time for laundry cleaning, percentage discarded linen.

BIOMEDICAL ENGINEERING DEPARTMENT

The main objective of the department is to facilitate the usage of latest technologies in the diagnosis, treatment of care of patients. It is also responsible for proper usage and quality performance of these costly equipment and tools inside the hospital

The departments maintains an updated asset register of the hospital equipment, conduct daily rounds to ensure that the equipment is functioning smoothly, responsible for facilitation and identification of equipment requirements, planning technical comparison, ordering installation and deployment units and new projects, conduct regular preventive maintenance servicing for all the equipment at regular intervals, facilitating equipment replacements and condemnation, whenever required, conducting regular training programs for hospital staff, on usage of hospital equipment's. The staff consists of HOD, 5 biomedical engineers and 2 biomedical technicians and 4 medical gas technicians.

FOOD AND BEVERAGES

The objectives of food and beverages department are to deliver healthy and nutritious meals coupled with a wonderful with a wonderful experience of hospitality services to all IP, OP and staff. The cafeteria is outsourced to java green. The main functions of the department are as follows:

- Impatient meal management
- Purchase of fruits, vegetables, milk, pulses, whole grain and other dietary consumables
- FIFO is followed

The purchased items are unloaded in the receiving area, where they are inspected and then washed with water and anti-bacterial liquid before bringing it in the kitchen premises. It is followed by storage of perishable and non-perishable items in refrigerator and dry storage area respectively. Diet planning and counseling is done by the dietician according to the patient's condition, food allergy and taste and general preference. The diet summary is handed over to the supervisor in the form of meal sheet cum ticket. According to this, the food is prepared and laid out on trays. The meals are served in the patient's room and clearance is carried out after 2 hours. Food/meal/diet for a patient admitted in the hospital is decided by the doctor admitting the patient depending on his/her medical condition. On doctor's recommendations, the dieticians plan the meal that is best for the patient 'speedy recovery. The staff includes:

- Regional head of support function
- F&B managers cum chef
- Assistant manager F&B staff

SECURITY

Services rendered by security department are surveillance and patrolling of the infrastructure and material, access control (in restricted areas like IT, MRD, LSS, Mortuary, Pharmacy, Electric control panels), control of movement of traffic in premises, reception and conduct of visitors and attendants, assistance in fire control and emergency plan, vigilance and intelligence, liaison with sensitive areas, carry out verification, hold records, issue passes, and generate reports on security matters, it is equipped with modern equipment like CCTV's metal and explosive detectors, alarms, security, lighting and walkie-talkies, etc. the staff members are:

- HOD
- Senior officer
- Security supervisor
- Sr. security assistant
- Security guards

The performance indicators are TAT, theft percent, code related incidents.

ADMINISTRATIVE SERVICES

ADMISSION AND BILLING:

The admission and billing staff includes 1 H.O.D and 12 employees. The services offered by the department are registration of a new patient, booking/reservation –bed and O.T, admission, billing, discharge work.

Front office:

The front office is the first point of contact at KDAH. It is manned by duty manager, deputy duty manger and patient care executive and patient care coordinator. There are total 7 front offices in KDAH and there are 2 help desks.

Functions:

- Respond and answer telephone calls from patients and clients (call center).
- Registration of outpatients and executive health checkup patients for various investigations (registration counter).
- Admission, billing and discharge of in patients.
- Direct the patient and their relatives to the outpatient services and the inpatient wards (helpdesk and welcome desk).
- Report receiving and handling over to the patient (dispatch counter).

Third Party Administrator Desk:

TPA Staff includes one executive clinical administrator and 4 customer care officers.

Functions:

- Counseling
- Pre- Authorization
- Cashless admission
- Query Handling
- Final approval
- Maintain privacy and confidentiality

INFORMATION TECHNOLOGY DEPARTMENT

It is implied that there is central database for entire hospital. Services rendered by the IT department are as follows:

- IT support to location users for hardware and software as per SLA (service level agreement).
- Installation of new IT equipment.
- Helping biomedical department in configuring the medical equipment with HIS.
- Installation of appointment scheduling programs.

The IT staffs include:

- Chief information officer
- Manager IT
- Executive IT engineers

The performance indicators are calls resolutions within a time limit, strict data security, zero percent variance, in hardware and software variance, minimal occupational hazard and proper e-waste disposal.

ENGINEERING DEPARTMENT:

Engineering and maintenance department is manned for 24 hours for keeping round the clock vigil on proper functioning of plant engineering equipment coming under the purview of department. This covers maintenance of major supplies to the hospital such as power, water, which form the life line to the hospital's activities. The responsibilities of the department include operation and maintenance of plant equipment installed in the basement of main building and various other areas to support the normal functioning of the hospital and repair work of equipment related to the department's responsibility. The policy of the department is to serve well with safety and it time, continuous improvement, cost saving, optimum utilization of manpower and equipment, optimum utilization of inventory and teamwork.

The major engineering services are:

- Electrical power supply- normal and emergency.
- Air conditioning, ventilation and refrigeration.
- Steam and hot water supply.
- Water stations and cold-water supplies- filtration system.
- Medical gases supply

- Fire detection alarms and fighting system.
- Internal and external plumbing system.
- Civil works- masonry, carpentry, glasswork, upholstery, painting etc.
- PNG and LPG supply
- Safety assessment of facilities.

MARKETING AND SALES:

Marketing and sales department is concerned with business development, branding, promotions and advertisement of KDAH healthcare services. Marketing deals with organizing health checkup camps and awareness talks for corporate or PSUs and RWA, designing all the brochures and signage, pitching referral sales from nearby general practitioners and nursing homes, liaison with TPAs and managing the international patients (medical tourism).

FINANCE:

The scope of services includes the entire hospital cash handling and cash disbursement in the form of salaries and vendor payment for stores, pharmacy and biomedical department. All the cash collected is deposited on daily basis of the bank. The TPA payment is collected through lump sum amount in the form of cheque at the end of the month. The staffs include:

- HOD
- Assistant Manager
- Senior executives
- Junior executives
- 2 cashiers

HUMAN RESOURCE DEPARTMENT:

The functions of HR department at KDA hospital are:

- Hiring
- Physician and nurse recruitment
- Employee orientation
- Personal management
- Benefits and compensation management

- Counseling
- Claims handling
- Training and performance monitoring
- Professional development programs
- State and federal regulations education
- Work place safety and sanitation
- Administration – employee meetings
- Staff morale and retention

Recruitment / selection:

- Identifying the key requirements areas (KRA)
- Drafting job description
- Recruitment through job portals and internal references
- Selection
- Medical examination of the candidate
- Offering letter to the selected ones

PURCHASE DEPARTMENT:

Purchasing department is responsible for the procurement of function of the hospital. The primary functions of the department are to:

1. Procure the rights and services from the right suppliers at the right time for the right place.
2. Receive, warehouse, issue & distribute stocks to hospital departments in accordance with KDH procedure.
3. Hospital users and clinicians actively participate in product evaluation processes. The purchasing department is actively involved in cost analysis and supplier's performance management. It is through all of these activities that the department manages the chain process.

QUALITY CONTROL DEPARTMENT

The Functions of the department are:

- To analyze patient feedback forms.
- To analyze different parameters from different departments and compare them.
- Infection control of the hospital.
- Induction and training of hospital staff.
- Accreditations (NABH, JCI).

This department also maintains few quality indicators for hospital:

- Medication Errors
- Return of patient within 72 hours.
- Return of patient to ICU within 48 hours.
- Return of patient to OT within 48 hours.
- Number of Needle Sticks Injuries.
- Number of blood transfusion reaction.
- Number of Adverse Drug reaction.

STAFF: -

This department consists of 1 quality manager who reports directly to the director of hospital.

6. Cancer Rehabilitation
7. Pain management
8. Women's health
9. Geriatric Rehabilitation

The therapy services offered in the department: -

1. Physical therapy
2. Occupational therapy
3. Electrotherapy
4. Speech and language pathology
5. Exercise physiology
6. Psychology
7. Rehabilitation nursing
8. Orthosis and prosthesis

Other facility: -

- ✓ Diagnostic tests
- ✓ Billing and registration
- ✓ Phlebotomy services
- ✓ Ultrasound facilities
- ✓ Andrology and embryology laboratories
- ✓ Operating room,pre-op and recovery room facilities
- ✓ Counselling and support services

A PROJECT REPORT ON

A six-sigma approach to reduce Turn Around Time of the patient from A&E to Ward/ICU

INTRODUCTION:

Accident and emergency departments (A&Es) all over the world are challenged with problems of overcrowding and excessive waiting times. Overcrowding and delays correlate with increased patient mortality, decreased patient and staff satisfaction, and inefficient use of resources. Moreover, as A&Es are the heart of hospitals, problems there may affect the whole organization.

Process and flow problems are factors that contribute to delays and overcrowding in A & E. Indeed, health care delivery has traditionally been organized around specialties and professional groups that address patients' problems one at a time (function-based organization), rather than around the entirety of each patient's needs. Hoping to overcome the limitations of function-based organization, many healthcare organizations are adopting approaches such as lean thinking to better integrate health care delivery. The term lean thinking (hereafter referred to as "lean") is based on a production philosophy originally developed by Toyota Motor Corporation. It consists of principles and practices that focus on minimizing the total time and resources needed to produce and supply goods or services to a customer, thus increasing efficiency. Reductions in time and resource use are achieved by focusing on value-adding steps and eliminating non-value-adding steps in the production process

LITERATURE REVIEW

The roots of Six Sigma as a measurement standard can be traced back to Carl Friedrich Gauss (1777-1855) who introduced the concept of the normal curve. Six Sigma as a measurement standard in product variation can be traced back to the 1920's when Walter Shewhart showed that three Sigmas from the mean is the point where a process requires correction.

Since then, tens of thousands of companies around the world have adopted Six Sigma as a way of doing business. This is a direct result of many of America's leaders openly praising the benefits of Six Sigma. Leaders such as Larry Bossidy of Allied Signal (now Honeywell), and Jack Welch of General Electric Company. Rumor has it that Larry and Jack were playing golf one day and Jack bet Larry that he could implement Six Sigma faster and with greater results at GE than Larry did at Allied Signal. The results speak for themselves.

Six Sigma has evolved over time. It's more than just a quality system like TQM or ISO. It's a way of doing business. As Geoff Tennant describes in his book *Six Sigma: SPC and TQM in Manufacturing and Services*: "Six Sigma is many things, and it would perhaps be easier to list all the things that Six Sigma quality is not. Six Sigma can be seen as: a vision; a philosophy; a symbol; a metric; a goal; a methodology

Literature reviews show that lean has been applied with success to a wide range of clinical situations Holden's recent review of lean applications in A&Es shows that lean can contribute to decreases in waiting times, length of stay, and the proportion of patients leaving without being seen. in health care is nevertheless at an early stage of development. Most published examples of lean in healthcare focus on the use of particular tools, such as process mapping, to achieve short-term improvements. Little is typically done to enable structured problem solving involving frontline workers and management and there are only a few cases in which lean interventions are integrated into an organizational-wide strategy. Virginia Mason Medical Center and Theda Care are some of the exceptions.

In sum, lean attracts interest as an approach to healthcare improvement, particularly in A&E settings, but further research is required to understand its feasibility and effectiveness. In addition to more rigorous tests of *whether* (or to what extent) lean "works" in healthcare, research is needed to fill the present knowledge gap regarding *how* and *why* lean may work in healthcare. Without such knowledge, it is difficult to design lean interventions that yield improvements with the least amount of necessary effort and resources. To generate such understanding, we undertook an in-depth case study of lean-inspired improvement efforts at a pediatric A&E in Sweden. By examining clinical operations and performance before and during the intervention, as well as the associated improvement process, we aimed to unpack how and why such a lean application may work.

RATIONAL

An A&E department (also known as emergency department or casualty) deals with genuine life-threatening emergencies, such as:

- Unconsciousness
- acute confused state and fits that are not stopping
- persistent, Chest pain
- breathing difficulties
- severe bleeding that cannot be stopped

Various kind of patient come to A&E department number of patient vary from hospital to hospital. So the purpose is to study the key issues of A&E department and delays in shifting of patient from A&E to ward /ICU of Kokilaben Dhirubhai Ambani Hospital Mumbai and suggest valid recommendation based on the analysis done through Six Sigma Approach.

RESEARCH QUESTION

- What is the process flow of patient in Shifting of patient from A&E to Ward/ICU
- What is the average time is taken in shifting process
- What are causes of delay in shifting of patient from A&E to Ward/ICU
- Does the delay in shifting affect the utilization rate

AIM

To reduce the delay in shifting from A&E to ward/ICU in the department of KDAH

OBJECTIVE

To determine the average delay in shifting from A&E to ward/ICU

To study the determinants of patients, delay in the A&E department of KDAH

To analyze and prioritize the causes which are leading to increase in waiting time of patients in shifting at KDAH

Based on the analysis using Six approach, suggest measure to reduce the waiting time in shifting the patient.

METHODOLOGY

STUDY DESIGN

The study was conducted in A & E department including all the patients who are coming to hospital through emergency department were the sample population and tacked down the time delays in shifting from emergency to floors.

STUDY SETTINGS

- The study was conducted in A&E department of Kokilaben Dhirubhai Ambani Hospital, Mumbai. The departments in which the study was conducted were as follows

SAMPLE SIZE

Sample size is of 200 patients from Accident and emergency department were used during study.

DATA COLLECTION

Quantitative data was collected from the respective departments. Patient's name, UHID number, appointment timings and the actual delay from appointment timings along with the reasons of delay were calculated and recorded daily in MS EXCEL sheets.

ANALYSIS PLAN

Analysis was done with the help of DMAIC (define, measure, analyze, improve, control) which is a part of six sigma approach.

METHODOLOGY IN DETAIL

A Six Sigma approach (DMAIC) to reduce TAT of the process of Out Patient Department

The DMAIC method under Six Sigma consists of the following five steps was used to achieve the objectives of this study.

Step 1 - Define

- Step 2 - Measure
- Step 3 - Analysis
- Step 4 - Improve
- Step 5 – Control

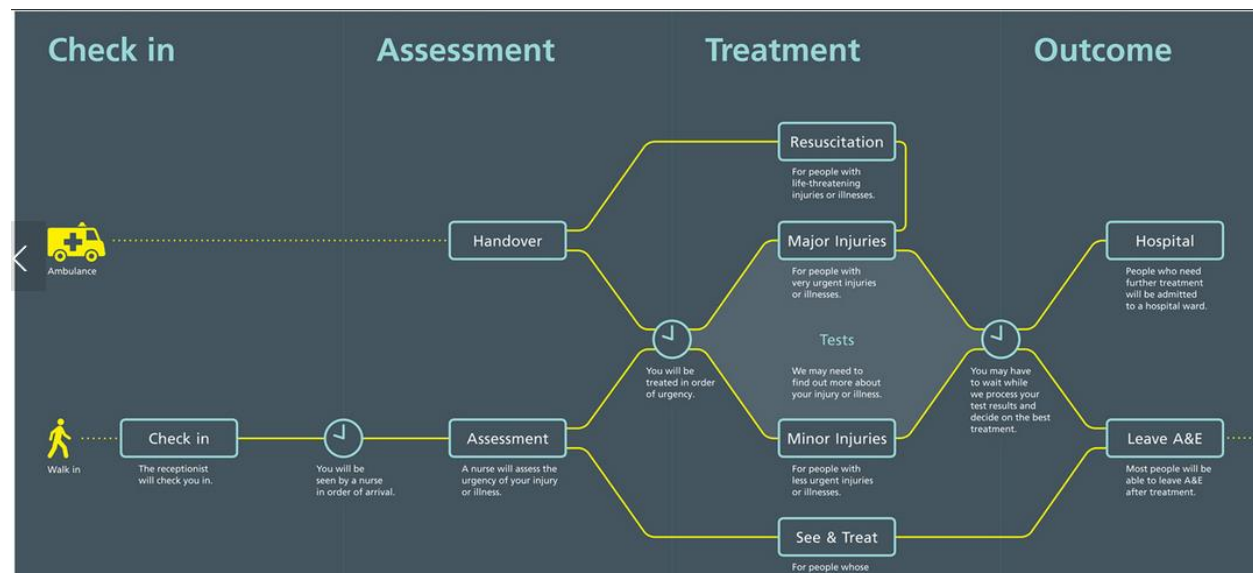
The study was conducted in four different departments mentioned in KDAH.

DEFINE

This is the first step that refers to defining the goals of the project. Process improvement goals may be aimed at increasing market share, the output of a particular department, bringing about improved employee satisfaction as well as customer satisfaction and so on.

The goal has to align the customer demands and the strategic goals of the organization.

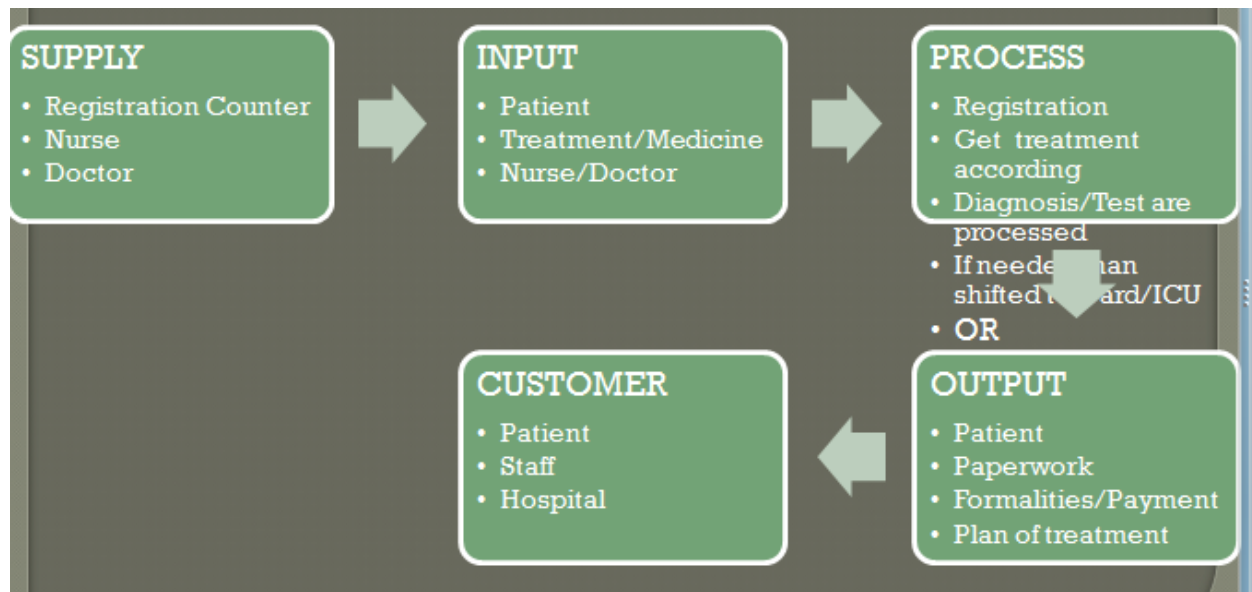
THE PROCESS FLOW OF A&E DEPARTMENT



PROBLEM DESCRIPTION

Problem	Consumer Impact	Business Impact
Delay in Shifting from A&E to ward/ICU	Customer Dissatisfaction	Bed Blocking in A&E Decrease in utilization rate

SIPOC



PROJECT CHARTER

Project Title: A six sigma approach to reduce TAT of Shifting of patient from A&E to ward/ICU.

Problem statement				Opportunity statement	
➤ TAT of Shifting of patient from A&E to ward/ICU is higher than standard. ➤ Long waiting time of patients in shifting to ward/ICU.				➤ Pain: Bed Blocking ➤ Loss of Revenue ➤ Dissatisfied customer	
Goal Statement				Project scope	
DEPARTMENTS	CURRENT LEVEL	Goal/Target	Target Date	Process under improvement in shifting patient from A&E to ward/ICU Starts with: 4.04.17 Ends with :10.05.17	
A&E department 250 min		180 min	10.05.17		
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	

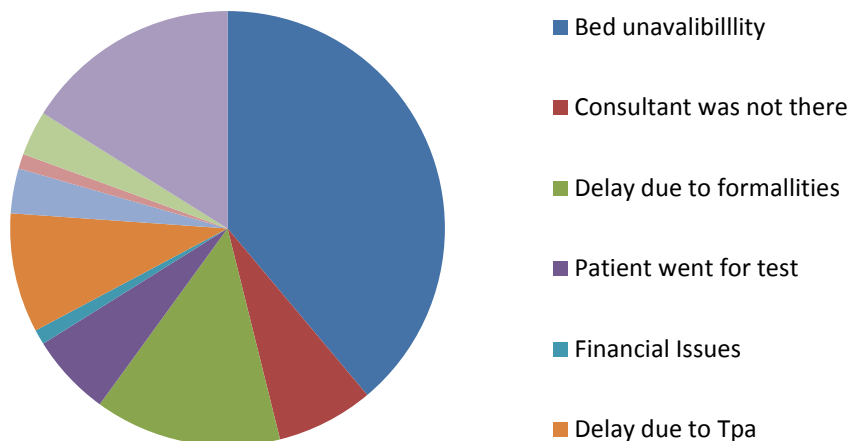
Analyse	8.05.17	10.05.17	Completed within time
Improve			
Control			

MEASUREMENT

- It is about understanding the current process, how the process is measured , and performance improvement

Process / Input (X)	Data source and location	Sample size	Who will collect the data	Data Collection	How will data be collected	Other data that should be collected at the same time
Admission process from A&E	A&E of KDAH	200	Harshita Sharma	04.04.17 to 30.04.17	Manual	
Admission process from A&E	A&E of KDAH	200	Harshita Sharma		HMIS	

FREQUENCY



Bed unavailability	35%
Consultant was not there	6.50%
Delay due to formalities	12.50%
Patient went for test	5.50%
Financial Issues	1%
Delay due to TPA	8%
Doctor didn't response	3%
Request late for admission	1%
system server issue	3%
shifted on time	14.50%

Data Summary

Data Summarization (Y)

Use appropriate Chart

Summary Data

Baseline definition

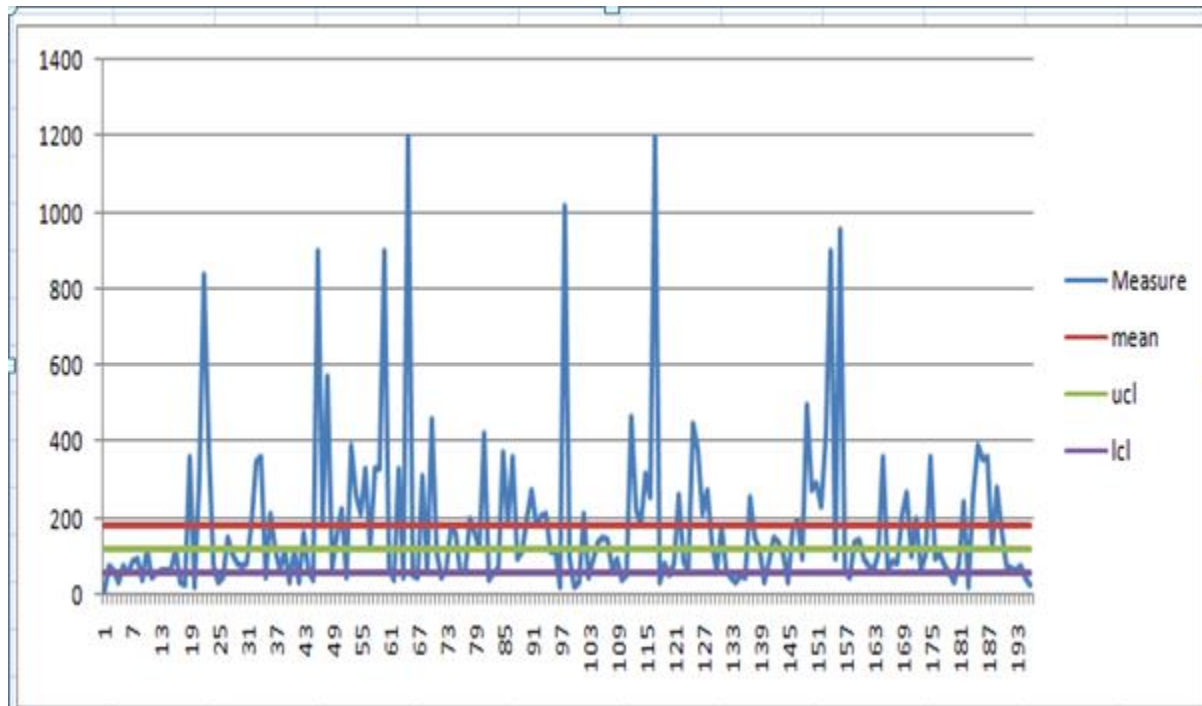
For continuous (X)

Output indicator	Average	Standard deviation	Cp	Cpk
X1	180.3316	205.8391	0.049	
X2				
X3				

For discrete (X)

Output indicator	No. of units	No. of opportunities per unit	No. of defects	DPMO	Sigma Level
X1	200	9	171	76,950,000	2.81
X2					
X3					

CONTROL CHART



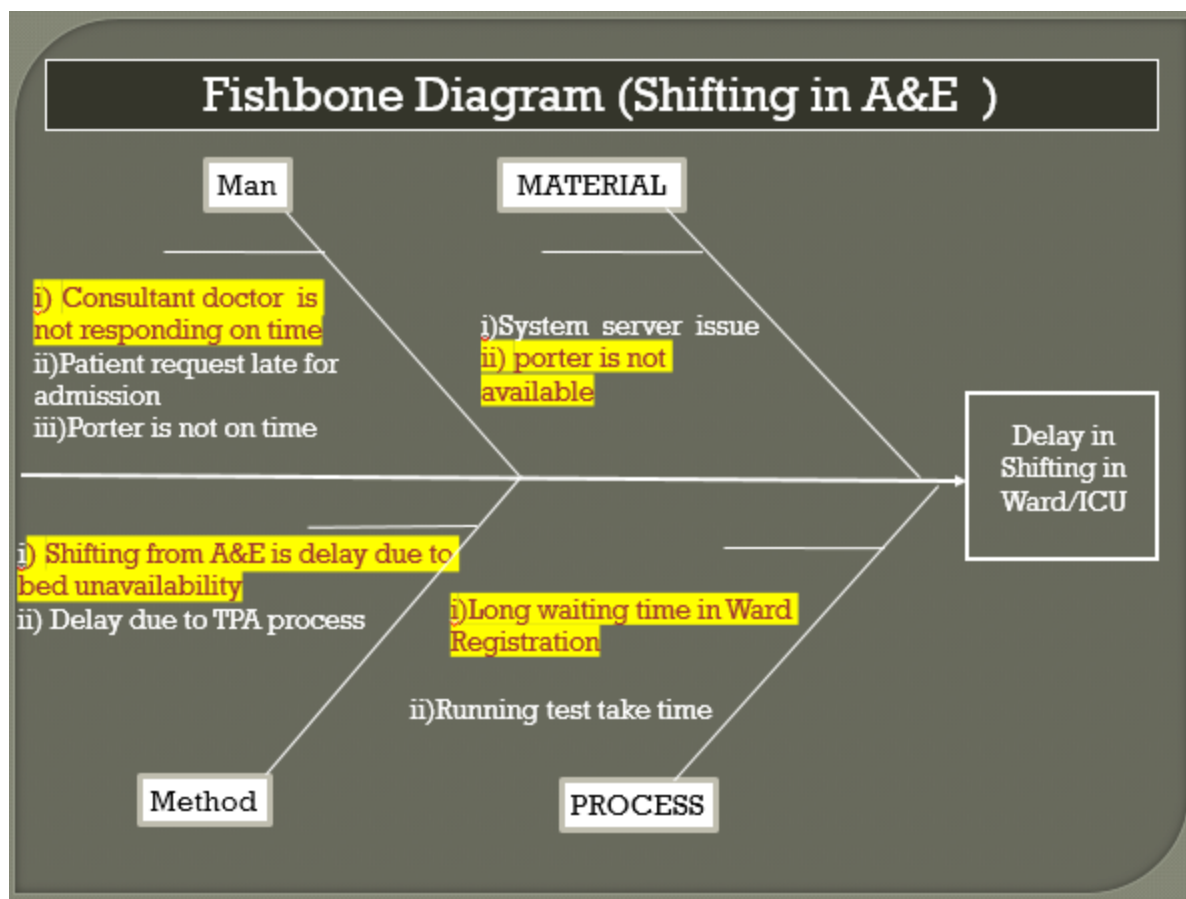
ANALYSIS

- ☉ Analyze is a step that considers the possible source of the variation that caused the defect to identify the root cause. In the Analyze phase, a Fishbone diagram is constructed to identify the major causes and sub-causes.

ROOT CAUSE ANALYSIS

A **fishbone diagram**, also called a cause and effect relationship diagram. Fishbone Diagram or Ishikawa diagram, is a visualization tool for categorizing the potential causes of a problem to identify its root causes.

Root cause Analysis was done based on the data collected from which the problems occurred, and the frequency measured the major causes which were measured in A&E department.



FINDINGS	RECOMENDATIONS
Consultant didn't respond on time	Consultant should know about his/her OPD timings or a reminder Call /Text messages /mails can be done
Porter is not available	Make sure that the enough porters are available during rush hours
Admission process delay due to System Server issue	IT personal should search for alternative options for software solutions that can reduce the delays in admission process
Bed Unavailability	Enough of bed should be avail and the dashboard technique should have introduced in hospital
Long waiting time in registration	Applying Queuing theory

RECOMMENDATIONS

- Pre-transfer checklist should be made and due to urgency to shift patient to ICU than after doing counseling
- Formal training programmer with recommended competency-based assessments are encouraged to improve the knowledge and skills of the staff.