SUMMER TRAINING

AT

Fortis HOSPITAL Mohali

MBA in Hospital and Healthcare Management (2014-16)

By

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Institute of Health Management Research

2015

IIHMR UNIVERSITY

INSTITUTE OF HEALTH MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

23 June 2015

CERTIFICATE

This is to certify that **Dr. Jasleen kaur** has undergone her Summer Training at **Fortis hospital Mohali** from 25 march 2015 to 22 june 2015.The candidate herself carried out all the studies related to her summer training. Her approach to the study has been scientific and analytical.

The summer training is in partial fulfilment of the course requirement and is recommended for the award of Master of Business Administration-Hospital & Health Management.

I wish her success in all her future endeavours.

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20-Jun-15

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Ms Jasleen Kaur** has completed her Training, in the Infection Control Department at Fortis Hospital, Mohali, from **25-Mar-15 to 20-Jun-15.**

The project undertaken by her during the training period was **"Central Line Associated Blood Stream Infections (CLABSI) in Hospital ICU", "Hand Hygiene Knowledge Assessment of Health Care Workers", "Time Motion Study in Radiology Department".**

She possesses a keen observation and conducts herself with confidence.

We wish her success in her future endeavors and pursuit of her career goals.

For Fortis Hospital

Kanwal Sandhu
Manager-Human Resource

ACKNOWLEDGEMENT

The successful completion of the internship and final outcome of this project required a lot of guidance and assistance from different people and I consider myself fortunate to have so many people around to guide me.

Firstly I would like to extend my sincere regards to my mentor Dr Santosh Kumar (Associate Professor) The IIHMR University Jaipur for providing such a great learning opportunity .

I am highly thankful to Dr Anita Sharma (Infection Control Head) and Head of Lab Medicine at Fortis hospital Mohali for her constant support ,motivation and guidance throughout the project .

I am also thankful to Dr. Bhavna Ahuja (Head of Department, Patient Care Services), Fortis Hospital, Mohali for her consent and further nurturing my understanding about the hospital and its working.

I take the opportunity to express my profound sense of gratitude and respect to all those who helped me throughout the duration of project.

Dr.Jasleen Kaur

MBA-HM

IIHMR JAIPUR

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ABBREVIATIONS

Sr. No.	ABBREVIATION	FULL FORM
1	ABG	Arterial Blood Gases
2	AGSS	Anaesthetic Gas Scavenging System
3	AHU	Air Handling Unit
4	ASD	Atrial Septal Defect
5	ATM	Automated Teller Machine
6	AVR	Aortic Valve Replacement
7	BME	Biomedical Engenerring
8	BMFT	Barium Meal Follow Through
9	BMV	Balloon Mitral Valvuloplasty
10	CABG	Coronary Artery Bypass Graft
11	CAG	Coronary Angiography
12	CDC	Center for Disease Control
13	CAPD	Continuous Ambulatory Peritoneal Dialysis
14	CCU	Coronary Care Unit
15	CPR	Cardio pulmonary Resuscitation
16	CR	Computed Radiography
17	CT	Computed Tomography
18	CTA	Computed Tomographic Angiography
19	CAPEX	Capital expenditure
20	CSC	Central supply chjain
21	CTVS	Cardiothoracic Vascular Surgery
22	DICOM	Digital Image Communication in Medicine
23	DVR	Double Valve Replacement
24	ECG	Electrocardiogram
25	EEG	Electroencephalogram
26	EMG	Electromyogram
27	EPR	Electronic Patient Record
28	ERCP	Endoscopic Retrograde Cholangio Pancreaticography
29	FD	Facility Director
30	FFP	Fresh Frozen Plasma

31	FNAC	Fine Needle Aspiration Cytology
32	GRN	Goods Receiving Note
33	HCV	Hepatitis C Virus
34	HIS	Hospital Information System
35	HIV	Human Immuno Deficiency Virus
36	HVAC	Heating Ventilation and Air conditioning
37	IABP	Intra Aortic Balloon Pump
38	ICD	Intra coronary Disease
39	IVU / IVP	Intra Venous Urography / Intra Venous Pyelography
40	HR	Human Resource
41	HK	House Keeping
42	MRCP	Magnetic Resonance CholangioPancreatography
43	MI	Myocardial Infarction
44	MICU	Medical Intensive Care Unit
45	MLC	Medico Legal Case
46	MRA	Magnetic Resonance Angiography
47	MRD	Medical Record Department
48	MRI	Magnetic Resonance Imaging
49	CSSD	Central Sterile Supply Department
50	MVR	Mitral Valve Replacement
51	NABL	National Accreditation Board for testing & calibration Laboratories
52	NIC	Non Invasive Cardiology
53	PA	Peripheral Angioplasty
54	PACS	Picture Archival Communications System
55	PCN	Percutaneous Nephrostomy
56	PCNL	Percutaneous Nephrolithotomy
57	PDA Closure	Patent Ductus Arteriosus Closure
58	PFT	Pulmonary Functions Test
59	PHC	Preventive Health Check
60	PNS	Para nasal Sinuses
61	PPI	Permanent Pacemaker Implantation
62	PTCA	Percutaneous Transluminal Coronary Angiography

63	RO	Reverse Osmosis
64	SBE	Small Bowel Enema
65	SICU	Surgical Intensive Care Unit
66	SPECT	Single Photon Emission Tomography
67	SOP	Standard Operating Procedure
68	STP	Sewage Treatment Plant
69	TLD	Thermo Luminescence Dosimetry
70	TMT	Treadmill Test
71	TPI	Temporary Pacemaker Implantation
72	IVF	In-Vitro Fertilization
73	PC	Purchase Committee
74	TRUS	Trans Rectal Ultrasound
75	UPS	Uninterrupted Power Supply
76	USG	Ultra Sono Graphy
77	UHID	Unique Hospital Identification
78	VSD	Ventricular Septal Defect
79	USP	Unique Selling Proposition
80	PLC	Programmable Logic Control
81	RN	Recommendation note
82	QCPAF	Quotation comparison & purchase approval form
83	GAM	Group authority matrix
84	OPEX	Operating expenditure
85	SCM	Supply chain management
86	PO	Purchase Order

INTRODUCTION

As an integral part of the **MBA course**, the summer training helps us in understanding the overall functioning of the hospitals from a managerial point of view. Keeping this factor in view, I tried to visit different hospital departments of **FORTIS HOSPITAL, MOHALI** with a special focus on understanding the various procedures in place. I visited different departments, met the department In-charge and interacted with the doctors, nurses and other staff.

The **Aim** of the summer training was:
"To study the administrative and managerial functioning of FORTIS HOSPITAL, MOHALI" with special reference to the different areas / departments of the Hospital.

The **Objectives** of summer training were:

- To learn the daily operational management of the Organization and its various departments / areas.
- To study the salient and critical features about the functioning of these departments / areas.
- To identify issues / problems associated with some specific departments / areas.
- To undertake the projects / special tasks assigned to us.

HOSPITAL PROFILE

A BRIEF HISTORY AND PRESENT

Fortis Healthcare Limited is one of the fastest growing and India's second largest healthcare provider in the country. The company was founded by the visionary business leader, **Late Dr.Parvinder Singh**, the Managing Director of Ranbaxy Laboratories.

Late Dr.Parvinder Singh, who architected the glorious evolution of Ranbaxy laboratories dreamt "to create a world class health care delivery system in India ,enabling the finest medical skills, combined with compassionate care" , a mission well carry forwarded by his son- Malvinder Mohan Singh and Shivinder Mohan Singh.

FORTIS HEALTHCARE LTD. Was incorporated in 1996 to develop a world-class system of integrated healthcare delivery in India, comprising super-speciality areas along with multi-speciality care at the tertiary level.

Fortis Hospital- Mohali was the first step towards realizing his dream, his vision regarding the Indian Healthcare industry. Fortis healthcare has assembled the finest talents in medicine, be they doctors, nurses, or technicians and even management professionals across a wide spectrum enabling them to deliver the highest quality of health care.
Fortis health care limited is one of the leading chains of hospitals in India which are benchmarked as international standards- achieving quality through the adherence to the protocols observed in some of the world's leading hospitals. The landmark of Fortis hospital distinguishing them from their contemporaries is the "patient- centricity that you will discover all over: in hospital design, services and programme and most significantly in the caring approach of our people.

The Fortis health care circle of caring is fast expanding the ,spreading the name of Fortis health care, India and also reaching out to distant communities ,welcoming patients from beyond India's shores.

VIRTUOUS Values

V - Imbibe and share the **Vision**.
I - Lead through honesty and **Integrity**.
R - Earn **Respect**.
T - Gain Patient **Trust**.
U - Commit to compassion, care and **Understanding.**
O - Own quality excellence.
U - Uphold innovation and continuous improvement.
S - Develop and **Share** success.

- **Mission Statement:**

"To create a world-class integrated healthcare delivery system in India, entailing the finest medical skills combined with compassionate patient care"

- Late Dr. Parvinder Singh

Founder, Chairman Fortis Ltd

Fortis health care enjoys the lineage that has become a benchmark of corporate excellence. Fortis health care network of hospitals, in a very short span of time has established itself as a premier health care chain with as many as about 50 hospitals in India and abroad. The credentials of doctors can leave anybody awestruck these compromises of some of best names in the trade, with the widest experience and unlimited research to their credit.

Other top of line facilities at the hospital include:

- Multi- speciality medical centre with day care facility
- Out- patient care to fulfil the local demands
- NABL certified path LAB
- BLOOD BANK
- Ultra-modern operation theatre with laminar Air flow and shadow- less lighting
- 24 hour emergency ambulance services
- A Dedicated emergency and trauma centre

Fortis hospital Mohali offers the most comprehensive medical treatment across a wide range of medical specialities.

Super speciality in Heart: Cardio-thoracic and Vascular surgery department, Invasive and Non- invasive Cardiology.

A part from cardiac super- speciality, the medical facility at Fortis hospital, Mohali comprises of highly experienced consultants in all major specialities. A dedicated, skilled team of doctors and surgeons provide quality health care with utmost care and compassion.

Type of Hospital: Multispecialty, Tertiary Care Hospital

No. of Specialities: 29

Thrust Area: Cardiac Speciality

Top specialities: Cardiac, Renal, Orthopaedics, neurosciences

Accreditations: JCI, NABH, NABL

MULTI – SPECIALITY FACILITIES

- Anaesthesiology
- Cosmetic, plastic and reconstructive Surgery
- Dermatology
- Dietetics and Nutrition
- Dentistry
- Emergency Medicine
- Endocrinology
- ENT
- Gastroenterology
- General Surgery
- Gynaecology
- Haematology
- Internal medicine
- Interventional radiology
- Lab medicine
- Medical oncology
- Neurosurgery and neurology
- Nuclear medicine
- Ophthalmology
- Orthopaedics and joint replacement
- Paediatrics
- Physiotherapy
- Psychiatry
- Pulmonology
- Radiology and imaging
- Transfusion medicine
- Urology
- Vascular surgery

MEDICAL FACILITIES

- Cardiac Cath lab
- Cardiac operation theatres
- Multi-speciality operation theatre
- CCU's
- Special emergency care
- Day care
- Oncology
- Dialysis
- Endoscopy
- Radiology
- Nuclear medicine
- Pathology
- Urology
- Audiometric tests
- Blood bank
- Physiotherapy
- Dietetics

NON – MEDICAL FACILITIES

- Fortis inn
- Café 24
- Café coffee day
- Business centre
- Jamjajee (Mess)
- Bank & ATM
- Prayer room
- Kids corner
- Patient welfare department

This hospital is first and the only hospital in India to be the proud awardees of two very prestigious accreditation which are the **Joint Commission international (JCI)** , USA and

the **Nation accreditation board of hospitals(NABH),**India ,both of which are known for their stringent standards and intensive evaluation . Many hospitals have tried and failed to acquire both, but as always FHM has come out with flying colours.

AWARDS & RECOGNITIONS

- Awarded the best design award by the prestigious American institute of architecture in 1999
- JCI Accreditation
- NABH Accreditation
- FICCI award

Vision Statement:

"Globally Respected Healthcare organization known for Clinical Excellence and Distinctive Patient Care."

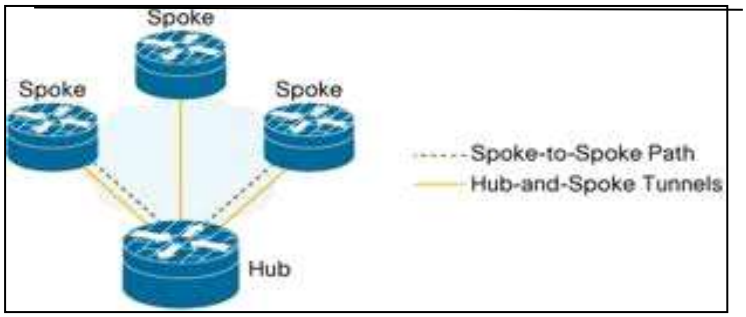
- Fortis is the manifestation of Dr.Parvinder Singh's ideology and has been rapidly growing through a combination of acquisitions, Greenfield, Brown field and management contracts.
- Fortis is in collaboration with the renowned hospital Escorts and has created history by acquiring 10 Hospitals from Wockhardt, giving it a strong Pan India presence; this was one of the largest deals ever in the Healthcare industry.
- In 2005, Fortis announced its first International foray jointly with Mauritius based partner, and thus came into existence "**Fortis Clinique Darne**"

JOURNEY OF FORTIS:

- 1996 : Foundation of the vision
- 2001 : JUNE, : Cardiac centre Launched
- 2002 : AUGUST : Multi speciality wing
- 2005 : Acquisition of 5 ESCORTS HOSPITALS

- 2009 : JANUARY, First International Hospital in partnership- MAURITIUS
- Latest acquisition : 10 Wockhardt Hospitals Pan India

OPERATING MODEL :



Fortis operates on a Hub and Spoke model to provide, Multi-speciality and Tertiary level medical care.
HUB's – are the super-speciality Hospitals
SPOKE's – are the Multi speciality centres.
Patients who have the need are referred to these Hubs from the Multi speciality facilities in the Region, by embracing this system the patient benefits from the many available network facilities.

- SOME HIGHLIGHTS :

- Fortis Hospital Mohali is the most advanced Hospital in the Tricity (Chandigarh, Mohali, and Panchkula) and the nearby regions, and has State-of Art Infrastructure and Technology and services. There are now 64 Fortis Hospitals across the globe.
- Recent Development is the FORTIS CANCER INSTITUTE at Mohali.
- Fortis Hospital Mohali has been awarded "BEST DESIGN AWARD" By American Institute of Architecture 1999.
- Built-up Area of Fortis Hospital Mohali 400,000 sq.ft, with an investment of 155 Crores.

QUALITY FOCUS & ACCREDITION:

Fortis Healthcare has been at the Forefront of providing quality healthcare services and has raised the bar of Quality Standards in the country. The hospital employs renowned medical talent from the healthcare industry.

- Due to their excellent Quality care standards & safety for patients 3 of Fortis's Hospitals have received the Prestigious JCI Accreditation 9 Joint Commission International)
- JCI- is the largest accreditor of Healthcare organisation in U.S
- In Addition to this, 6 Fortis hospitals in India have been given the highly Respected NABH Accreditation, which is the highest national recognition for Quality, Patient care and Safety.
- On the other hand even the Labs have been given NABL accreditation.

Certificate of Accreditations, Fortis Mohali:

- Awarded JCI Accreditation on 15TH June, 2007
- Re-Accreditation July, 2008, 2013
- Awarded NABH Accreditation on 16th June,2008
- Re-Accreditation June, 2011

HOSPITAL OVERVIEW

- **FHM** – is divided into 2 Blocks, A - block & B – block, and now recent development is the Fortis Cancer Institute, which may be named C – block.

- Further, again the Departments are divided Floor wise, which is as follows,

- **Basement:** Materials, Stores, H.R, House-keeping, MRD, Biomedical engineering dept, CSSD, Laundry, Food & Beverage dept.

- **Ground Floor :** Reception, Registration, OPD's Blood Bank, X-ray, NICU, General ICU, Patient waiting areas, IDBI Bank + ATM ,cafeteria, CCD, Prayer Room, Children play area, Dietetics ,PWD-Patient welfare department .Emergency. Lab, Nuclear Medicine, Clinic Rejuve, Pharmacy.

- **1st Floor :** OPDs, Wards, CMO office, MICU

- **2nd Floor :** MSOT,CCU, Cath Lab, PCR, ORTHO OT

- **3rd Floor:** Executive offices, Café Jamjaajee, Paalna Library. Auditorium, Finance, Marketing, Media & Communication, IT, CSR, FOS, QA Dept.

- Some Depts. At FHM are Outsourced, like :

  - IVF- Dr. Pai & his Team (Mumbai)
  - Lab : SRL
  - Ultrasound ,CT,MRI : Dr.Chawla
  - Dental : Axis Dental

And latest addition is Physiotherapy Dept. outsourced to Dr.Balaj

OPD- BLOCK	
3rd FLOOR	IVF CENTRE AUDITORIUM EXECUTIVE OFFICES WARD A3, A4 MEDICAL ICU LIBRARY CANTEEN
2nd FLOOR	OPERTATON THEATRES CATH LAB SURGICAL ICU CARDIAC CARE UNIT SPECIALITY ICU-2
1st FLOOR	ENDOSCOPY PRE ANAESTHESIA CHECK DIALYSIS WARD A1, A2 MULTISPECIALITY OT SPECIALITY ICU-1
GROUND FLOOR	OPD, IPD RADIOLOGY LAB MEDICINE GAMMA SCAN PREVENTIVE HEALTH CHECK
BASEMENT	HR DEPARTMENT PURCHASE LAUNDRY MRD MORTURY

IPD-BLOCK	
3rd FLOOR	WARD A3 PATIENT ROOM ONCOLOGY MEDICAL ICU
2nd FLOOR	SICU CCU CARDIAC AND ORTHO OT IP PHARMACY
1st FLOOR	WARD A1, A2 PATIENT ROOMS
GROUND FLOOR	IPD RECEPTION BLOOD BANK CAFETARIA BANK AND ATM EMERGENCY
BASEMENT	BIOMEDICAL DEPARTMENT CSSD ENGINNERING HOUSEKEEPING

FORTIS INN	
GROUND FLOOR	ROOMS FOR PATIENT ATTENDENTS OP PHARMACY CAFETARIA

CANCER INSTITUTE	
4TH FLOOR	CAFE ATTENDANT LOUNGE
3RD FLOOR	PATIENT ROOMS WARD
2ND FLOOR	BMT ROOMS SPECIALITY ICU NEURO ICU
1ST FLOOR	CHEMOTHERAPY/DAY CARE CENTRE OPERATION THEATRES STEM CELL
GROUND FLOOR	OPD PET-CT RETAIL
BASEMENT	CT STIMULATOR TUMOUR BOARD ROOM LINAC 1 & 2 BRACHY

Overview of FORTIS HOSPITAL Department wise

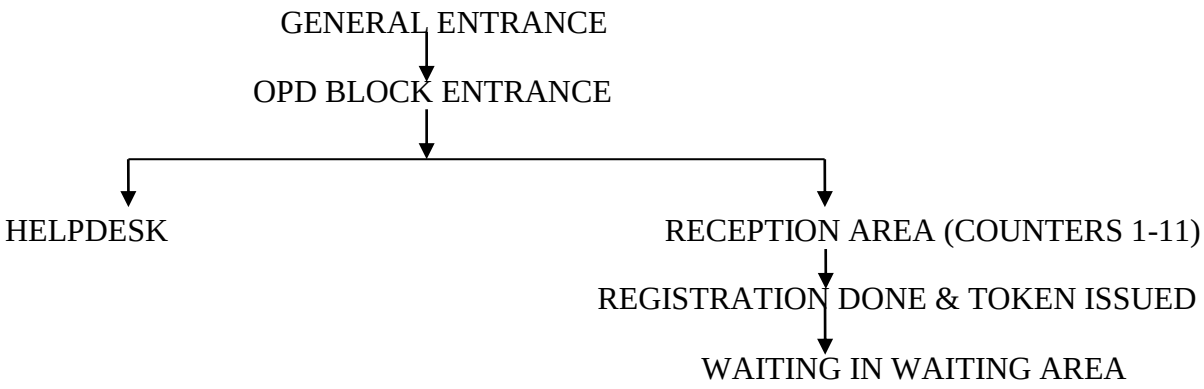
➢ OPD – Out Patient Department

The OPD at FHM is a Multi –specialty centre bringing to the patients all the required specialties under one roof.

It also has Home Based Rehabilitation Programmes and a Rehabilitation centre-cum inn providing a world class ambience along with Patient care.

Location: Ground Floor & First Floor

PROCESS FLOW OF OPD



Number of Consultant Chambers: 52

OPD Timing: 9AM- 5PM

No. of Procedures Room: 2

Waiting Area sitting Capacity: 150

Sub waiting area: 150

Facilities: Consultation, Diagnostics, Procedures, Physiotherapy, Dialysis

No. of Front Desks: 18 in total (11- ground floor, 7- first floor)

Appointment System: on call and walk- in

Tariff: Different consultation for different doctors

Manpower: 1- Incharge, 1- Supervisor, 15 PODs, 25 FOAs

OPD Record Keeping: Oracle

Retrieval of Records: by Medical Record Department

No. of OPD: 700 average per day

Duty Rosters: monthly updated

- **Preventive Health Care**: ***CLINIC REJUVE***

Fortis firmly believes in Prevention is better than cure, and this is done here at Clinic Rejuve, where preventive Healthcare packages are given to patients and their family members at discounted rates to help them identify High-Risk patients and guide them towards better and healthy living, and providing them with required Medical help or Medication, and try to decrease lifestyle diseases by guiding towards healthy living.

Different packages:

1. Wellness package
2. Whole body package
3. Whole body premium
4. Cardiac
5. Comprehensive
6. Cardiac with CT angiography
7. Various discounts and packages on women day, health day etc.

EXECUTIVE HEALTH CHECK
A range of preventive health check packages is available under following categories:

A. Cardiac Package Check up: - Rs.2800
Four different packages are available under this category. It assesses general health on several key parameters and is recommended as an annual check to ensure fitness.

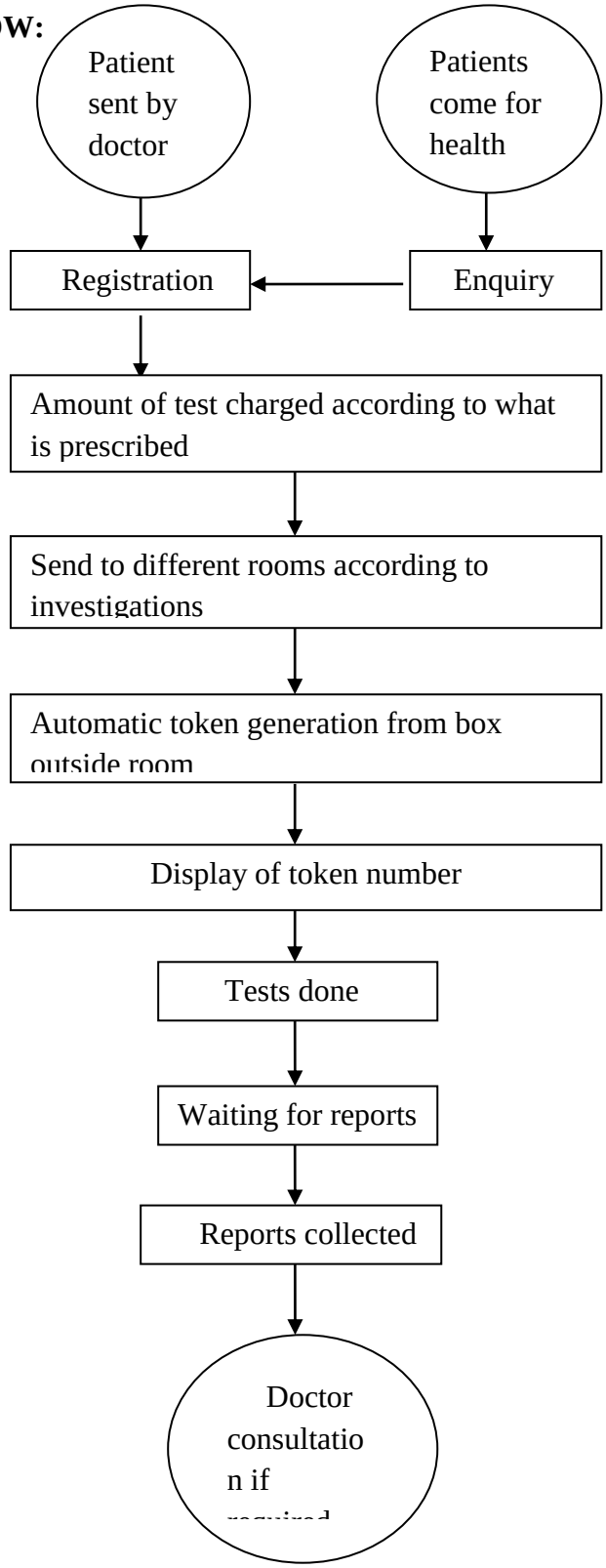
B. Comprehensive Package (Male/Female):- Rs.3300

C. Whole Body Package (Male/Female):- Rs.4500

D. Cardiac CT:-13500

20% discount is provided, in case, further tests are conducted on the recommendation of the consultant.

PROCESS FLOW:



➢ IPD – In-Patient Department

Location:

The main IPD reception is located on the Ground Floor, 'A' Block of the main Hospital building.

It is connected to the OPD Block by an easily accessible corridor running from the Left of the main entrance to the IPD Lobby. It is also well connected to the other departments of the Hospital.

Patients will usually be admitted through the following ways:

1. Through OPD, advised admission by consultation with our consultants.
2. Through emergency.
3. Through referral by consultants.
4. From satellite clinics of Fortis.

The priority of the admission is determined by the degree of urgency, which usually classifies cases into three types:

1. Emergency cases (require immediate admission).
2. Urgent cases (require admission as soon as possible)
3. Elective cases (which are scheduled in advance and are generally admitted in order of their reservations).

The following are the main functions of the IPD:

1. Admit Discharge and Transfer the patients.
2. Interview the patient to collect the information needed by the various hospital departments.
3. Coordinate the admission with the other functions of the hospitals.
4. Compute and arrange for the payment of pre-admission deposit according to the policy.
5. Arrange for the Interim billing process in case of those patients whose bills have exceeded the deposited amount.
6. Accept reservations for scheduling future admissions.

7. Disseminate information relating to the admission, transfer, death etc. to the departments concerned.
8. Disseminate information relating to the patients well being to his attendants and other relatives and friends who are visiting him.
9. Maintain a bed index showing current occupancy status of all patient rooms in order to schedule and assign beds for admissions and transfers.
10. Prepare admission and discharge lists and midnight census.
11. Coordinate pre-admission tests in the case of the elective admissions in order to reduce actual time needed to complete the admitting process.
12. Arrange for the patient escort service whenever needed besides the admission and discharges.

Type of Bed	Tariff/day	Consultant Charges	Resident Charges
Ward/PCR/Day Care	3000	850	250
Twin Sharing	5000	+ 10%	
Single	7000	+ 25%	
Deluxe	10500	+40%	
Suite	18500	+65%	
Presidential Suite	25000	+100%	
General ICU	7000		
CCU/MICU/SPICU/SICU/NICU/PICU	8500		
Isolation Ward	9500		
Labour Room/Paalna	6500		
Nursery	6000		
Triage	750		
CTVs	5500		

Nursing Station:

Equipment- 2 computers, 2 Telephones, 1 printer, cupboards, x-ray board, instrument trolley

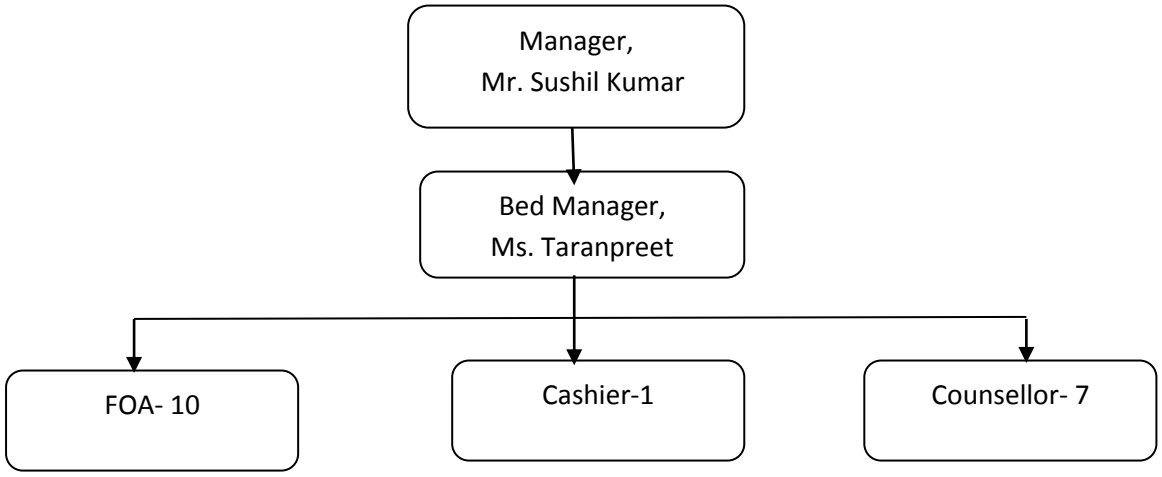
Bed Area- 2000 sq ft per bed

Room amenities-

- Bathroom, chair, cupboard, Round the clock medical and nursing care
- Centralized oxygen and suction facility
- Nurse Call Bell
- Television / Phone
- Bed cum sofa for the convenience of the attendants
- Fully Air conditioned.

Record Keeping- MRD

Manpower and Hierarchy-



MIS and Computerization: MEDTRACK, Accounts department maintains in Oracle.

Visiting hours and visitor policy-:

Timings: 10AM- 11 AM & 4PM – 7PM

Only two passes per slot can be issued by electronic machine

Facilities and the Layout

Entrance

As the patient gets down from the vehicle in the main IPD porch, the general duty attendant provide him with wheel chair or stretcher, if required. (The stretcher, wheel chair bay is located on the right hand side of the main entrance).

Lobby

The main lobby primarily is used to accommodate patients and their families and friends. Patients enter and also be get discharged from the main lobby. There is a large circulation area, which forms an integral part of the main lobby.

Reception Desk

The main IPD reception is the integral, important and the most sensitive part of the IPD. All Patient handling is done from this reception. This reception is manned 24 Hours. All the Admission, Discharge and Transfers is done from this counter. Reception also caters to all the information that the patients or accompanying relatives require.

There are information brochures and fliers describing the facilities of the hospital available on the main counter of the reception.

Back Office

Behind the IPD reception, there is back office. All the Transactions, Processes, Cash tallying, Report generations will be carried out from the back office. Back office will also provide for the staff to relax in an informal mood.

Café Coffee Day

Right inside the main IPD reception area at ground floor is Café Coffee Day where attendants can wait.

Social Counselling Room

Hospital procedures are personal and never routine for the patient or the relatives. The trauma and the tragedy can breakdown most of the people visiting the hospital. These people need strength, courage and Motivation to move on with life. For the purpose of counselling these people, the social counselling room is on the back of the main reception.

Grievance Handling Room

Not all patients or the accompanying relatives visiting the hospital are happy with the way of functioning and like to provide inputs. Some also like to understand the billing details and want modification. These activities require privacy and cannot happen on the main reception counter. For this purpose there is Grievance handling room.

Business Centre

The business centre is located at a convenient distance from the lobby and is right opposite the blood bank. It provides facilities like Xerox, Telex, Fax, Cyber café.

Automated Telling Machines

For the convenience of the patients and the accompanying relatives, there are two ATM's (Bank of Punjab and IDBI) right in front of the main reception counter. This cater to the needs of the staff also.

Bank

Next to business centre, the IPD has a branch of IDBI bank. The bank facilitates the requirement of money at the last hour by the patients or their relatives. This also is a safer alternative than carrying large sums of money with themselves. The patients have an option of opening an account with the bank and also settling the bills directly through the bank facilities. The bank is equipped with an ATM.

ICU Lobby

Behind the main lobby, across the main IPD corridor, adjacent to the Bank, there is a waiting area for the attendants of those patients who are in the intensive care units.

Prayer Room

To cater to the religious needs of the patient and attendants, there is one prayer room in front of the ICU lobby. Patients or the attendants can spend time in meditation and prayers here in peace and silence.

The second prayer room is located in the Basement near the mortuary .

Patient Rooms

No. of Beds: 349

Break up of Beds:

Presidential Suite: 2

Suite: 1

Deluxe: 5

Semi-Deluxe/ single: 23

Twin Sharing: 52

Wards: 63

Bed Occupancy: 82-85%

ALOS of few procedure/Surgery:

Total knee replacement- 7 days

Bypass surgery- 8 days

Normal Delivery- 2 days

Caesarean- 3 days, Angioplasty- 1 day

WARDS:

The Wards at FHM are, A1, A2, A3, A4 Latest additions A6 (Cancer institute block)

A1 A2 is located on the first floor.

A1 Multi-speciality unit which have a capacity of 33 which includes 2 deluxe rooms, and one presidential suite

A2 Cardiac unit, bed capacity of 38 with one presidential room, 5 Double rooms and 10 single rooms.

A3 is Multispecialty again, with 47 beds

A4, A5, A6 has also been made now.

- **OPERATION THEATRE:**

  There are 3 Main OT's Cardiac-OT, MS-OT, Ortho-OT

MULTISPECIALTY OPERATION THEATRE (MSOT)

Location: Second Floor

Number: 6 MS OT

FHM is equipped with high-tech OT's where high risk surgical procedures are performed by a dedicated team of experts. There are 6 Major and one Minor OT.

On an average 15-20 cases are done in MSOT from 8am to 8pm, however Emergency services are available round the clock

The MS- OT department has the following areas:

- Pre-Operative area (6 bedded)
- Post- operative area (10 bedded)
- Pharmacy sub store
- Data operator room
- Instrument Store room
- Instrument washing room
- Instrument /linen room(sterile)
- Doctor's changing room
- Nurse's changing room
- Nursing Office
- Technician Room

The MSOT types and additional rooms are:-

- General Surgery OTs- 5
- Neurosurgery OT- 1
- Procedure Room
- Trauma OT
- Vascular Cath Lab

Manpower:

- ANESTHESIA TECHNICIANS: 24
- ANESTHEOLOGISTS: 32 on any given day(rotational duty)
- TECHNICIANS: on any given day(rotational duty)
- NURSING STAFF: 53
- DATA OPERATOR: 2
- Housekeeping
- GDA

Nurses perform their duties in following manner:-

- 1 NURSE in Pre- op care
- 1 NURSE in Post – op care
- 1 Floor nurse in O.T. who give all sterile instruments to scrub nurse, verify with the surgeon, anaesthetist and the scrub nurse about the operation procedure and in the end after the surgery , count all the instruments that are used and write it in patient file.
- Scrub nurse in O.T. assist the surgeon during operation.
- Technicians assist anaesthetist during operation and also keep buffer of drugs used for anaesthesia. They got reserve of drugs for at least 5 patients.

Cardiac OT : Bringing breakthrough technologies to the operating room, and setting international standards in its cardiac facilities, FHM has one of the most state of art OT with the most advanced lung and heart machines and many such devices. Cardiac OT has been constructed around a central sterile core which has the provision of storing all the sterile items to be used in the OT. It also has a lab for immediate ABG &Electrolyte and steam sterilizer. The OT is directly connected with CSSD thorough a Dumb waiter lifter to transfer items.

Cardiac CATH Lab: FHM has 3 Cath labs that function Round the clock 24hrs and 7 days supported by a sophisticated CCU. It has some world class equipments like, COROSCOPE - by Siemens used for electrophysiological monitoring and INNOVA 2000 –by GE a digital imaging system, one of its kinds in the world.

Ortho OT: There are 3 OT for Joint Replacements where knee replacement, hip replacement and trauma cases are taken up. On an average 10-12 cases are taken up here from 8am-8pm.

➢ CSSD : CENTRAL STERILE SUPPLY DEPARTMENT

Ensuring high standard of sterilization and disinfection to minimize the incidence of hospital acquired infection rate, is one of the most essential feature at FHM.

The objective of the Central Sterile supply Dept. is to provide all the hospital departments served adequate supply of sterilized goods conforming to highest standards of sterilization from a central place thus reducing the overall cost and contributing towards reduction in the

incidence of hospital acquired infection. Destruction of all micro-organisms including their spores is done by chemical or physical means.

Sterilization methods used:

1) Steam Sterilization

2) Ethylene Oxide Gas Sterilization

To minimize the time as well as distance, CSSD is connected with Cardiac units and OTs through two dumb waiter lifts. One is used to transfer the sterile goods, and one for transportation of contaminated goods.

The Dept is divided into 3 zones:

1. Decontamination Area

2. Semi-sterile Area

3. Sterile Area

There are timings for supplying and taking of the goods at CSSD, for Wards and others

Morning- 8.15am to 11am

Evening- 2:30pm to 5pm

While for Emergency /OT's there is no time restriction (Inventory stock is kept in the Ratio 3:1 to avoid any kind of shortage)

EMERGENCY COMPLEX

Layout: - Ground floor

AMBULANCE SERVICE FLOW

Call centre executive attends the emergency call

↓

Transfer the call to Emergency's CMO

↓

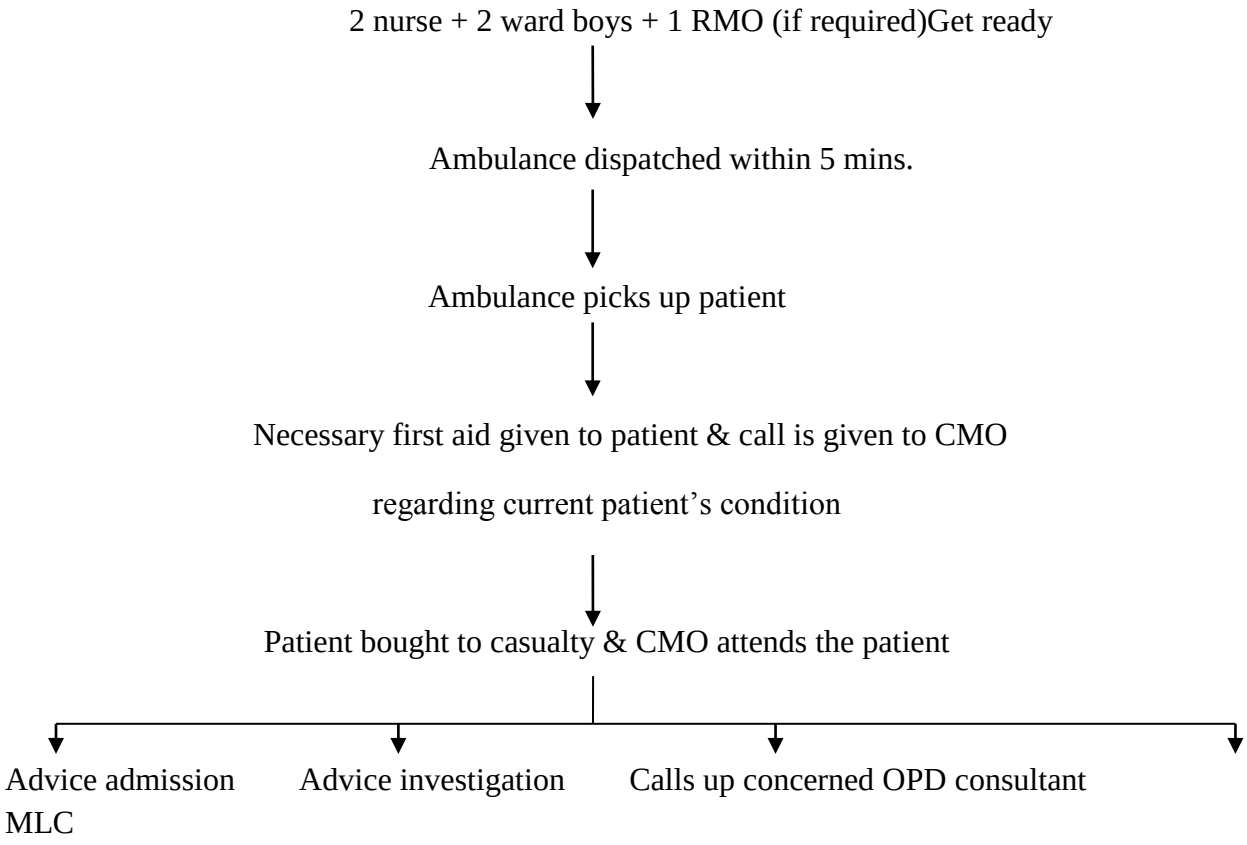
Notes down necessary details like:

(Place/address/ contact no. of caller, Time & details of call received)

↓

Informs Casualty Nurse in charge

↓



The Dept is equipped to handle all emergency cases like,

- Cardiac emergencies : Chest pain, heart attacks, angina
- Neuro. Emergency: Stroke, shock
- Medical emergencies : Poisoning, abdominal pain, lung problem ,liver, kidney
- Surgical emergencies : appendicitis, lacerations, cuts , wounds, fractures, trauma, RTA's

It has:

- Nurse Station
- Emergency OT
- Store room
- Isolation Room
- Doctor's Duty Room
- POP Room
- Casualty Ward

➢ Cath Lab

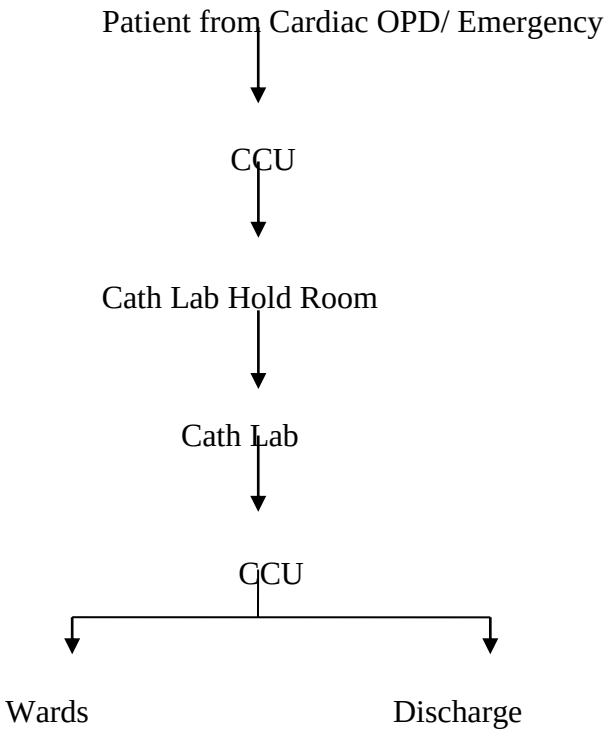
Location: 2nd floor

Number: 3

- **EQUIPMENT:** COROSCOPE - by Siemens used for electrophysiological monitoring and INNOVA 2000 –by GE a digital imaging system, one of its kinds in the world.
- **Manpower:**

1. 4-5 Nursing staff
2. 2 Technicians
3. 1 GDA

Workflow:



- **Common procedures in Cath Lab:**

  - Coronary Angioplasty (PTCA)
  - Balloon Mitral Valve Valvoplasty
  - Coronary Angiography (CAG)
  - Permanent Pacemaker
  - Peripheral Angiography & angioplasty
  - Renal Angioplasty
  - Electrophysiology study- Radiofrequency Ablation (EPS-RFA)

➢ RADIOLOGY/ IMAGING SERVICES

Fortis has Advanced Radiology dept with skilled technicians and with the latest and most advanced machines. The Dept. has facilities like 64 Slice CT Scan, MRI, Mammography, X-Ray Ultrasound.

X-rays
No. of Machines-2, digital
No. of x-rays/day- 200
TAT- 2- 3 minutes (depending on type of X-Ray and patient)
Waiting time- 15/20 min
Reporting Time- 30 minutes to 1 hour

USG: No. - 4 TAT: - 30 min Tariff- Rs 600/- onwards

TMT: No. - 1 TAT: - 1 hr Tariff- Rs 1900/-

CT scan:
No. of Machines- 1
No. of CT Scans/day- 40
TAT- 30 min
Reporting Time- 4 hours

MRI:
No. of Machines- 1
No. MRIs/day- 20
TAT- 1 hour
Reporting Time- 4 hours

Ultrasound:
No. of machines- 4
No. of US/day- 40-45
TAT- 30 min

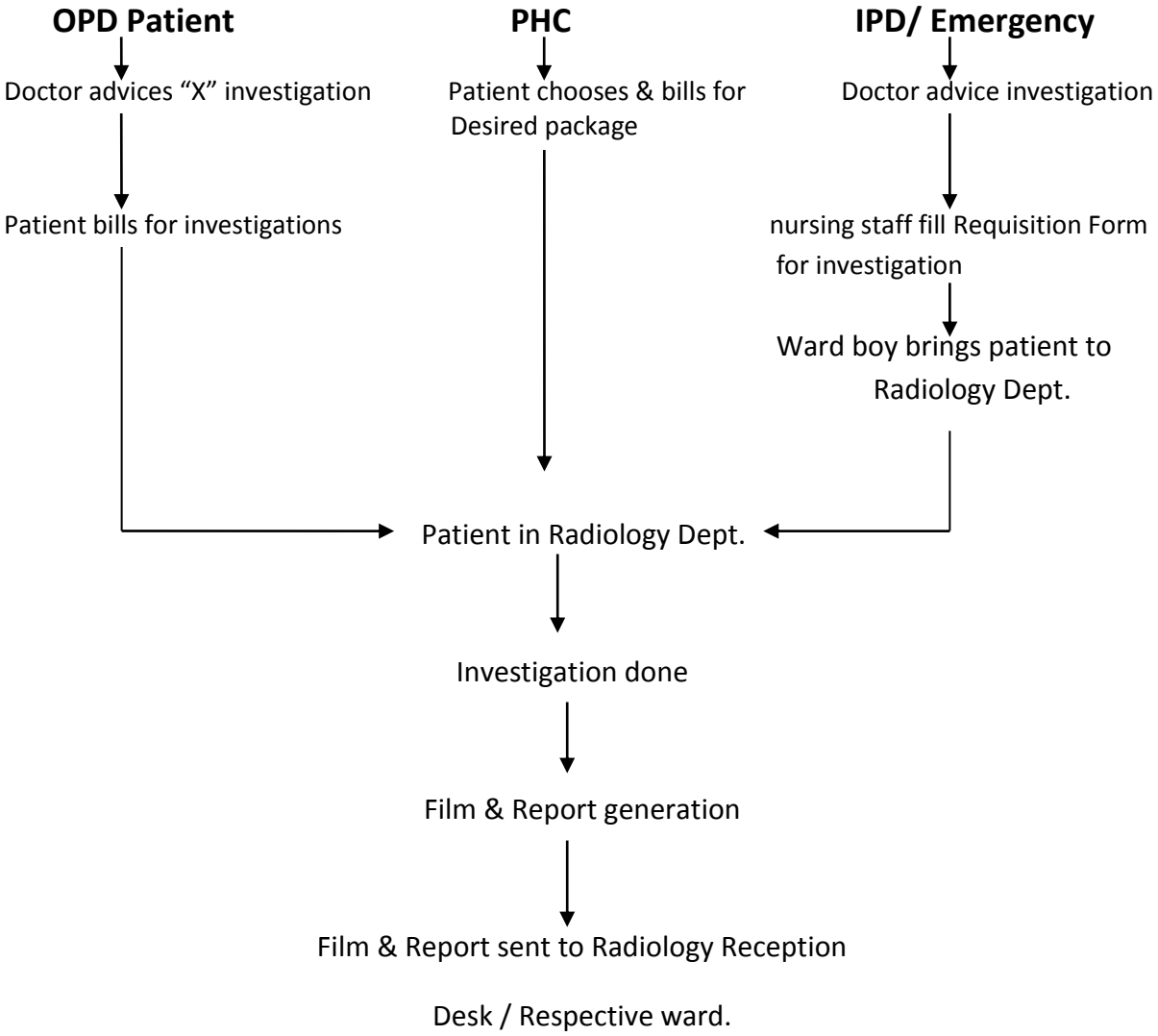
Bone Marrow Density Test:
No. of Machines-1
No. of BMD/day- 10

Manpower and Hierarchy of CT/ MRI:

Owner: Mr. Chawla
HOD: Dr. Rahat
Technician: 5
Nursing staff: 1

Helper: 4
FOA: 4

WORKFLOW:



- **PHARMACY :**

Pharmacy is one of the most important units in the hospital. FHM has In Patient Pharmacy on 2nd floor, and the Out Patient Pharmacy on the Ground floor. The Chemist shop is right at the entrance that operates 24x7 and the aim of this Dept is to provide standard medicines to patients.

OP PHARMACY

- **PURCHASE** : request is send to purchase department
- **STORING OF DRUGS** : freezer: 2-8 degree Celsius

At room temperature: 24 degree Celsius

- **ISSUING OF ITEMS** : Depending on prescription
- **NARCOTIC DRUGS** : Not in OP pharmacy

Have **SCH H1 DRUGS** which are sold on doctor's prescription, entry done in separate register, if possible copy of prescription kept. E.g.: drugs like- ALPREX, LONAZEP, ULTRACET, CLOPIC, ZOLFRESH etc.

These drugs have warning printed on a box with red border on the label.

- **LOOK ALIKE AND SOUND ALIKE DRUGS :**

E.g.: TRAMADOL, TRAZODONE & TORADOL- similar generic names

MORPHINE & HYDROMORPHINE INJECTIONS

INSULIN PRODUCTS: NOVOLIN, NOVOLOG, NOVOLIN 70/30

DEPLATT 75MG & DEPLATT A 75 MG

To control this – TALL Man lettering eg. PredniSONE & PrednisoLONE

➢ BLOOD BANK:

- **LICENSES** : NABH
- **EQUIPMENTS**: 1. Component centrifuge machine

2. Diagast (for grouping)

3. Platelet incubator

4. Deep freezer (-80 degree Celsius)

5. Platelet agitator (-40 degree Celsius)

6. refrigerator-: For reagent sample- 3

For blood samples - 2

7. Machine to defreeze the frozen elements

8. ECI Machine for testing blood samples

- **DIFFERENT ROOMS**:
  - Counselling room
  - Refreshment room
  - NAT lab
  - Screening cum medical examination rooms
  - Blood donation room
  - Apheresis room
- **STORAGE AND DISCARD**: PLATELETS- 5 DAYS

  FRESH FROZEN PLASMA- 1 YEAR

  PACKED RED BLOOD CELLS - 35 DAYS
- **TIME OF ISSUE:** 1.5hr - Normally

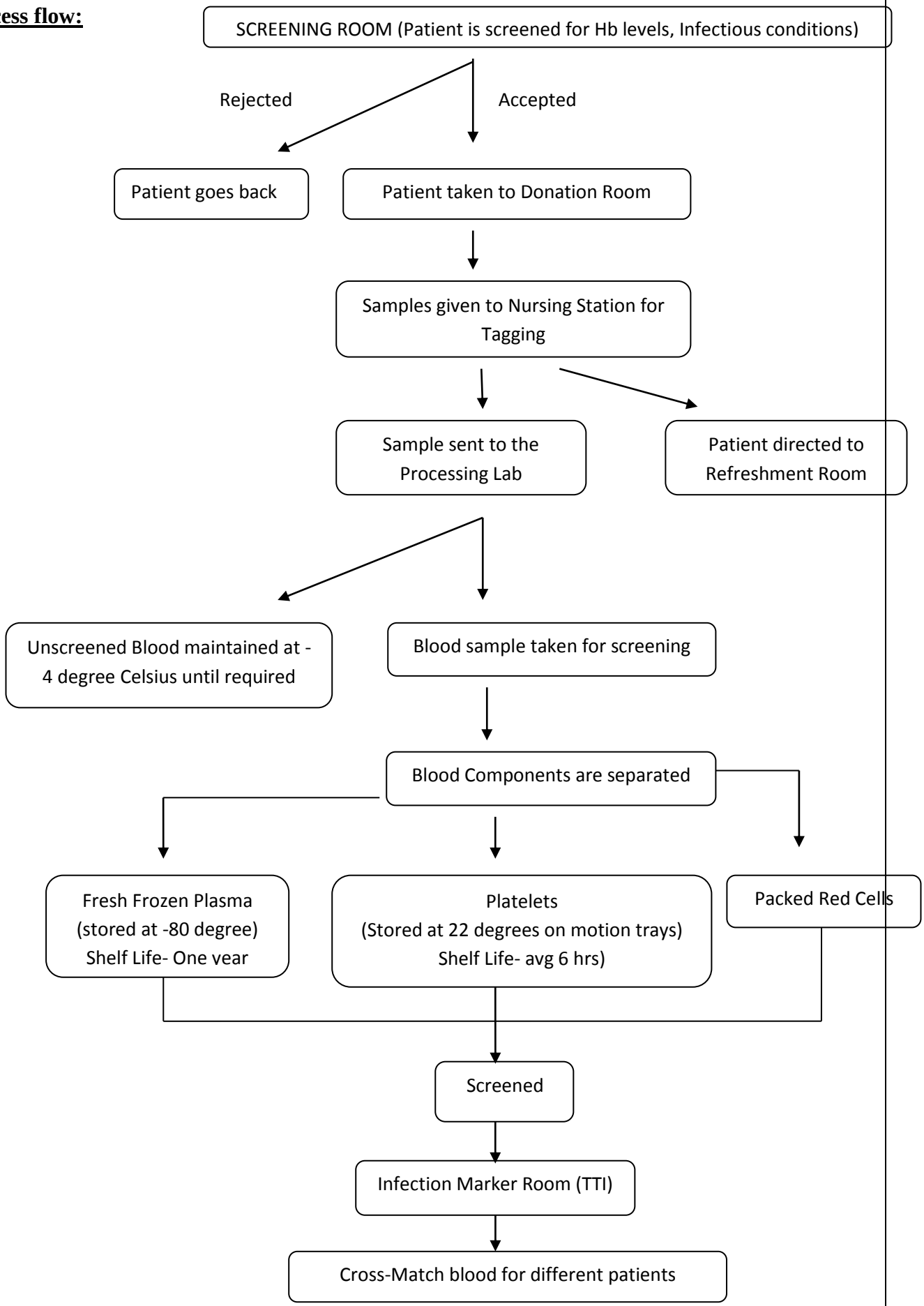
  15min. - In emergency

- For emergency cases, where patient requires platelet, a separate apheresis room is available, where direct donation of platelets from donor to recipient is made.
- For patients who test positive for infectious /serious conditions like HIV, etc, counselling is done in a counselling room by a consultant doctor. First counselling is free of cost, rest the patient can decide as per the treatment plan.
- A separate washing room and autoclave room is available for processing the infected blood.
- **NAT LAB:** Specific testing of HIV,HBV,HCV

  TIME FOR PROCESS- 4.5hr

  Automatic processing of blood, 6 different samples make 1 pool which is kept in machine & scanned. Report checked on computer. If any one sample is positive for HBV, HCV OR HIV, it shows in that column and the pool is indicated as positive & then individual samples of that pool are scanned again for confirmation of which sample is actually positive in the pool.

Process flow:



➢ HUMAN RESOURCE DEPARTMENT

Total no. of employees: 1400+

Category:

- Medics
- Paramedics
- Administrative Staff
- Nurses
- Supportive Staff

Training:

Every employee receives Fire and safety, BLS, ACLS training at least once a year. Other Training programs vary according to staff and need.

Recruitment Process: Walk-in, word of mouth

Documentation is required

Interviews

Different sources to be used –

- Online Portal
- Employee Referral
- Consultants – Only Approved Consultants by Corporate
- Walk-Ins
- Data Base
- Campus – To be only routed through Head - Talent Acquisition
- Advertisement- If given in local newspaper, RHR approval needed and Head - Talent Acquisition to be informed. If the advertisement is in National newspaper, Head – Talent Acquisition's approval is required

Job Description:

It is prepared by the HR, has to be signed by the HOD, HR, and the joining employee

Performance Appraisal:

Yearly

Mid-term review

Retention Policy:

Employee engagement Policy, Awards, Insurances, Discounts, Annual health checks, Fortis Idol, Sports matches, Sparkle etc

Payroll: Doctors are on payrolls and empanelment,

For other outsourced deptt., paid to contractor.

Grievance Handling:

7 day process, if unresolved by boss/ super boss. Appraisal process does not fall under this.

Employee Rights:

List of rights is prepared.

Employee Rewards/appreciation systems: Monthly internal deptt. Recognition, rewards/bonuses for target achievers.

Exit Interview: Taken by HOD, HR to know the reason for exit.

- Some of the important functions of HR are:

  Manpower planning, Recruitment and Selection, Training and Career Development, Periodic Employee Performance Appraisal, Employee Rights/Welfare/Grievance, Wage and salary administration, rewards, incentives, Trainings, Job description and Job Analysis, employee engagements programmes- Fortis idol, FHM Nach baliye, Doctor/Nurse/Staff of the month etc. Thus this Dept is one of the key depts. for functioning of the hospital.

- **IT- INFORMATION TECHNOLOGY:**

  The mission of the dept. to implement and support the IT related infrastructure required to achieve the target of being a near paperless and film less institute. The major tasks

include Systems support, looking after the installation and routine maintenance of the Computer systems and networking at FHM Mohali.

There are IT Help desk nos.6050, 6055, there are 13 servers, 450 work stations, call centre,etc. Backups and internet are also maintained by this dept.

The Software used here at FHM is: MEDTRAK and PYROGEN.

PYROGEN: operational only in the accounts and Pharmacy Dept.

MEDTRAK: is operational in all the depts. at FHM

Fortis was one of the first few hospitals to HIS Hospital information system.

➢ FINANCE & ACCOUNTS DEPARTMENT

One of the Most integral dept. of the hospital, which is responsible for Revenue collection, calculation and all money related matters, Purchases, allowances or salary of Employees

Location: B Block, 3rd Floor

Extension Numbers: 6040 to 6042

Functions of the Department

- Routine Finance & Accounting Functions like maintain of books of accounts, Cash & Banking Management etc.
- Contract & Hospital services Accounting
- Management Information System
- Closing & Finalization of Accounts
- Fixed Assets Register
- Budgeting
- Costing
- Inventory & Purchase Accounting
- Salary Preparation & disbursement
- Statutory Obligations like Income Tax, Sales Tax, and Provident Fund etc.
- Purchase Accounting
- Co-ordination for statutory & internal audits

Salary Disbursement

Salary is paid on the last working day of each month. If the last day of the month is a holiday, it will be paid on the following working day.

Salary Reimbursement

All reimbursement claims should be submitted to Accounts Department by 25th of every month so that reimbursement may be made on 2nd of the month.

Salary Advise

Salary is credited directly to bank account with IDBI Bank, Fortis Branch, Mohali.

Salary Advance

Salary advance can be claimed only in case of urgent need. Employees desiring to take a salary advance will make an application to HR Department duly approved by Departmental Head.

Other Claims for Official Expenses

Other claims for the official expenses should be submitted to accounts department after due approval of Departmental Heads. Normally all claims are processed and paid within three working days of submission.

➢ MARKETING :

FHM is the first of its kind of Hospital in this region, and FHL has been formed with the sole objective of providing total integrated healthcare by establishing State-of-Art Health delivery system. This dept along with Media and communication creates awareness through Ad, Banners, Hoardings Press releases and interviews on Radio and Seminars.

Catchment Area is as per the target audience (Corporate/Retirees/CGHS and ECHS)

Promotional Activities: CME/ Health Camps/Packages/ Radio and Newspaper Advertisement

Sale & Marketing given monthly targets.

➢ CSR : CORPORATE SOCIAL RESPONSIBILITY

For the upliftment and betterment of Society, this has now become a Mandatory issue, 2% of the profits are supposed to be used for CSR activities for the welfare of the people.
FHM also is doing its bit, and has 21 programmes running like:
CHETNA: To provide help to the underprivileged girl child
ACTFAST: To spread awareness about HIV/AIDS
SAARTHAK: To extend support to cancer patients
SAHAYAK: A programme for Dialysis Patients
NANHI CHAH: To celebrate birth of a girl child and plant tree saplings
Friends of Fortis, Rural Outreach camp, Blood Donation Camps, Free Health checkups etc to name a few.

➢ F&B –FOOD AND BEVERAGE DEPARTMENT

This is again a vital part of the Hospital as it provides the restricted and special diet to the patients as per requirements. It is responsible for pre-preparation, Preparation, service, clearance of Food and Beverages.

Location

Ground Floor Block - C, In addition to this three units namely meat fabrication, bakery & confectionery are located in the basement block-C

As the name suggests this is a support service department at Fortis Heart Institute, which is responsible for the pre-preparation, preparation, service and clearance of Food and Beverages for the patients as well as the staff of the hospital.

Following functions fall under the purview of Food & Beverage;

Service of Food for Patients

This takes place in patients' rooms through room service trolleys and therapeutic diets are prepared and served on the basis of Dieticians advice. Service is carried out by qualified service staff in the main block and Rehabilitation Block.

The meals served to the patients are as follows

1. Bed Tea
2. Breakfast

3. Mid-Morning Tea/Coffee/Soup/Snacks
4. Lunch
5. Evening Tea/Coffee/Snacks
6. Dinner
7. Milk Service

Service of Food for Fortis staff

Fortis staff is served meals in the dining area located on 3rd floor, Block – B, Café Jamjaji

The meals planned for staff are as follows:

1. Breakfast
2. Mid-Morning Tea/Snacks
3. Lunch
4. Afternoon Tea/Snacks
5. Dinner
6. Midnight Tea/Snacks

Service of Food for Contractors staff

There is a cafeteria in the basement, Block-B where all contractual staff is served the meals

Service of food for guests / Visitors

Café 24 at Fortis Inn and Café Coffee Day is located in the IPD block on the ground floor, which caters to the needs of outside guests. Apart from that, Sagar Ratna and few other local eating shops are put up outside and opposite the OPD.

➢ MATERIALS/ STORES/PURCHASE

This dept is responsible for purchase storage of Medical Consumables, Stationary, Medical equipments, Pharmacy stores, its aim is to provide right item at the right time at the right price and quantity. Fortis have a CBU-Central Buying Unit that procures all the orders. Functions of this dept. are Procurement, Storage, and Distribution.

Location

1.	Medical Consumable Stores	Basement B
2.	Stationary/Medical Equipment Stores	Basement A
3.	Pharmacy Store	Basement A
4.	OPD Pharmacy	G. Floor A

In addition to the above the department there are sub stores in Cardiac OT and Cath Lab managed by the respective floor coordinators.

Objective:

To provide the right item, at the right time, at the right price and in the right quantity.

Functions of the Department:

Department of materials is a service-providing department for the internal as well as external customers of the Hospital. Its main functions are:

1. Procurement
2. Storage
3. Distribution

Types of Items

- Capital Equipments
- Items held in stock
- Items not held in stock (very rarely used items)
- Items on consignment
- Services

Functions of Purchase

- Timely Procurement
- Vendor Audit
- Development of alternatives for continuous improvement

Imp: For any non-stocked/ rare items purchase requisition authorized by appropriate authority should be submitted.

For capital items, Capex form approved by appropriate authority should be submitted.

Functions of Stores

1. Lay down stocking policies for main store and sub store based on consumption pattern

    - SS (Safety stock),
    - MSP (Maximum stock potential)
    - ROL (Re-order Level)
    - EOQ (Economic order quantity)

2. Indenting of items based on the ROL preferably once/ twice in a month
3. Receipt of items based on purchase orders.
4. Check for quantity and quality
5. Acknowledge the receipt
6. Prepare goods receipt note
7. Follow up for non receipt of items with purchase
8. Proper and safe storage of items in racks
9. Issue of items to sub stores, against patient requests and request from departments based on requests received.
10. Physical verification of the quantity and quality
11. Check for near expiry items and arrange for exchange of the same
12. Return to suppliers
13. Update inventory

Distribution

Requisitions for the indent of material from the end users are accepted through HIS.

Timings for distribution of material are follows:

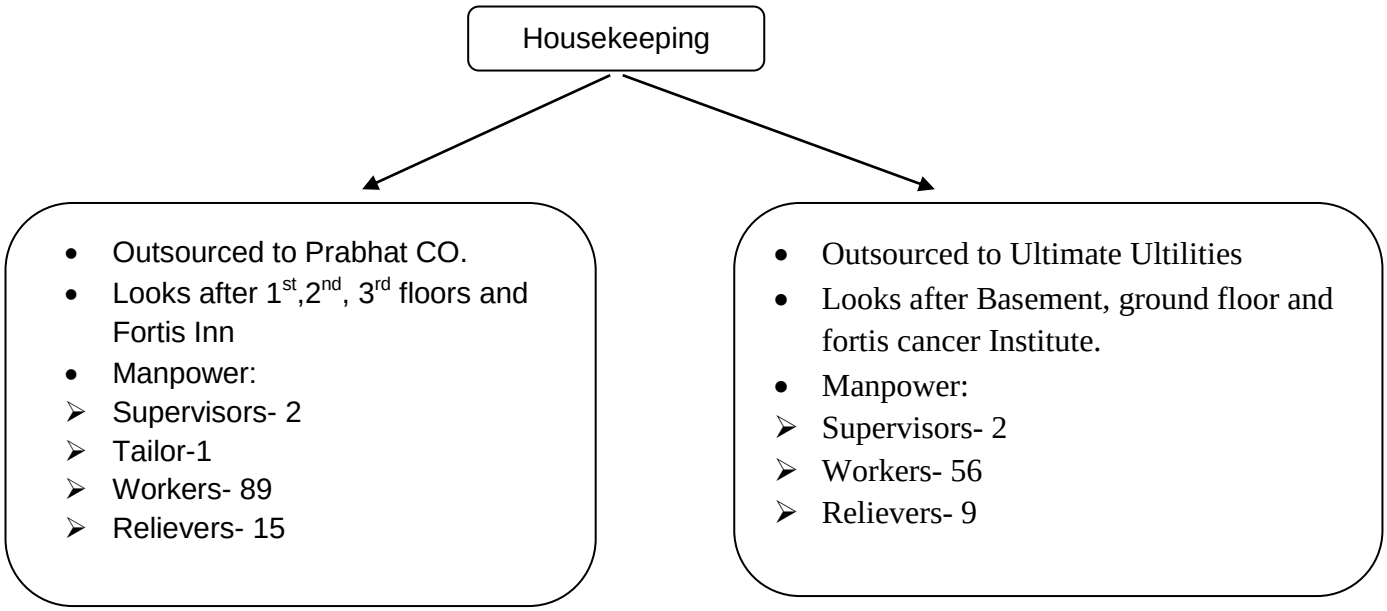
1.	Stationary Store	11:00am to 1:00 pm
2.	Pharmacy	9:00 am 12:00 noon 3:00 pm

		6:00 pm 8:00 pm
3.	Medical Consumable Store	9:00 am to 5:30 pm

Any stat requisitions are also accepted by the pharmacy.

➢ HOUSE-KEEPING

- The department is outsourced to four companies.
- Includes Cleaning, Laundry and Biomedical waste transportation.



➢ LAUNDARY: Outsourced

Manpower:

- Supervisors- 1
- Tailor-1
- Workers-24
- Relievers- 4

- Laundry collected every morning and then as per requirement.

- Induction starts after three days of trial of the new joining.
- Monthly training is given
- Briefed thrice a day about responsibilities and work.

➢ ENGINEERING

The major work of this department is Building maintenance, Water supply, Power backup, Gas supply, Sewage treatment plant.

STP (Sewage Treatment Plant)

To treat all the waste water and sewage waste, sewage treatment plant has been planned which is located on the right side of the IPD entrance while facing Emergency. Enhanced Wapp Systems India Ltd has supplied it.

SAFF (submerged aerated fixed film) membrane is being used to bring down COD and BOD (Biological Oxygen Demand).

Capacity	200 m3 / day
Post treatment BOD	5mg/l
Post treatment COD	10 mg/l

The water after treatment is softened and reused for cooling towers. There is a provision of using this water for irrigation.

➢ BIOMEDICAL WASTE MANAGEMENT

Waste is collected in three shifts: Morning, Afternoon and Night

Process Flow:

Area ⟶ Loaded onto Trolley ⟶ Transferred to STP ⟶ Collected by Contractor (Evening/ morning) after segregation

➢ MRD – MEDICAL RECORDS DEPARTMENT

Situated at the basement, the MRD keeps a record of all the patient files along with their details and history. Retention Period – 2 years

Arrangement of medical records-

- IPD- UHID wise
- OPD- Day wise

Retrieval Policy- A form has to be filled and got duly signed from Medical Superintendent, MR Department.

➢ MANIFOLD ROOM: Central piping system

GASES	PIPE COLOR	BAND COLOR
OXYGEN	YELLOW	WHITE
NITROUS OXIDE	YELLOW	BLUE
AIR	SKY BLUE	BLACK & WHITE
VACCUM	SKY BLUE	BLACK
AGSS	MAROON	MAROON

AGSS - Anaesthesia gas supplying system.

Black cylinder- oxygen

Blue cylinder- nitrous oxide

Huge cylinders for air compression, oxygen and vacuum.

Pressure maintained -4.2

If any change in pressure, light blinks red to check that supply

OT & OPD – Have same coded pipes and receivers. Direct supply to the departments through centralized system.

➢ PWD - PATIENT WELFARE DEPARTMENT:

Fortis healthcare has an established PWD and the welfare officers, termed as the pink ladies – due to their uniforms act as liaisons between the patients/customers and the hospital. They are patient's advocates or representatives striving to provide solutions to any problem they may encounter here at Fortis.

➢ OTHER DEPARTMENTS:

Nuclear Medicine: This Dept. uses Safe, Painless, cost-effective method to image body with specialized diagnostic Gamma Cameras, in order to identify organ function and find out if presence of any disease.

Pathology: SRL Ranbaxy manages the Path Lab at FHM. One of Asia's leading clinical testing facilities, SRL follows the protocol of College of American Pathologists Staffed with highly skilled technicians and equipped with digital analyzers and complete automation in Biochemistry, Haematology Serology, Microbiology and Pathology and these services are rendered round the clock 24x7,and has also been Awarded NABL.

Physiotherapy: FHM has a dedicated Physiotherapy dept. which facilitates quick rehabilitation and pain management plus manages patients with musculoskeletal, cardiothoracic and neurological conditions. They also aid in Geriatric care from Degenerative diseases and provide Rehabilitation post trauma /surgery.

Dietetics: The goal of the Diet clinic is to provide diet consultation to patients and their attendants and satisfies their diet related queries. This dept organizes specific individual counselling and diet education to the pts based on the clinical parameters and Doctors prescription.

Fortis Paalna: FHM has launched a complete Obstetrics and Maternity division .It aims at offering young expectant mothers an excellent experience of childbirth and care. FHM aims to make the delivery safe and comfortable.

Library: A library is present on the Third Floor that houses various reference books, Journals, articles etc and every employee is a member.

Security: The security although is outsourced gives a 24X& cover to the entire Hospital and especially regulates the traffic in the parking areas.

➢ Some of the other facilities available are :

- **Fortis inn :** a paid rest house for the attendants of Out-station patients, or the Attendants of Patients for some rest within the hospital

- **Café 24:** an in house Restaurant that offers a wide variety of food for the attendants and family members of the patients.
- **Bank/ATM :** IDBI Bank and ATM is also present within the premises that can be very helpful to the customers in cases of need for money, and don't have to run around to get instant financial aid
- **Café Coffee Day:** CCD as is it well known is also present in the premises near the waiting area, again which is there to cater the needs of the people.
- **Prayer Room :** keeping in mind the religious and spiritual needs of the people, such a room is created where people can pray for their loved ones
- **Play area:** for Children

PROJECTS:

- A study on knowledge of central line associated blood stream infections among ICU staff and their routine practices.

- Hand hygiene knowledge assessment survey of hospital staff.

- Time motion study in radiology department of Fortis Hospital Mohali.

Project report 1

CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTIONS(CLABSI) IN HOSPITAL ICU

CONTENTS

- ACKNOWLEDGEMENT
- REVIEW OF LITERATURE
- RESEARCH METHODOLOGY
- DATA ANALYSIS & INTERPRETATION
- FINDINGS & CONCLUSION
- BIBLIOGRAPHY
- ANNEXURE:

  QUESTIONNAIRE

INTRODUCTION

Health-care-associated infections (HAIs) are among the most vital patient safety issues in health care today. The four common HAIs that are typically studied using standardized definitions include surgical site infections (SSI), central line associated blood stream infections (CLABSI), and ventilator associated Pneumonia (VAP) and catheter-associated urinary infections (CA-UTI). Together, they contribute substantially to mortality, morbidity and health-care costs in all environments.

Central line-associated bloodstream infections (CLABSIs) are responsible for increased lengths of hospital stay and increased attributable mortality in high-income countries and in limited-resource countries, including India.

CLABSIs are also responsible for increased health care costs, as reported in studies from high-income countries ICUs provide care to the sickest and most complex hospitalized patients. These patients are at great risk for serious adverse events and constitute a high-cost population. Furthermore, the delivery of care in the ICU is very complex, with many simultaneous processes, various technologies, and multiple medications that contribute to the potential for harm.

REVIEW OF LITERATURE

CENTRAL LINE ASSOCIATED BLOOD STREAM INFECTIONS

CLABSI is a laboratory-confirmed primary bloodstream infection associated with a central line (a long fine catheter with an opening at each end used to deliver fluids and drugs) indwelling for more than 48 hours.

Bloodstream infections can occur when bacteria or other pathogens, including fungi, travel down a central line and enter the bloodstream. Infection severity can range from mild to life-threatening.

A CLABSI diagnosis is indicated when the bloodstream infection is not related to an infection from another site.

The longer a central line is in place, the higher the risk for bloodstream infection –care team members should check in daily to determine if the benefits of continued central line maintenance outweigh the risks of potential CLABSI.

The major types of central venous catheters (CVCs), based on their design, are nontunneled catheters, tunnelled catheters, implantable ports, and peripherally inserted central catheters.

Some insertion sites may be more prone to infection such as the femoral vein and internal jugular vein.

The Impact

Central line associated bloodstream infections increase hospital costs, lengthen duration of hospitalization and can result in death. Over the past decade there has been great focus on reducing hospital acquired infections in general and central line associated bloodstream infections in particular.

In 2009, there were approximately 18,000 CLABSIs in ICUs in the United States annually. With a mortality rate as high as 25%, this could represent 4,500 preventable deaths. Since the widespread adoption of safety measures included in the "CLABSI bundle" the incidence of CLABSI has decreased by over 50% since 2001.

Preventing CLABSI in 4 steps:

- Think wisely about each central line placement
- Remove central lines promptly when no longer needed
- When inserting a central line, use techniques known to reduce the risk of infection
- While the central line is in place, take precautions to reduce the chance of infection

Step 1: Think wisely about each central line placement: Does this patient really need a central line?

One of the most effective means of preventing CLABSI is to reduce the use of central venous catheters. There are many indications for central lines including the infusion of vasopressors and inotropes, parenteral nutrition and other caustic medications, and for hemodynamic monitoring.

Finding other means to obtain hemodynamic information (such as using dynamic indices of volume responsiveness or obtaining an echocardiogram) can allow you to avoid placing a central line and putting a patient at risk for developing CLABSI.

Step 2: Remove central lines promptly when no longer needed

One of the most effective means of preventing CLABSI is to reduce the use of central venous catheters. There are many indications for central lines including the infusion of vasopressors and inotropes, parenteral nutrition and other caustic medications, and for hemodynamic monitoring.

Finding other means to obtain hemodynamic information (such as using dynamic indices of volume responsiveness or obtaining an echocardiogram) can allow you to avoid placing a central line and putting a patient at risk for developing CLABSI.

Step 3: When inserting a central line, use techniques known to reduce the risk of infection (known as an Insertion Bundle):

- Select the best site
- Practice good hand hygiene
- Use maximal-barrier precautions
- Use chlorhexidine for skin preparation

Step 4: While the central line is in place, take precautions to reduce the chance of infection (known as a Maintenance Bundle):

- Daily chlorhexidine bathing
- Use a chlorhexidine-soaked sponge dressing
- Change the dressing using sterile technique and only when necessary
- Change IV tubing frequently
- Confirm daily that the central line is still necessary
- Ensure that access points are clean when accessing them

INSERTION BUNDLES:

A few simple precautions can help you make your patient safer when placing a central venous catheter

- Choosing the best site:

Selecting the best site can help reduce the risk of infection. It is generally recommended to avoid the femoral vein when placing a CVC in adults and to preferentially place the catheter in the subclavian vein rather than the internal jugular vein as the subclavian vein has the lowest risk of infection.

However, in patients with kidney disease who may require dialysis, it is recommended to avoid the subclavian site. Additionally, subclavian cannulation is associated with an increased risk of pneumothorax –a potentially life-threatening complication. The risks and benefits for each site will have to be accounted for when selecting a cannulation site for any individual patient.

- Hand hygiene:

Central line insertion is a sterile procedure and proper hand hygiene should be practiced. The Centers for Disease Control (CDC) recommends either conventional soap and water hand-washing or use of an alcohol-based gel prior to insertion of a CVC.

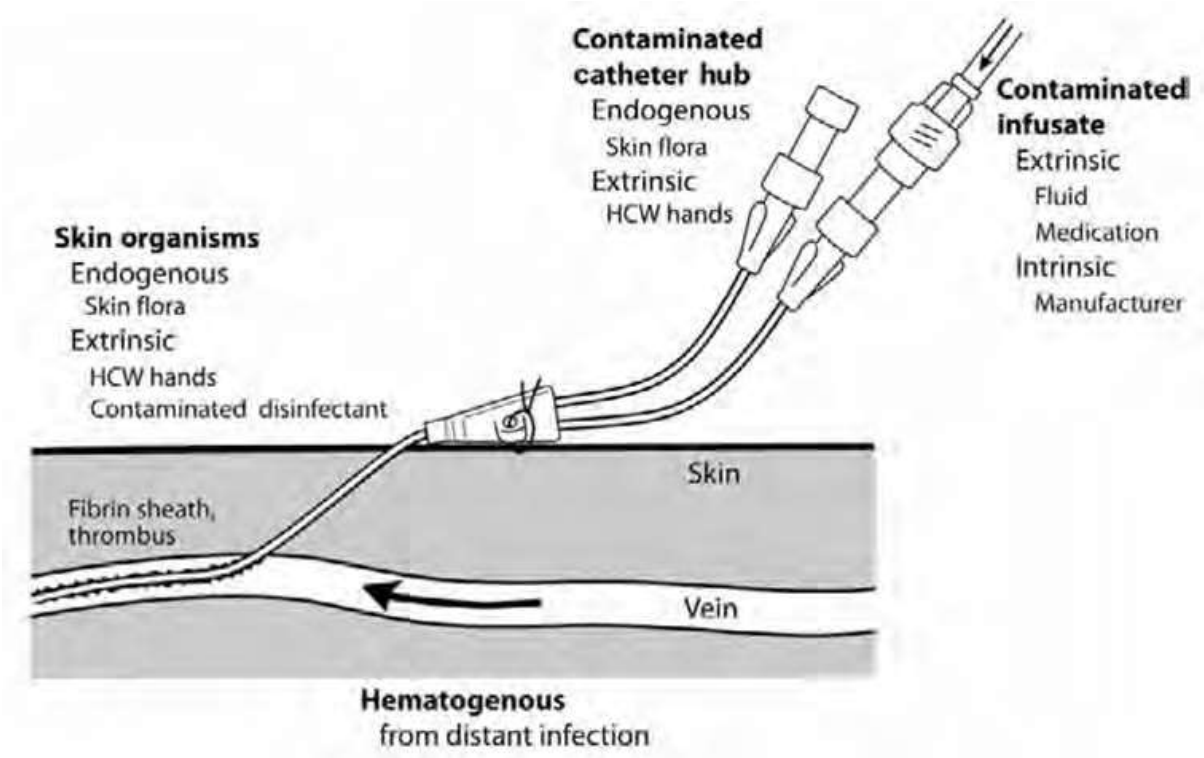
- Maximal-Barrier Precautions:

When placing a central line, several steps should be taken to ensure sterility. These include wearing a hat, mask, sterile gown and sterile gloves and using a full-body sterile drape which completely covers the patient. It is, effectively, a surgical procedure. These steps reduce the likelihood that the catheter could become contaminated during placement.

- Chlorhexidine Skin Preparation:

Unless there is a contraindication such as an allergy, chlorhexidine-based skin preparation should be used. It has been shown to have superior efficacy to other agents. In the event that an alternative must be used, the CDC recommends iodine-based agents or 70% alcohol.

SPREAD OF CLABSI :



After the catheter is inserted into the bloodstream, plasma proteins begin to adhere to it, which can result in the formation of a fibrin sheath around the catheter. When microorganisms gain access to the intraluminal or extra luminal surface of the catheter, they become irreversibly adherent and begin to produce a biofilm that incorporates the microorganisms and provides a protective environment against the host defences (that is, polymorph nuclear leukocytes) and antibiotics. Dispersal of single-cell microorganisms or clumps from the biofilm results in haematogenous dissemination of biofilm bacteria. Microorganisms that are dispersed as single cells can be killed by host defences, but if the dissemination becomes extensive or if host defences are compromised, true CLABSI occurs.

OBJECTIVES

- To assess the practices for infection control measures in CCU (Cardiac care unit) and PICU (paediatric care unit) in Fortis hospital Mohali.
- To find out the reasons of CLABSI in spite of strict infection control measures.
- To make appropriate recommendations for the corrective future actions.

RESEARCH METHODOLOGY:

RESEARCH DESIGN: Descriptive and observational study

SETTING: The survey was conducted in FORTIS HOSPITAL, MOHALI, a tertiary care super specialty hospital for the period of 2 weeks.

The survey was done in CCU AND PICU department of hospital.

DATA COLLECTION:

1. Primary Data: Steps of collection of data:

   STEP-1 KNOWLEDGE ASSESMENT BY QUESTIONAARE DISTRIBUTION

   - The primary data was collected by means of a survey. Questionnaire was prepared for knowledge assessment of ICU staff and it is distributed in CCU AND PICU and it is collected at that time only.

STEP-2 AVAIALABILITY OF RESOURCES TO STAFF

- ICU is visited daily and availability of hand rub on each bed , availability of soap , paper towels in department is checked.
- Presence of posters in department is checked.
- Availability of hand rubs at entrance of department.
- Working of sinks and tap is checked.

STEP-3 DAILY OBSERVATION OF ACTIVITIES OF HEALTH CARE WORKERS

- Routine visits to CCU AND PICU is done for 2 weeks is done
- All the activities of nurses, physiotherapist and doctors are observed
- Doctors are observed while inserting central line and giving central line care.
- Nurses and physiotherapist while doing procedures giving central line care and touching the patient are observed.

2. Secondary Data:

Data was collected for patient who had undergone CLABSI in last three months i.e. in month of January ,February, march and their history of central line insertions was taken from Medical records department.

April data is collected from department while doing department visits.

SAMPLING PLAN:

Since it is not possible to study whole universe, it becomes necessary to take a sample from the universe to know about its characteristics.

- Sample Size: 60 staff nurses of CCU and PICU
- Sampling Units: staff nurses in FORTIS HOSPITAL, Mohali
- Sample Technique: Quasi design
- Research Instrument: Questionnaire designed and manual observations

DATA COLLECTION TOOL:

Data is collected through use of questionnaire which is filled by staff and manual observation is done on practices of staff.

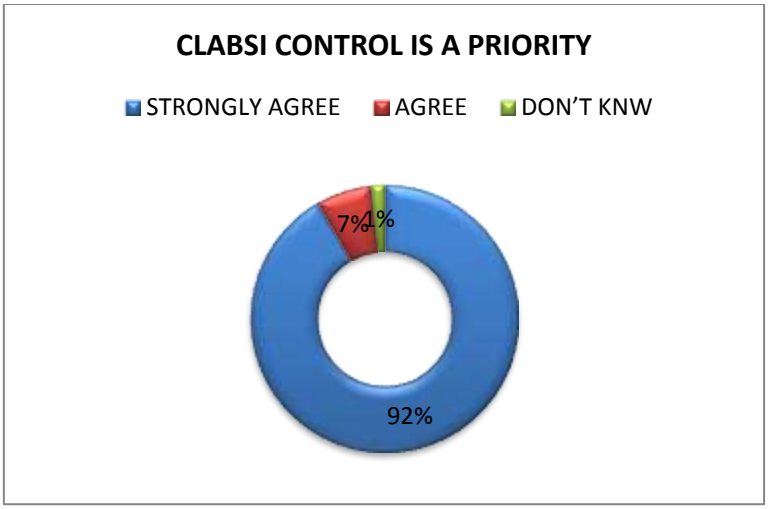
GRAPHICAL TOOLS USED:

- Pie Charts, Bar graph

DATA ANALYSIS

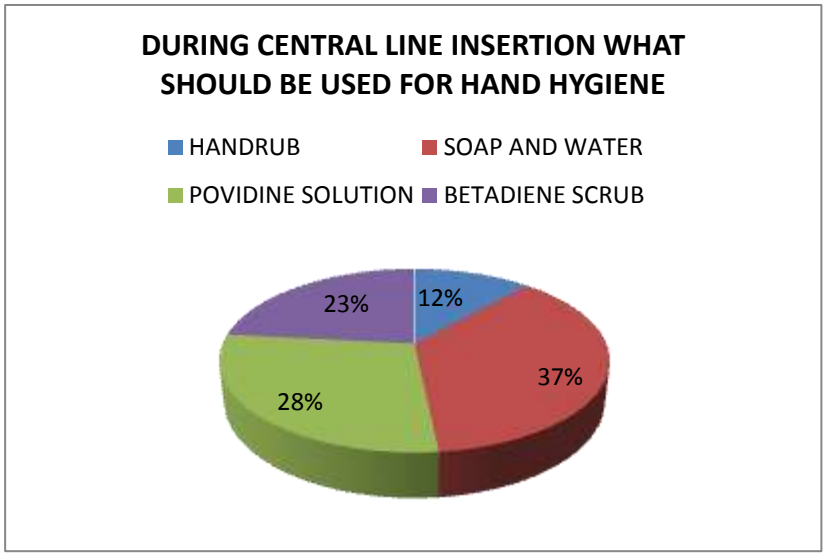
A. KNOWLEDGE ASSESMENT BY QUESTIONAARE DISTRIBUTION

FIGURE 1



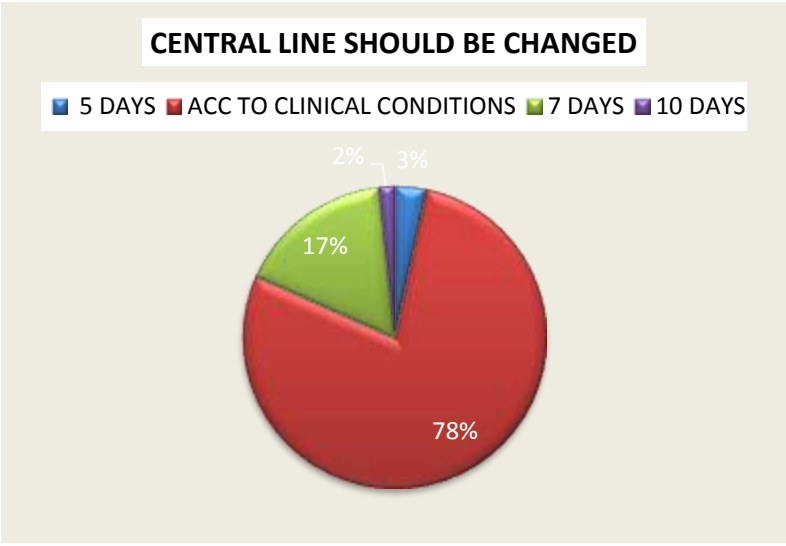
92% said that CLABSI control is a priority

FIGURE-2



37% responded that during central line insertion hand hygiene is performed by using soap and water

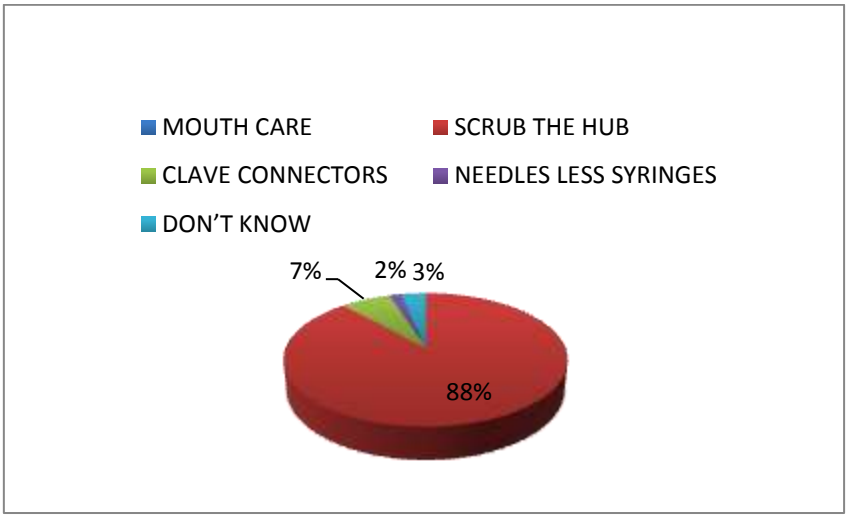
FIGURE-3



78% said that central line should be changed depending on clinical conditions of the insertion site

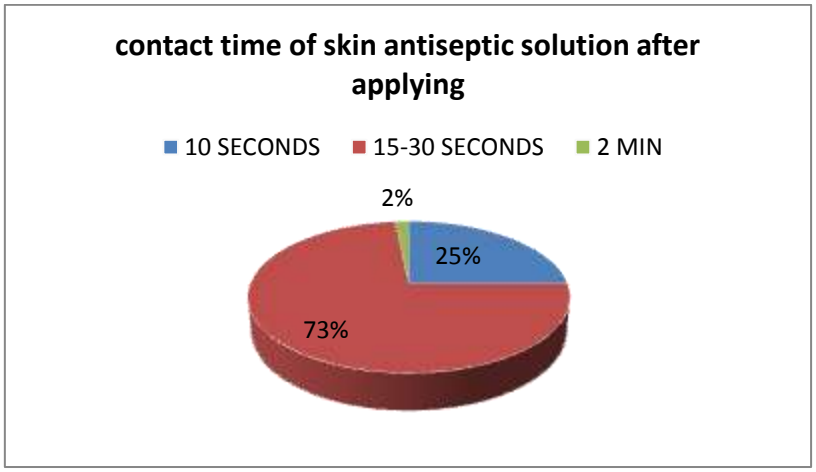
FIGURE-4

Most important in prevention of CLABSI



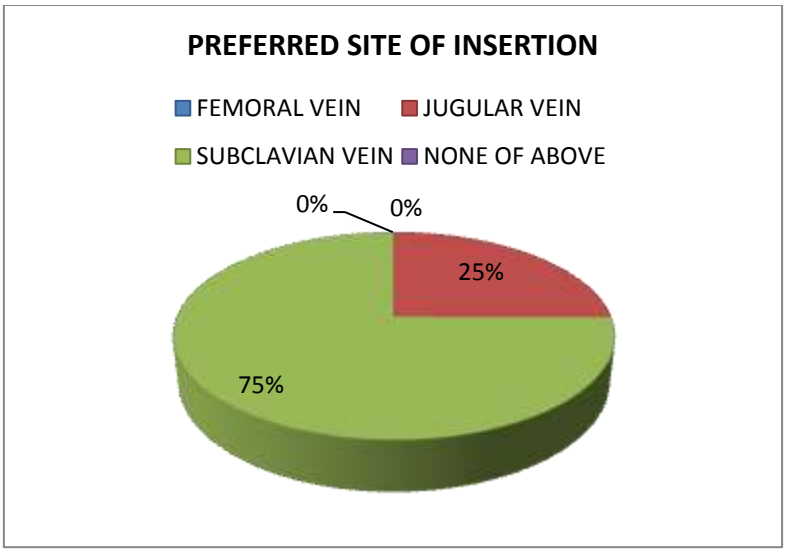
88% said scrub the hub is important in prevention of CLABSI

FIGURE-5



73%PERCENT SAID IT SHOULD BE 15-30 SECONDS

FIGURE-6



75%said preferred site of insertion is subclavian vein

Overall knowledge is – 78%

B. To find availability of resources to staff of CCU and PICU

Observations-

- They are provided with hand rubs, soap and water
- Paper towels of good quality are provided.
- Poster and reminders in form of charts are available at every area.
- Gloves ,masks are also available

C. To know actual hand hygiene compliance of health care workers in department

TABLE 1 –Overall Hand hygiene compliance

Hand Hygiene	CCU April 2015	PICU April 2015
Doctors	78%	85%
Nurses	84%	79%
GDAs	57%	70%
Physiotherapy	85%	74%
TOTAL	**76%**	**77%**

TABLE -2

PRACTICE OF 5 MOMEMTS OF HAND HYGIENE IN CCU

	1ST MOMENT	2ND MOMENT	3RD MOMENT	4TH MOMENT	5TH MOMENT
Doctors	74%	100%	100%	78%	52%
Nurses	81%	100%	93%	66%	41%
Physiotherapy	80%		100%	81%	57%
GDAs	71%		72%	64%	56%

General observations

- **Moments not followed properly, 5th moment is very less practised in CCU by all health care workers.**
- **While central line insertion nurses and assistants neither wear gloves and cap nor did they do hand hygiene before procedure.**
- **The trolley was not cleaned prior to dressing change.**

TABLE -3

PRACTICE OF 5 MOMEMTS

OF HAND HYGIENE IN PICUs

	1ST MOMENT	2ND MOMENT	3RD MOMENT	4TH MOMENT	5TH MOMENT
Doctors	59%	100%	100%	83%	79%
Nurses	73%	100%	80%	55%	64%
Physiotherapy	80%			85%	63%
GDAs	-		84%		70%

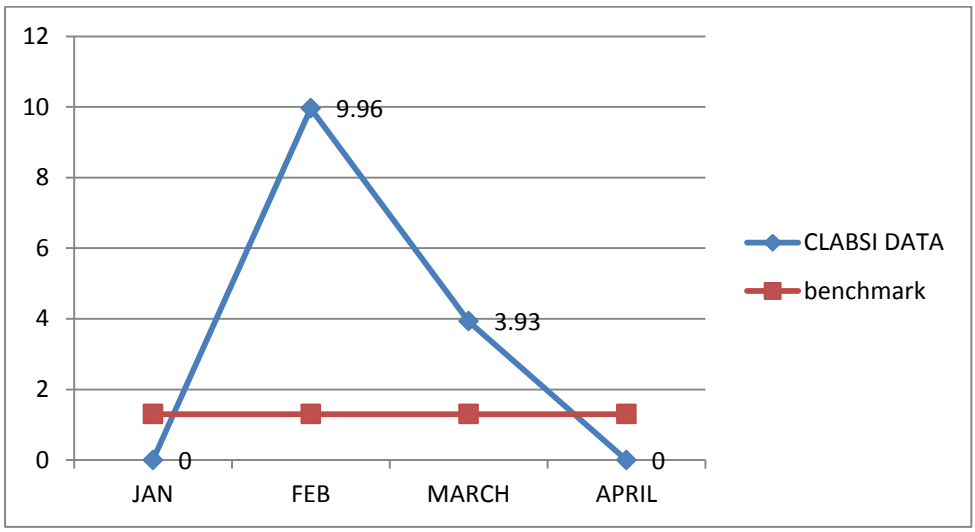
General observations

- **1st moment is not practised by doctors in PICU Properly**
- **Compliance for 5th th moment is very less by nurses and physiotherapist.**

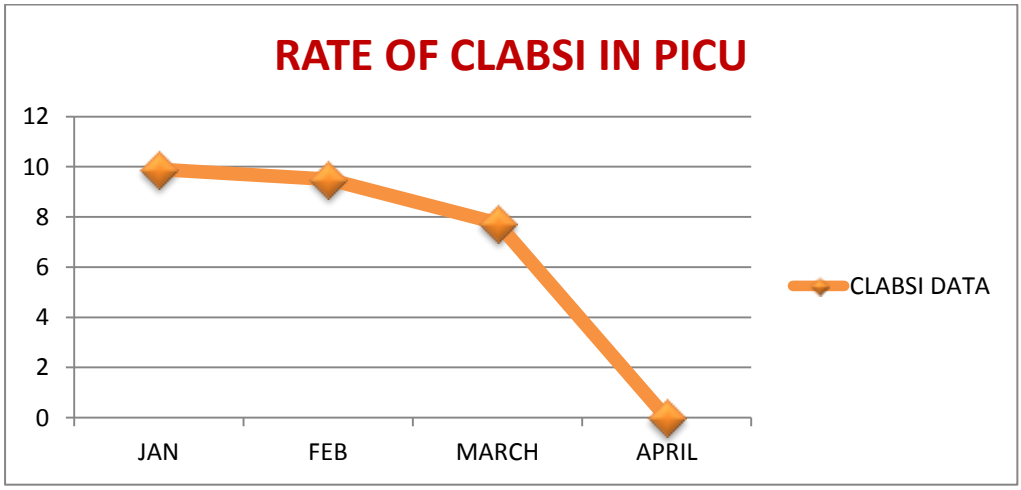
- **4 th moment is very less practised by nurses**
- **Health care workers don't use hand rub before touching the central line.**
- **It was observed that the hubs were not scrubbed all the time.**
- **Presence of blood in lines is seen. Flushing is not done properly.**

SECONDARY DATA INTERPRETATION

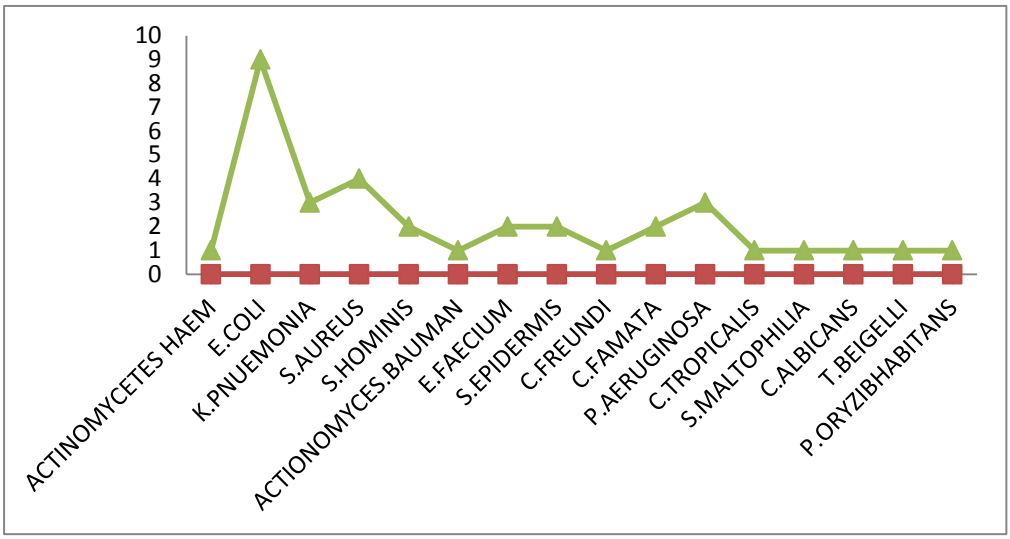
RATE OF CLABSI IN CCU



Rate of CLABSI in CCU has decreased during observation period



Rate of CLABSI in PICU has also decreased during observational period



COMMONEST ORGANSIM ISOLATED FROM BLOOD CULTURE IN CCU IS E.COLI FOLLOWED BY S.AUREUS

CONCLUSIONS

- E .Coli is the most common organism found in blood cultures.
- Males are more affected by CLABSI than females.
- It is concluded that staff has enough knowledge and all the required resources are available to them but in spite of this they are not practising proper infection control methods.
- Change of behaviour is required for that and continuous training is required.

RECOMMENDATIONS

Simple precautions that can keep a patient with a central line from developing an infection

- THE DRESSING:

Careful attention to how you maintain the dressing which secures a central line in place can help prevent the development of infections. Historically, dressings were changed frequently according to a fixed schedule. However, current practice recommendations suggest that the dressing should only be changed every seven days unless is it visibly soiled or soaked with blood. A transparent, semi-permeable dressing is best as it allows for daily assessment of the insertion site without the need for removal of the dressing. Sterile gauze is an acceptable alternative (although it is recommended that the dressing be changed every two days if this option is used).

Placement of a chlorhexidine-soaked sponge at the catheter insertion site is also recommended to help reduce the rate of CLABSI.

- DAILY CHLORHEXIDINE BATHING:

A newer strategy, daily bathing with chlorhexidine, has been shown to help decrease the rate of CLABSI as well as protect patients from other hospital acquired infections, including vancomycin-resistant enterococcus (VRE), methicillin-resistant Staphylococcus aureus (MRSA) and Clostridium difficile. It is well-tolerated by most patients but should be avoided in patients who have an allergy to chlorhexidine.

- ACCESSING THE CATHETER:

Aseptic technique should be used when accessing any port of a central line or tubing connected to it. This includes practicing hand antisepsis, using clean gloves, and disinfection with 70% alcohol prior to accessing hubs, connectors, or stopcocks. New devices are now available to assist with this step including caps that contain a small alcohol-soaked sponge that can be connected to ports on IV tubing sets to increase compliance.

Project report 2

HAND HYGIENE KNOWLEDGE ASSESMENT OF HEALTH CARE WORKERS

INTRODUCTION

Health care-associated infection (HCAI) – also referred to as nosocomial Infection – is defined as "an infection occurring in a patient during the process of care in a hospital or other health-care facility that was not present or incubating at the time of admission. This also includes infections acquired in the hospital but appearing after discharge and occupational infections among staff of the facility".

From the definition it is clearly understandable that the occurrence of this infection is linked to health-care delivery and that it may result, although not always, as a consequence of the failure of health-care systems and processes as well as of human behaviour. Therefore, it represents a significant patient safety problem. Hand hygiene is very much at the core of Standard Precautions and is the undisputed single most effective infection control measure.

Hand hygiene may be practised by rubbing hands with an alcohol based hand rub or by washing with soap and water. The technique for doing this, as well as the product used, render hands free from potentially harmful contamination and make them safe for patient care.

OBJECTIVES

1. To assess actual knowledge of hospital staff and their awareness towards hand hygiene and their methods.

2. To plan the need of improvement to conduct more learning sessions in future in accordance with compliance of hand hygiene in hospital.

3. To make appropriate recommendations for the corrective action.

AIM OF STUDY

HCAI affects hundreds of millions of people worldwide and is a major global issue for patient safety. At both the level of the country and of the health-care facility, the burden of HCAI is significant.

Hand hygiene is considered to be the primary measure necessary reducing HCAI. Although the action of hand hygiene is simple,
the lack of compliance among health-care workers continues to
be a problem throughout the world.

The most important factor in preventing the spread of illness is the performance of hand hygiene. Most health care professionals recognise this and yet compliance is usually <50

Patient Safety Challenge, 'Clean Care is Safer Care' compliance to hand hygiene is widely acknowledged as the most important way of reducing infections in healthcare facilities and the spread of antimicrobial resistance . Regular training sessions are given to all health care workers in Fortis hospital

REVIEW OF LITERATURE

Hand hygiene is considered the primary measure to reduce the transmission of nosocomial pathogens. Noncompliance with hand hygiene, however, remains a major problem in hospitals. Despite the emphasis placed on hand washing and regular trainings sessions given to hospital staff and related hygiene activities, many health care professionals still fail to adhere to this basic practice we surveyed nurses and healthcare professionals employed at Fortis hospital Moreover, not only is the average level of compliance with hand hygiene recommendations low, but time spent is usually insufficient. The duration of hand washing or hygienic hand wash episodes by HCWs varies between a few seconds and more than 60 s, addition to washing their hands for very short periods of time, HCWs often fail to cover all surfaces of their hands and fingers and the technique of hand hygiene is frequently deficient.

Compliance or non-compliance with hand hygiene has consequences for the transmission of pathogens and the development of HCAIs. Hand hygiene is not just an option, a matter of common sense merely an opportunity; it corresponds to indications during care delivery that are justified by the risk of germ transmission. To minimize differences in the way they are understood and applied by health-care workers, trainers and observers of hand hygiene practices it is important that hand hygiene indications become universally understandable. There should be no room for doubt or interpretation by health-care workers.

RESEARCH METHDOLOGY

RESEARCH DESIGN

Descriptive study

A prospective descriptive study design was the methodology used to conduct this study.

SETTING:

The survey was conducted in FORTIS HOSPITAL, MOHALI, a tertiary care super specialty hospital for the period of 2 weeks.

This survey covers almost all ICU nurses and their managers with objective knowledge assessment.

DATA COLLECTION

SAMPLING PLAN

Sample size- 250 Staff nurses ,50 senior managers,

INSTRUMENT- The questionnaire was prepared by using WHO tools **of hand hygiene knowledge questionnaire for health care workers and perception survey for senior managers and some questions were added in it.**

METHODS-

Prepared Questionnaire was distributed in various department of hospital and senior managers covering head physician , head nurse, and hospital administrator and staff nurse . Responses was taken from them.
Limitation was study was less responses from senior managers.

GRAPHICAL TOOLS USED:

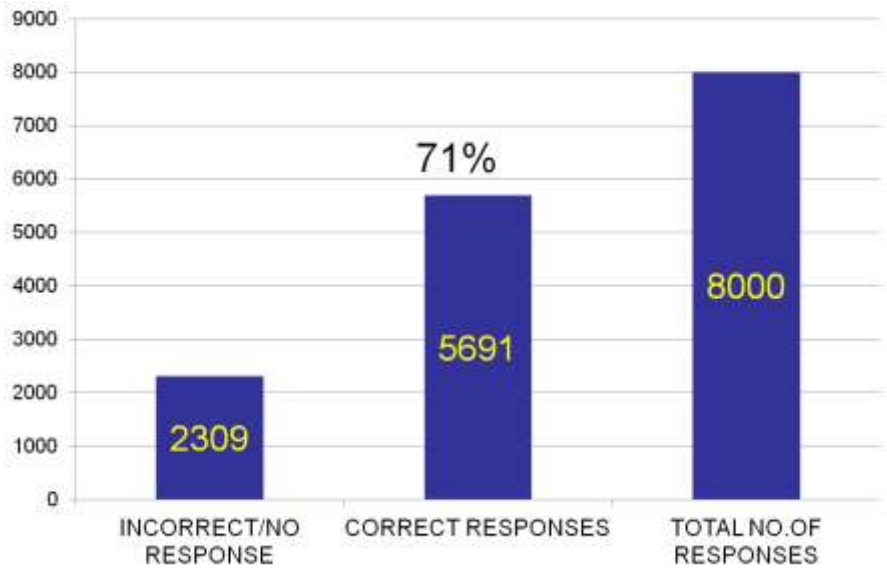
Pie Charts, Bar graphs

LIMITATIONS OF THE STUDY:

- This study has not covered the whole staff of hospital.

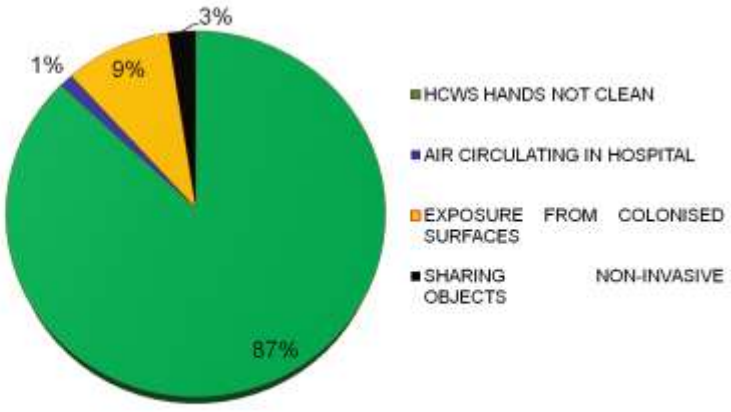
DATA INTERPRETATION

Graph No 1 Overall Responses Analysis



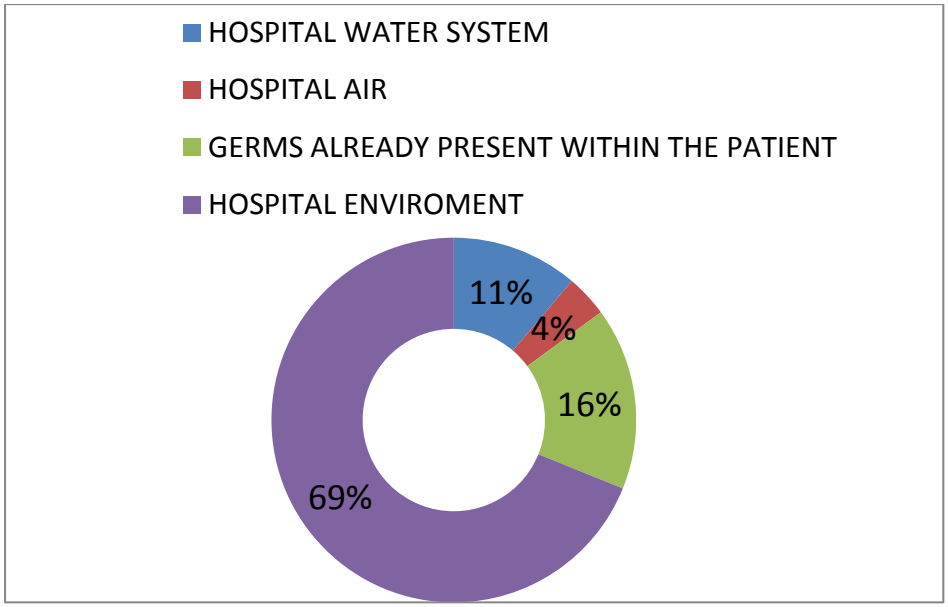
71 percent of staff has given right responses

GRAPH NO 2



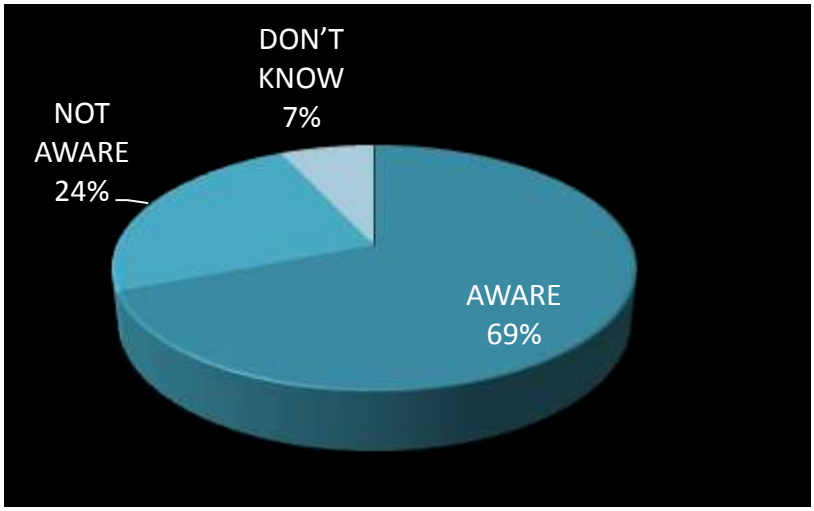
87 % replied that Unclean Hands were responsible for cross transmission of Germs in Hospital

GRAPH NO 3



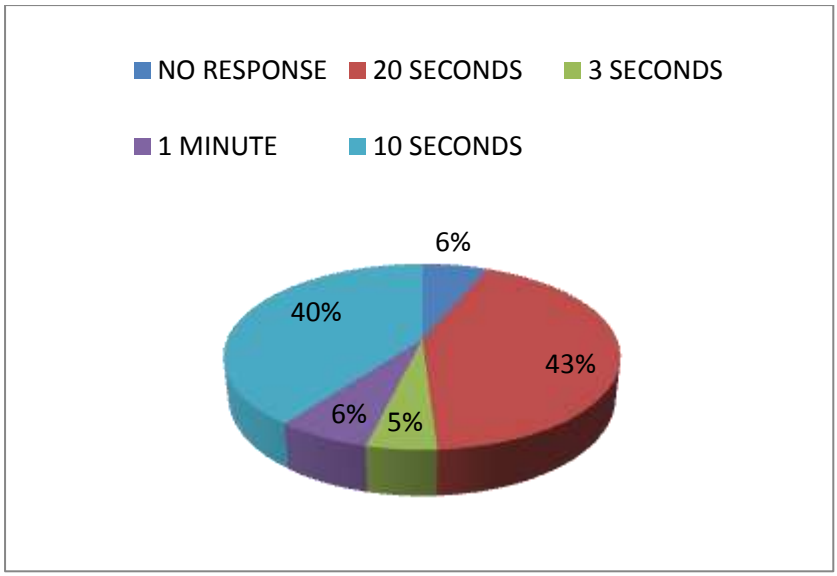
SOURCES OF GERMS RESPONSIBLE FOR HAI'S

GRAPH NO 4



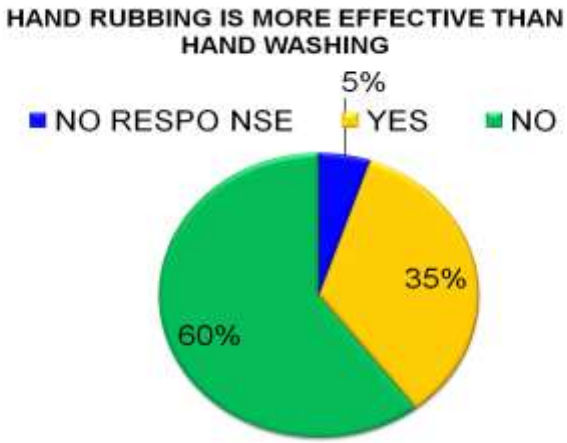
Practising 5 moments of hand hygiene prevents transmission of germs to patient and HCW'S

GRAPH 5



MINIMAL TIME NEEDED FOR HAND RUB

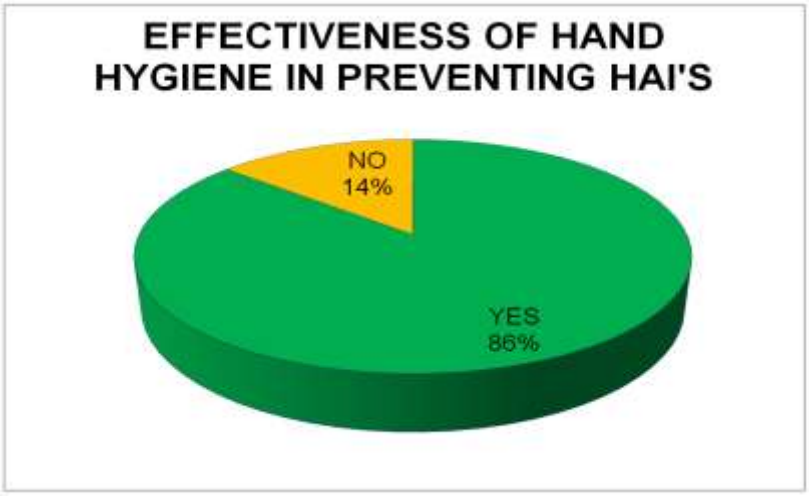
GRAPH 6



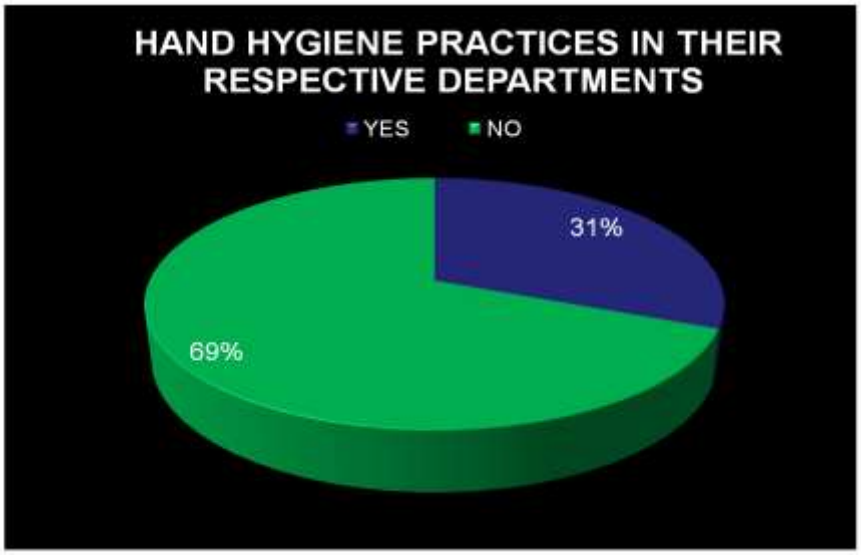
35 % of respondents felt that Hand rubbing was more effective than Hand washing

PERCEPTION SURVEY FOR SENIOR MANAGERS

GRAPH 7

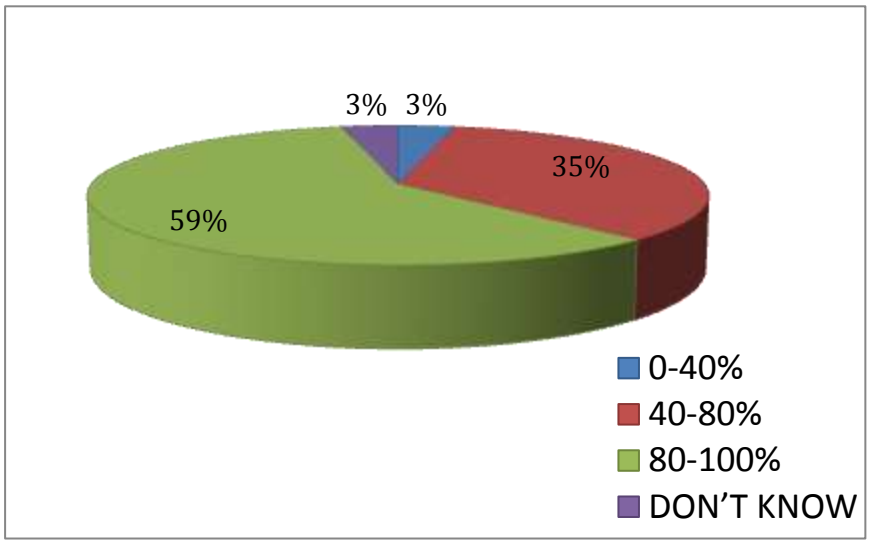


86 PERCENT SAID THAT PRACTISING HAND HYGIENE CAN PREVENT HAI'S



69% PERCEIVE THAT HAND HYGIENE PRACTICES ARE FOLLOWED IN THEIR DEPARTMENT

HAND HYGIENE MANAGEMENT PRIORITIES



ACTUAL HAND HYGIENE PRACTICES OF HCW'S ACCORDING TO THEM

CONCLUSIONS

1. As data interpretation showed that 71% of overall response was correct that means still 29 % does not have appropriate and desired knowledge in spite of regular trainings on hand hygiene.
2. In spite of having knowledge about hand hygiene practices they are not following it because of their habits and mind set.

RECOMMENDATIONS

1. Senior managers of the respective departments should become a role model for all medical and paramedical staff. And should have strict rules and regulations towards practising hand hygiene.

2. Good role models are also important as a consultant who washes or rubs his/her hands when appropriate will encourage junior staff to follow this example; unfortunately, the reverse is true too.

3. Patient and patient family should be taught about hand hygiene so that they are aware and they are allowed to speak up when any doctor or nurse touches them without doing hand hygiene.

4. Other recommendations include providing HCWs with hand lotions or creams to minimize the occurrence of irritant contact dermatitis associated with hand hygiene action, whether it be hand washing or hand rubbing.

5. Some changes including securing the active participation for hand hygiene promotion at individual and institutional level, and administrative sanction or rewarding associated with hand hygiene behaviour.

6. Other indicators have been proposed to measure hand hygiene compliance and assess the possible impact of intervention. These include counting used paper hand towels, monitoring the amount of alcohol-based hand rub used or estimating the required amount using a computerized database of nursing activities.

7. Skin irritation constitutes an important barrier to appropriate compliance. Because soaps and detergents can damage skin when applied on a regular basis. Lack of knowledge and education on this topic is a key barrier to motivation. Emollients and hand lotions help to protect skin and may reduce microbial shedding.

PROJECT REPORT 3

TIME MOTION STUDY IN RADIOLOGY DEPARTMENT

INTRODUCTION

Increased focus is being placed on the quality of care provided by Hospital Healthcare Systems around the country. Caught in the middle between tightening government standards, stricter compliance guidelines for insurance companies, and the basic mission to serve those in need with quality and compassion; hospitals are looking for ways to improve their processes (services) for the benefit of all.

CT (Computed Tomography) and MRI (Magnetic Resonance Imaging) services in the hospital radiology departments are revenue-generating areas. The reimbursement rates for these services are very high, the scan times (especially in CT) are relatively low, and so the potential for additional revenue to the hospital comes with increasing patient capacity for these services.

However, it is also a very competitive time for hospital radiology departments as many outpatient diagnostic centres are being built, drawing patients and physicians to their fast, efficient, no hassles approach to imaging. This brings additional hurdles to the already struggling hospitals. The diversity of inputs and range of services provided makes the radiology department a very complex system to run. One of the hallmarks of a well managed radiology department is the short length of time patients spend before accessing a radiology service. Previous studies on the factors that affect patient's satisfaction with health care services show that they are patient centred, and include the time spent with the health care provider, willingness of the physician to listen to the patient, and expectations for treatment. Lengthy patient waiting times have been fingered as the major cause of dissatisfaction with health care services.

The radiology department under study provides several radiological services like Accident and Emergency Radiology, Conventional and Special radiological examinations, Computed Tomography examinations, Mammography examinations, MRI and Ultrasonography. The objective of this study was to find out the average length of time a patient spends from reporting to the department to the time he/she leaves, and identify how the steps in patient registration contribute.

REVIEW OF LITERATURE

"Despite of all the challenges of the broken system, there are hospitals that are figuring out a way to create patient-centered culture—they're doing it…And it's the little things that they put into place that actually impact the patient's experience. But when you take them all together they begin to change the culture. And even though they may not have a huge impact on the macro system, in that hospital and for those patients, they are making a difference."

(Dr. Susan Frampton, Planetree)

Background

Hospitals understand where their revenue generating areas are. In most cases, these areas are surgery (especially Orthopaedic), Cardiology/Cardiovascular, and Radiology. These areas are utilized to offset the losses incurred within other areas in the hospital to meet bottom line revenue goals. They have taken a serious look at the Weaknesses of the hospital model, turned them into Opportunities for their business, and focused efforts into making them the Strengths within their business model (SWOT/TOWS analysis). In radiology specifically, the outpatient diagnostic centres have listened to the Voice of the Customer (VOC) and made dramatic improvements in the areas Critical to Quality (CTQ). They also understand that their customers (physicians and patients) have choices for where they receive service and so they have a strong marketing presence to promote their facilities, services, and improvements over traditional hospital processes. Radiology is a major source of revenue generation within healthcare. Insuring the referral base for a specific radiology department and service area is an important component to providing a consistent revenue stream for a healthcare facility. The important components to maintaining the referral base include:

1) Timely patient scheduling

2) Timely reporting of results to physicians

3) Providing an expected level of technology

The leading MRI producers are GE (Signa brand), Siemens (Magnetom), Philips (Achieva, Intera and Panorama), Hitachi (Aaltaire, Airis) and Toshiba (Vantage, Opart, Ultra). Products range from Low Field systems (<0.5T) through Mid Field (0.5-1T) High Field (usually 1.5T) to Very High Field (usually 3T.Currently the greatest demand for MRI procedures in the US is for Brain, Head and Neck scans with spine and extremity scans running a close second. The following chart shows a breakdown of procedure types in the years 2010 and 2007.

MRI PROCEDURE TYPE	2010		2007	
	PROCEDURE NUMBERS (MILLIONS)	% OF ALL PROCEDURES	PROCEDURE NUMBERS (MILLIONS)	% OF ALL PROCEDURES
Spine	7.5	25%	7.1	27%
Brain Head and Neck	8.7	29%	8.5	32%
Extremity	7.3	24%	5.3	20%
Vascular (MRA)	2.3	8%	2.4	9%
Pelvic & Abdominal	2	7%	1.9	7%
Breast	1.1	4%	0.5	2%
Chest, other cardiac	1.1	4%	0.8	3%
Other (inc interventional)	0.2	1%	0.2	1%
Total	30.2		26.7	

The spectrum of clinical MR examinations has hardly changed during the last decade. Brain and spine studies make up more than 50% of all studies, breast, heart and interventional studies less than 5%. fMRI (functional brain MRI) and other sophisticated examinations add up to less than 1% of all clinical MR studies.

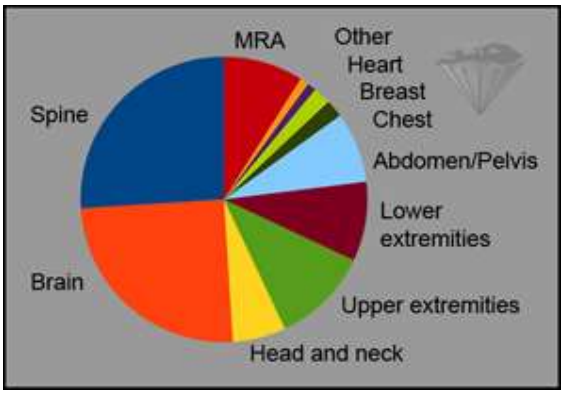
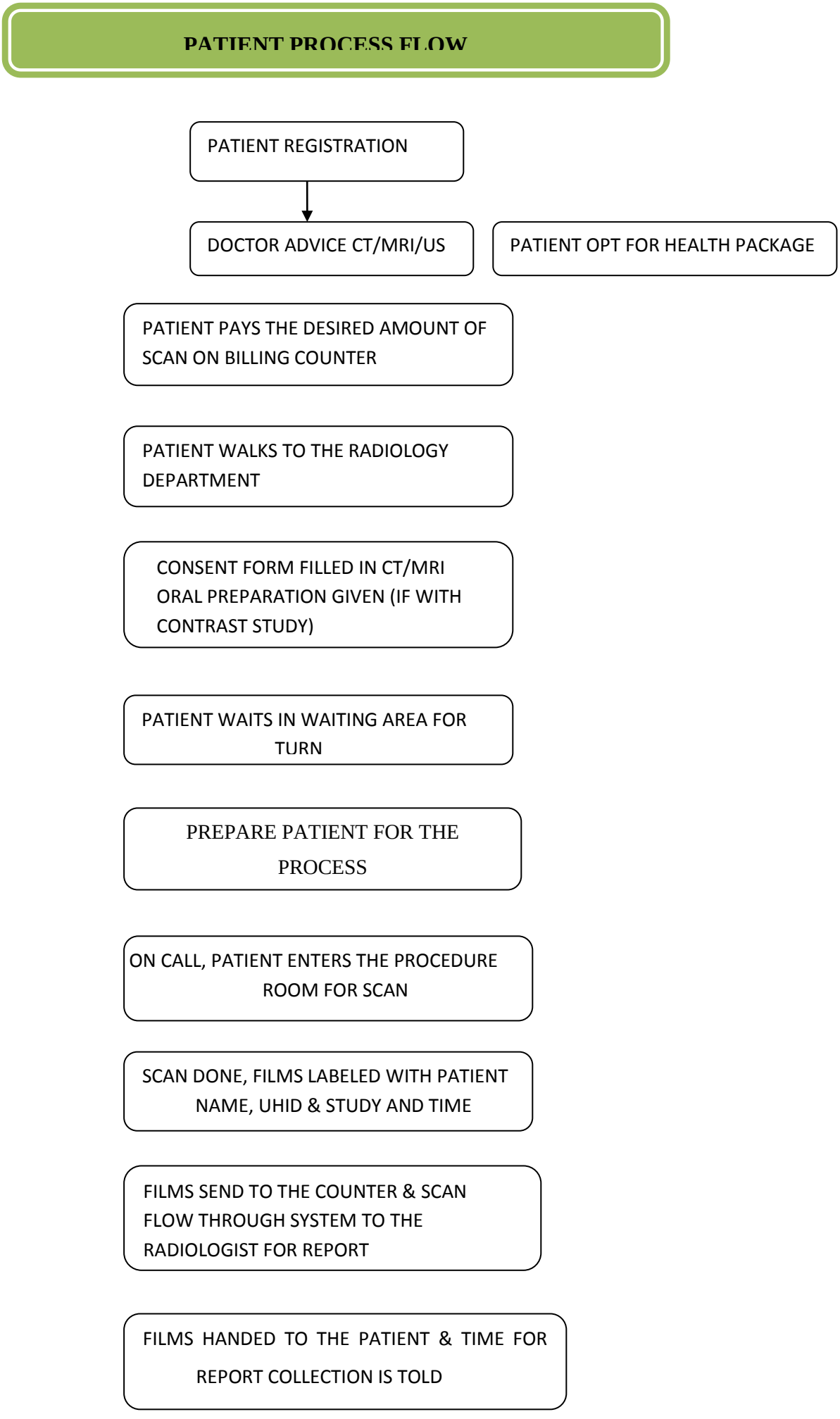


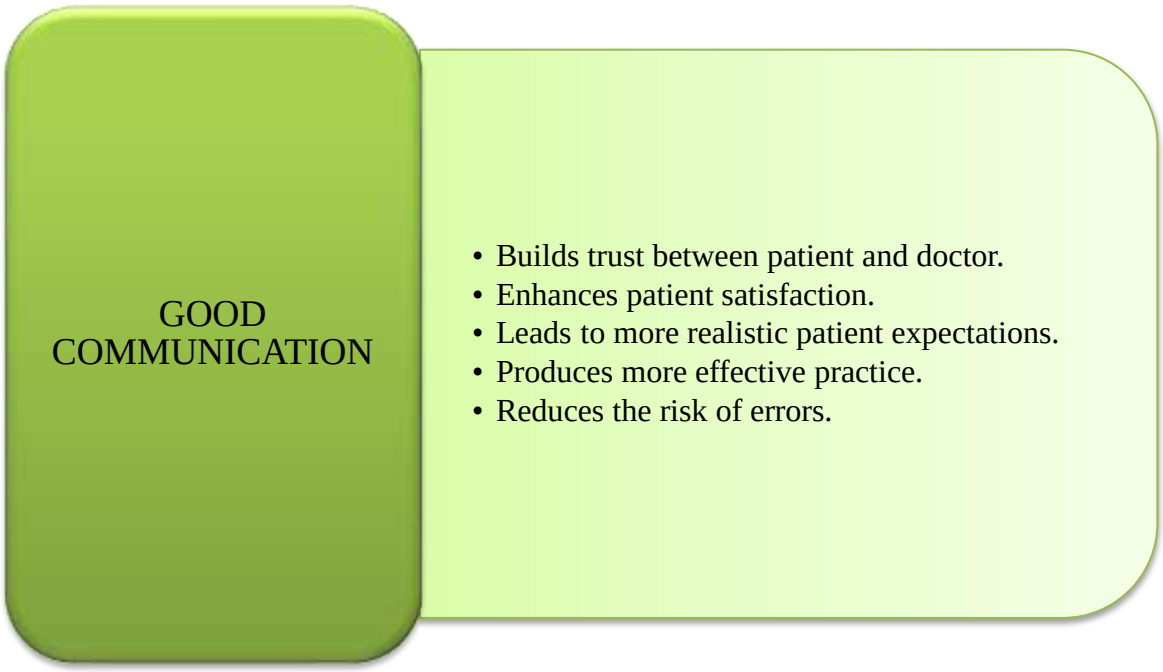
Figure 21-01:
MR examinations in percent (2010): Spine 26%; brain 25%; head and neck 6%; upper extremities 11%; lower extremities 9%; abdomen and pelvis 8%; chest 2%; breast (MRM) 2%; cardiac 1%; angiography (MRA) 9%; other ≤ 1%.
Source: EMRF estimates 2012/2013.

The biggest markets are still the United States of America with some 46% of worldwide sales followed by Europe which buys approximately one quarter of all units, and Japan with 15%.

PATIENT PROCESS FLOW



The Benefits of Streamlining the process flow



RESEARCH METHODOLOGY

AIM:

To study the average waiting hours of CT ,MRI and Ultrasound Department.

OBJECTIVES OF THE STUDY:

The objectives of the study are as follows:

1. To study the process flow of radiology department.
2. To assess the average waiting time from the arrival in the department to get the process done and further report collection.
3. To give recommendations to reduce the waiting time.

RESEARCH METHODOLOGY:

Research Design: A prospective analytical design

Sample Size: CT-100 patients, MRI-80 patients , USG -240 Patients

Sampling Units: All the OPD patients in CT/MRI department in FORTIS HOSPITAL, MOHALI

DATA COLLECTION

Primary Data:

The primary data regarding various time variables was collected for 2 weeks. It includes recording the time of billing, arrival in the department, in and out process time, report time. The responses for each OPD/IPD patients was taken and recorded accordingly for each parameter. The filled up information was later analyzed to obtain the required interpretation and the findings.

Secondary Data:

In order to have a proper understanding of effective process flow, data was also collected from the official system (FOS and IT data) and staff of Fortis Hospital Mohali.

What is TAT (turnaround time):

TAT for the process is the time when patient arrives in the department till the time patient enters the procedure room.

TAT for the report is the time taken for the execution of reports after the completion of procedure.

According to Fortis Hospital Mohali: TAT (Turn around Time) for CT/MRI is:

TURN AROUND TIME		
	PROCESS	REPORTS
CT	30 MINS	4 HR
MRI	1 HR	4 HR
USG	15 -30 MINS	15 HR

SAMPLING PLAN:

The survey was conducted in FORTIS HOSPITAL, MOHALI, a tertiary care super specialty hospital for the period of 1week.

The survey took place in reception & waiting area of CT/MRI department to collect the data regarding various time variables associated with the patient movement from arrival in the department to process completion.

DATA COLLECTION TOOL:

Data was collected through a structured time variable data format. (Annexure: Table 3)

GRAPHICAL TOOLS USED:

- Pie Charts, Bar graphs

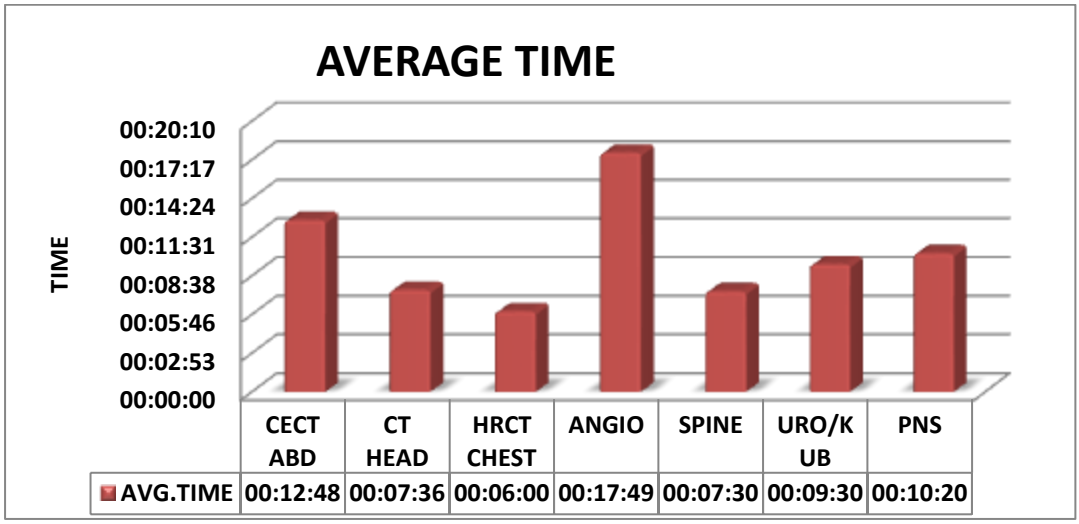
LIMITATIONS OF THE STUDY:

1. The survey is based on personal observations combined with data from system of hospital, so there may be chances of variation to small extend.
2. The study is mainly done for OPD patients.
3. Study was limited to waiting & reception area, and not in scan area. So internal system and scan findings remain unnoticed.

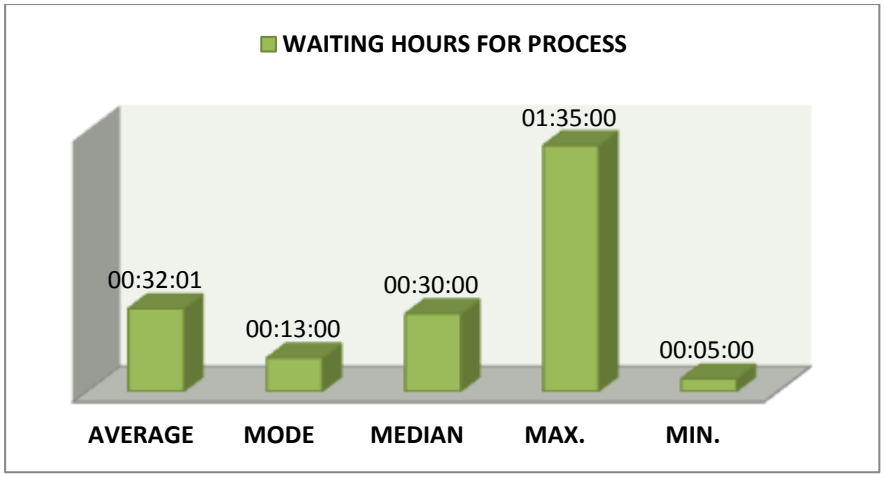
DATA ANALYSIS & INTERPRETATION

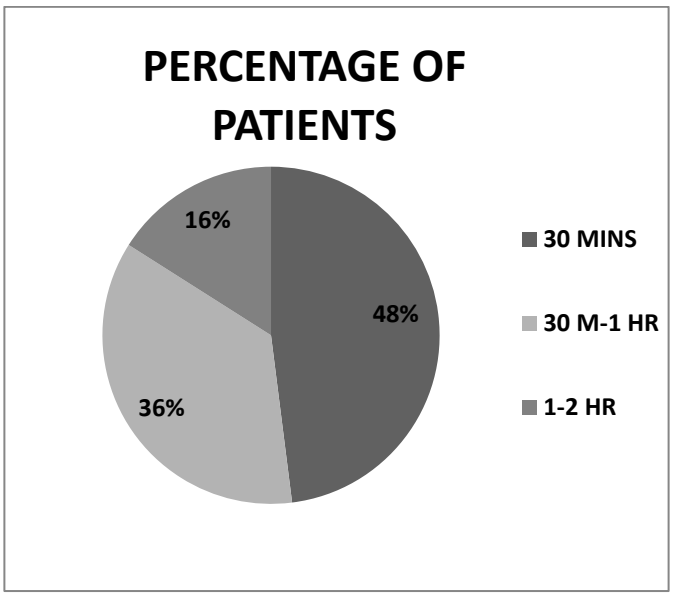
❖ CT – DATA

1. TIME FOR THE PROCESS TO BE DONE i.e. time when the patient enters for scan and came out of the scan room, depending upon type of process.



2. WAITING HOURS FOR THE PROCESS i.e. time when the patient arrives to the department to the time he/she enters the scan room.

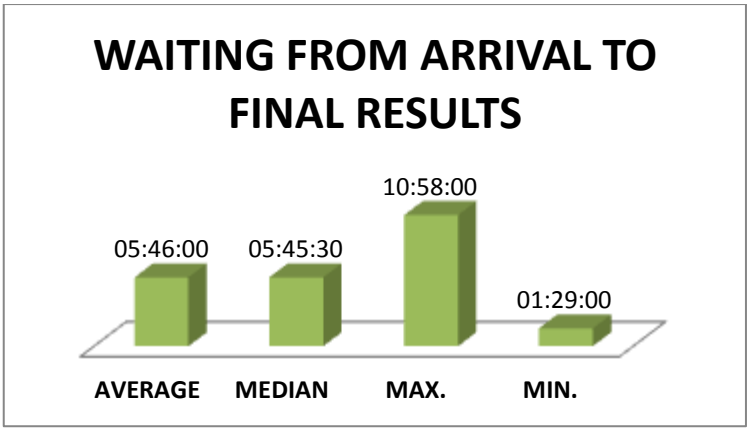


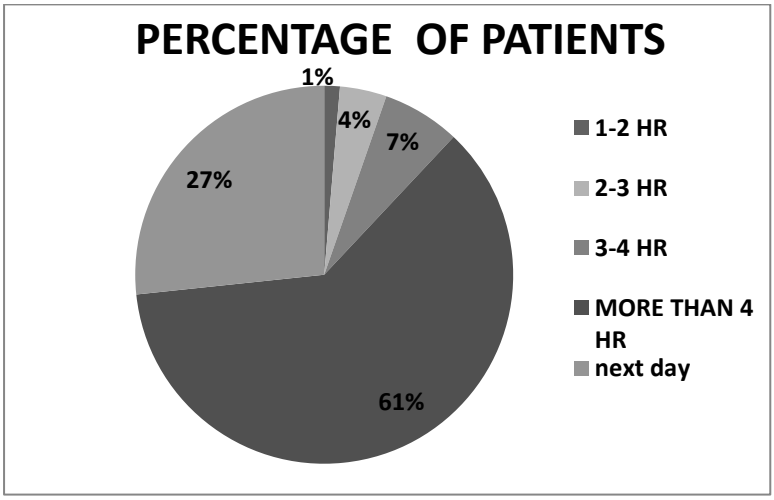


WAITING HOURS FOR PROCESS	NUMBER OF PATIENTS	PERCENTAGE OF PATIENTS
30 MINS	36	48
30 M-1 HR	27	36
1-2 HR	12	16

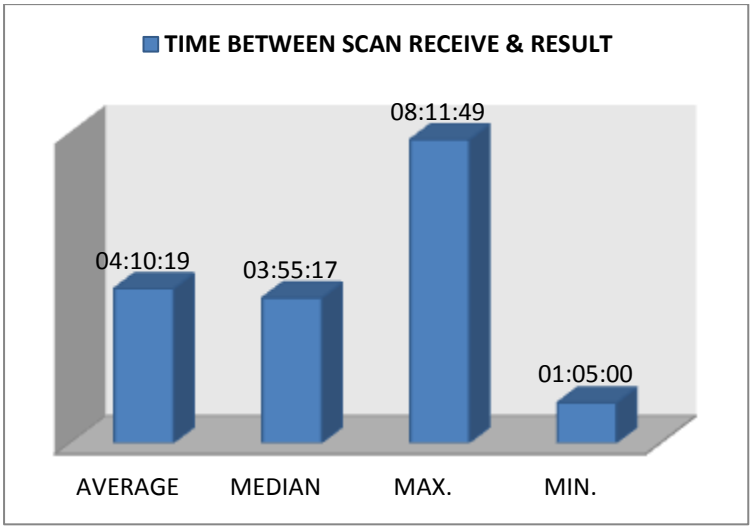
3. <u>WAITING FROM THE ARRIVAL IN THE DEPARTMENT TO FINAL REPORT</u> i.e. time when the patient arrives to the department to the time the result is validated.

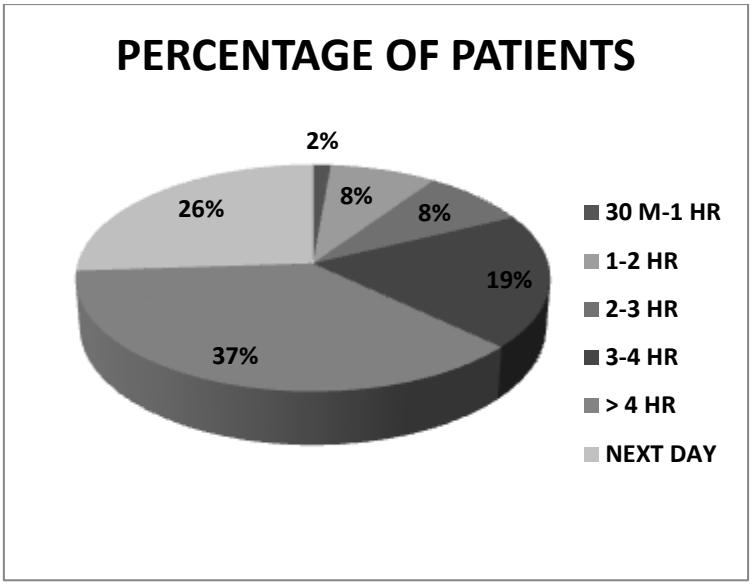
WAITING FROM ARRIVAL TO FINAL RESULTS (T10-T2)	NO. OF PATIENTS
1-2 HR	1
2-3 HR	3
3-4 HR	5
> 4 HR	46
next day	20





4. TIME BETWEEN SCAN RECEIVE & THE RESULT i.e. time when the scan is received by the system to the time result is validated.



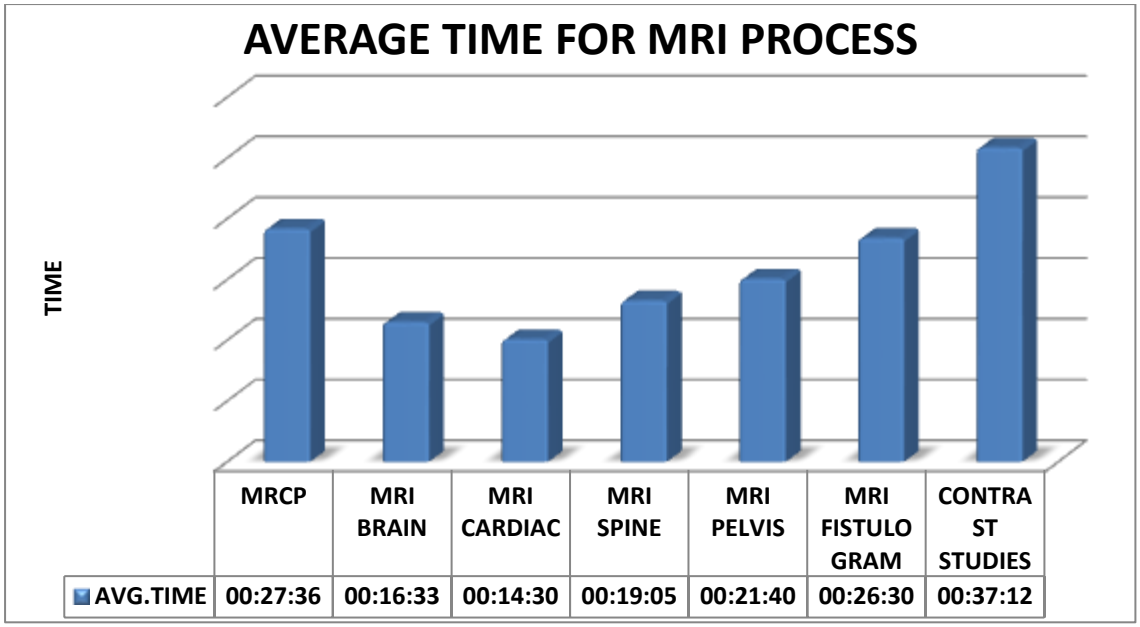


RESULT: About 19% patients get result within 3-4 hrs of scan receive.

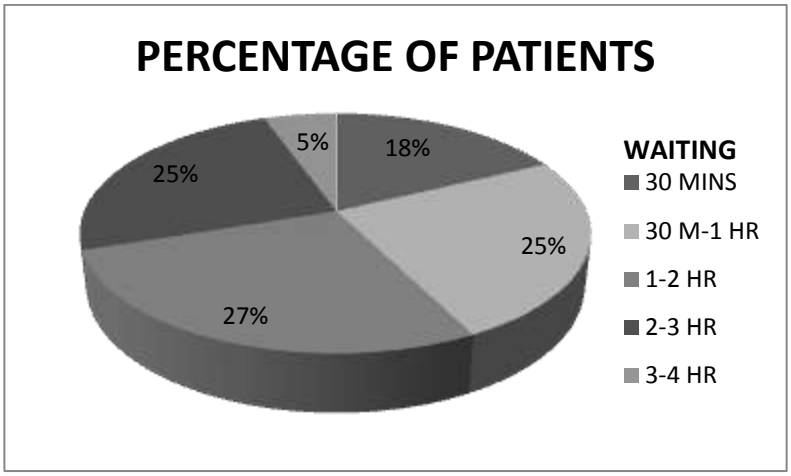
37% Results take more than 4 hrs after scan receive.

❖ MRI – DATA

1. TIME FOR THE PROCESS TO BE DONE i.e. time when the patient enters for scan and came out of the scan room, depending upon type of process.



2. <u>WAITING HOURS FOR THE PROCESS</u> i.e. time when the patient arrives to the department to the time he/she enters the scan room.

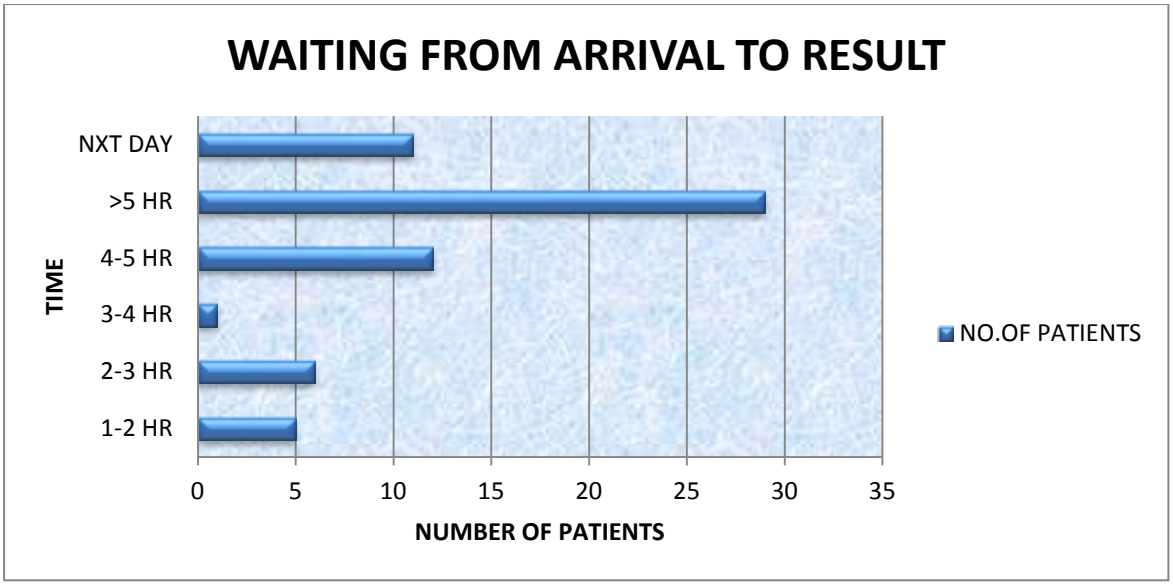


WAITING HOURS FOR PROCESS	NO.OF PATIENTS
30 MINS	13
30 M-1 HR	18
1-2 HR	20
2-3 HR	18
3-4 HR	4

RESULTS:

- Average waiting hours = 1:25:23
- 50% patients have to wait more than 1 hr for the scan.

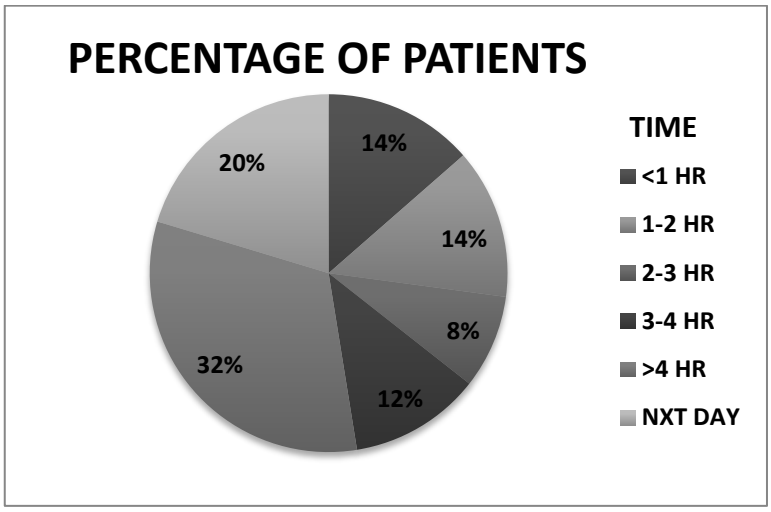
3. <u>WAITING FROM THE ARRIVAL IN THE DEPARTMENT TO FINAL REPORT</u> i.e. time when the patient arrives to the department to the time the result is validated.



RESULT:

- Average waiting for report is 5hr 20 mins.
- 45% patients get result in more than 5 hrs from their arrival in the department.

4. TIME BETWEEN SCAN RECEIVE & THE RESULT i.e. time when the scan is received by the system to the time result is validated.



RESULT: About 28% patients get result in less than 2 hrs of scan receive.

RECOMMENDATIONS

IMMEDIATE:

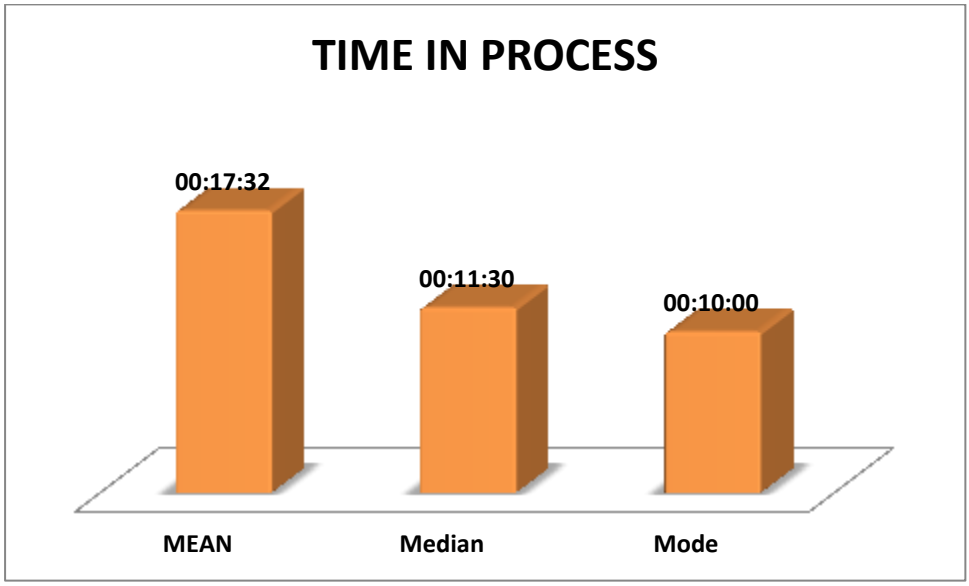
- ✓ In cases if possible, email the reports to patient or doctor in case of delay so that patient need not have to come again and again asking for same thing.

IN FUTURE:

- ✓ Communication: When patient arrives for the process it is necessary that he should be well informed about the process. This can make the process easier for the patient and will also reduce the rush.
- ✓ A separate counter can be there for report collection in front of reporting room so that patients asking for report can be guided better.
- ✓ In future, waiting area of CT/MRI can be extended to accommodate the patient demand.
- ✓ In case of MRI, if possible department can be made 24 hrs open with night shift which can take the load of IPD/ Emergency patients so that they need not have to be adjusted in busy

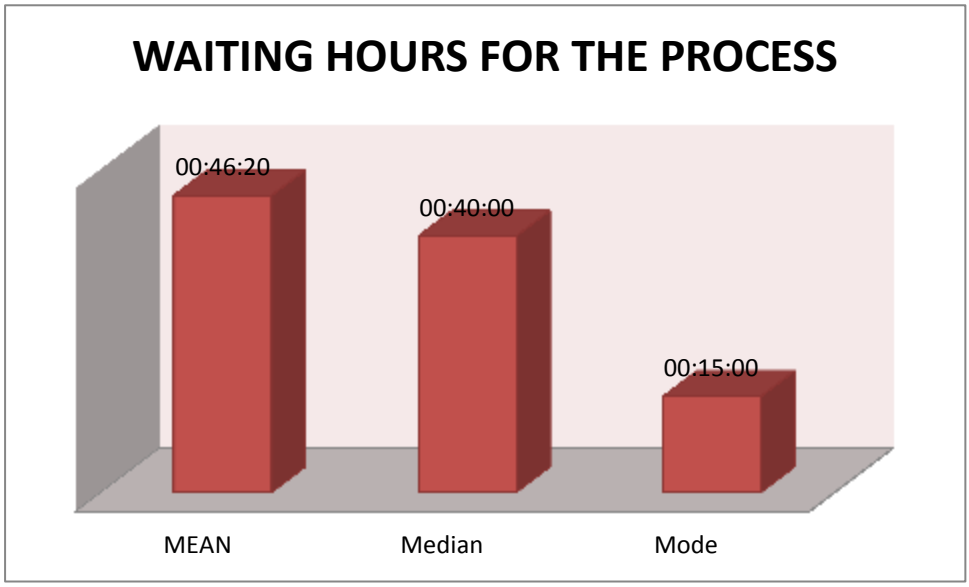
❖ USG – DATA

1. TIME FOR THE PROCESS TO BE DONE i.e. time when the patient enters for scan and came out of the scan room.



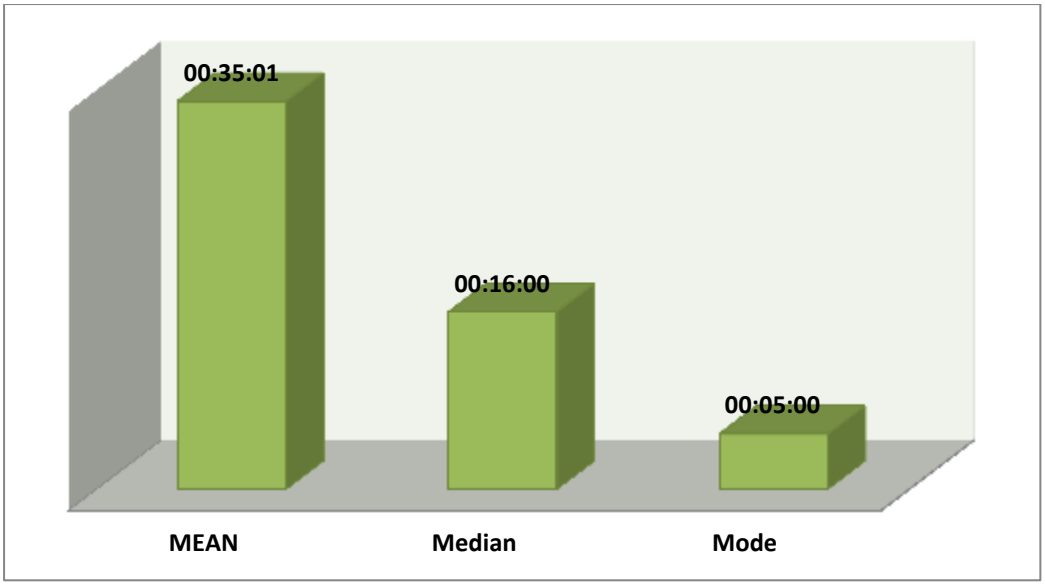
RESULT-Mean time taken for all procedures is 17 minutes**.**

2. WAITING HOURS FOR THE PROCESS i.e. time when the patient arrives to the department to the time he/she enters the scan room**.**

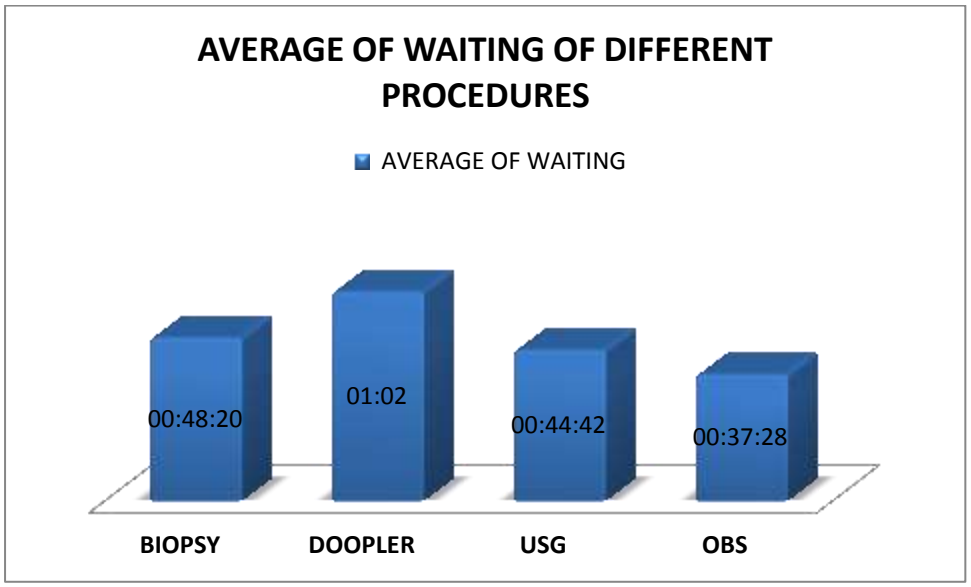


3.

WAITING FOR RECEIVING FINAL REPORT i.e. time when the patient comes out of procedure room to the time the result is validated.

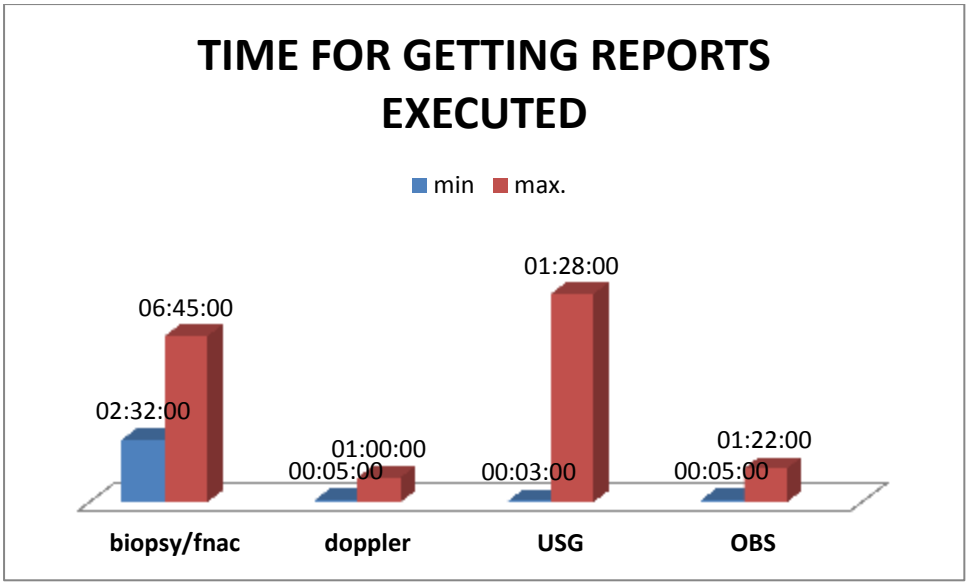


4. AVERAGE OF WAITING TIME FOR ALL PROCEDURES-



RESULT- As observed from data that average waiting time is highest for Doppler followed by biopsy due to multiple reasons.

6. OUT FROM PROCEDURE ROOM TIME TO REPORT EXECUTION TIME –



Report execution time is highest for biopsy and minimum is for ultrasound.

RECOMMENDATIONS

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- ✓ Doppler waiting is a big concern for department – So patients who have to undergo Doppler should be called on certain time frame when functioning of department is smooth .
- ✓ As it is observed only some doctors perform Doppler in their absence problem occurs so patient have to wait for doctor to get free from other procedure . So manpower should be arranged accordingly.
- ✓ Patient who have to undergo OBS or LEVEL 2 should be called on that time slot when rush of patients is less to maintain smooth patient flow.
- ✓ E mail or text messages can be done to inform patients earlier about their appointments.
- ✓ As ultrasound is not working in night hours except for emergency cases all IPD load comes in morning which disturbs OPD flow. So ultrasound at night time should be arranged for some time span to avoid morning rush.
- ✓ As observed only 3 rooms are working instead of 4 and Doppler machine are 2 in department but only one is functioning so it should be kept in working state along with man power required should be arranged this will reduce Doppler waiting.

ANNEXURE 1:

QUESTIONNNARE

1.Do you know anything about CLABSI?

a. YES
b. NO

2.What is the full form of following?

a. CLABSI-
b. HAI-
c. BSI-

3.Do you think control and prevention of CLABSI is a priority?

a. Strongly agree
b. Agree
c. Disagree
d. Strongly disagree

4. All of the following factors increase the risk of CLABSI except

a. Low Nurse to Patient ratio
b.Insertion to femoral site
c.TPN or Lipid administrations
d.use of tunnelled orimplantable central VAD for patients requiring long term access greater than 30 days
e.Multiple lumen catheter
f. all of above

5.Central line insertion should be dressed

a.after sterile barriers are removed
b.while the field is still sterile
c.As soon as insertion site has stopped bleeding or oozing
d.After an X-ray has verified correct placement of catheter

6.What are the symptoms of CLABSI?

a. Fever and chills
b. Red skin
c. Oozing from central line site
d. All of above

7. Do you have any cart or kit to ensure items used for bundle care?

a. YES

b. NO

8.What are the moments of using hand rub /wash?

9. During Central line insertion according to you what should we use for hand hygiene?

a.Handrub

b.Soap and water

c.Povidine solution

d.Betadine scrub

10. What is most important step for prevention of CLABSI while giving central line care?

a.Mouth care

b.Scrub the hub

c.clave connectors

d.Needle less syringes

11.Central line should be changed

a.5 days

b.acc to clinical indications

c.7 days

d. 10 days

12.Contact time of skin antiseptic solution after applying

a.10 seconds

b.15-30 seconds

c.2 minutes

d.immediately

13.Tegadram is used for

a.binding the line

b.for observing any oozing or pus formation

c.covering the skin

d.None of above

14.Do you think central line checklist is necessary while inserting central line?

a.yes

b.No

15.Infection related to CLABSI can increase

a.Morbidity

b.Mortality

c. Increased hospital length of stay

d.costs

e.all of above

16.What type of dressing is used to cover the insertion site if the patient is sweating?

a.Transparent

b.Gauze and tape

c.any other (specify)

17. CLABSI prevention bundle care involves?

a. Chlorhexidine for skin antisepsis

b. Hand hygiene practices

c.Maximal sterile barrier precautions

d.All of above

18. Skin preparation for central line insertion and central line care is done by?

a.2 per cent chlorhexidine tincture

b. 4 per centChlorhexidine solution

c.70 per cent alcohol

d. 7.5 per cent Povidine iodine

19. Which site is preferable for inserting central line

a. Femoral vein

b. Jugular vein

c. Subclavian vein

d. None of above

20.Time interval for scrubbing hands with hand rub should be

a.10 seconds

b.20-30 seconds

c.2 minutes

d.45 seconds

21. When attempting to diagnose a CLABSI , two sets of blood sample should be drawn for culture . the proper sites to culture are

a. one from catheter hub, the other from a peripheral source

b. Two from different peripheral source

c.Both from a catheter hub

d. none of above

22. When inserting a central VAD, maximal sterile barriers are required. This includes:

1. facemask,cap and sterile gloves

2.sterile gown that is snapped and tied

3. assistants wearing the same barriers

4. use of fenestrated drape in kit only

5. use of large sterile drape that covers the entire patient

a. 1,2,3,4
b. 1,2,4
c. 1,2,3,5
d. 1,2,5
e. All of above

ANNEXURE 2

QUESTIONNNARE

Hand Hygiene Knowledge Questionnaire for Health-Care Workers

1. **Did you receive formal training in hand hygiene in the last three years?**
   ☐ Yes ☐ No

2. **Do you routinely use an alcohol-based handrub for hand hygiene and Do you practice hand hygiene moments?** ☐ Yes ☐ No

3. **Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a health-care facility? (*tick one answer only*)**

   a. ☐ Health-care workers' hands when not clean
   b. ☐ Air circulating in the hospital
   c. ☐ Patients' exposure to colonised surfaces (i.e., beds, chairs, tables, floors)
   d. ☐ Sharing non-invasive objects (i.e., stethoscopes, pressure cuffs, etc.) between patients

4. **What is the most frequent source of germs responsible for health care-associated infections?**
   (tick one answer only)

   a. ☐ The hospital's water system
   b. ☐ The hospital air
   c. ☐ Germs already present on or within the patient
   d. ☐ The hospital environment (surfaces)

5. **Which of the following hand hygiene actions prevents transmission of germs *to the patient*?**

a.	Before touching a patient	☐ Yes	☐ No
b.	Immediately after a risk of body fluid exposure	☐ Yes	☐ No
c.	After exposure to the immediate surroundings of a patient	☐ Yes	☐ No
d.	Immediately before a clean/aseptic procedure	☐ Yes	☐ No

6. **Which of the following hand hygiene actions prevents transmission of germs *to the health-care worker*?**

a.	After touching a patient	☐ Yes	☐ No

b. Immediately after a risk of body fluid exposure ☐ Yes ☐ No

c. Immediately before a clean/aseptic procedure ☐ Yes ☐ No

d. After exposure to the immediate surroundings of a patient ☐ Yes ☐ No

7. Which of the following statements on alcohol-based handrub and handwashing with soap and water are true?

a. Handrubbing is more rapid for hand cleansing than handwashing ☐ True ☐ False

b. Handrubbing causes skin dryness more than handwashing ☐ True ☐ False

c. Handrubbing is more effective against germs than handwashing ☐ True ☐ False

d. Handwashing and handrubbing are recommended to be performed in sequence ☐ True ☐ False

8. What is the minimal time needed for alcohol-based handrub to kill most germs on your hands?
(tick one answer only)

a. ☐ 20 seconds
b. ☐ 3 seconds
c. ☐ 1 minute
d. ☐ 10 seconds

9. Which type of hand hygiene method is required in the following situations?

a. Before palpation of the abdomen ☐ Rubbing ☐ Washing ☐ None

b. Before giving an injection ☐ Rubbing ☐ Washing ☐ None

c. After emptying a bedpan ☐ Rubbing ☐ Washing ☐ None

d. After removing examination gloves ☐ Rubbing ☐ Washing ☐ None

e. After making a patient's bed ☐ Rubbing ☐ Washing ☐ None

f. After visible exposure to blood ☐ Rubbing ☐ Washing ☐ None

10. Which of the following should be avoided, as associated with increased likelihood of colonisation of hands with harmful germs?

a. Wearing jewellery ☐ Yes ☐ No
b. Damaged skin ☐ Yes ☐ No
c. Artificial fingernails ☐ Yes ☐ No
d. Regular use of a hand cream ☐ Yes ☐ No

11 .In which of the following situations should hand hygiene be performed?

a. Before having direct contact with a patient

b. Before inserting an invasive device (e.g., intravascular catheter, foley catheter)

c. When moving from a contaminated body to a clean body site during episode of patient care

d. After having direct contact with a patient or with items in the immediate vicinity of the patient

e. After removing gloves

1. B and E

2. A, B and D

3. B, D and E

4. All of the above

12. If hands are not visibly soiled or visibly contaminated with blood or other proteinaceous material, which of the following regimens is the most effective for reducing the number of pathogenic bacteria on the hands of personnel?

a. Washing hands with plain soap and water

b. Washing hands with an antimicrobial soap and water

c. Applying 1.5 ml to 3 ml of alcohol-based hand rub to the hands and rubbing hands together until they feel dry

13. How are antibiotic-resistant pathogens most frequently spread from one patient to another in health care settings

a. Airborne spread resulting from patients coughing or sneezing

b. Patients coming in contact with contaminated equipment

c. From one patient to another via the contaminated hands of clinical staff

d. Poor environmental maintenance

14. Which of the following infections can be potentially transmitted from patients to clinical staff if appropriate glove use and hand hygiene are not performed

a. Herpes simplex virus infection

b. Colonization or infection with methicillin-resistant *Staphylococcus aureus*

c. Respiratory syncytial virus infection

d. Hepatitis B virus infection

e. All of the above

15. Which of the following pathogens readily survive in the environment of the patient for days to weeks?

a. *E. coli*

b. *Klebsiella spp.*

c. *Clostridium difficile* (the cause of antibiotic-associated diarrhea)

d. Methicillin-resistant *Staphyloccus aureus* (MRSA)

e. Vancomycin-resistant enterococcus (VRE)

1. A and D

2. A and B

3. C, D, E

4. All of the above

Thank you very much for your time!

ANNEXURE 3

DATA SHEET

Sr. No.	PROCEDURE	PATIENT NAME	TYPE OF PATIENT	UHID	BILLING TIME (T1)	ARRIVAL TIME IN THE DEPTT. (T2)	IN TIME (T3)	OUT TIME (T4)	REPORT EXECUTION TIME (T5)	REPORT HAND OVER TIME(T6)	T3-T2	T4-T3	T5-T4