

Summer Training at



**Max Hospital, Saket (New Delhi)
(April 08, 2013 to June 07, 2013)**

- 1. Market Analysis and proposal for introduction of Diabetes Helpline**
- 2. Standardization of Insulin Sliding Scale for Critically ill Patients**
- 3. Patient Safety Audits**

**By
Vandana Sharma**

**Under the guidance of
Dr. Ashok Kaushik**

**Post Graduate Diploma in Hospital and Health Management
2012-2014**



**Institute of Health Management Research,
Jaipur
2013**

CERTIFICATE OF COMPLETION

This is to certify that

Dr. Vandana Sharma

has been associated as an

INTERN

with the department of

Quality

for a period of

08th April 2013 to 7th June 2013

at

**Max Super Speciality Hospital,
Saket, New Delhi**

"The Internship course is a Max certified course not
affiliated to any National/International society".


Head of the Department

DR. ARATI VERMA
Sr. VP, MEDICAL QUALITY


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Dean - Nursing, Allied Health, & Wellness Programs
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CERTIFICATE

This is to certify that Dr.Vandana Sharma, student of Post Graduate Diploma in Hospital and Health Management (PGDHM) from Institute of Health Management Research, Jaipur Batch 17th has undergone Summer Training at Max Healthcare Institute Ltd. Saket, New Delhi and has done following projects:

- Market analysis and proposal for introduction of Diabetes Helpline
- A study on standardization of insulin sliding scale for critically ill patients
- A study on cost of treatment of Diabetic patients
- Assisted in patient safety audits

The candidate has successfully carried out the mentioned studies assigned to her during summer training from 8th April 2013 to 8th June 2013 and her approach to study has been sincere, scientific and analytical.

I wish her success in all her future endeavor

Dr. Ashok Kaushik
Mentor and Dean, Academics and Student Affair
IIHMR, Jaipur

AKWOLEDGEMENT

It was indeed a great opportunity to pursue my 2 months of summer internship from such a well established hospital. I would like to express my gratitude to

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- Dr. Arati Verma, Vice-President, Medical Quality, Max Hospital and her team for giving me the opportunity to conduct patient safety audits not only in Max Saket but also in other Hubs.
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Dr. Vandana Sharma
IIHMR, Jaipur

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INTRODUCTION TO MAX HOSPITAL,SAKET



MAX AT A GALANCE

Caring for you... for life

Max Super Speciality Hospital is a part of Max India Limited which is a public limited company founded in 1985 by its current chairman, [Analjit Singh](#). Its major shareholders include Singh and the private equity firm [Warburg Pincus](#). Max Super Speciality Hospital under the name Max Healthcare commenced operations in 2001 with the intention to provide comprehensive and world-class healthcare services in India. Max Super Speciality Hospital is the country's first comprehensive provider of standardized, seamless and world-class healthcare services. It is committed to the highest standards of medical and service excellence, patient care, scientific and medical education. Max super specialty operates eight centers in Delhi & NCR, offering services in over 30 medical disciplines. Max Super Speciality Hospital has state of the art tertiary care facilities at Saket in South Delhi, secondary care hospitals at Pitampura, Patparganj, Gurgaon and Noida and an outpatient facility, the Max Med centre and a Specialty centre focused on Eye and Dental care at Panchsheel Park. Max Super Speciality Hospital is located in serene environment of South Delhi, 15 km away from New Delhi railway station and 12 km from domestic airport. It is also easily reachable from satellite town of NCT, Delhi.





- I. Max Healthcare is **ISO 9001:2000 & ISO 14001:2004** certified organization.
- II. Medical Quality Performance Standards Surpassed International Benchmarks in **Nosocomial infection**.
- III. India's first fellowship in Emergency Medicine Established in conjunction with **George Washington University**.
- IV. American Heart Association recognizes MHC as a training centre.
- V. **"Best Managed Healthcare Program"** awarded at the National level at Express Healthcare Excellence Award.
- VI. Max Institute of Minimal Access recognized as Centre of Excellence in APAC.
- VII. FICC Award for operational Excellence in Healthcare delivery. FICC Healthcare awards.
- VIII. NABH accreditation for Transfusion Medicine Department.
- IX. NABH accredited hospital.
- X. DL Shah National Awards on "Economics of Quality".

PROMOTER

Max super specialty hospital is a over 450 **bedded** super -specialty hospital in saket promoted by Max India Limited under the ownership of Padmabhushan **Mr. Analjit Singh**.

Max India limited include:

Max healthcare institute limited

Max BUPA health insurance Company limited

Max New York life insurance Company limited

Mr. Analjit Singh is .founder and chairman of Max India limited. A self made entrepreneur, Mr. Analjit Singh has been leading the charge of reinventing and restructuring the Max India group with a vision to be amongst the best admired group for service excellence.

The entire internship can be divided into 2 phases:-

- i) Observational learning
- ii) Learning through Projects

I) OBSERVATIONAL LEARNING

The Max Hospital works as a system and offers wide variety of services. During my 2 months of internship I was given the opportunity to visit some of the departments and understand their functioning. The services and departments being discussed under can be classified as:

Clinical and Nursing Services	Supportive Services	Utility Services	Administrative Services
Outpatient Department (OPD)	Laboratory Services	Laundry and Linen	Front office
Indoor Patient department (IPD)	Blood Bank	Food and beverages	Marketing
Accident and Emergency Services	Radiology	House Keeping	Material management
Intensive Care Unit (ICU)	Pharmacy	Security	Human Resource(HR)
Operation Theatre (OT)	CSSD	Engineering Services	
Nursing Services	Medical Records Department	Dietetics	
Endoscopy	Physiotherapy and Rehabilitation	Bio Medical Engineering	
		IT	

Observational Learning in Different Departments:

OPD

Every specialty has a decentralized OPD. New patients need to get themselves registered by paying a sum of Rs.100. The registration is done only once and is then valid for lifetime. Registration is done for patient identification by issuing a unique Id and easy retrieval of patient records.

IPD

IPD rooms are available on 2nd, 3rd, 4th and 5th floor of east wing and 2nd, 3rd, 4th, 5th and 6th floor of west wing. There are 5 types of in-patient rooms available depending on patient's choice of stay. The types of rooms are:

- Economy: One room has 4 beds and 2 washrooms
- Twin sharing: 2 patients share one room and there is one washroom
- Single
- Suite
- Deluxe

4th floor of east wing has 2 reverse barrier nursing rooms with positive pressure for immune-compromised patients. Also every nursing station has its own crash cart for emergency purposes.

To prevent medication errors Bar coded medication administration (BCMA) software is used. The software ensures 5 rights of administration which are Right patient, right drug, right dose, right time and right documentation.

Also to ensure easy identification of vulnerable patient the patient file is of green color with a violet sticker on it. Also the door of the patient's room had a red color sticker.

EMERGENCY

25 bedded Emergency comprises of Observational area and Resuscitation area and 1 Resuscitation room. Since Cardiology is a major specialty hence the Emergency is directly connected to ACC (Apex Coronary Care) ICU.

STAFF: 2 Senior Doctors, 4 PG Doctors, 6-8 Nurses and 5-6 GDA's

AMBULATORY SERVICES: All the Hubs of PAN MAX are planning to have a centralized ambulatory service centre which promises to provide an ambulance within 30min of call for request in the NCR region. There are 2 types of ambulances ACLS and BLS. Max Saket has 2 ACLS Ambulances and 5 BLS Ambulances.

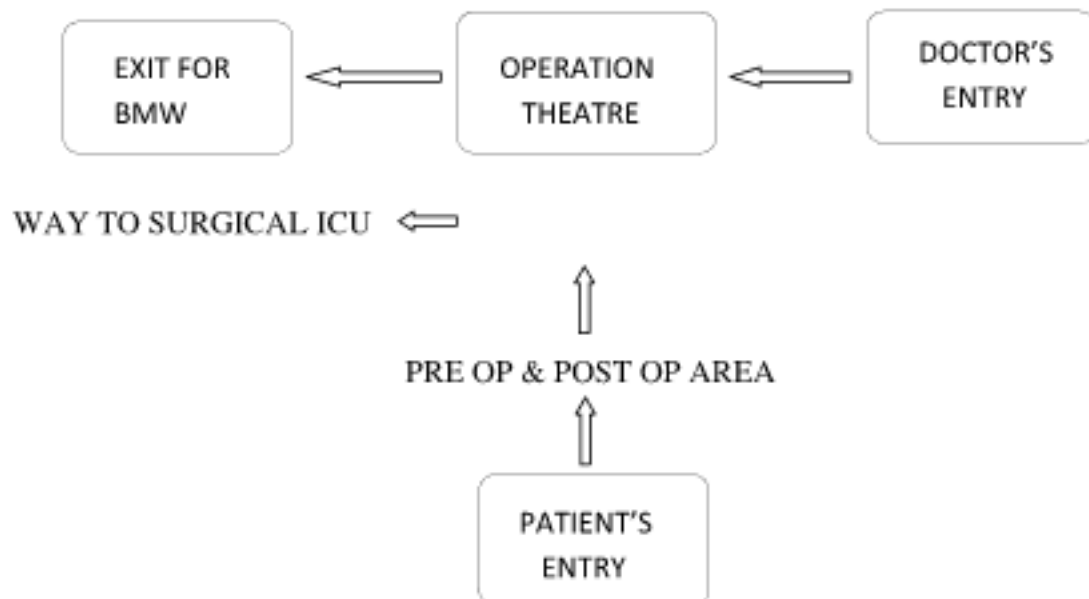
The health condition of the patient is enquired over the phone and depending upon the severity the required ambulance is sent. In case the requirement is within the NCR region, the

ambulance leaves within 5min of receiving call but in case of an outstation requirement, the ambulance leaves within an hour.

OPERATION THEATRE

There are 20 Operation Theatres in Max, Saket. West Block comprises of 10OT complex which has 7OTs on 1st Floor and 1 Labour OT on 3rd Floor. East Block has 12 OTs. West Block OT caters to the specialities like Neurology, Orthopaedics, Paediatrics, Urology, Laproscopy, Gyanaecology, Eye and ENT. East Block OTs caters to the specialities like Cardiology, Minimal Access Metabolic Bariatric Surgery, Plastic Surgery and Oncology. For neurology there is a special OT Brain Suite with Installed MRI Machine.

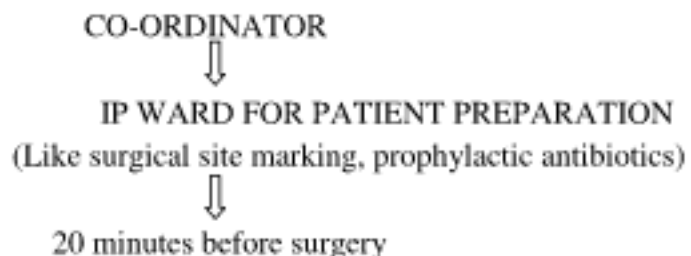
OT LAYOUT:

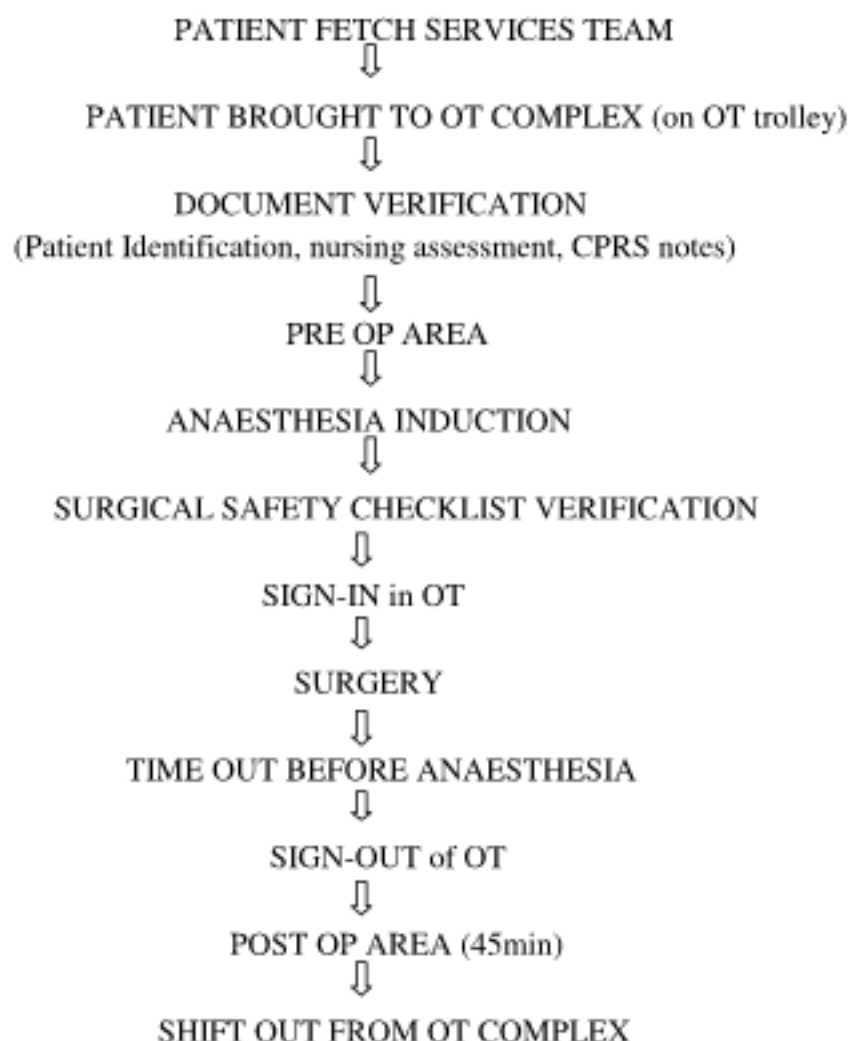


Process flow for Planned Surgery:



On the day of surgery:





Disinfection of OT:

- In between 2 cases (20 minutes)
- End of Day
- Weekly
- 6 Months
- Annually

Culture Swabs are collected weekly to keep a check on OT sterilisation.

There is also a BONE BANK and a Mini Pantry within the OT Complex.

Instrument sterilization: After surgery, preliminary washing of instruments is done by nurses and the instruments are sent to CSSD. Sterile instruments are supplied from CSSD to Sterilization room in OT complex. There is also 1 TSSU (Theatre sterile supply unit) which has 2 autoclaves and in case of emergency sterilization is done in there.

Material management: The OT Complex has an individual material store for OT consumables.

Training – conducted weekly for nursing staff, GDAs.

INTENSIVE CARE UNIT

There are 99 beds for ICU in East and South wing and 77 beds in West wing. Every ICU is specialized like CTVS Adult-17 beds, ACC-16 beds, CTVS pediatric- 9beds, Medical ICU, Surgical ICU, Oncology Medical ICU and Surgical ICU, Respiratory ICU, Pediatric ICU, Neonatal ICU.

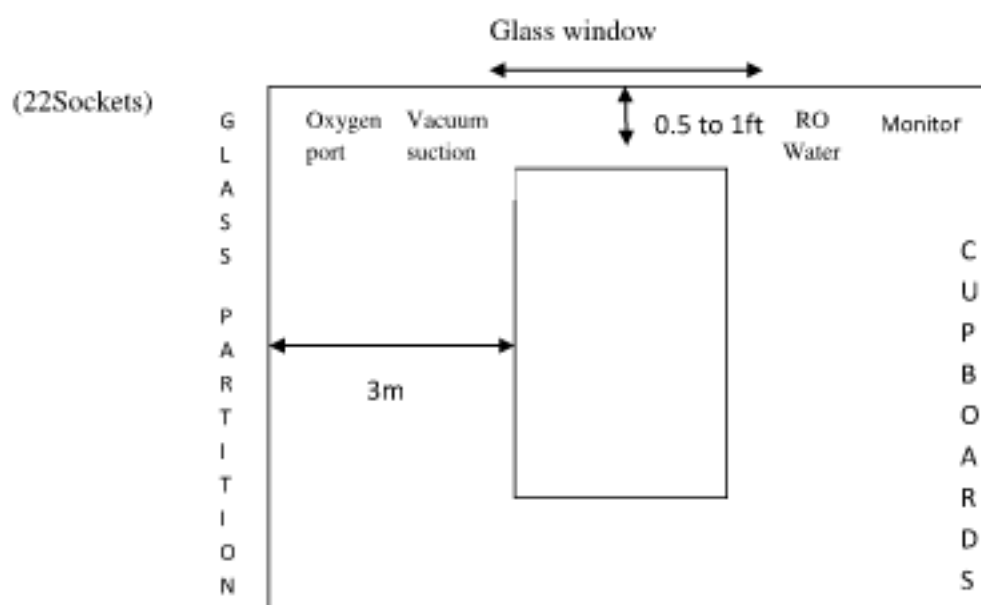
Every ICU has an Isolation Room apart from onco medical ICU. The beds types include alpha beds, nimbus beds, excel beds and normal beds. Every cubicle has a monitor, oxygen pipelines, vacuum line, a Computer on Wheels (COW) and 22 electric sockets. Ventilators are available on demand. The ICUs have syringe pumps.

Areas: Nursing Station, dirty utility room , medication storage room, washroom, clean utility room and pantry.

Nurse: Bed Ratio is maintained as 1:2 normally and 1:1 for critically ill and ventilator supported patients. 2 duty doctors are available in each shift. Visits by consultants and physiotherapists are made as per requirement.

The material is managed by 2 rounds per day by the ICU GDA to and from CSSD.

Layout of ICU Cubicle:



PHARMACY

The pharmacy is self-owned with Central Pharmacy situated at corporate office, Okhla. There are 2 In-patient pharmacy stores and 2 Out-patient stores in the hospital. The number of narcotic drugs to be issued to the hospital is sanctioned by the Government of Delhi according to the bed occupancy, number of surgeries occurring and other factors.

Inventory is maintained according to categories of ABC Analysis as:

- A Items: 7 days
- B Items: 10 days
- C Items: 15 days

IP Pharmacy maintained inventory of 9 days and OP pharmacy maintained that of 17-20 days. Turnover for IP pharmacy is 6-7 crores per month and OP pharmacy is 2 crore per month.

Medication Dispensing: Orders for medicine dispensing are fed in CPRS. The Stat orders required immediately were dispensed within 30 minutes. The normal order is dispensed within 1 hour and routine order is delivered by 1 round per day. Narcotics are dispensed on indent raised by nursing staff through indent form along with return of broken ampoules of used drugs.

Medication Recall: If a drug is found to be defective, it is reported to the Okhla office where the records for that particular series of drugs dispensed is checked and verified for medication recall.

Room temperature is maintained at 15-30°C and refrigerator temperature is 20°C for medication storage.

CENTRAL STERILE SUPPLY DEPARTMENT

The department is centralized for the hospital and situated in an area of 1500 sq. feet in basement 1 of east wing. The aim is to achieve microbial count in range of 10^6 to 10^{-6} to ensure sterilization.

Process flow: Dirty trays are dismantled → mechanical cleaning done → ultrasonic washing in washers for 1 hour → rinsing → thermal disinfection (hot water wash) → packaging done with different materials (medical grade paper, linen, SMS paper) in the clean area → materials are differentiated → transferred to sterile area (with positive pressure) → sent to issue area.

CSSD has a plasma sterilizer. There was no software or IT involvement for counting of instruments. Bowie Dick Test batch monitoring is followed.

LABORATORY

There were different equipments for various tests, with a back up for almost every equipment. Most of the equipment is rented from the companies. The reagents used for testing are marked-up

- Biochemical immunological tests – Equipments with a capacity of 1700 tests per hour. 6-7 parameters tested in 45 seconds. There are 4 stat positions in the equipment for emergency cases.
- Hematology
- Coagulation
- Serology
- Flowcytometry

- Thalassemia testing
- Microbiology labs - BSL-II & III

Manpower: Number of staff = 76

Each sample received in the laboratory is checked to have a bar code, generated in sample collection rooms and a copy of bar code slip is labelled on every sample collection tube of the patient.

Quality check is carried out after every 100 samples. Regular quality checks also carried out after 1 month. An internal audit every 6 months and external audit once in a year is also carried out.

RADIOLOGY

The radiology department is divided into 2 sections:

One section has a reception counter, 4 ultrasound rooms, 1 mammography room, 1 bone densitometry room, reporting room and conference room.

The reporting room has computer systems for the doctors to study images and reports are hand-written by the radiologists in the reporting room. These reports are then sent to the typists and final printed reports are delivered to the patients from the dispatch window. The reports for an x-ray done in morning till 12pm are dispatched in evening and those done in afternoon are delivered next day morning.

Second section has reception counter, X-ray room, MRI room along with a change room and waiting area, interventional radiological suite, fluoroscopy room and CT Scan room.

There are 2 MRI machines – 1.5 Tesla and 3 Tesla and 2 fixed and 2 portable X-ray machines

BLOOD BANK

Location – 5th Floor in the East Wing

Services offered (24*7) to Emergency, OT, ICU, IPD, Day Care.

Manpower– 20 in number

On average 40-50 units of blood is collected per day.

Records:

- Blood donor records are maintained both manually and on computer (software used is Acquana)
- Issue Records are also maintained.
- Transfusion Adverse Reaction records are also maintained.
- There is **Serology Lab** – Here blood grouping is done.
- Storage of blood is done here in three refrigerators – 1 has storage capacity of 150 bags and 2 has storage capacity of 280 bags. Temperature is maintained from 2 to 8 degree Celsius.
- There is **T.T.I room** (Transfusion transmitted infection room) – Here blood is tested for
- HIV , Hepatitis C , HbsAg , Hbc in addition to malaria and VDRL.
- Blood and Blood components not suitable for use are autoclaved and then discarded
- In case need arises in any department after cross matching blood is sent within 40 minutes.

- If it is case of emergency like RTA then without cross matching O+ve blood is sent within 3-5 minutes.

Quality Indicators:

All instruments are standardised and calibrated before initial use every day.

HOUSE KEEPING

The manpower in housekeeping is outsourced with a number of 230, of which 6 are in-house employees. Service level agreement is followed i.e. the out sourcing company charges the hospital for per square feet of area. The department has a nerve centre, which is a centralized system for complaints concerning housekeeping. Any patient complaint is closed within 15 minutes. If it is not possible to solve the complaint within this time, the patient is communicated about the delay.

SECURITY

The department is outsourced with permanent and contract-based employees:

7-8 persons per shift are permanent employees and 56 persons per shift are contract based.

Total number of permanent employees is 28.

Material control is applied at the main gate for both the blocks to restrict entry of unwanted items. 2 types of gate passes can be issued to a visitor – Returnable Gate Pass (RGP) and Non- Returnable Gate Pass(NRGP).

Security codes are designated by colour and announcement of a particular is made by the call center on happening of the particular incident:

Code Red – Fire. To control a fire accident, Emergency Response Team (ERT) formed by a duty manager, security person, nursing staff and a floor coordinator, is responsible.

Code Blue – Cardiac arrest. Rapid Response Team is activated in case of code blue.

Code Yellow – External disaster

Code Pink – Patient or attendant missing

Code Black – Bomb threat

Code Violet – Violence with patient or attendant

A mock drill for each code is conducted by the department twice in a year.

Staff training sessions are held every day at the end of each shift, concerning a new topic daily.

A total of 125 cameras are fixed in the 3 blocks. Footage of one week is available in record for every camera. The cameras put outside the main premises are night vision cameras.

Security is actively involved in medico-legal cases, regarding the communication with police.

MATERIAL STORE

There are total 5 stores in both the wings.

More than 1600 items are managed based on ABC analysis. Inventory of 14 days is maintained.

Process flow: Department raises indent through HIS → print out taken → material is picked from the store on First- In First- out (FIFO) basis → person from the department receives the indent → a receipt is signed by the team leader at the nursing station or department → the signed receipt is deposited back with the store.

In case of requirement of a new item, a request form is filled by team leader or clinician and signed by head of the department (HOD). It is then sent to the administration for approval and forwarded to finance department for quotations and then to the purchase department for final procurement.

Monthly audit is done for 80% value saving.

INFORMATION TECHNOLOGY

IT department supports operations by assisting employee and patient management through the following software:

- HRIS – Human Resource information System generates an employee code for every employee of the hospital.
- HIS – Hospital Information System is used for material management, billing, pharmacy management and other purposes.
- CPRS – Computerized Patient Record System is the software for electronic health records of the patients used for maintaining records of all the activities of the patient from the time of arrival to hospital till the discharge of patient. It is integrated with HIS.
- PACS – Picture Archived Communication System is used for storage n transfer of images.
- Software integrated with hospital website for online appointment
- Software for storage of images in Cath Lab.
- SPARSH – is the software for service quality which ha thresholds for cost estimates, that are compared with the actual bills generated.
- Feedback management system is in the pipeline.

Manpower: 25 on-roll employees and 20-25 outsourced employees.

All the servers are interconnected for all hubs of the hospital.

MEDICAL RECORDS DEPARTMENT

Location– Service Floor (MRD for IP records)

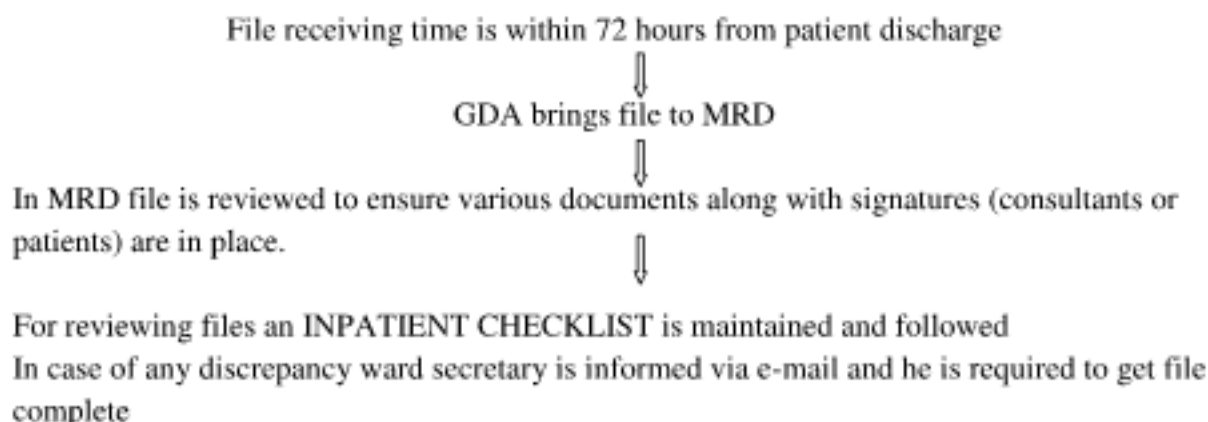
Basement 1 (For Oncology OPD records)

Manpower – 13

Types of medical records – For OPD, IPD

Arrangement of medical record by UHID

Process Flow for Receiving Files: –



Retention of Files –

- Files are kept for a week in MRD then they are handed over to an outsourced Vendor OMAX
- MLC and DEATH case files to be retained permanently
- General cases destroyed in 3 years

Retrieval –

In case a file is to be retrieved Rs.200 per file is to be paid.

ENGINEERING DEPARTMENT

The engineering department is a support department that coordinates with patient care indirectly, through the nursing, housekeeping and food and beverages departments.

It contributes to the following functionalities of hospital:

- Electrical maintenance
- Mechanical maintenance
- Infrastructure
- Plumbing
- Medical quality

Water Storage

Total storage capacity is 1100 Kilo Litres. Water consumption per day is 400-500 Kilo Litres.

There are 4 types of water storage facilities:

- i. Raw Water: used for fire and safety
- ii. Soft Water: used for patients and staff for external use
- iii. Reverse Osmosis Water: used for drinking and hand wash in critical areas as CSSD, dialysis, blood bank and dental wing
- iv. Recycled (or STP) Water: used for air-conditioning and washrooms only in the South wing.

- STP Plant: is located in back side of the west wing of hospital. It treats the waste water and recycled water is supplied for use. The plant capacity is 1-2 Lakh Kilo Litres. Activated Carbon filters and water softeners are used
- Effluent Treatment Plant: is used for disposal of effluent waste generated in departments like OT and dialysis.
- RO Plant: has a capacity of 2000 Litres.
- Boilers for hot water supply are installed.
- Centralized Cooling Plant: 3 plants of capacity 300 TR. Gas is used to condense water and the chilled water is circulated in the building through Air Handling Units (AHUs), which are 56 in the west wing.
- Fire treatment plant: comprises of sprinkler pump, hydrant pump, jockey pump and fire engine.

Electrical Maintenance

The supply of electricity is from following sources:

- Sub-station of State electricity board
- Power system (Diesel generated system)
- UPS – for critical services

Low Tension (LT) Room: is located in basement 1 in west wing. It maintains all the UPS systems.

A complaint tracker system is functional, in which a complaint is registered at the help desk and corrected within 30 minutes. For a breakdown at larger scale, the maximum time to correct the problem is 6-24 hours.

PROJECT 1
MARKET ANALYSIS AND PROPOSAL FOR INTRODUCTION OF
DIABETES HELPLINE

This project was assigned by the Director of Endocrine Department Dr. Sujeet Jha after discussion with the Finance Team.

BACKGROUND

According to WHO, Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycaemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.

In 2004, an estimated 3.4 million people died from consequences of high fasting blood sugar. More than 80% of diabetes deaths occur in low- and middle-income countries. WHO projects that diabetes will be the 7th leading cause of death in 2030.

Treatment of diabetes involves lowering blood glucose and the levels of other known risk factors that damage blood vessels. Interventions that are both cost saving and feasible in developing countries include:

- Moderate blood glucose control. People with type 1 diabetes require insulin. People with type 2 diabetes can be treated with oral medication, but may also require insulin.
- Blood pressure control
- Foot care

Other interventions include:

- Screening and treatment for retinopathy (which causes blindness)
- Blood lipid control (to regulate cholesterol levels)
- Screening for early signs of diabetes-related kidney disease.

These measures should be supported by a healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use.

This indicates that diabetic patients require regular medical guidance and support for effective management of the disease. And technology can be used effectively to provide the required knowledge and support. Though there are various organizations in US and UK which offer a Diabetes Helpline to reduce the gap between the patient and medical advice but in India such use of technology is still untapped.

REVIEW OF LITERATURE

INDUSTRY OVERVIEW-In India there are few specialised hospitals for Diabetes which include FORTIS C-DOC of Prof. Anoop Mishra (New Delhi), Coimbatore Diabetes Foundation of Dr.V.Sekar, M.V.Hospital for Diabetes by Prof.Vijay Vishwanathan (Chennai), Dr.Mohan Diabetes Specialist centre by Dr.V.Mohan(Chennai), Dr.A.Ramachandran Diabetes Hospital by Dr.A.Ramachandran and few other Super Speciality Hospitals which offer Endocrinology as a speciality.

Of these Hospitals, Fortis C-DOC is one Hospital which offers a Diabetes Helpline named "Ek Sawal" which is available from 9am-6pm and is available for the general public. They also offer online consultation service with a promise to provide consultation within 24-48 hours. One of the major drawbacks of the helpline is its limited availability (9am-6pm) and its poor accessibility.

SITUATIONAL ANALYSIS AND MARKET DEMAND-The endocrinology department at Max Hospital, Saket comprises of The Director, one Senior Resident doctor, one Junior Resident Doctor and a Senior Diabetes Educator. The team attends approximately 6000 patients in a year. Of these 6000 patients approx 60-65% of the patients suffer from diabetes. 60% of these patients are new registrations and 40% are follow-up cases. The endocrinology team answers around 30 calls a day and replies to 5-6emails per day for OPD patients only.

In order to overcome such problems of providing service the organisation planned to introduce a **24*7 DIABETES HELPLINE** for its registered patients based on their treatment needs and queries regarding

- Blood glucose goals
- Nutrition
- Medication regimens and how medications work
- Complications of diabetes and their treatment

The queries will be attended by Diabetes Nurse Educator, Doctors and Senior Consultant After retrieving patient's previous records and reports.

The patients' queries will be resolved through phone, e-mails and videos.

The registered patients will have access to

- Medication Reminder Services
- Daily news updates regarding Diabetes
- Updates about latest technology
- Counselling about caller's personal diabetes control
- Information on the latest medications and research

"ONLINE CONSULTATION" may also be provided to patients where the patients can mail there test reports and receive consultation.

The service was planned to be introduced in 2 packages:

PACKAGE 1		PACKAGE 2
• 6 Calls/Month • 2 e-mails • Videos		• 15 Calls/Month • 6-8 e-mails • Online Consultation • Medication Reminder Services
COST	Rs.100-300	Rs.500-800

The Study consists of 2 parts:

1) **QUALITATIVE STUDY**

Objective: To conduct market analysis

METHODOLOGY

BUYER'S DECISION PROCESS- For purchase of any new service the buyer undergoes a sequence of process which includes:

Need Recognition and Problem Awareness



Information Search



Evaluation of Alternatives



Purchase



Post-Purchase Evaluation

i) **Need recognition and problem awareness:** One of the major requirements of the OPD patients is a reduction in the waiting time. The patients always want an easy accessibility to medical consultation with a quick and prompt response. Simultaneously they even expect that the confidentiality of their information should be maintained.

ii) **Information search:** Once the patient understands their need they search information on how to meet their requirements. Information can be obtained personally through family and friends or through the commercial advertisements.

iii) **Evaluation of alternatives:** Patients prefer a face to face interaction with the doctor because of the trust they have on the doctor.

iv) **Purchase:** Purchase Intention and purchase decision of patients depends on

- Attitude of others
- Unexpected situational factors-like performance of homecare help lines

v) **Post Purchase Evaluation:** It can be evaluated by

- Relationship between patient expectation and service delivery
- Feedback for improvement

SCANNING THE ENVIRONMENT

SCANNING OF EXTERNAL ENVIRONMENT- PORTER'S MODEL : External environment scanning forms a major component of environmental scanning. Porter's Model comprises of 5 steps-

i) **Bargaining Power of Buyer:** LOW

- Saves Time
- Economic- Reduces travelling cost
- Persistent medical guidance and support
- Attractiveness- Positive

ii) **Bargaining Power of Suppliers:** MODERATE

- Brand Image

- Brand Loyalty
- Patient's trust on Doctor and Staff
- Patient satisfaction will be comparatively low

iii) **Threat of New Entrants:** MODERATE

- Qualified Human resource and technology is easily available
- Low Investment

iv) **Threat of Substitute:** HIGH

- Patients prefer face to face interaction

v) **Current Rivalry:** MODERATE

- C-Doc

SCANNING OF INTERNAL ENVIRONMENT-SWOT Analysis:

i) **Strength:**

- Brand Image of Max Healthcare: Max healthcare is a well known brand in North India which has more than 10 hospitals and provides quality of care.
- Image of Dr. Sujeet Jha: Designated as the Director of the Endocrine Department, Dr.Jha is a very well known super-specialist doctor.
- High Patient satisfaction, loyalty and Trust
- Dedicated and well coordinated Endocrinology Team

ii) **Weakness:**

- Patient satisfaction is high because of face to face interaction
- Understaffed and High workload - The OPD appointments are always full and the patients often have to wait. The current amount of staff will be insufficient to for the additional new services.

iii) **Opportunities:**

- Growing technology and Untapped resources of Technology- a round the clock diabetes helpline is a new advancement which intends to provide customized information to the patient. Such use of technology is very rare in India.
- Attracting Patients who miss consultation because of poor accessibility or lack of time
- iv) **Threat:** Online Consultation may impact Laboratory services as outstation patients visit to hospital may reduce and hence they may get the laboratory tests done elsewhere.

2) QUANTITATIVE STUDY

Problem Statement:

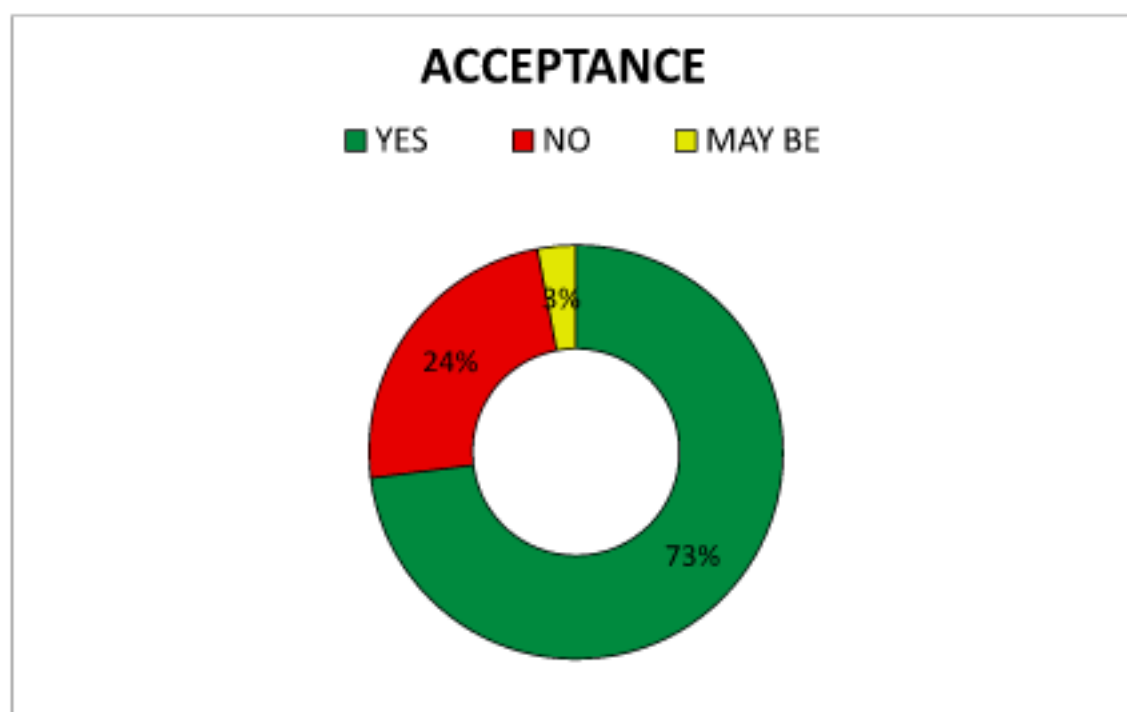
- Will the patients accept the Helpline services and online consultation?
- Will the patients pay for these services as some are availing these services for free?

Objectives:

- To assess patients acceptance and expectation towards Diabetes Helpline
- To obtain variables for market segmentation

Methodology:

- Study Type: Analytical Study
- Site of Study: Endocrinology OPD of Max Saket and Max Gurgaon
- Study Duration: 10 days
- Sample Size: 100 (70 from Saket and 30 from Gurgaon)
- Sampling technique: Convenience Sampling
- Inclusion Criteria: Diabetic patients of Endocrinology OPD
- Data Collection Method: Semi structured questionnaire (Annexure I)- Sample tested on 30 patients and then modified

Results:

Reasons for No: 24 patients out of 100 were willing to use the service if introduced. The reasons include

- Local residents-5 (prefer to visit the Doctor personally)
- Controlled diabetes- visits rarely
- Outstation patient, doesn't have access to internet
- Nephrology patients- on dialysis
- International patient(From Afghanistan)-not having internet access
- International patients(From Afghanistan)-have more faith on Max Diagnosis
- Not interested in paying-6
- Not satisfied with Homecare helpline services

PACKAGE DISTRIBUTION

Geographic Distribution	Package 1	Package 2
NCR(38/73) 52%	66% (25/38)	34% (13/38)
OUTSTATION(27/73) 37%	52% (14/27)	48% (13/27)
FOREIGN COUNTRY(8/73) 11%	50% (4/8)	50% (4/8)

Package 1(6calls/month, 2 e-mails & videos)- 59%

Package 2 (15 calls, 6-8 e-mails, online consultation, medication reminder services) - 41%

MARKET SEGMENTATION

Segmentation variables	Sub segments	Targeted customers
Geographical	• NCR • OUTSTATION • FOREIGN COUNTRY	• Outstation And Foreign Patients-For Package 2 • NCR(excluding Local residents)- For Package 1
Demographic	AGE	40-59 Years

SUGGESTIONS FOR IMPROVEMENT

- Maintain confidentiality of patient information
- Feedback
- Dietary Consultation
- Only online consultation package
- Prompt response
- Insure active patient participation
- Special information for frequent Travellers
- Skype facility
- Family Education
- Active Calling
- Have quarterly or half yearly package

PROJECT 2

STANDARDIZATION OF INSULIN DLIDING SCALE FOR CRITICALLY ILL PATIENTS

OVERVIEW

The increasing evidence that aggressive glycaemia control improves outcomes and decreases length of stay in the intensive care unit of those suffering acute cardiovascular events such as a heart attack or a stroke, as well as other critical illness co morbidities, challenges physicians, nurses, dieticians, and pharmacists to develop an insulin infusion protocol. Illness in people with insulin-managed diabetes can necessitate adjusting their insulin regimen to meet altered needs. It is important that nurses understand the principles of insulin management during illness so that they can identify when a patient's insulin dose needs to change. The main reasons adjustment may be required are to:

- Prevent escalating hyperglycaemia
- Reduce risk of diabetic ketoacidosis (DKA) and hyperosmolar hyperglycaemic state (HHS)
- Counter the delayed wound healing and increased infection risk associated with hyperglycaemia
- Reduce symptoms of hyperglycaemia and increase general well-being.

Guidance varies on how much insulin doses should be increased during illness, but the basic principle is that, if blood glucose levels are rising, insulin doses should be increased. The phrase to remember is: 'sugars high: higher the insulin'.

Though a Insulin Sliding Scale can be designed for a patient by a team of endocrinologist, physicians and nurses, but such scales are difficult to monitor as the nurses often get confused and thus the chances of errors increase. Such errors can often lead to fluctuating sugar levels and impact treatment outcome in critically ill patients.

Thus there is a greater need to standardise the IV Insulin Infusion Sliding Scale and to provide adequate training to the nurses on how to monitor these scales. Though various standardised protocols are available for Insulin Infusion but the most widely used and acceptable one is the YALE protocol.

PROBLEM STATEMENT:

- Are all the ICU's and HDU's in Max Saket following a standardized Insulin Infusion Sliding Scale?
- And are the Patients being charged for the Insulin Infusion?

OBJECTIVES

GENERAL OBJECTIVES

- To obtain the diabetic profile of ICU patients which includes ketone bodies, NPO and Hypoglycemia
- To obtain the different Insulin Sliding Scales being followed in ICU

SPECIFIC OBJECTIVE

- To Standardize Insulin Sliding Scale followed for critically ill patients
- To understand the charges of the ICU

RESEARCH METHODOLOGY

- **STUDY DESIGN-** Descriptive and Cross Sectional
- **SITE OF STUDY-** Max Hospital, Saket
- **STUDY AREA-** Number of ICU and HDU covered – 13. The ICU & HDU covered were-

Medical ICU(West wing), Surgical ICU, Neuro HDU, Ortho HDU, Neuro ICU & Stroke Unit, ISCU, NSICU, Medical ICU(East wing), Onco MICU, ACC, CTVS ICU, ONCO CTVS HDU, ONCO Surgical ICU.

- **STUDY DURATION-** 1 week
- **SAMPLE SIZE-** 27
- **CRITERIA OF SAMPLE SELECTION-** ICU patients who were on Intra venous infusion of Insulin following the designed Insulin Sliding scale were selected.
- **SOURCE OF DATA-** Primary Data from 13 ICU and HDU was collected.
- **SAMPLING TECHNIQUE-** Convenience Sampling

RESULTS

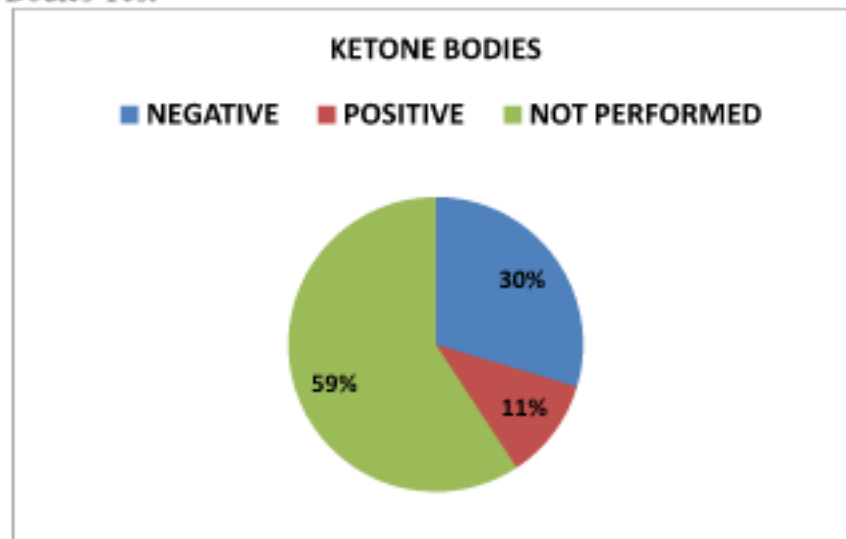
DIABETIC PROFILE OF ICU PATIENTS

- Total number of patients admitted to ICU in 1 week-267
- Diabetic patients-69

This indicates that approx. 26% of patients admitted to the ICU were Diabetic.

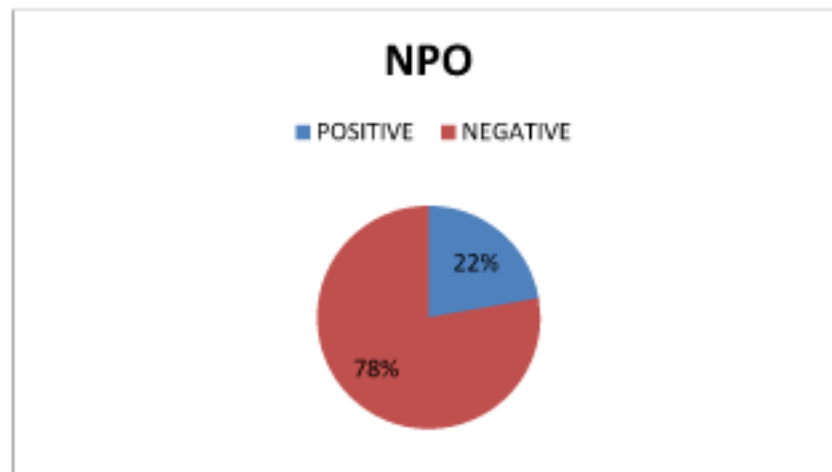
DETAILED PROFILE OF 27 PATIENTS ON IV INFUSION OF INSULIN

- Ketone Bodies Test



Out of the 27 patients admitted to the ICU's, the test for Ketone Bodies was not performed for 59% of the patients.

- **NPO (NIL PER ORAL) for more than 48 hours**



- **HYPOGLYCEMIA**- There was no incidence of Hypoglycemia seen in any of the patients
- **SLIDING SCALES OF INSULIN**- There were 4 sliding scales of Insulin being followed.

SCALE 1

Regimen for separate IV insulin infusion for diabetic patients	
Blood glucose (mg/dl)	Insulin Infusion Rate
<80	nil
80-140	0.5
141-180	1
181-220	2
221-250	3
251-300	4
300-350	5
351-400	6
401-450	7
>451	8

SCALE 2

DIABETIC CHART

Blood sugar	Insulin Sliding Scale
<90	Nil
91-120	2units
121-150	4units
151-175	6units
176-200	8units
201-225	10units
226-250	12units
251-275	14units
276-300	16units

SCALE 3

Blood Sugar (mg/dl)	Insulin (Short/Rapid) Infusion Rates
101-120	0.5
121-150	1.0
151-200	2.0
201-250	3.0
251-300	5.0
301-350	6.0
351-400	7.0

SCALE 4
INTENSIVE INSULIN THERAPY IN
Patients with Sepsis/Non Sepsis/Diabetes

Target RBS=100-150mg/dl

RBS(mg/dl)	INITIATION	MAINTANENCE	
Bolus(U)	INF(U/hr)	@1-5U/hr	@>5U/hr

151-199	0	2.0	Incr 1U/hr	Incr 2U/hr
200-249	3	2.0	BOLUS 3U+ Incr 1U/hr	Bolus 3U+Incr 2U/hr
250-299	5	3.0	5U+Incr 1U/hr	Bolus 5U+Incr2U/hr
300-349	8	3.0	8U+Incr1U/hr	Bolus 8U+Incr2U/hr
350-399	10	4.0	10U+Incr2U/hr	Bolus10U+Incr3U/hr
400-449	10	5.0	10U+Incr3U/hr	Bolus10U+Incr4U/hr
>450	10 +inform	6.0	10U+Incr4U/hr +inform	Bolus10U+Incr4U/hr +inform

DISTRIBUTION OF SCALES

TYPE OF SCALE	NO. OF PATIENTS
SCALE 1	3
SCALE 2	2
SCALE 3	13
SCALE 4	9

ICU PROFILE

- A cross sectional study of every ICU was conducted where a spot analysis of the no. of ICU patients and no. of patients on insulin sliding scale (both IV and subcutaneous) was performed.

NAME OF ICU	NO. OF BEDS	TOTAL NO. OF PATIENTS	NO. OF PATIENTS ON SLIDING SCALE
ACC	16	13	4
CTVS	17	13	6
ONCO CTVS HDU	4	4	1
ONCO MICU	12	12	3
ONCO SICU	9	8	3
MICU(East Wing)	8	8	2
SICU	11	9	2
ISCU	8	7	2
NSICU	9	5	0
NHDU	5	5	3
NEURO ICU & STROKE UNIT	8	8	2
ORTHO HDU	8	5	1
MICU(West Wing)	8	8	2

INSULIN INFUSION PREPARATION TIME

The various steps included for insulin infusion were

DOCTOR'S WRITTEN PERMISSION



INDENTING INSULIN



COLLECTION OF ARTICLES



HAND WASHING



PREPARATION



INFUSION

- On an average the insulin infusion preparation time for every ICU is 20-25 minutes.
- Only the ORTHO HDU indents insulin from the pharmacy which takes 15-20 minutes more to start insulin infusion.

COST AND CHARGES

- ✓ ROOM RENT INCLUDES-
- BED CHARGES
- NURSING
- DIET
- ✓ DRUGS
- ✓ CONSUMABLES

CONCLUSION AND SUGGESTIONS

- Standardization of insulin sliding scale based on YALE Protocol
- No separate charges should be applied for the insulin infusion as the nursing charges are included in the room rent and the billing also includes drugs and other consumables.

PROJECT 4

PATIENT SAFETY AUDITS

INTRODUCTION

To maintain quality of services offered to the patients, the organisation conducts patient safety audits which are an internal policy of the organisation.

Max Hospital has identified top 10 policies namely Initial assessment, Hand hygiene, Surgical safety, Medication safety, Fall prevention, Patient identification, RRT, Discharge policy, Admission policy and Vulnerable patient. A standardised checklist is prepared and scoring is done as follows:

0-no compliance

5-partial compliance

10-full compliance

The percentage compliance of infrastructure, general observation, doctors, nurses, GDA and housekeeping is thus calculated.

To maintain confidentiality of the organisation the results and conclusions cannot be disclosed.

For any further information you can contact me through mail on the id dr.sharmavandana@gmail.com

ANNEXURE I

Questionnaire for Market Survey for Diabetes Helpline



DIABETES HELPLINE-Market Survey

MAX HEALTHCARE is planning to introduce a **24*7 DIABETES HELPLINE** for its registered patients based on their treatment needs and queries regarding

- Blood glucose goals
- Nutrition
- Medication regimens and how medications work
- Complications of diabetes and their treatment

✦ Your queries will be attended by
provided through

- Diabetes Nurse Educator
- Doctors
- SENIOR CONSULTANT

After retrieving your previous records and reports
through Web Site

✦ Prompt Feedback will be

- Phone
- e-mails
- Videos
- Online

❖ What extra we will provide.....

The registered patients will have access to

- Medication Reminder Services
- Daily news updates regarding Diabetes
- Updates about latest technology
- Counselling about caller's personal diabetes control
- Information on the latest medications and research

☉ Also planning to introduce "**ONLINE CONSULTATION**" - Send us your reports online and get consultation!

Please help us serve you better by answering the following questions:

❖ Will you be interested in using the 24*7 DIABETES HELPLINE?

YES ☐	MAY BE ☐	NO ☐
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Reason for

No.....

If Yes, Please provide us the following information:

❖ You are a resident of

National Capital Region ☐	Outstation ☐	Foreign Country ☐
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❖ How old are you?

<30 years ☐	30-39 years ☐	40-49 years ☐	50-59 years ☐	60 & above ☐
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❖ Since how many years are you diabetic?

Recently Diagnosed ☐	Less than 1 year ☐	1-5 years ☐	5-10 years ☐	>10 years ☐
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❖ Since when are you taking treatment for Diabetes from MAX?

First visit ☐	Less than 6 months ☐	6 months-1 year ☐	1-2 years ☐	>2years ☐
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❖ What is the Status of your Diabetes?

Controlled ☐	Uncontrolled ☐
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❖ What is the frequency of complications of diabetes you face?

Rarely ☐	Occasionally ☐	Frequently ☐
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❖ Which package do you think will be beneficial for you?

PACKAGE 1 ☐	PACKAGE 2 ☐
• 6 Calls/Month • 2 e-mails • Videos	• 15 Calls/Month • 6-8 e-mails • Online Consultation • Medication Reminder Services
COST Rs.100-300	Rs.500-800

REMARKS/SUGGESTIONS

THANKS FOR YOUR FEEDBACK

FROM THE ENDOCRINE DEPARTMENT-THE TEAM THAT CARES!