



Summer Training
In
Max Super Specialty Hospital, Saket, New Delhi
(April 7th to June 7th, 2015)

A Report

By
Dr.Sonal Gupta

Post-Graduate Diploma in Hospital and Health Management
2014-2016



Institute of Health Management Research, Jaipur

CERTIFICATE

This is to certify that Dr. Sonal Gupta has undergone summer training at Max Super Specialty Hospital, Saket, New Delhi from 7th April to 7th June, 2015.

The candidate has herself carried out all the studies related to the summer training. Her approach to the studies has been sincere, scientific and analytical. This summer training is a course requirement recommended before awarding the degree of Masters in Business Administration (MBA) in Hospital Management.

I wish her success in all her future endeavors.



Col. (Dr.) Ashok Kaushik (Retd.)
Dean (Academic and Student Affairs)
IIHMR University, Jaipur



Dr. Arindam Das
Associate Professor
IIHMR University, Jaipur

29/6/2015

SUMMER TRAINING CERTIFICATE

This is to certify that Dr. Sonal Gupta of IIHMR, Jaipur Batch -19 of IIHMR University (Jaipur) has successfully completed her Summer Internship during 7th April - 7th June 2015.

The project undertaken by her in Max Saket Super Speciality Hospital titled:

“A study on Crisis Preparedness Plan during Epidemics at Max Super Specialty Hospital, Saket, New Delhi”

The project on evaluation fulfils all the stated criteria and the students findings are her original work.

I hereby certify her work excellent/good/satisfactory to the best of my knowledge.



Dr. Sandeep Mor
DMS (Deputy Medical Superintendent)
Max Super Specialty Hospital, Saket,
New Delhi

ACKNOWLEDGMENT

A summer project is a golden opportunity for learning and self development. I consider myself fortunate for having been provided an opportunity to undergo summer training at Max Super Specialty Hospital, Saket, New Delhi.

I have had the privilege to get know many people that generously shared their experiences and knowledge with me. I would like to take this opportunity to express my gratitude to all of them.

I wish to express my deep gratitude and regard to Dr. Sandeep Mor, DMS (Deputy Medical Superintendent) at Max Super Specialty Hospital, Saket, New Delhi, who in spite of being extraordinarily busy with his duties, took time to hear, guide and keep me focused by giving helpful advice, constructive comments and encouragement throughout the project. His valuable inputs made this project possible.

I am also very thankful to all the staffs of Max for their attention towards my work and helping me which greatly added to my project. The Administrative staff of the hospital has been very helpful to me and I would like to express deep gratification to all.

Dr. Sonal Gupta


Dr. Sandeep Mor
DMS (Deputy Medical Superintendent)
Max Super Specialty Hospital, Saket,
New Delhi

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ABBREVIATIONS

S.No.	Abbreviation	Meaning
1.	NABH	National Accreditation Board for Hospitals & Healthcare Providers
2.	IPS	International Patient Services
3.	CTVS	Cardiac Thoracic Vascular Surgery
4.	RRT	Rapid Response Team
5.	HAI's	Hospital Acquired Infections
6.	CABG	Coronary Artery Bypass Graft
7.	LAMA	Leave Against Medical Advice
8.	PAC	Pre-Operative Assessment Clinic
9.	ABG	Arterial Blood Gas
10.	PPT	Partial Thromboplastin Time
11.	HIS	Hospital Information System
12.	CPRS	
13.	GDA	Ground Duty Assistant
14.	TAT	Turn Around Time
15.	LASA	Look alike Sound alike
16.	MRSA	Methicillin Resistant Staphylococcus aureus
17.	CLABSI	Catheter linked associated bloodstream infections
18.	RA	Restricted Antibiotics
19.	CAPEX	Capital Expenditure
20.	OPEX	Operational expenditure
21.	COW	Computer on Wheels
22.	AAMI	Association for the Advancement of Medical Instrumentation
23.	ICPs	Infection Control Practitioners
24.	PPE	Personal Protective Equipment
25.	BBV	Blood Borne Viruses
26.	CSSD	Central Sterile Services Department
27.	MSSH	Max Super Specialty Hospital
28.	CDC	Centres for Disease Control and Prevention
29.	NNIS	National Nosocomial Infection Surveillance
30.	CAUTI	Catheters associated urinary tract infections

OBSERVATIONAL LEARNING

INTRODUCTION

Max Healthcare follows a core of 'Patient Centred Care'. Widely acknowledged nationally and internationally for its quality patient care, Max has successfully implemented the "Medical Excellence Model" through its clinical team of expert physicians and nurses who work together in an integrated manner, assessing patient needs, ordering tests, planning treatments, scheduling surgeries, monitoring progress and planning for early discharge to home.



The pillars of this model include:

- Clinical governance
- Credentialing and clinical privileging of physicians & nurses
- Use of standardized, evidence based protocols
- Patient and staff safety
- Infection control
- A culture of audit and continuous professional development

Every department of the hospital was observed carefully for its working, staff, hierarchy, physical set up and major challenges faced by them and suggestions were made to overcome those challenges.

The hospital has four key areas of specialties :

- Institute of
- Institute of
- Institute of
- Institute of

MODE OF DATA COLLECTION

Data collection involved discussions with the HODs on the managerial issues and talking to the other staff and going through the records.

Sources of Data

➤ Primary

- By interacting with the HODs, executives, Doctors and other employees of the hospital.
- By interacting with the patients and their attendants.
- Through direct observations.

➤ Secondary

- Through registered records
- Through website of the hospital
- Literature available about the hospital like magazines, pamphlets, brochures, CDs, written documents

GENERAL FINDINGS

FRONT OFFICE

- **First contact point** between the patients / their attendants coming to the facility.
- Gives directions to them about the locations of various departments.
- Helps in planning timely discharge a day before by inquiring about the same from the concerned consultants.
- Performs in patient and out- patient registration.
- Does appointment scheduling of the patients.
- Makes doctors' available summary.
- Insurance management.
- Does registration and scheduling of preventive health check-ups.

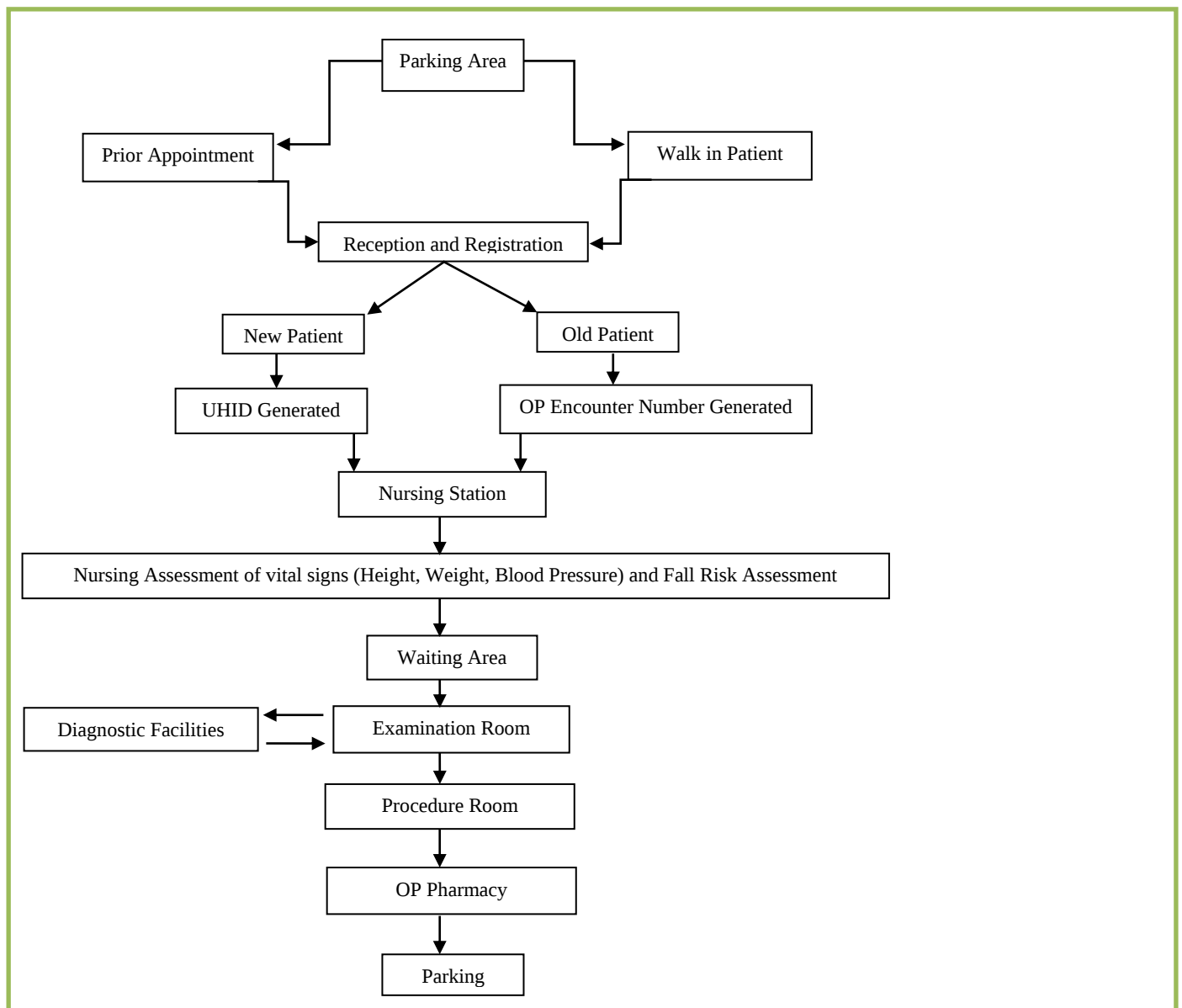
Challenges

- Shortage of staff
- Huge rush during peak hours such as morning.

OUT-PATIENT DEPARTMENT

- Each INSTITUTE of Max saket hospital has its own OPD area as well as IPD area / day-care area wherever applicable with doctors chambers and procedure rooms.
- Every OPD has a procedure room and its own Front Desk.
- Appointments are centralized and are recorded on the Hospital Information Management System. As soon as appointments are fixed, a text message is sent to the patient confirming the appointment, and a reminder message is sent on the day before the appointment. No walk-in patient is turned away, and the staffs try to accommodate these patients between the appointments already scheduled for the day.
- Each OPD waiting area has the capacity to handle 70-100 patients waiting.
- In case of a new patient, registration is done which is valid pan-Max and for life time of the patient and a UHID is created which becomes a unique identification for all his health related information.
- For Chairpersons and senior doctors, a junior doctor does the initial assessment of the patient, which not only reduces the workload of the senior doctors (whose slots are always overbooked), but it also gives the junior doctors an opportunity to learn from the best brains in the industry.

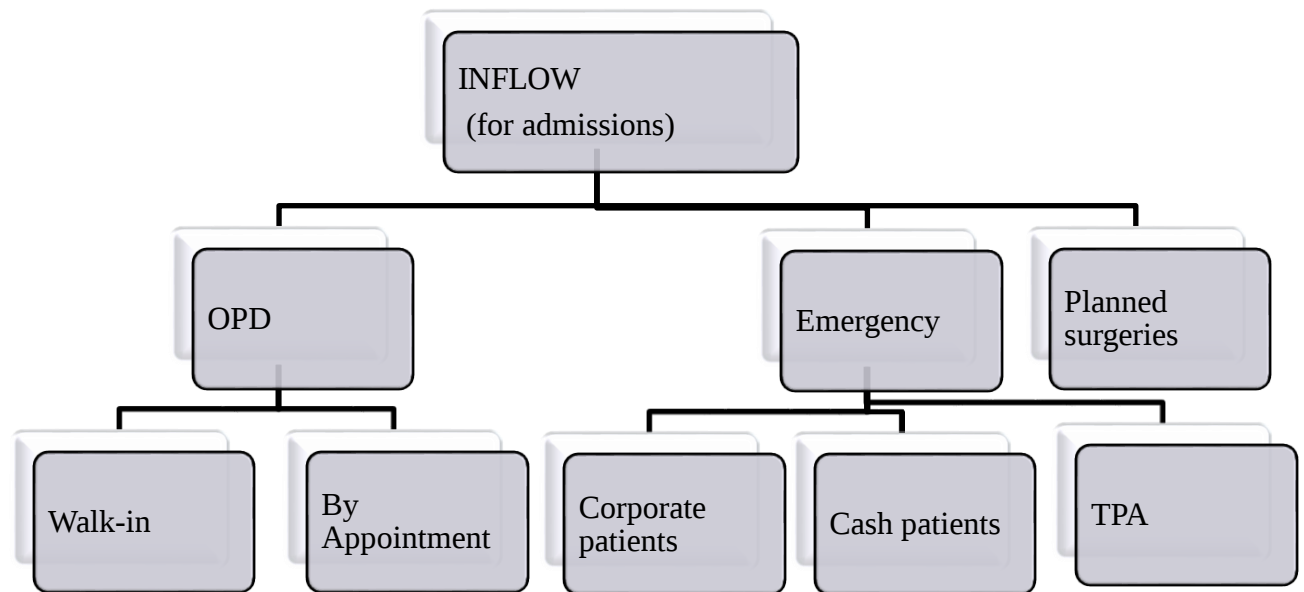
The general process flow that is followed in all the OPDs is as follows:



ADMISSIONS DESK

- If the patient has to be admitted to the hospital , he/she first reports to the admissions desk wherein all the paperwork is completed , do's and dont's as well as patient's rights and duties are explained to him. An initial token amount is deposited here by the patient which is according to his preference of the room (be it economy , single , twin sharing or suite)
- In case of TPA patients, the admission has to be reported to the insurance company within 24 hours.
- STAFF – 70-80; work in shifts with TPA staff working only from 5-5.

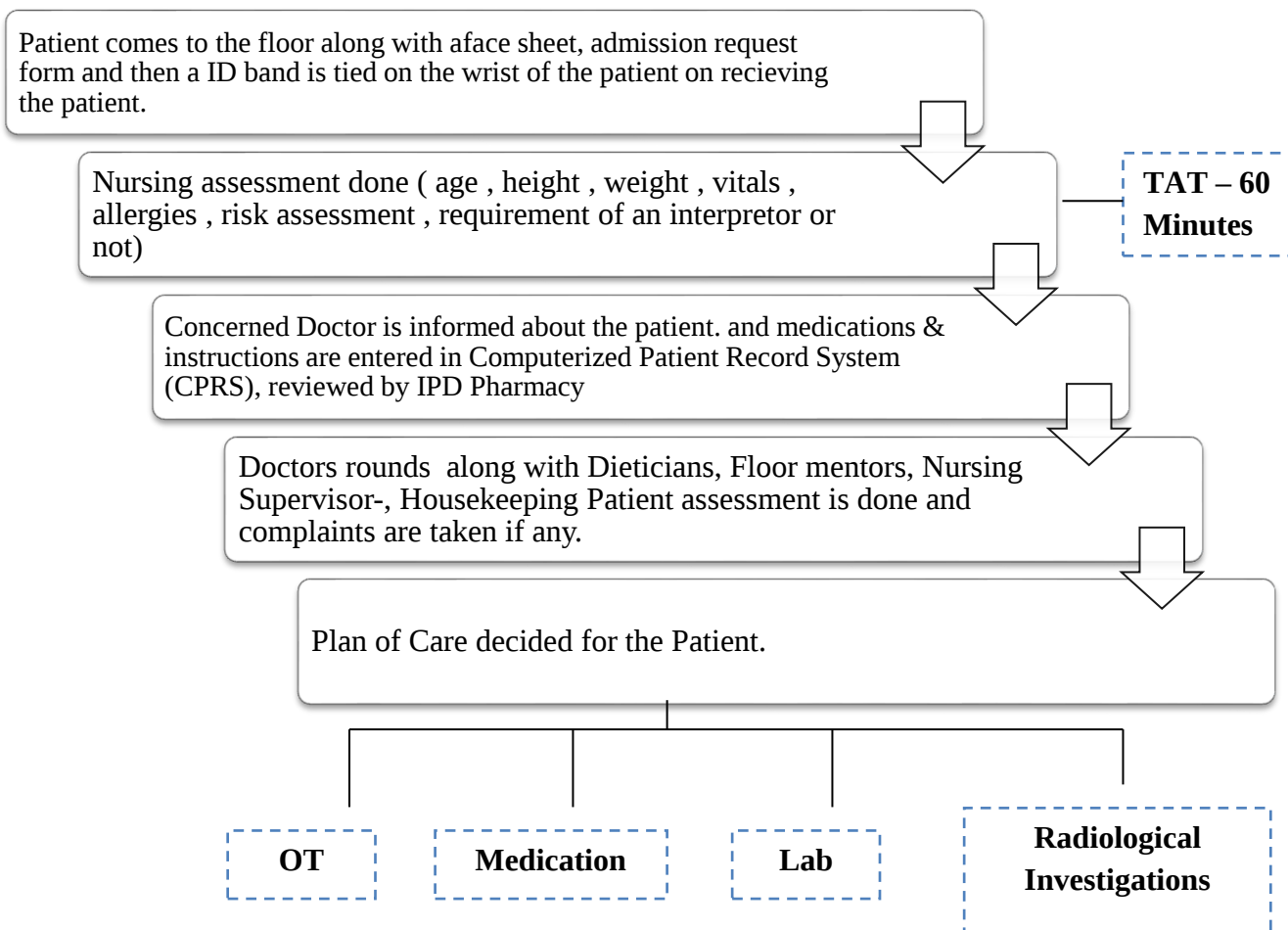
ISSUES- Huge departmentalisation which causes co-ordination problems



IN-PATIENT DEPARTMENT (IPD)

- IPD is distributed over four floors (3rd-6th) in the east wing and over five floors (2nd-6th) of Max hospital including a total number of beds.
- Every bedside has:
 - Details of Consultant, Nurse and Mentor written at the top of every bed
 - Room equipment checklist – side rails, Oxygen, Suction
 - Important Instructions
- The rooms available in IPD have the following structure of beds per room:
 - Economy room – 4 beds per room.
 - Twin Sharing – 2 beds per room
 - Single Deluxe
 - VIP suite
- Every floor has a central nursing station with
 - Information Board covering:
 - Designation & Contact numbers of
 - Duty doctor
 - Administration Staff
 - Floor Mentor
 - Support Staff
 - Ward Secretary
 - Bed Manager
 - Nurses' names with shift timing and designation(8-10 nurses per shift)
 - Crash Cart parked next to the nursing station
 - Computer on wheels (COW) - 4
 - Cupboards with forms- down time form, investigation track sheet, blood request form, PAC sheet, informed consent, inventory files and registers
 - Medication rooms – 2 ;Pantry – 1
 - Records room
 - Biomedical Waste Disposal

- Nurse to bed ratio = 1:5 or 1:6
- General Duty Assistants (GDAs) = 2-3 in every shift
- Average Length of Stay (ALOS) for normal Laparoscopic surgeries = 2-3 days
- Quality Indicators are: Patient Fall, Hypoglycaemia, Needle stick Injury
- Process of admission of new patient to IPD



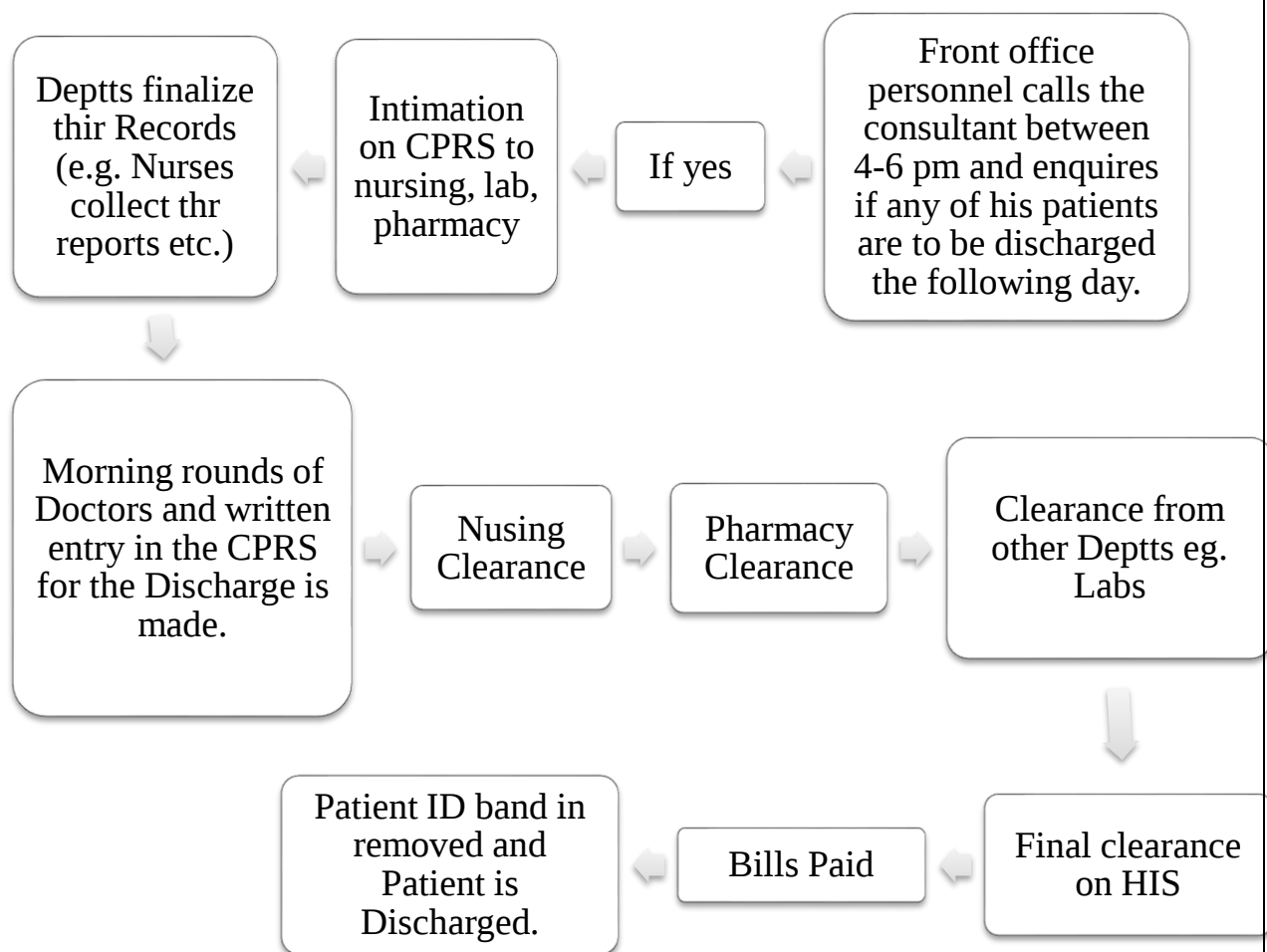
- **BARRIER NURSING-**

Isolation of the patient in case the blood or urine culture of the patient has been tested positive for any infection so that the infection doesn't spread to others .

- **REVERSE BARRIER NURSING-**

Done in cases where patient is immuno compromised so that infection doesn't travel to him from others.

- Process of Discharge of patient from IPD.



EMERGENCY DEPARTMENT

Due to the unplanned nature of patient attendance, this department provides initial treatment for a broad spectrum of illnesses and injuries, some of which may be [life-threatening](#) and require immediate attention, except for major burns. It is located at the ground floor with its own dedicated entrance and operates for 24 hours a day.

Ambulance - 2 ACLS (with CCTV camera for telemedicine, Suction Cardiac Monitor, Defibrillator, Oxygen Pump) and 2 BCLS (Ferno Stretcher, Oxygen Pump)

Patients are either transferred to other departments or are discharged within 4 hours. Max Super Speciality Hospital, Saket had made a world record for management of MI patient in emergency department from entrance to the balloon time in cath lab, in less than 35 minutes.

Response time:

- EMO response time <1 min
- Consultant response time <60 min
- Code blue response time <3min
- Ambulance response time <10 min

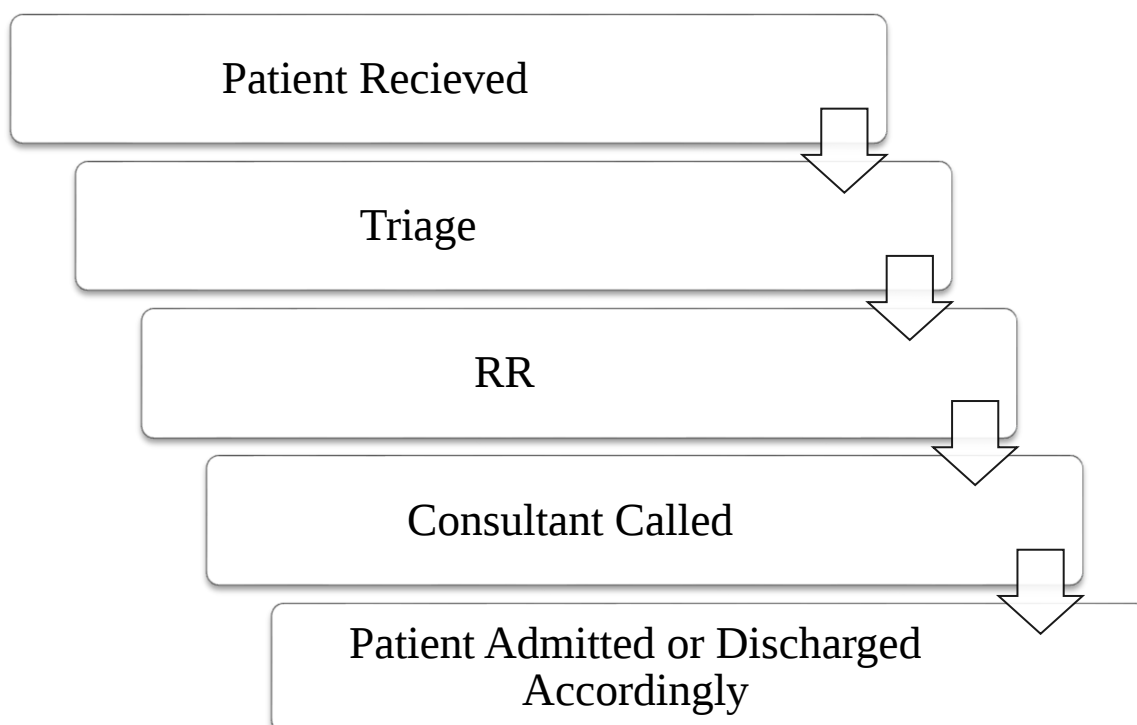
Infrastructure:

- Total 16 bedded triage
- Resuscitation suite -1 bed
- Urgent care area – 4 beds
- Observation area – 9 beds
- Clinical decision unit – 2 beds
- Doctors work station-is located in the centre of the urgent care area
- Store room- is located behind the reception. Medications are filled twice a day and stock of two days is kept in advance for Sunday. Narcotics are also available and kept in double lock and key system.
- Hospital information system and CPRS
- COWS(computer on wheels)
- Waiting area for patient's attendants is outside the department.

Staffing:

1. Senior consultant (Emergency medical officer)
2. 4 doctors
3. Team leader
4. Emergency physicians - 3
5. Nurses : 32 (8 nurses per shift)
6. 2 personnel at reception
7. Paramedical staff for ambulance
8. 4 GDA per shift
9. Outsourced staff : security personnel.

Process Flow



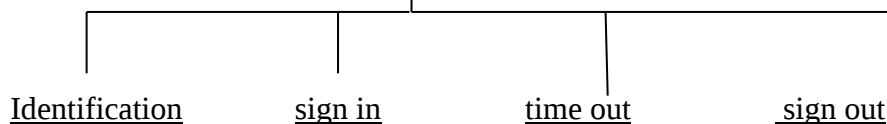
OPERATION THEATER COMPLEX

Operation theatre complex of East wing is located on first and second floor. Operation theatre complex has 11 operation theatre assigned to various departments. Cardiac, oncology , bariatric laparoscopic, gynaecology, ENT and plastic surgeries are performed in these operation theatres. Operation theatre complex of west wing is located on first floor. It has 7 operation theatres for various departments. Orthopaedic, neurology and general surgeries are performed here.

Organization of staff: The staff of Operation Theatre is organized into four groups: Anaesthetist and surgeon, nursing staff, technician, supportive staff.

- Average number of cases done per day – 30 in each wing
- Temperature - 21 approx
- Humidity – 50-55
- Light – 2000 lux in the centre of OT table and decreases on moving farther
- OT booking is done through online . 2 types of surgeries are performed – *elective*: surgeon gets PAC done and gives an appointment ; *add on*: manual booking of OT in case there is cancellation of the scheduled cases due to any reason.
- Each OT complex has a separate material store and a TSSU_(Theatrical Sterile Supply Unit).
- Staffing ratio- Nurses : patients – 4:1(pre-op) ; 2:1(post-op)
Technicians : patients- 1:1
- OT Utilisation – average is 70%
- Max super speciality hospital recently got a GREEN OT certificate which signifies minimal amount of pollution caused by OT gases and an acceptable standards of practices being followed here .
- Sterilisation is done by ETO (12 hrs); autoclave. Fumigation is done twice a day in the morning and evening.
- Bio medical waste disposal is done every 2 hours.
- No. Of pre-op beds -3
- No. of post-op beds -4

- **Surgical safety check list includes**



- Quality indicators: wrong patient , wrong surgeon , wrong surgery , return to OT(within 7 days) , waiting time for OT

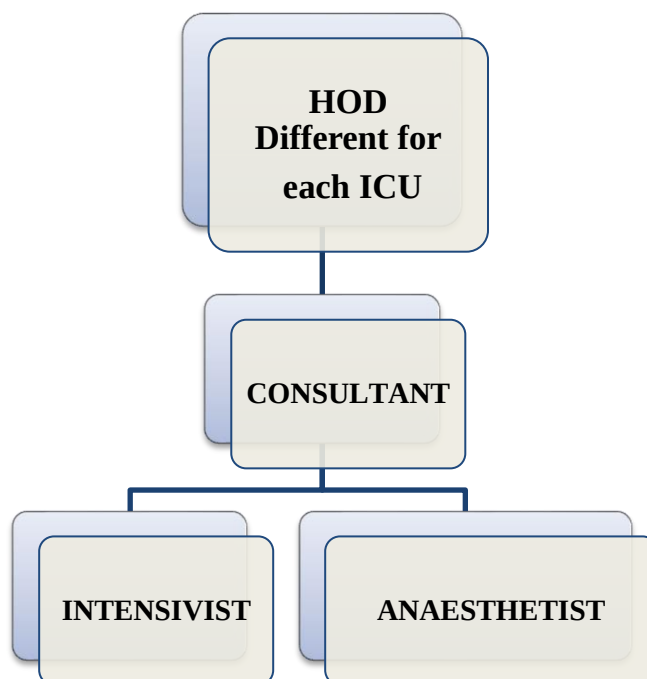
INTENSIVE CARE UNIT (ICU)

Max Saket has a total of 7 Intensive Care Units in the Hospital :

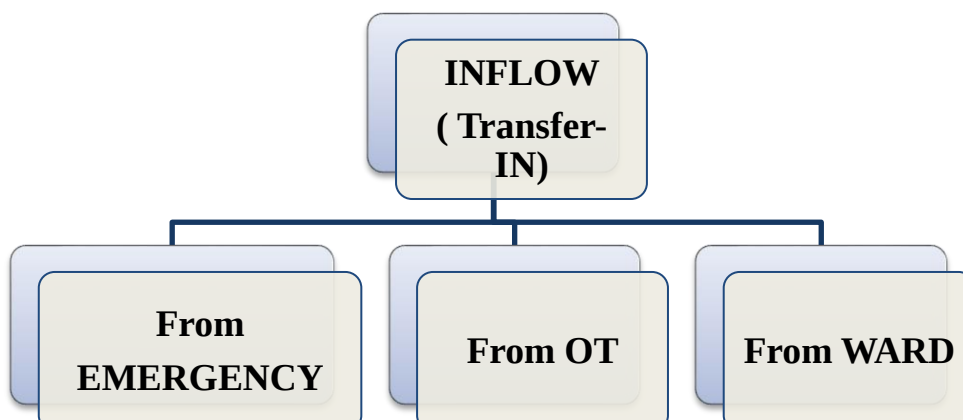
1. Respiratory ICU – 8 Bedded
2. Medical ICU – 8 Bedded
3. Neonatal ICU – 8 Bedded
4. Apex Coronary Care - Bedded
5. Stroke and Neuro Medical ICU - Bedded
6. Neurosurgical ICU – 8 Bedded
7. CTVS ICU - Bedded

All Intensive Care Units have a 24 hour service of Intensivist and an Anaesthesit.

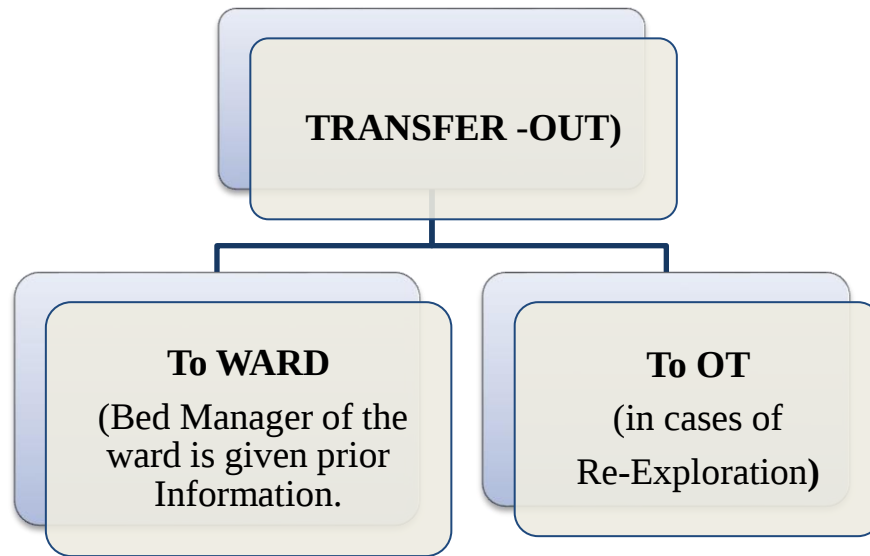
Hierarchy



Patient Flow



Before hand information is given on call to the ICU for ***transfer-in*** of the patient.



- Patient: nurse – 1:1(for all patients)
- Patient counselling – done throughout the day ; Relative counselling – done twice a day by the Intensivist .
- Protocol for infected patients –
 - Isolation
 - Visitor's policy- no visitor allowed inside the isolation room
 - Aseptic policy
 - Full PPA
 - Separate linen disposal in separate bags
 - Separate dressing trolley
 - Separate housekeeping material- dusters, mops etc
- Quality indicators-
 - Patient falls
 - Bed sores
 - Medication error
 - Nosocomial infections

All the Quality indicators are duly noted in “Quality Flash” and it is audited time to time and measures are taken to reduce the number of incidents.

CATH LAB

Catheterization laboratory or cath lab is an examination room with diagnostic imaging equipment used to visualize the arteries of the heart and the chambers of the heart and treat any stenosis or abnormality found.

Diagnostic procedures performed here are:

- Angiography
- Electrophysiology study
 - Cath study

Out of these 3 angiography, angioplasty and cath study is done in cath lab 1 and EPS is done in cath lab 2.

Other procedures are:

- Percutaneous Transluminal Coronary Angioplasty
- Peripheral Transluminal Angioplasty
- Radio Frequency Ablation
- Permanent Pacemaker Implantation
- Intra Cardiac Defibrillation
- Cardiac Resynchronisation Therapy Defibrillator Device
- Cardiac Resynchronisation Therapy Pacemaker
- Left and right sided pressure studies
- Closure of some congenital heart defect

Slots are booked for everyday as per the doctors' and patients' convenience. About 70% of the slots booked are treated everyday

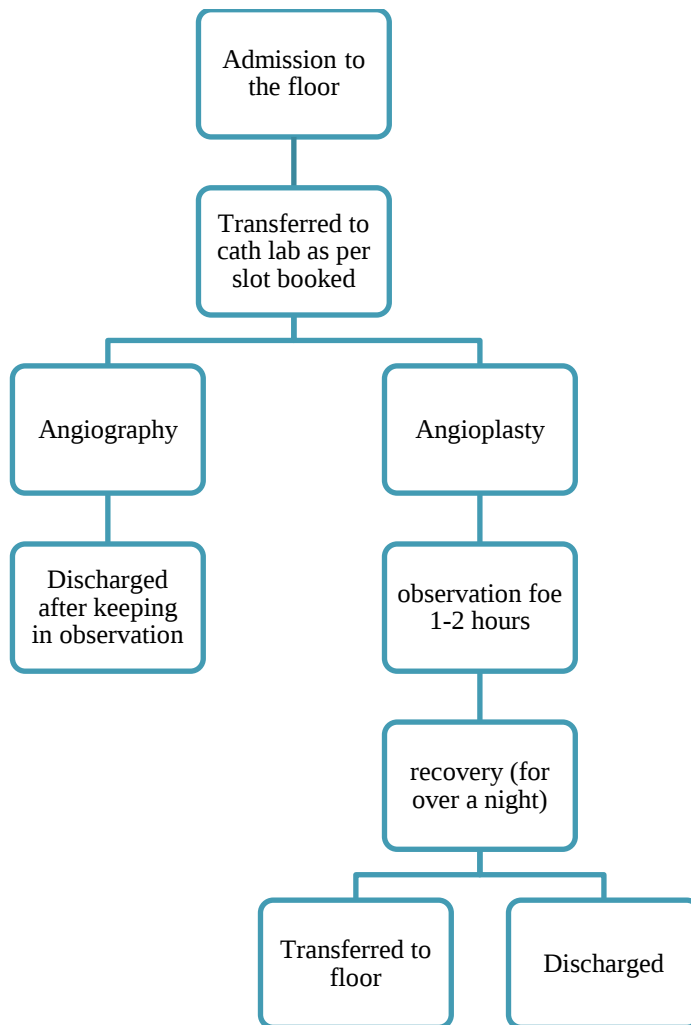
Units of cath lab:

1. Cath lab 1
2. Cath lab 2
3. Technical room
4. Observation area
5. Technician room
6. Store room and utility room
7. Observation area-7 Beds
8. Instrument washroom

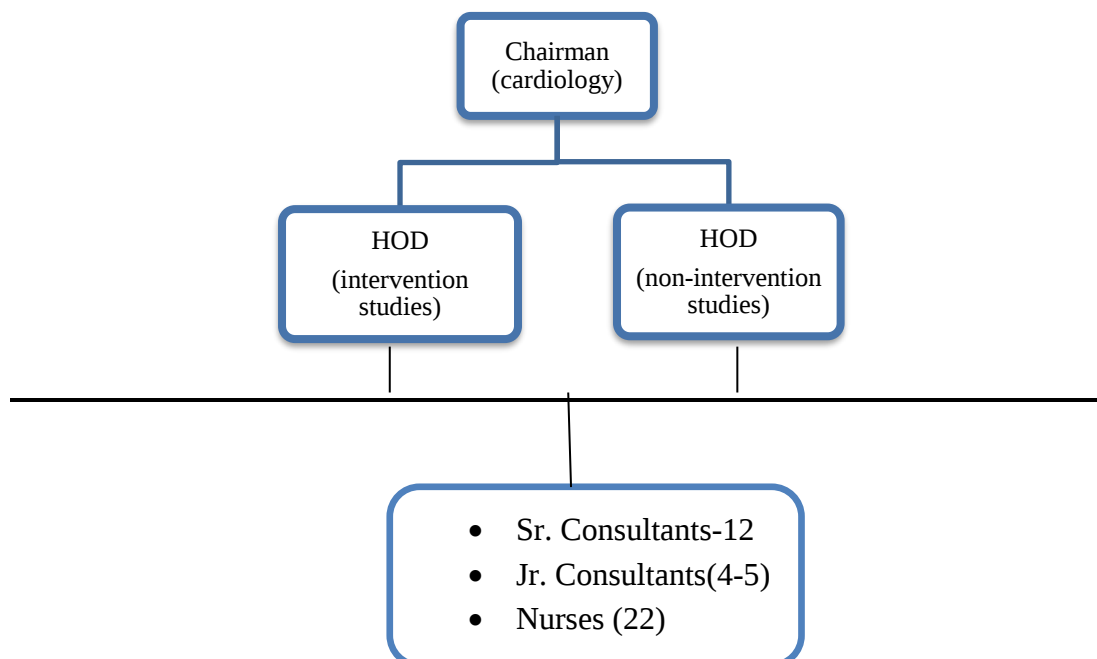
Location: Cath lab is located on the first floor with the vicinity areas as

- Emergency department
- Operation theatre
- Cath recovery-14 Beds
- Coronary care
- CTVS OT
- SICU
- PICU
- MICU

Process Flow of Patients



Staff



DEPARTMENT OF LAB SERVICES

INTRODUCTION-

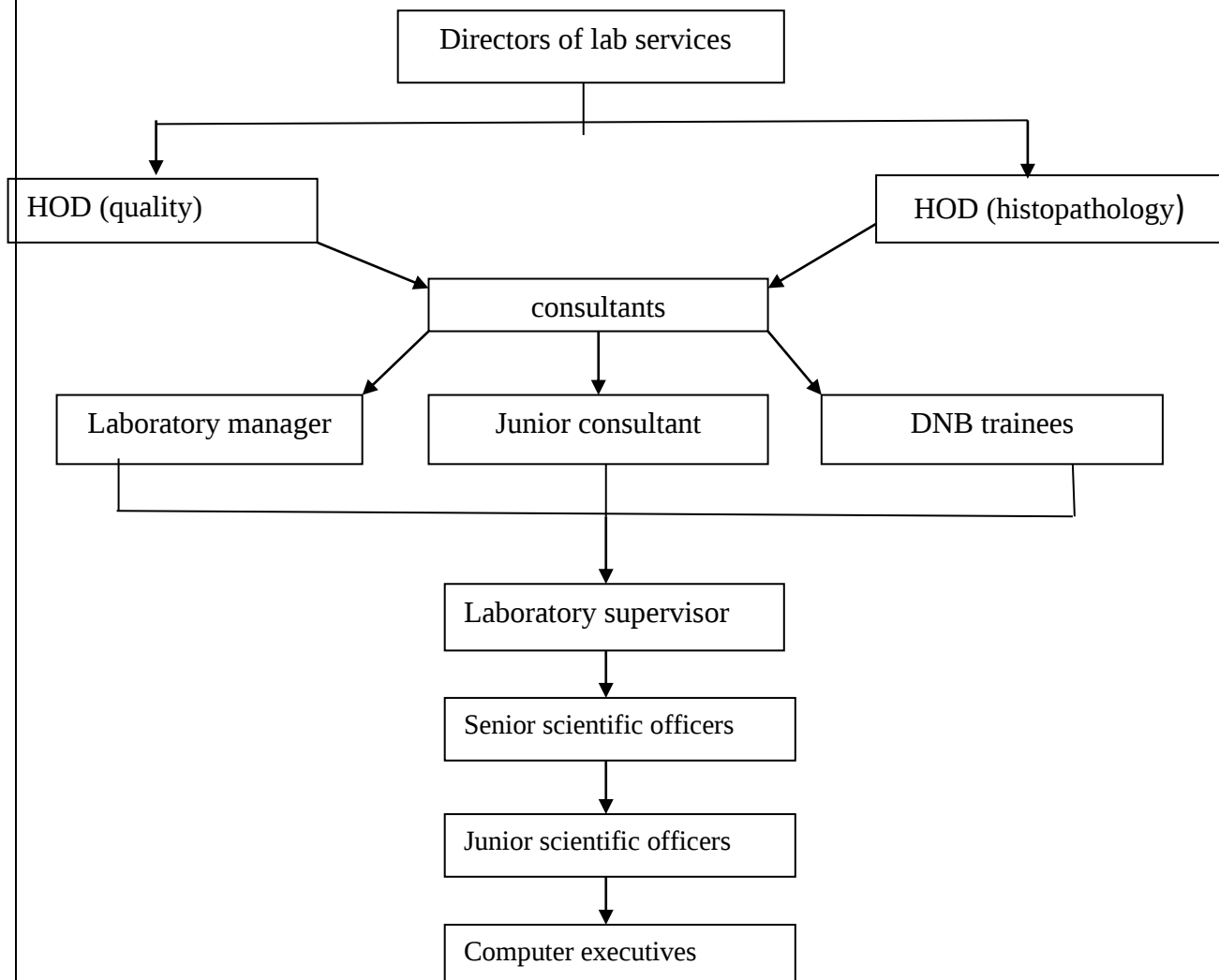
An ISO 9001:2000 certified lab, it is open 24 hrs a day. It's a high-tech lab with fully automated instrument which are directly interfaced with ***hospital information system*** and ***laboratory information system***. Facility of stat tests (emergency) and sample collection from home is also available.

LABORATORY COMPRISES OF THE FOLLOWING DEPARTMENTS-

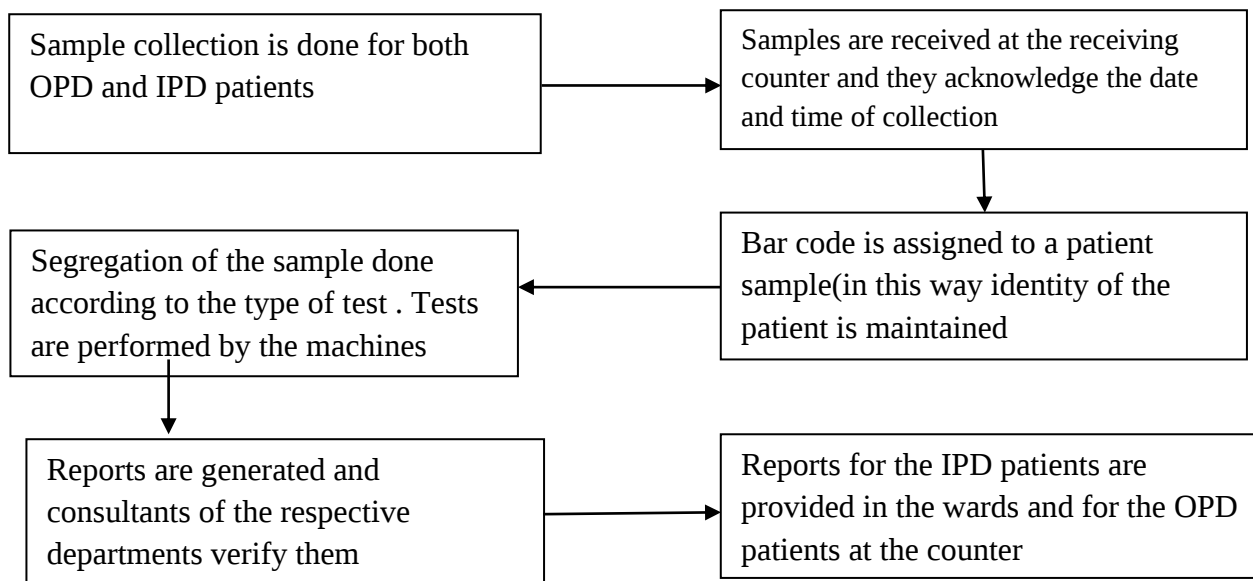
- Biochemistry
- Haematology
- Immunoassay
- Histopathology
- Clinical pathology
- Serology
- Microbiology

HIERARCHY- The Department Of Lab Is Broadly Divided In Two Departments

- Lab medicine
- Histopathology



PROCESS FLOW-



LABORATORY INFORMATION SYSTEM-It is connected with with hospital information system

- Sample received-red colour
- Samples acknowledged-yellow colour
- Test done-blue colour
- Result verified-green colour
- Billing done-pink colour

RADIOLOGY DEPARTMENT:-

Situated at the ground floor of the west wing of the hospital.

The total staff working in the Radiology Department is 60.

Procedures done in the department:-

(1) Routine X-Ray studies

- (a) Plain - e.g. chest, spine, etc
- (b) Routine fluoroscopic procedures e.g. Barium studies

(2) Routine ultrasound studies

- (a) Ultrasonography - e.g. Abdomen, Pelvis
- (b) Doppler studies peripheral (B/W & colour) e.g. 2 D echo, vascular studies, etc

3) Mammography

4) Dexascan

5) Special imaging techniques

- (a) CT Scan (Computerized Axial Tomography)
- (b) MRI (Magnetic Resonance Imaging)

Divided into two parts:-

- 1) For Ultrasonography, mammography, Dexascan
- 2) For CT Scan, MRI, X-ray, fluoroscopy

Consist of:-

- 1) Reception:-Counter for appointment and billing
- 2) Waiting room with general facilities like toilets, drinking water, air conditioning
- 3) Diagnostic room
- 4) Counseling room
- 5) Changing room
- 6) Film processing room
- 7) Radiologist office
- 8) Report collection room

There are two MRI and one CT scan machine in the department.

Timings for OPD patients:-8am to 8pm

In between this IPD and Emergency patients are also taken.

Main OPD hours: - 8am to 6pm and after 8pm only IPD and Emergency patients are taken

Report collection: - If the scan is done before 12pm, reports are ready by the evening and can be collected in the same evening. And if done after 12pm, report will be delivered next day.

Patient who comes in the radiology department either walks in or takes the appointment.

Appointment patients are given preference whereas walk in patients have to wait. Emergency, doctor's referred patients or ICU patients scan is done as soon as possible.

Process flow in radiology department (OPD)

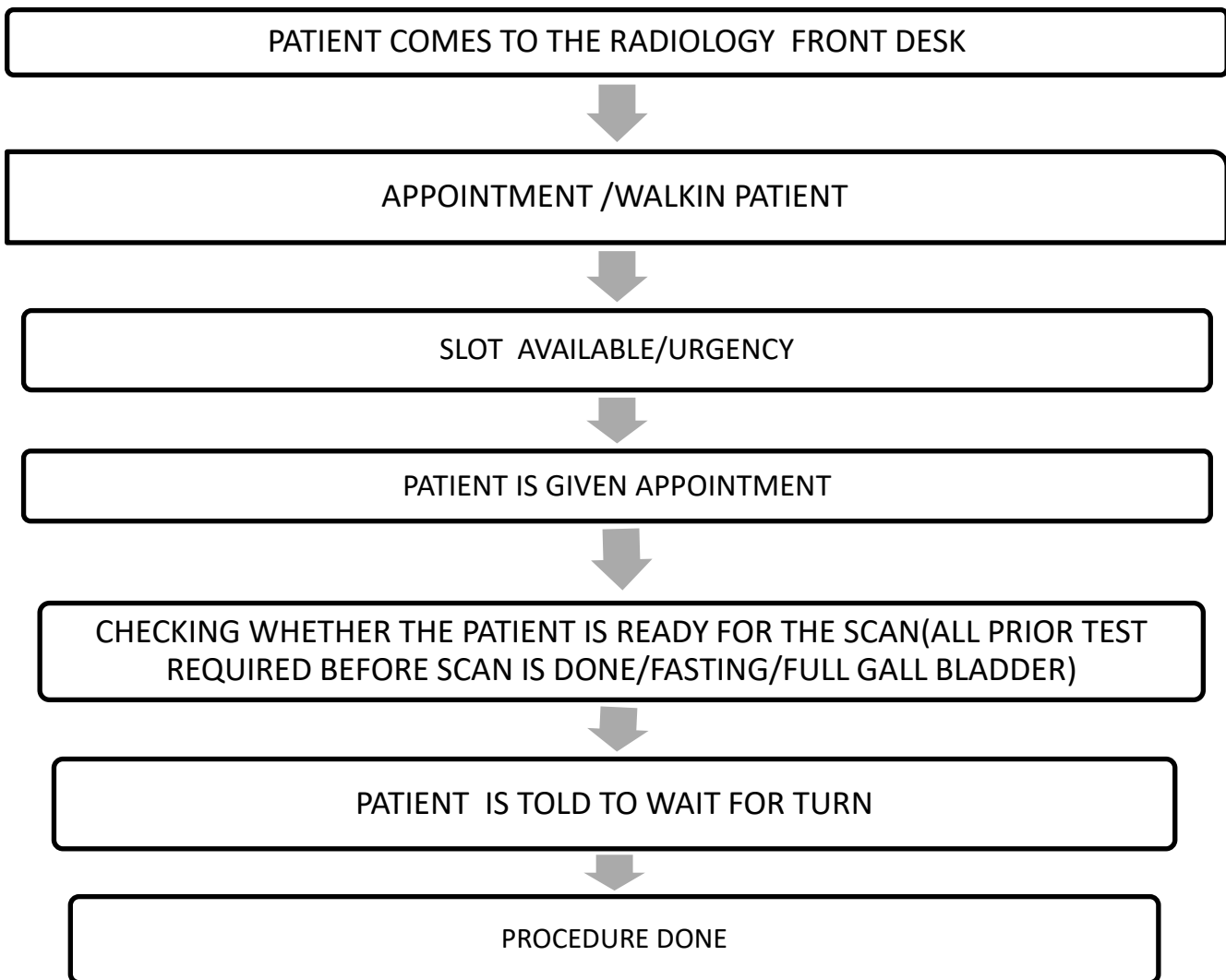


Figure:-Process flow in radiology department for outpatients.

Firstly, the patient comes to the radiology front desk after been prescribed by doctor for the scan; patient is either taken prior appointment or walk in patient. The availability of the slot required is then checked for the walk in patient by the front desk. Once the slot is checked, the requirements for the scan i.e. condition of the patient required to undergo the scan is checked. (e.g. proper creatinine level for renal patients).After that the patient is been provided the appointment and been told to wait for his turn. Finally the procedure is been performed.

- Emergency patients especially with a critical diagnosis – highlighted in the register and the consultant is immediately informed about the findings.
- Procedures wherein contrast is to be given , for example MRI , consent of the patient is taken prior to the procedure.

BLOOD BANK

Max super specialty hospital has its own blood bank. All blood groups are available. But it is preferred that patient arranges blood through his relatives or any friend and should give replacement.

Blood bank consist of

1. Sample collection area / reception area: In reception area a form is given to the attendant of the patient regarding their details before he/ she donates the blood.
2. Aphaeresis area: blood have several components including red blood cells platelets and plasma. Donor aphaeresis is a special type of blood donation in which a specific component platelet, plasma is withdrawn from donor
3. Component room: In component room the whole blood is separated into packed cells FFP and platelets.
4. TTI room: It is to diagnose transfusion transmitted infections. If donor is detected positive for TTI status it means donor have the potential to transmit the infection to their partner and children.
5. Issue room: This room is to issue the screened blood bags.

Staff of blood bank consists of 1 HOD, 2 blood bank officer, 1 technician supervisor, 16 technicians, 2 staff nurse, 2 computer executives, 4 GDA.

- The Department is headed by Dr.Sangeeta Pathak and the technical manager is Ms. Ruchi.
- The blood donation timings are from 9am to 5pm and approximately one volunteer comes for donating blood. Blood can be donated after every 3 months.
- The PRBC are stored for 45 days at 2-6 degree Celsius.
- The Platelets are stored for 5 days at room temperature $22\pm$ Celsius.
- The FFP (Fresh Frozen Plasma) are stored for 1 year at -40 degree Celsius.

CENTRAL STERILIZATION SERVICE DEPARTMENT

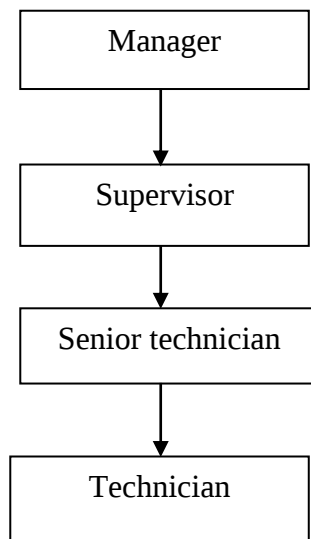
INTRODUCTION-

CSSD is the heart of the hospital infection control and the most important unit of the clinical support services. CSSD role lies in receiving, cleaning, packing, disinfecting, sterilizing, storing and disinfecting instruments as per well-delineated protocols and standardized procedures.

CSSD department in max healthcare ,saket is a centralized department and the location of the department is in the basement

The main aim of the CSSD department is to reduce the level of micro-organisms from 10^6 to 10^{-6} .

HIERARCHY OF THE DEPARTMENT-



The Department is headed by Dr. Sanjeev Bhatia.

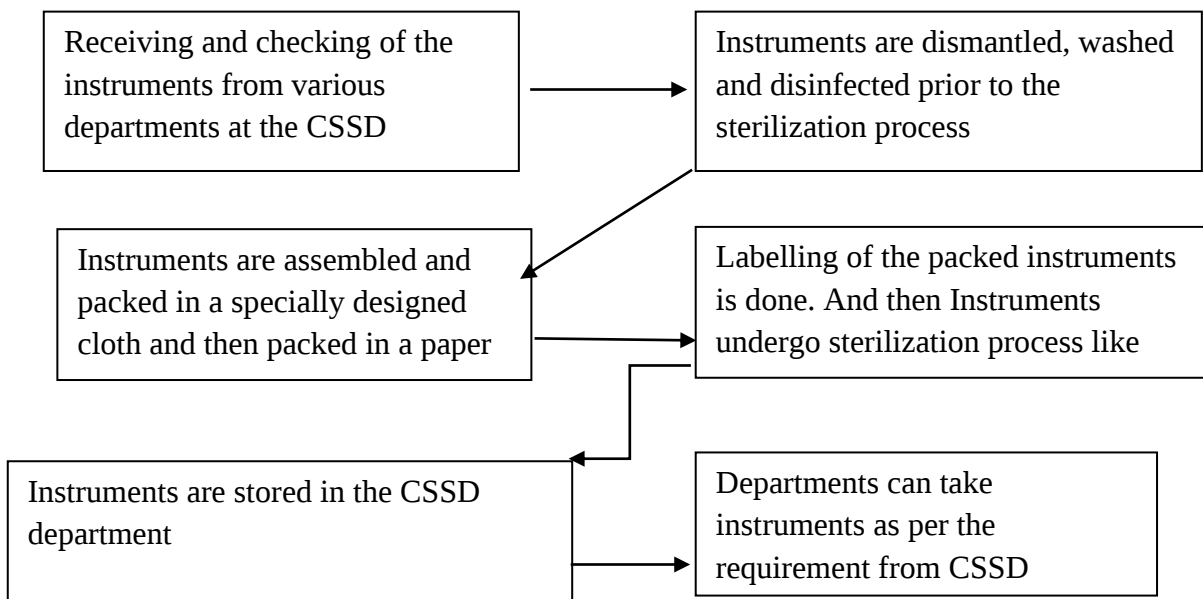
ZONES PRESENT-

- Decontamination
- Clean
- Sterile

Colour coding for the following zones -

- Decontamination area-red colour
- Clean area-blue colour
- Sterile area-green colour

PROCESS FLOW-



- At the time of receiving the instrument at the CSSD department, the instruments are counted, checked for any damage, segregated according to the method of sterilization required for the instrument.
- Instruments used for the washing of the instruments are fully automated and according to the European standards.
- For packing of the instruments medical grade paper and cloths are used which are specifically designed for the purpose(they have a zig -zag pattern)
- Once sterilized and packed instrument can be used within 6 months.

EQUIPMENT LIST-

- Washer-
- Autoclave -
- Plasma sterilizer-
- ETO sterilizers-
- Dryers-
- Air-guns-
- Water-guns-
- Ultrasonic cleaners-

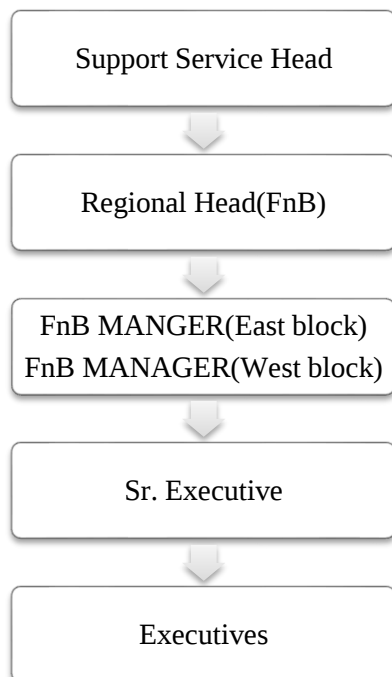
QUALITY INDICATORS-

Various quality indicators used in CSSD are-

- **Batch monitoring strip**- a yellow colored strip which is attached to every lot which on exposure to right temperature and pressure turns black

FOOD & BEVERAGES

- Food & Beverage department is responsible for the supply of food to the in-patients and sometimes their attendants (if required) and also for arranging food during various meetings and conferences in the hospital.
- The department has been outsourced to sodexo pvt, ltd. , however , the management and supervisory staff is in-house.
- Staff- 230 (outsourced) ; 11 (Max in house)
- Hierarchy

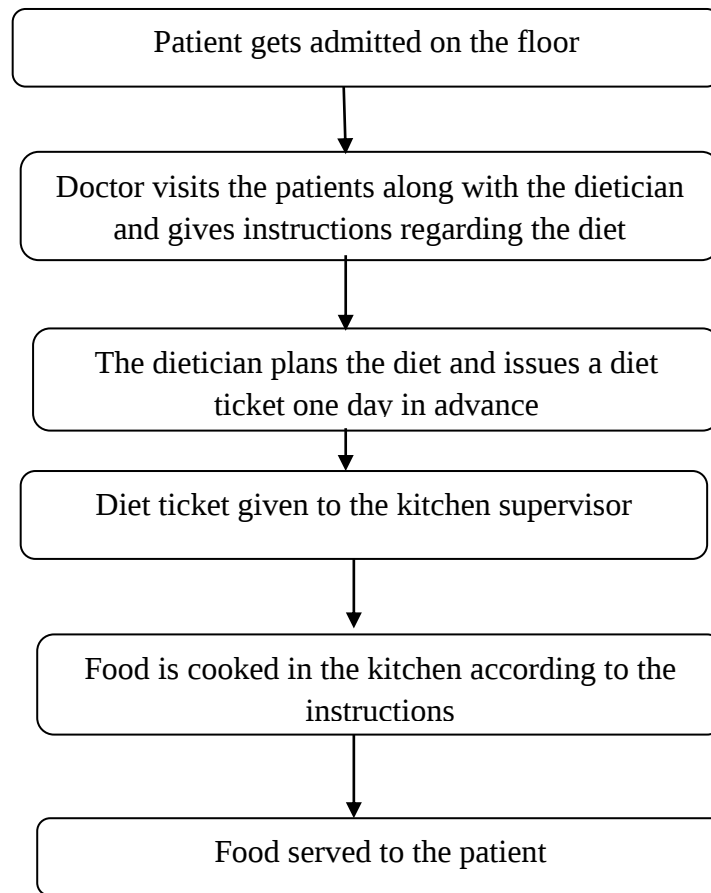


Time table for the diet of the patient

7-8AM	Breakfast
10:30-11:30AM	Soup/Beverages
1-2PM	Lunch
4-5PM	Evening tea
6-7PM	Soup
8-9PM	Dinner

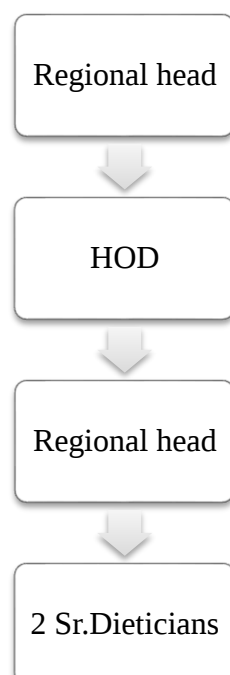
- Dinner of the same day, breakfast and lunch of the next day are decided prior in the evening and diet tickets are issued by the dietician and given to the chef.
- Apart from these if patients wants to have something extra ,those can be provided to the patient after consulting dietician ,but for an extra charges.
- Different menus offered are:
 - Continental
 - Afghani – for middle east patients
 - No onion and garlic – for middle east patients
 - Indian

- Process flow of the department



DIETETICS

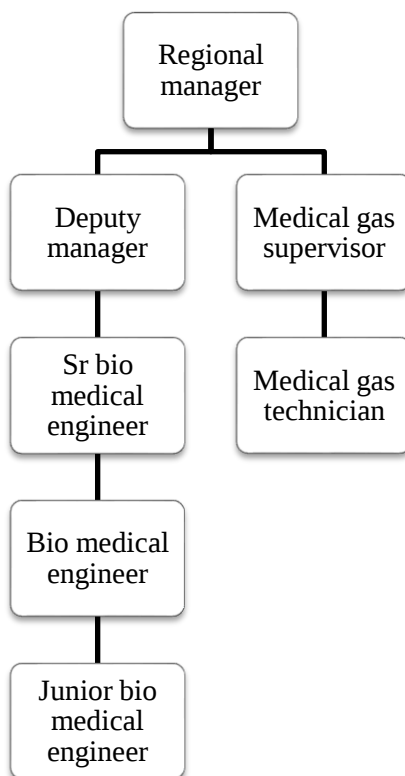
- The department plans diet for all IPD patients in accordance with the primary consultant's opinion on the same.
- Staff- 13 in total.
- Hierarchy



- Dietician: patient – 1:50
- Assessment of each patient to be done within 24 hours of admission and thereafter every 8th day after initial assessment.
- For enteral nutrition, all commercial supplements for each disease are available.

BIOMEDICAL ENGINEERING

- This department deals with purchase, installation and commissioning, training on operating , handling and maintenance of medical equipment in all departments of the hospital.
- Looks after running equipment and new equipment.
- For Running equipment
 - Preventive maintenance is done – to prevent breakdown, maintenance is done.
 - Calibration is done – i.e. to check how accurate an equipment is functioning
 - Breakdown call is checked for
 - Depreciation is measured
- For new equipment
 - Installation and commissioning is done.
- AMC and CMC records are maintained.
- CAPEX (Capital Expenditure) and OPEX (Operating Expenditure) registers are maintained.
- Equipment Incident report is made in case of any physical damage – it is filled mentioning how the damage did happened. Thereafter replacement or repair whatever is required is done.
- Organisational chart



- Gas manifolds are also handled by this department and Max is awarded green OT certificate because of the efficient dispersion of OT gases.

PHARMACY

Max 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.

PURCHASE

Auto purchase requisition is given to central purchasing team which is forwarded to vendor (outsourced). For purchasing the items ABC method is followed. Weekly requisition is done and vendors take minimum 3 days for delivery of drugs to hospital.

STORING OF DRUGS

Medicines are arranged according to VISTA (e-care) in Client patient record system via generic name in alphabetic order in racks, shelves, cupboards and drawers. Oral, parenteral and topical items are stored separately. Near expiry (expiry within 3 months) is stored in separate designated area to expedite the consumptions.

INDENT AND DISPENSE OF MEDICATIONS.

In patient pharmacy-

In CPRS, Medication orders posted by the clinicians is verified by pharmacist on PUTTY System labelled with (patient info, SSN no., drug name,) then the medications are dispatched after Billing via HIS (Hospital information system) and finally handover to GDA to dispense medicines. The Stat orders required immediately are dispensed within 30 minutes. The normal order is dispensed within 1 hour and routine order is delivered by 1 round per day.

NARCOTICS DRUGS

They are in kept in double lock and key system. Documentation of narcotic drugs is appropriately maintained.

Narcotics drugs under statutory regulation being used in max hospitals includes: injection and transdermal patch of Fentanyl and injection and tab. of Morphine.

LOOK ALIKE AND SOUND ALIKE DRUGS

Look alike and sound alike medications have high medication error due to similarities in nomenclature and packaging.

In the main pharmacy stores, (SALA Medications) are stored separately in 2 adjacent racks with blue coloured sound alike and pink coloured look alike medications warning stickers to avoid confusion while dispensing.

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.

Licences acquired by Max hospital pharmacy -

- 1) Pharmacist License
- 2) Narcotics License

INVENTORY MANAGEMENT PARAMETERS

I. ABC Class

A Items: 7 days

B Items: 10 days

C Items: 15 days

II. EOQ - (economic order quantity)

III. LEAD TIME – Time from ordering to delivery of drugs

IV. VED – Vital Essential Desirable (According To move of drugs)

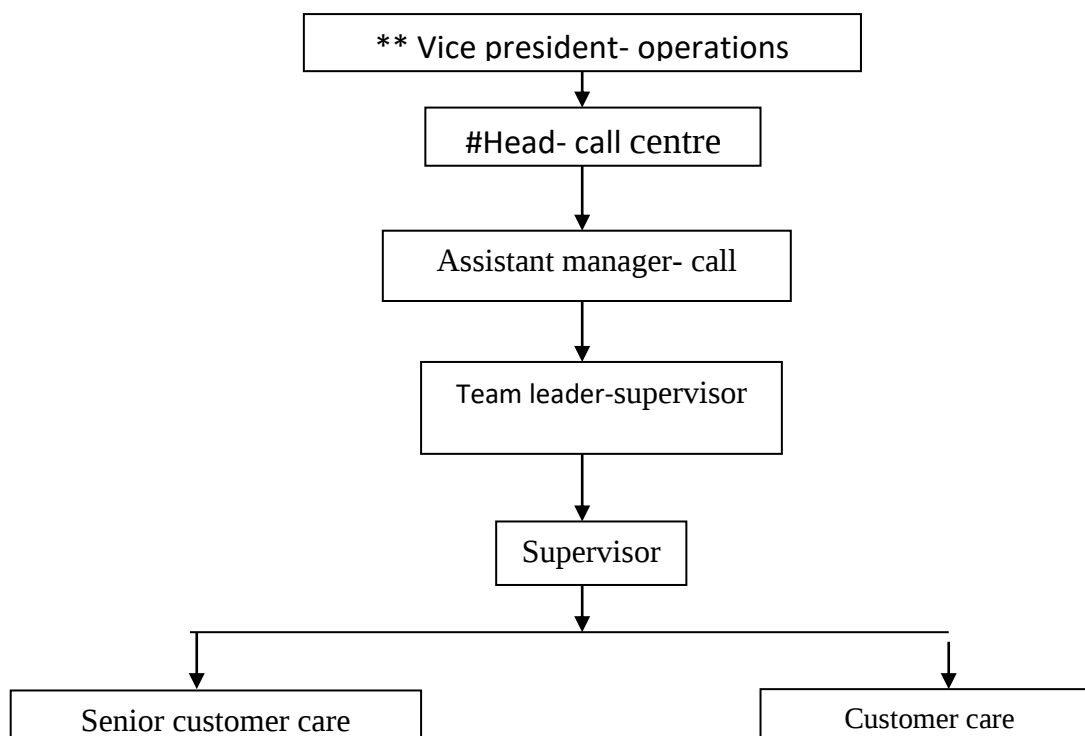
CALL CENTRE

Call centre of Max hospital, saket operates at 24*7. It is centralized patient contact centre for saket. It can be used as an information centre for all customers.

Call centre deals with:

- Doctor's appointment
 - Health check ups
 - Radiology and diagnostic appointments
 - Patient's information
 - Doctor's information
 - Employee's information
 - Speciality information
 - Other department information
 - It handles internal emergency e.g. Blue code
- Main board line number is: 26515050

Organization chart:



SECURITY DEPARTMENT

The security department is an eye and ear of every organization acting as a liaison between management and staff. The control room of Security Department is located on B1 (basement) of East Wing, Max Saket.

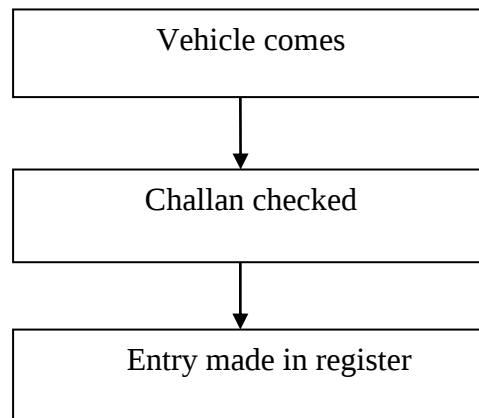
Functions of Security Department:-

1. Security management:-

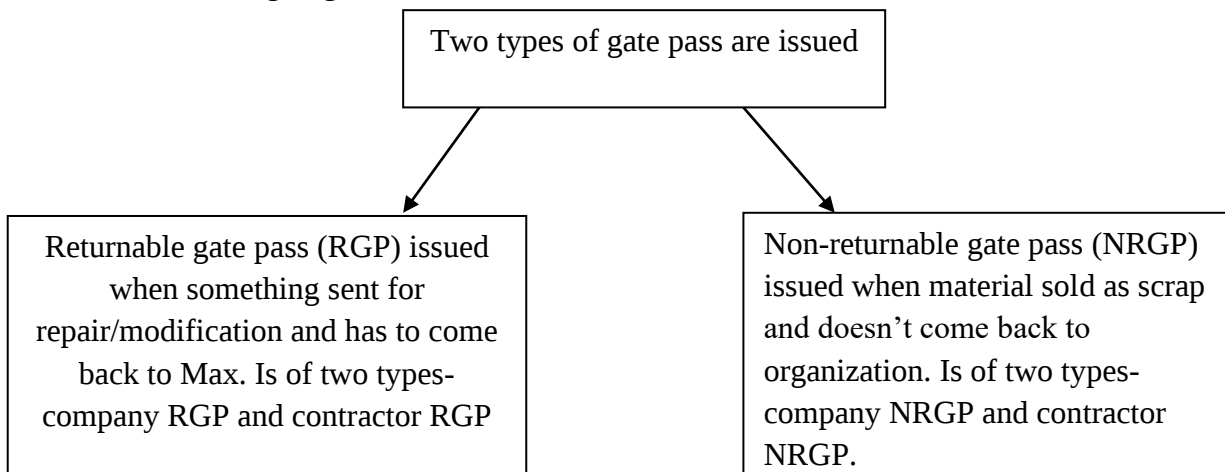
- Selection of people(guards and supervisors)
- Deploying of security staff to different floors and departments
- Checking of people entering hospital
- Turnout and grooming of security staff
- Training of security staff
- MLC handling
- Dispute handling

2. Material management:-It includes management of both incoming and outgoing materials.

a. Flow for incoming materials:-The incoming materials are received either from a company or a contractor to Max. The process flow is as under:-



b. Flow for outgoing materials



3. Disaster management.

There are six emergency codes:-

1. Red- Fire
2. Black- Bomb threat
3. Blue-Cardiac arrest
4. Yellow- External disaster like earthquake
5. Violet-Violent patient
6. Pink- Missing patient

The SOP's and disaster management plans are prepared by the Security Department. Fire management system includes smoke detectors, sprinklers fitted on ceiling and fire shafts in all corridors.

Walkie talkies are an important source of communication.

Other disasters include floods, water logging, terrorist attacks.

4. Valet management:-

- Helps to optimally utilize the parking space.
- Within a time frame of maximum 7 minutes, vehicle is handed over to customer when asked for in porch.

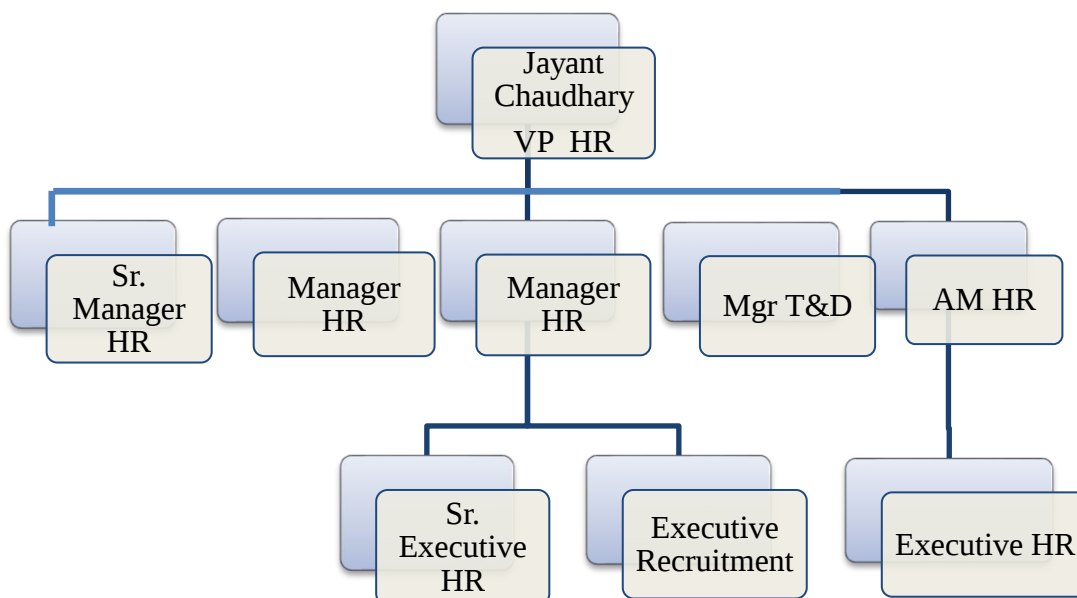
HUMAN RESOURCE MANAGEMENT

Human resource management (HRM or simply HR) is a function in designed to maximize employee performance in service of their employer's strategic objectives. HR is primarily concerned with how people are managed within organizations, focusing on policies and systems.

Following are the policies undertaken by the Human Resource Management Department:-

- Human Resource Planning Policy.
- Job Profile Format.
- Recruitment policy.
- Training and development policy.
- Induction and Orientation policy.
- Performance appraisal Policy.
- Complaint & Grievances Redressal Policy.
- Disciplinary Policy.
- Medical Discount Policy.
- Annual Medical Check-up Policy.
- Clinical credentialing and privileging Policy.
- Nursing Credentialing and Privileging Policy.

HR Structure



INTERNATIONAL PATIENT SERVICES (IPS) DEPARTMENT

It takes a lot to be a world-class health care services provider and as per patient registration data, over 11 lakh overseas patients have been helped to get back to their normal lifestyle. This department, situated in East wing, is exclusively dedicated for the services of international patients.

Contact Procedure:

- Patient sends a query and/or reports
- IPS Team consults the relevant consultant and provides diagnosis, proposed treatment and estimate
- If required, a telephonic meeting may also be arranged
- Patient confirms if he wants to have treatment at Max Healthcare to provide Visa Facilitation Letter
- Patient confirms the arrival date and time
- IPS Team, in the meantime, books room, OT etc. for the patient
- Patient is received at the Airport and then, brought to the Hospital/Guest House/Hotel

Also, another contact procedure is as follows:

- Max hospital conducts free outreach OPDs in other countries, at least 1-2 per year
- Max hospital also has tie ups with different hospitals in these countries

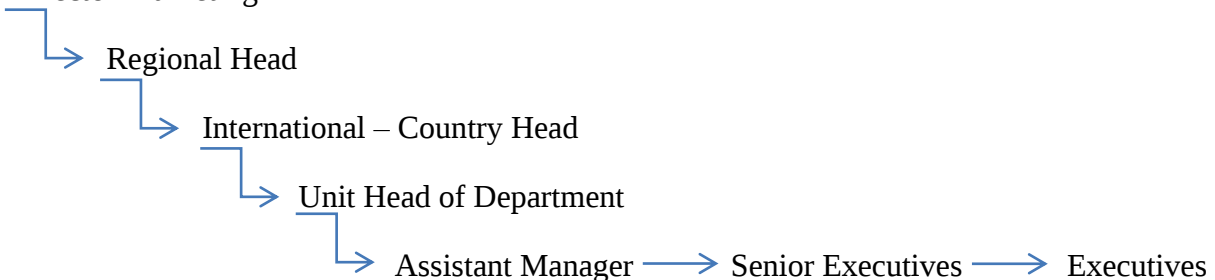
International patients avail treatment in India mainly because these facilities or treatments are not available in their respective countries, and are available at a much cheaper price in India than other countries such as US, UK or European countries. The countries from where patients come to seek treatment most commonly are Iraq, African countries (Nigeria, Congo), Oman, Uzbekistan, Afghanistan, Nepal, and Bangladesh.

The hospital provides:

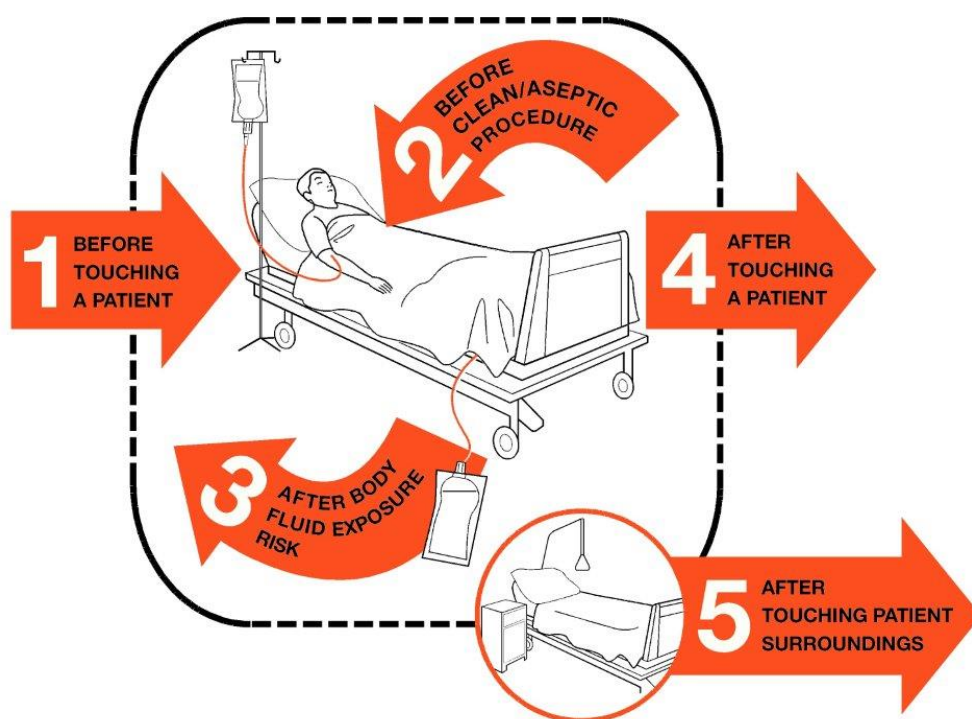
- Various Regional Translators such as Arabic, Persian, Iraqi, Bangladeshi and Russian (In house interpreter).
- Assistance in ground transportation such as finding a shuttle, hiring a car or choosing any other mode of transportation within the city.
- Relationship Managers, who closely work with over 50 Diplomatic Missions and numerous Expat bodies to ensure that international patients have a comfortable and memorable stay in India.

Staffing:

Director Marketing



Your 5 Moments for Hand Hygiene



1	BEFORE TOUCHING A PATIENT	WHEN?	Clean your hands before touching a patient when approaching him/her.
		WHY?	To protect the patient against harmful germs carried on your hands.
2	BEFORE CLEAN/ASEPTIC PROCEDURE	WHEN?	Clean your hands immediately before performing a clean/aseptic procedure.
		WHY?	To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN?	Clean your hands immediately after an exposure risk to body fluids (and after glove removal).
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
4	AFTER TOUCHING A PATIENT	WHEN?	Clean your hands after touching a patient and her/his immediate surroundings, when leaving the patient's side.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.
5	AFTER TOUCHING PATIENT SURROUNDINGS	WHEN?	Clean your hands after touching any object or furniture in the patient's immediate surroundings, when leaving – even if the patient has not been touched.
		WHY?	To protect yourself and the health-care environment from harmful patient germs.



World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES
Clean Your Hands

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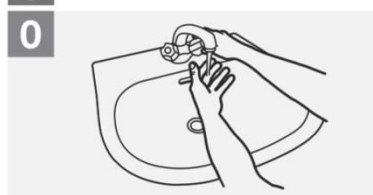
May 2009

How to Handwash?

WASH HANDS WHEN VISIBLY SOILED! OTHERWISE, USE HANDRUB

 Duration of the handwash (steps 2-7): 15-20 seconds

 Duration of the entire procedure: 40-60 seconds



Wet hands with water;



Apply enough soap to cover all hand surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



Backs of fingers to opposing palms with fingers interlocked;



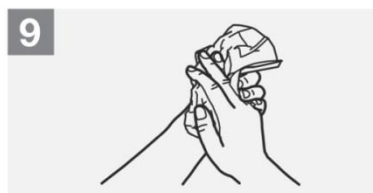
Rotational rubbing of left thumb clasped in right palm and vice versa;



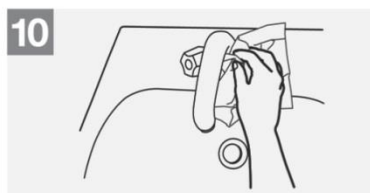
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



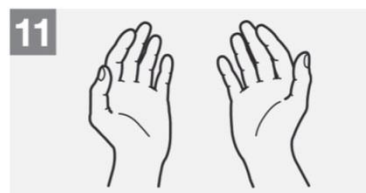
Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.



World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES

Clean Your Hands

Based on the 'How to Handwash', URL: http://www.who.int/gpsc/5may/How_To_HandWash_Poster.pdf © World Health Organization 2009. All rights reserved

May 2009



**A STUDY ON HOSPITAL CRISIS PREPAREDNESS PLAN
DURING AN EPIDEMIC OUTBREAK
AT
MAX SUPERSPECIALITY HOSPITAL, SAKET**



Institute of Health Management Research, Jaipur

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DECLARATION

I do hereby declare that I am a student of 1st year, MBA in Hospital and Healthcare Management, IIHMR University, Jaipur, Rajasthan session 2014-2016.

I would like to state that I have carried out my Internship on the topic “A study on Hospital Crisis Preparedness Plan During An Epidemic Outbreak at Max Super Speciality Hospital, Saket ” under the guidance of Dr. Sandeep Mor (Deputy Medical Superintendent) at Max Super Speciality Hospital, Saket, New Delhi for the partial fulfilment for the degree of MBA in Hospital and Healthcare Administration.

This project work is my own and has not been submitted to any of the other Institute or University for the purpose of award of any degree or diploma.

Dr. Sonal Gupta

IIHMR University

(2014-2016)

ACKNOWLEDGMENT

A summer project is a golden opportunity for learning and self development. I consider myself fortunate for having been provided an opportunity to undergo summer training at Max Super Specialty Hospital, Saket, New Delhi.

I have had the privilege to get know many people that generously shared their experiences and knowledge with me. I would like to take this opportunity to express my gratitude to all of them.

I wish to express my deep gratitude to Dr. Sandeep Mor, DMS (Deputy Medical Superintendent) at Max Super Specialty Hospital, Saket, New Delhi, who in spite of being extraordinarily busy with his duties, took time to hear, guide and keep me on the correct path by giving helpful advice, constructive comments and encouragement throughout the project. His valuable guidance made this project possible.

I am also very thankful to all the staffs of Max for their attention towards my work and helping me which greatly added to my project. The Administrative staff of the department has been very helpful to me and I would like to express my deep gratitude to all.

Lastly, I thank Almighty, my family and friends for their constant encouragement without which project would not have been possible.

Dr. Sonal Gupta

Dr. Sandeep Mor
DMS (Deputy Medical Superintendent)
MSSH, Saket, New Delhi

A STUDY ON HOSPITAL CRISIS PREPAREDNESS PLAN

ABSTRACT: Hospitals play a critical role within the health system in providing essential medical care to the community, particularly during a crisis, such as an epidemic or a pandemic. Prolonged and combined outbreaks can lead to the progressive spread of disease with rapidly increasing service demands that can potentially overwhelm the capacity of hospitals and the health system at large. To enhance the readiness of the health facilities to cope with the challenges of an epidemic, a pandemic or any other emergency or disaster, hospital managers need to ensure the initiation of relevant generic priority action or a Crisis Preparedness Plan (CPP). This study provides a list of issues explored through in depth discussion with all concerned personnel that are considered as essential themes that must be tackled in all CPPs for hospitals. The recommendations provided are tailored to a tertiary hospital with various specialties included, and should be adjusted as appropriate at the different levels of health care of the health facility. The study aims to provide specific measures and hints for preparedness in the event of communicable disease epidemic, such as the possible influenza pandemic or any other seasonal emergency such as dengue fever.

INTRODUCTION:

Hospitals are complex and vulnerable institutions, dependent on crucial external support and supply lines. Under normal working conditions, many hospitals frequently operate at near-surge capacity. Consequently, even a modest rise in admission volume can overwhelm a hospital beyond its functional reserve. Well-established partnerships with local authorities, service providers (e.g. of water, power and means of communication), supply vendors, transportation companies and other organizations are required to ensure the continuity of essential services. During an epidemic or pandemic, an interruption of these critical support services and supplies would potentially disrupt the services provided by an unprepared health facility. Even for a well-prepared hospital, coping with the health consequences of an epidemic, pandemic or any seasonal emergency would be a challenge. Despite the difficult demands and obstacles foreseen, the systematic implementation of key generic and specific pandemic-related action can facilitate effective hospital-based management during such emergencies. According to WHO the benefits of an effective, hospital-based epidemic/pandemic response plan include: (1) the continuity of essential services; (2) the well-coordinated implementation of priority action at every level; (3) clear and accurate internal and external communication; (4) swift adaptation to increased demands; (5) the effective use of scarce resources; and (6) a safe environment for health workers.

This study aims to propose an integrated Crisis Preparedness Plan (CPP) to ensure effective delivery of health care during emergency, structured through in- depth discussions and survey with all concerned personnel of a tertiary super speciality hospital, Delhi.

REVIEW OF LITERATURE:

BACKGROUND

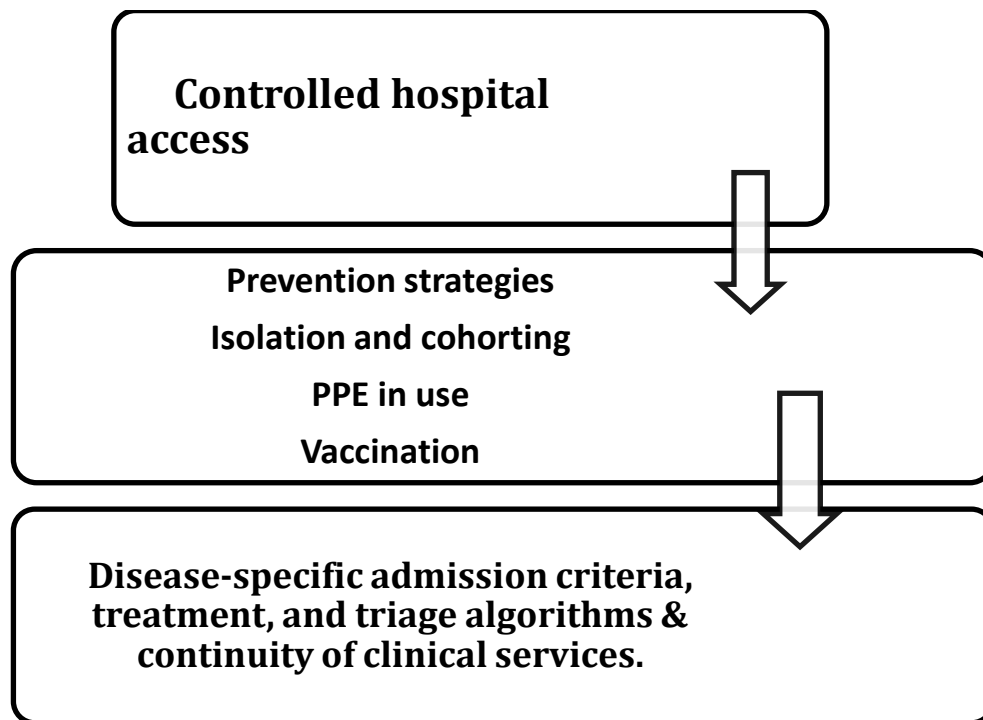
Since 11 September 2001 and the 2003 severe acute respiratory syndrome (SARS) outbreak, the health care and public policy communities have extensively discussed the importance of crisis preparedness. Significant steps have been taken by national and international health care organizations to prepare for the burden on health systems that such events might pose (*LO, Pandemic preparedness under International Law, 2009*). The 2009 H1N1 influenza outbreak has underscored the importance of preparedness at the hospital level. Some hospitals have effectively integrated the infection prevention and crisis preparedness lessons learned from SARS and previous influenza pandemics.

EXSISTING CONDITION: GLOBAL SCENARIO

Data from the early 2009 H1N1 influenza response confirm that the concern for risk in health care settings is warranted. In one report, the Centres for Disease Control and Prevention noted that 50% of health care personnel with documented H1N1 infections were infected in a health care setting. Furthermore, expert estimates regarding the expected volume of patients in a pandemic, although variable, highlight the need for plans that incorporate measures to (1) provide quality care to affected patients, (2) protect patients and health care personnel from health care-associated infection, and (3) maintain continuity of core operations in the face of epidemic and pandemic respiratory illness (EPRI). Few resources are available, however, to guide hospital EPRI planning efforts, and early experiences in the 2009 H1N1 influenza outbreak highlighted key planning issues that had previously been inadequately addressed. Herein, this study offers an approach to hospital EPRI response planning that incorporates lessons learned in the initial response to 2009 and subsequent outbreaks of H1N1 influenza.

As hospital crisis planners develop comprehensive approaches to threats to infrastructure and ongoing clinical operations, all-hazards planning using the Incident Command System (ICS), developed as part of the National Incident Management System, provides a common

framework that is easily interpretable across institutions and departments. An example of such framework adapted for EPRI with reference to *Infectious disease society of America* includes:



Further studies summarize functions to be addressed, involved departments, and tools for executing effective responses (RH, 2006) as:

Function	Departments involved	Tools
Hospital access	1. Security 2. Emergency medicine 3. Hospital Epidemiology and infection control	1. Hospital access control plan 2. Triage protocol
Prevention strategies	1. Hospital Epidemiology and infection control 2. Infectious diseases 3. Occupational health services 4. Human resources 5. Administration	1. Patient prioritization algorithm 2. Vaccine prioritization strategy 3. Vaccine and prophylaxis distribution plan

Department	Functional Responsibility
Hospital Epidemiology and Infection Control	1. Provide status reports at initial briefing, interval updates, and leadership meetings 2. Coordinate epidemiologic investigation activities and notify health department of cases 3. Appoint a clinical case evaluation lead and response documents coordinator

	4. Determine and monitor implementation of isolation and cohorting strategies 5. Collaborate with pharmacy and antibiotic management to implement and monitor vaccination and/or Chemoprophylaxis distribution.
Security	1. Open, prepare, and secure ICC, as directed 2. Implement controlled access to hospitals with closure of unmonitored entrances and tunnel access 3. Redirect visitors and staff to respective screening stations 4. Secure adult and pediatric EDs and close all hospital entrances not designated as screening areas 5. Secure family information center and prophylaxis and vaccination locations.
Emergency Medicine	1. During stage 6 or higher, evacuate non urgent, EPRI-negative patients when possible to ambulatory medical teams located at the designated alternative care areas 2. Set up and implement established procedures for level 1, 2, and 3 EPRI

	and AFRI cases 3. Maintain communication with ICC and MIEMSS Emergency Management Response Center
Occupational Health services	1. Set up and maintain employee screening stations with OHS staff, reassigned staff, and volunteers 2. Supervise development of database with vaccination and prophylaxis profiles of employees and work assignments with human resources and forward reports to HEIC daily 3. Track employees who develop EPRI, record exposures to EPRI patients, order and follow up appropriate diagnostic testing, and dispense prophylaxis based on HEIC recommendations
Medicine	1. Set up inpatient respiratory isolation unit or units as needed to care for admitted patients 2. Provide resident and attending physicians and nurses to staff emergency overflow area in outpatient medicine and pediatric clinics (for noncontagious patients) and inpatient

	unit(s) 3. Divisions of infectious diseases, adult and pediatric A. Assist with cohorting and isolation strategies as recommended by HEIC B. Arrange for transfer of triage level 4 and 5 patients from EDs to the appropriate clinical area and provide support staffing for level 4 and 5 EPRI clinic to be set up in reallocated space
--	---

Source: (Daugherty, 2010)

STANDARD RECOMMENDATIONS

According to the article on healthcare epidemiology by (Daugherty, 2010) another key resource for plan implementation is an algorithm for case detection and clinical management. The goals of such an algorithm include both effective case detection and appropriate risk stratification.

Effective infection control necessitates the limitation of admissions to those with identified need for and probable benefit from in-hospital support. A carefully developed tool to triage patients needing essential care will streamline efforts to manage markedly increased patient volume.

The overarching goal of hospital planning is to outline broad objectives and then encourage and empower departments to develop their own plans within key parameters, as dictated by infection prevention principles, ethical standards, and operational pragmatism .Once a framework has been developed, decision makers must be identified and communication strategies must be defined. Furthermore after defining key leadership functions, core communication strategies should be formulated (E, 1996) to ensure effective communication during epidemic outbreak.

OBJECTIVES

1. To identify and respond to disease outbreaks on a timely basis.
2. To help in preparing Crisis Preparedness Plan which will strengthen the functioning, co-ordination and response for an enhanced hospital care during epidemic.

METHODOLOGY

- **Type of study** : Descriptive cross-sectional
 - **Study population** : Doctors, Nurses from the Emergency and In Patient Department, Hospital Administrators & In Patient Pharmacy at Max Hospital, Saket, Delhi
 - **Study area**- Max Hospital, East wing, Saket, Delhi
 - **Duration of Study**- 4 weeks
 - **Type of Data**- Quantitative& Qualitative
 - **Technique** – Direct Observation of Operations& Unstructured Interviews
 - **Tool**- Schedule
-
- **Sample size**- 60
 - **Sampling technique**- Non probability sampling

- ***Inclusion criteria-***

- All personnel staff coming in contact for the diagnosis and treatment and providing care to the patient.
- In Patient Hospital Pharmacy

- ***Exclusion criteria-***

- Housekeeping department could not be contacted regarding the measures they take during epidemic.

- ***Data collection-***Primary and Quantitative (4weeks)

- ***Data entry-*** Manually

- ***Data Analysis-*** Using bar charts, pie charts

OBSERVATION

With the help of in depth discussions with all concerned authorities of the MAX Super Specialty Hospital, Saket, the hospital preparedness at the time of epidemics or emergencies has been observed. Each department responsible for proper patient management was identified and observed to explore various procedures and guidelines followed during epidemic to ensure continuum of health care service delivery

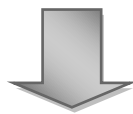
The detailed analysis of the patient flow at the time of epidemics revealed following actions undertaken to ensure smooth functioning of the hospital:-

EMERGENCY DEPARTMENT-

**PATIENT
ARRIVAL**



- The patient was received from a separate access made during H1N1 epidemic outbreak to control the spread of infection.



TRIAGE

- The Triage protocol was established and followed.
- The triage nurse was appointed for quick dissemination of the patients during H1N1 epidemic.
- The suspected patients were admitted in the 6-bedded isolation room within the emergency where they were examined by an emergency physician.
- Furthermore, to increase the surge capacity the waiting lounges on ground floor were used to accommodate the suspected cases.
- If advised for blood test by Emergency Physician, the blood sample of the patient is sent to laboratory through Ground Duty Assistant, the report of which was received within 48 hrs.



**SHIFTED TO
WARD/ICU**

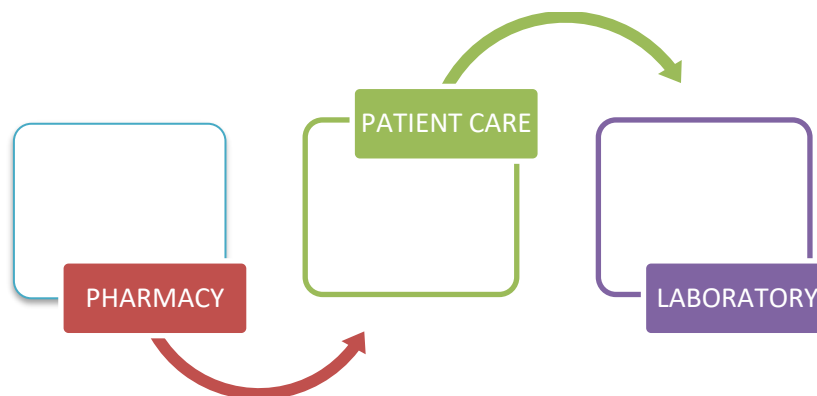


DISCHARGED

IN-PATIENT DEPARTMENT

- On confirmation patient was shifted in ward/Intensive care unit depending on the type of patient care required.
- The respiratory Intensive Care unit located on 3rd Floor, East Wing; the economy ward(5 bedded) and Room no.2608 on 6th floor, East Wing was maintained with negative pressure to accommodate H1N1 patients during the outbreak.
- All standard protocols of prevention and control were followed which included Barrier Nursing, hand hygiene, use of Protective Personal Equipment (PPE) by staff to minimize the spread of infection.

SUPPORT SERVICES- It includes laboratory services and pharmacy.



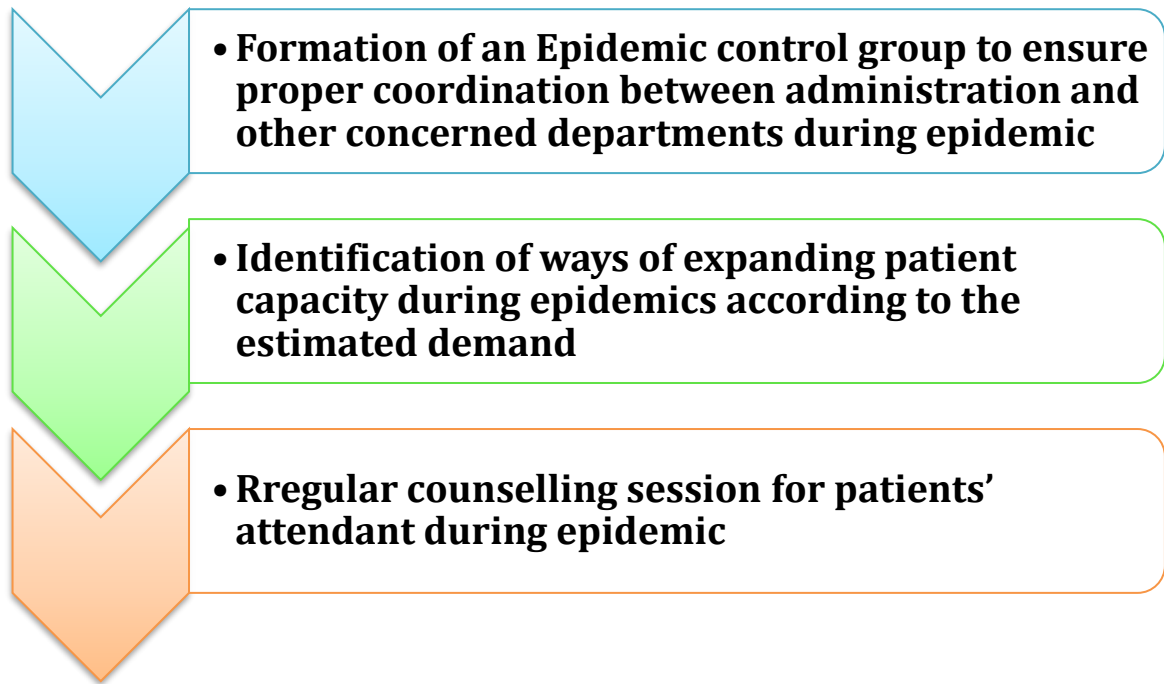
- The pharmacy ensured continuous supply of drugs through appropriate estimation of increased demand during epidemic.
- The timely intimation to local vendors and effective coordination between transportation network and hospital services was established.
- The space to accommodate additional supplies during epidemic was identified within the pharmacy.

- The laboratory established patient prioritization protocol to ensure effective functioning of the department during the time of increased patient flow as in case of epidemic.
- The reports of blood tests confirming the suspected H1N1 cases were delivered within 48hrs of patient admission in emergency.
- A proper back up of laboratory personnel &/or alternative laboratory services was maintained to ensure the continuous availability of basic laboratory testing (e.g. complete blood count, chemistry profile, electrolytes, blood gas analysis, and blood culture & sputum examination) prior to speculated season as in case of swine flu.

Other support services like bio medical engineering, security, housekeeping and food and beverages also established standard protocols to deal with increased patient flow during epidemic:

- Estimation of demand.
- Back up of equipments and personnel
- Vaccination of housekeeping and food and beverages staff.
- Patient and attendant management.
- Accommodation of patient attendants in waiting lounge.
- Daily reporting of confirmed cases (electronic laboratory reporting) to government authorities by Medical Record Department was ensured in case of H1N1 epidemic (notifiable disease).
- Ensured proper hand over of deceased patient in the case of mortality.

ADMINISTRATION: the following actions were taken by the administration to maintain continuum of hospital services during the epidemic outbreak:



CHALLENGES: In spite of the measures taken by the MAX Super Specialty Hospital, Saket there were certain challenges that were streamlined by the discussion with the concerned hospital staff:

- .Shortage of medical and non medical consumables
- Staff constraints.
- Counseling of patient/attendants
- Excess stress/workload especially during nights at the time of epidemic.
- Housekeeping delay

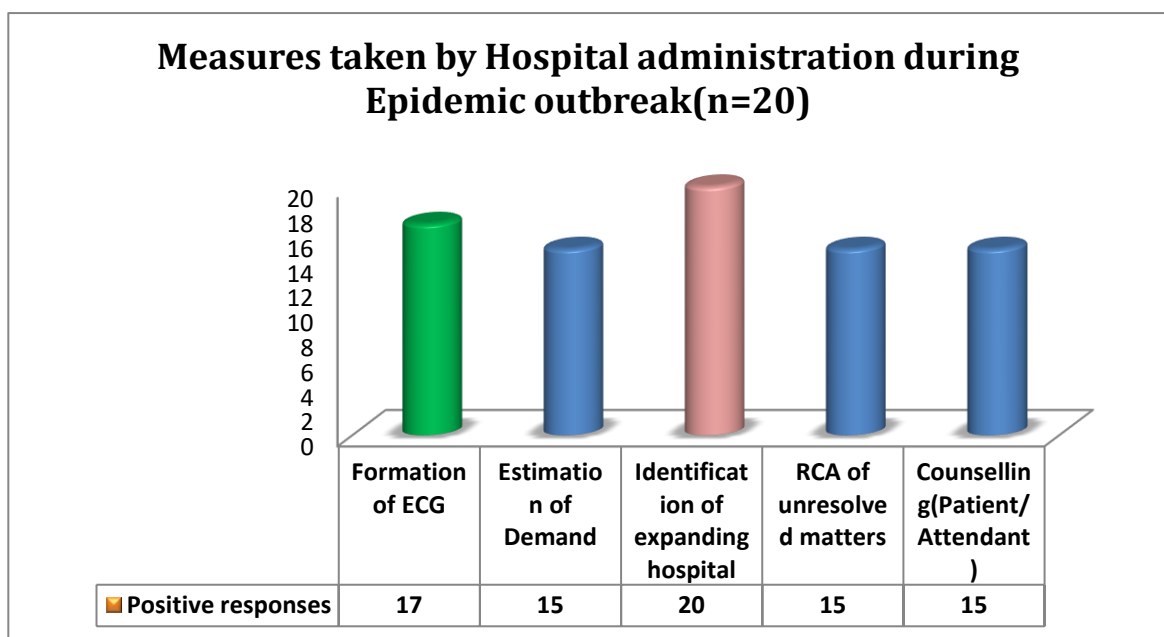
DATA COLLECTION:

To further investigate the root cause of the challenges faced and analyzes complete process flow of the hospital during epidemics, data was collected through a survey with the help of unstructured questionnaire prepared through the discussions and interviews concerned hospital personnel.

The questionnaire was distributed to four departments namely Hospital Administration, Emergency, In Patient, Pharmacy, responsible for ensuring proper patient care during H1N1 epidemic outbreak in the months of January to March 2015.

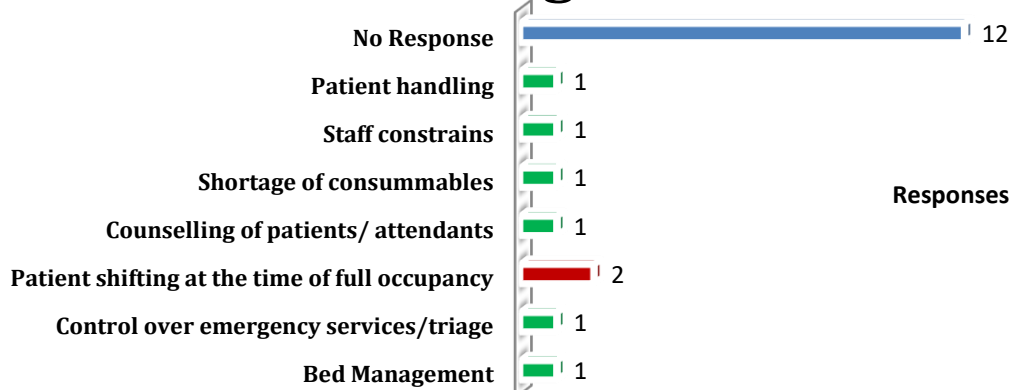
DATA ANALYSIS

HOSPITAL ADMINISTRATIO



INFERENCE: 17 of the Hospital Administrators confirmed the formation of Epidemic Control Group during epidemic outbreak, Identification of ways to expand hospital was responded positive by all the 20 personnel and 15 confirmed estimation of demand, Root Cause Analysis(RCA) and Counselling of patient/attendants during epidemics.

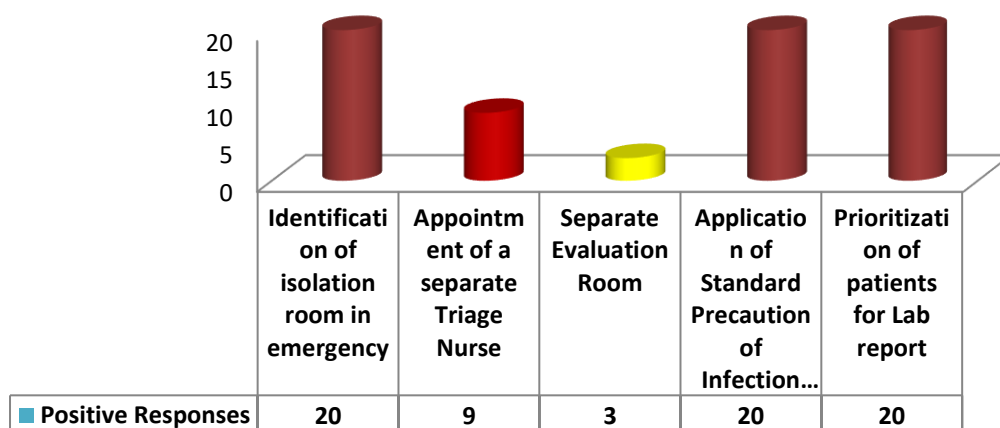
Challenges(n=20)



INFERENCE: The most prominent challenges faced by Hospital Administration include Patient handling(1), Staff constrains(1), Shortage of consumables(1), Counseling of patient/attendant(1), Patient shifting at the time of full occupancy(2), Control over emergency services/triage(1), and Bed Management(1) during H1N1 epidemic outbreak.

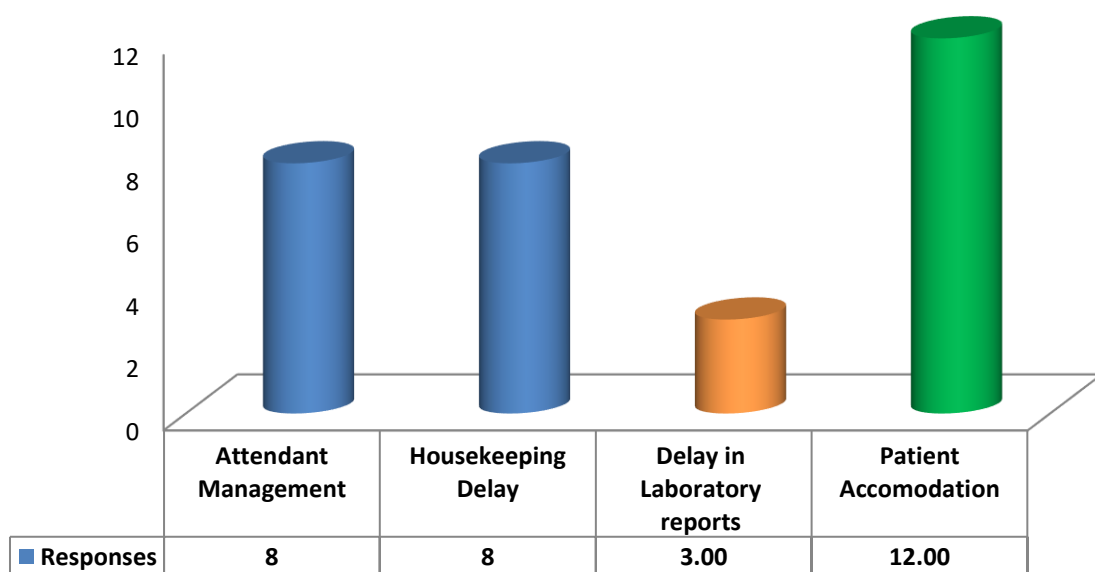
EMERGENCY DEPARTMENT

Complete Process Flow in Emergency during Epidemics(n=20)



INFERENCE: Three processes HIGHLIGHTED IN BLUE namely identification of isolation room, Application of Standard Precaution of Infection control and Prioritization of patients for laboratory reports were confirmed positive by all the interviewees and appointment of separate triage nurse and separate evaluation room were confirmed positive only by 9 out of 20 and 3 out of 20

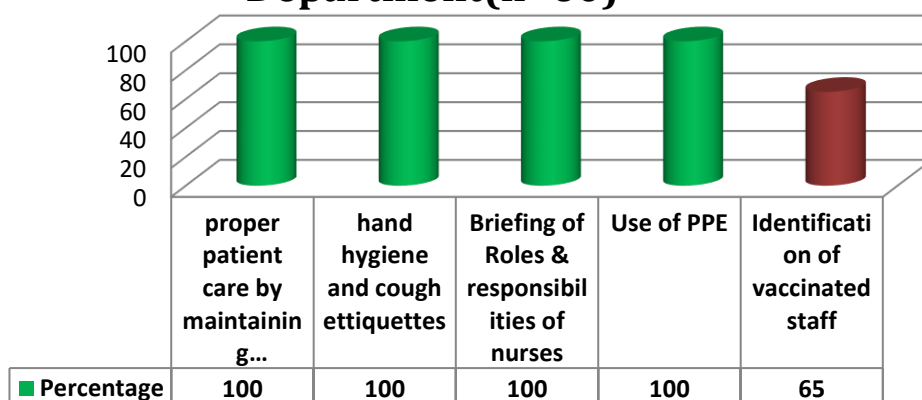
Challenges(n=20)



INFERENCE: The most common challenges encountered in emergency was Patient accommodation(12 out of 20) followed by Attendant management & Housekeeping delay (8/20 each). Other includes delay in laboratory reports (3/20).

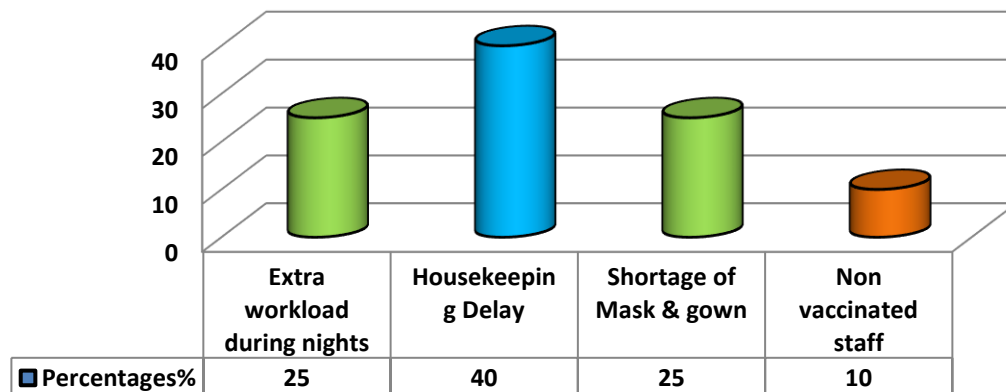
IN PATIENT DEPARTMENT:

Complete process flow in In Patient Department(n=60)



INFERENCE: FOUR processes HIGHLIGHTED IN GREEN namely proper patient care by maintaining negative pressure, hand hygiene and cough etiquettes, briefing of nurses & use of PPE were confirmed positive by 100% of the nurses on duty during epidemic.

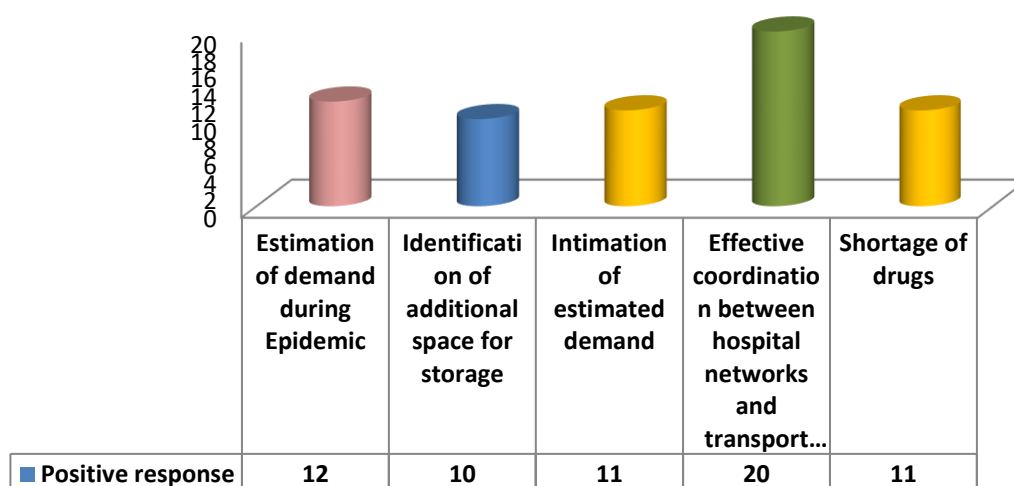
Challenges For IPD



INFERENCE: The most common challenges encountered by the nurses in the ward/Intensive Care Unit includes housekeeping delay(40%), Extra workload during nights(25%), shortage of masks & gowns(25%) and non vaccinated staff(10%).

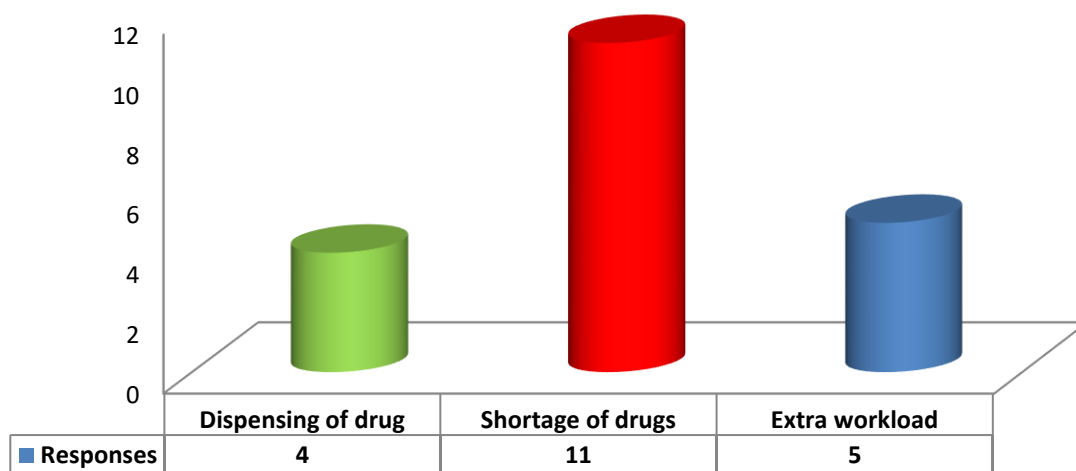
PHARMACY

Complete process flow in Pharmacy(n=20)



INFERENCE: 12 out of 20 staff in Pharmacy responded positively to approximate estimation of increase in demand during Epidemic outbreak, 10 affirmed identification of additional space for storage, 11 confirmed intimation and shortage of drugs during epidemics and all positive response was observed for effective

Challenges for Pharmacy(n=20)



INFERENCE: The most common challenges encountered by the Pharmacy in the epidemic includes shortage of drugs (11 out of 20) followed by extra workload and dispensing of drug.

INTERPRETATION:

Data analysis of the survey carried out in Max super specialty hospital during H1N1 influenza epidemic outbreak revealed following results:

- **HOSPITAL ADMINISTRATION:**

- 17/20 of the staff responded positively to formation of Epidemic control group during H1N1 outbreak
- 15 confirmed estimation of increase in demand during epidemic outbreak, proper Root Cause Analysis of unresolved issues & incidents and counseling of Patient/ attendants during epidemic.
- 100% confirmed identification of ways to expand patient admission capacity during epidemic.
- The most common challenges encountered include Patient handling(1), Staff constrains(1), Shortage of consumables(1), Counseling of patient/attendant(1), Patient shifting at the time of full occupancy(2), Control over emergency services/triage(1), and Bed Management(1) during H1N1 epidemic outbreak.

- **EMERGENCY DEPARTMENT:**

- Three processes namely identification of isolation room, Application of Standard Precaution of Infection control and Prioritization of patients for laboratory reports were confirmed positive by all the interviewees
- Appointment of separate triage nurse and separate evaluation room were confirmed positive only by 9 out of 20
- Presence of Separate evaluation room was confirmed positive by 3 out of 20 staff.
- Identification of isolation room was confirmed positive by all.
- Application of Standard Precaution of Infection control was affirmed positive by all.

- **IN PATIENT DEPARTMENT**

- proper patient care by maintaining negative pressure, positive response was 100%
- Hand hygiene and cough etiquettes was maintained 100%
- Briefing of nurses & use of PPE were confirmed positive by 100% of the nurses on duty during epidemic.
- 65% of the nurses affirmed that there was no specific method to identify vaccinated staff other than verbal confirmation during epidemic.
- The most common challenges encountered by the nurses in the ward/Intensive Care Unit includes housekeeping delay(40%)

- **PHARMACY-**

- 12 out of 20 staff in Pharmacy responded positively to approximate estimation of increase in demand during Epidemic outbreak
- 10 affirmed identification of additional space for storage
- 11 confirmed intimation and shortage of drugs during epidemics and
- all positive response was observed for effective coordination

The most common challenges encountered by the Pharmacy in the epidemic includes shortage of drugs (11 out of 20) followed by extra workload and dispensing of drug.

The most common challenge as reflected was Housekeeping delay and Shortage of masks encountered in all or most of the departments during an epidemic outbreak.

RESULTS

In the light of the above findings and with the help of in depth discussions with the Medical Superintendent of MAX SUPER SPECIALITY HOSPITAL, SAKET, DELHI, and Deputy Medical Superintendent, a *checklist* is structured for each department involved in effectively managing patient flow at the time of epidemics or emergencies. Under each department, there is a list of questions regarding the status of implementation of the recommended action specific to that department.

A. Epidemic Control Group: A well-functioning epidemic control group is essential for the effective management of emergency operations.

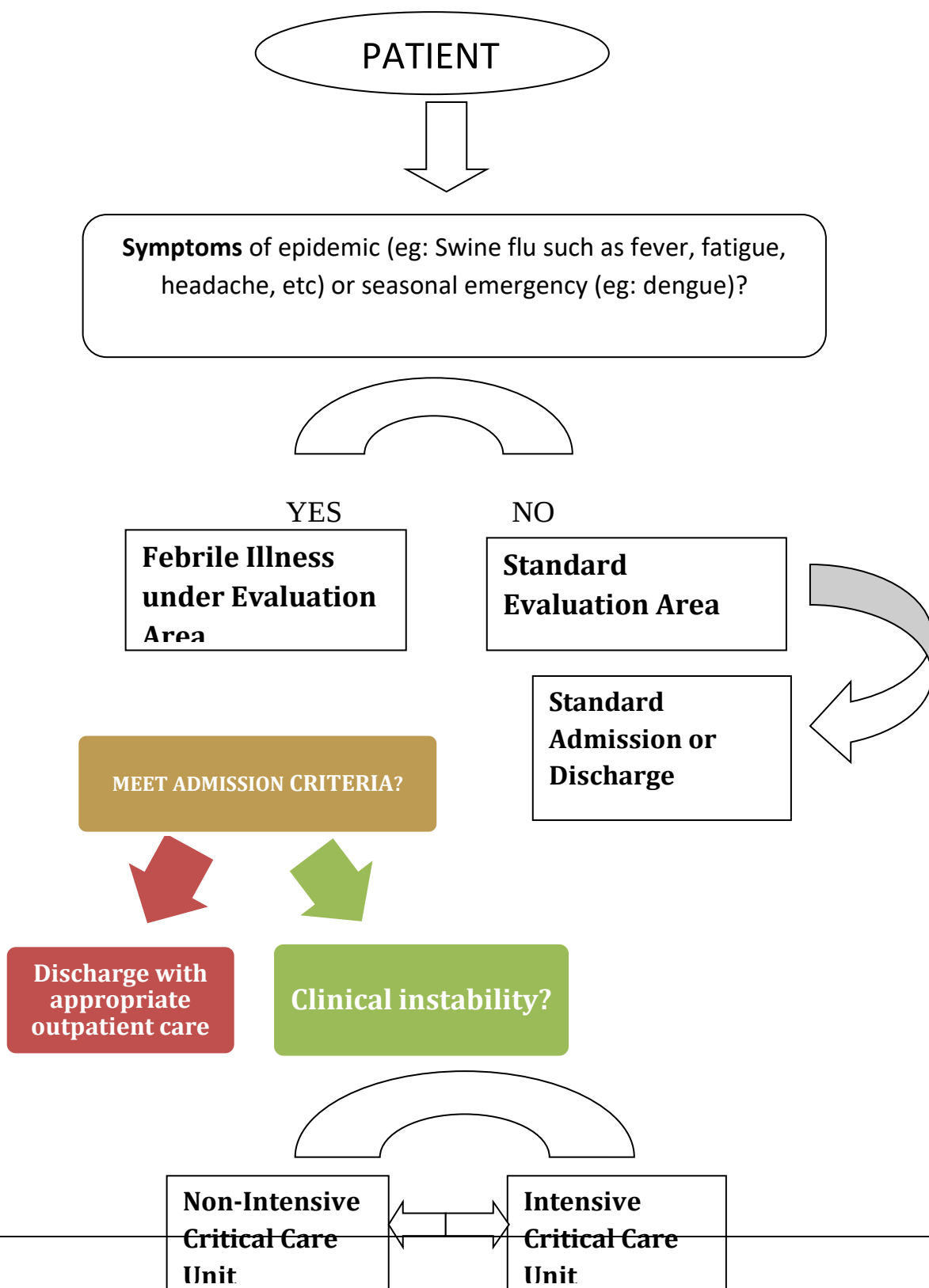
Checklist:

Recommended Action	Under Review	Under Progress	Completed
Activate or Establish the hospital Epidemic Control Group(ECG)			
Identify season of epidemics with the help of past experience.			
List all hospital services in priority order.			

Use available planning assumptions to estimate increase in demand for hospital services during a pandemic			
Formulate admission and discharge criteria according to available treatment capacity and demand.			
For each department identify the minimum number of health-care workers needed to ensure effective operation of the department.			
Provide training relevant to areas in need such as infection control and safety			
Vaccinating staff prior to epidemic season every year to ensure continuity of health care service during epidemics.			

B. Case management: An efficient and accurate triage system and an organized in-patient management strategy are required to ensure adequate treatment of epidemic emergency. The detailed analysis of the patient flow at the time of epidemics with the **Head of Department, Emergency** revealed following actions essential for an effective crisis manage

TRIAGE OF PATIENTS DURING EPIDEMICS



Checklist:**1) Identification**

Recommended action	Under review	Under process	Completed
Calculate approximate increase in bed requirement(past experience) during the season			
Identify the area within the vicinity of emergency where patients can be accommodated(isolation)			
Appointment of a triage supervisor for proper identification of patients.			

2) Examination

Recommended action	Under review	Under process	Completed
Establish a triage protocol			
Establish Febrile Illness Under Evaluation room for examining suspected cases			
Ensure availability of beds for positive cases in wards and ICU			

Ensure application of standard precautions of infection control all the time			

Support Services

Recommended action	Under review	Under process	Completed
a)Hospital Administration			
Activate the supervisory body responsible for directing emergency response operation			
Establish mechanism for appropriate sharing of information between hospital administration and department head/staff			
Ensure continuity of essential health service delivery of entire hospital(patients other than epidemic related)			
Establish guidelines for effective management of patient's attendants.(waiting lounge etc) Identify ways of expanding hospital in patient capacity(including staff, space, supplies)			

Formulate policies to minimize staff absenteeism (consultants, nurses, managers, etc) at the time of identified epidemic seasons in emergency department.			
b)Pathological lab			
Ensure proper receiving of blood sample from emergency			
Ensure quick blood test results(prioritizing the epidemic patients)			
c)Housekeeping			
Implement methods of cleaning and disinfecting in accordance with national guidelines.			
Assign different teams of GDA's(vaccinated) on each floor for proper transfer of patient from ward to ICU and vice-a-versa			
d)Medical stores			

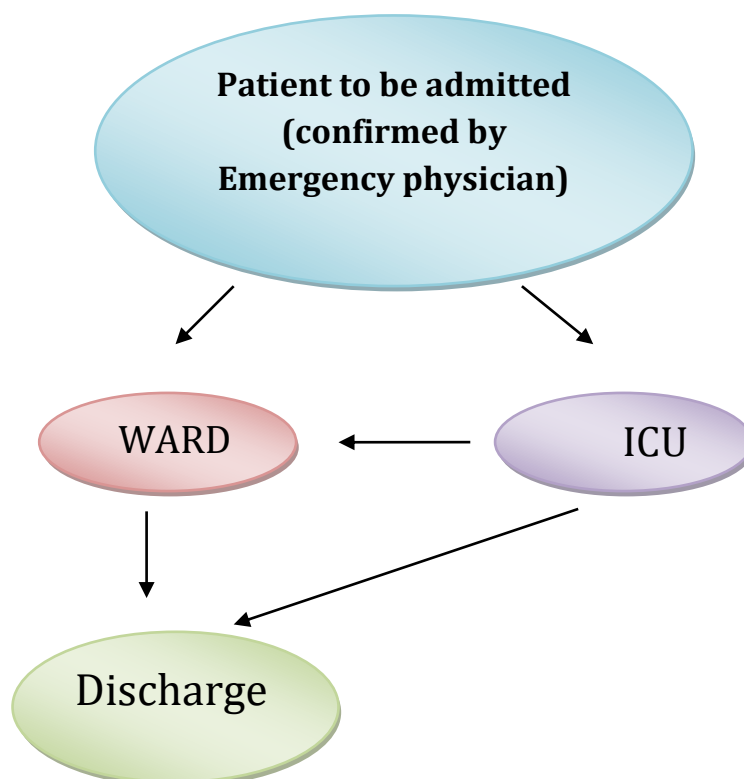
Ensure sufficient supply of identification kit			
Ensure supply of PPE(gloves, gowns, masks, etc)			
e)Pharmaceuticals Supply Management			
Ensure continuous supply of drugs(alert mechanism in case of shortage)			
f)Bio-Medical Engineering			
Ensure functionality of all required equipments			
Ensure mechanism for maintenance and repair of the equipment for essential services in emergency department			
Establish appropriate back up in case of increased demand at the time of epidemic			
g) Blood Bank			
Ensure continuous supply from blood bank in case of any epidemic or seasonal disease through storage			

mechanism and strengthening referral services			
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- **In-Patient-Department:** After successful triage during emergencies, admission of patient confirmed by physician on duty takes place.

Through in depth discussion with nurses, physician, ward secretary, floor mentor, housekeeping staff and dietician a checklist is prepared keeping in view patients' requirements that can effectuate and ensure timely management during epidemic and seasonal emergencies.

Admission of patient in a hospital during emergency is processed as:



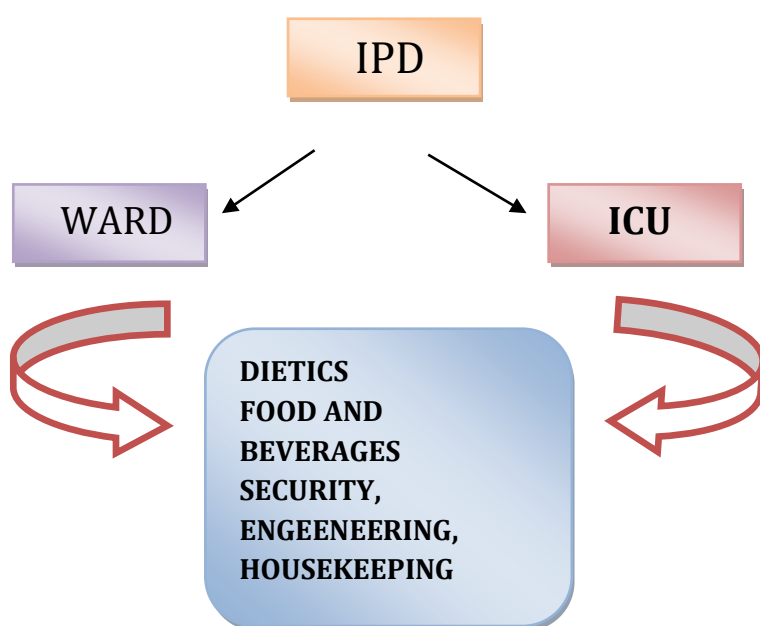
Checklist:**Ward/ICU**

Recommendations	Under review	Under process	Completed
a)Hospital Administration			
Update the staff contact list			
Establish staff absenteeism in advance and monitor it continuously			
Calculate maximum case admission capacity, determined by number of beds as well as availability of human resources.			
Identify ways of expanding in patient capacity(including staff, supplies and processes)			
Ensure that all decisions on patient prioritization like adapted admission and discharge criteria are communicated to relevant staff			
Ensure regular monitoring of bed occupancy and average length of patient stay during the epidemics			
Ensure effective coordination between administration and health care service providers.			
Ensure patients' attendants counselling during epidemic			

emergency.			
Ensure proper escalation of unresolved issues and incidents with immediate effect.			
b) Nursing Station			
Ensure proper receiving of patient from emergency or ICU			
Effectively briefing nurses on their role and responsibilities by Team Leader.			
Ensure proper patient care by maintaining negative pressure in case of swine flu and continuous supply of drugs and equipments (timely intimation to pharmaceuticals)			
Ensure that health care workers, patients and visitors are aware of cough etiquette and hand hygiene. (Provide verbal instruction, Informational posters, cards, etc.)			
Ensure that nurses and staff apply Standard and droplet precautions.			
Ensure the use of personal protective equipment (PPE) (i.e. medical/surgical masks, gloves, gowns, eye protection) to limit the spread of infection.			
Ensure proper identification of vaccinated staff though			

badges etc in case of critical care.			
Functions related to notifiable disease.			

- **Essential Support Services:** To optimize patient care during an epidemic or a pandemic, it is necessary to identify and maintain essential support services, such as those for laundry, cleaning, waste management, dietary services and security.



In depth review of literature and extensive discussions with the mentioned departments highlighted following actions that can lead to effective hospital management during epidemics.

Checklist:

Recommended actions	Under review	Under progress	Completed
Estimate the additional supplies required by the support services and			
Introduce a mechanism to			

ensure continuous availability of estimated additional supplies.			
Implement methods of cleaning and disinfecting hospital in accordance with the increased demand			
Anticipate the impact of epidemic on hospital food supplies and initiate measures to ensure the availability of food.			
Ensure the availability of appropriate back-up arrangements for essential supplies such as water, power and oxygen.			
Ensure appropriate repair and maintenance plan of essential equipments to be used especially in ICU's			
Identify potential security constraints and ensure the control of facility access, essential			

Pharmaceutical stocks, patient flow, traffic and parking.			
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- **Logistics and pharmaceuticals:** The continuity of hospital services and the availability of essential equipment and supplies, including pharmaceuticals, require a proactive approach for effective facility management.

Checklist:

Recommended actions	Under review	Under progress	completed
Estimate the consumption of essential equipment, supplies and Pharmaceuticals, (e.g. amount used per week) during epidemics.			
Establish continuity of supplies by intimating vendors on timely basis			
Identify space within the hospital for the storage of additional supplies. Factors to consider include accessibility, security, temperature, ventilation, light exposure and humidity.			
Ensure an uninterrupted			

cold-chain for essential items requiring refrigeration.			
Coordinate with hospital networks and transportation services to ensure continual supplies during epidemic.			

Infection control: An operational infection prevention and control (IPC) policy is essential to minimize the risk of transmission of health-care-associated (nosocomial) infection to patients, hospital staff and visitors.

Recommended Actions	Under review	Under progress	Completed
Ensure that health care workers, patients and visitors are aware of cough etiquette and respiratory and hand hygiene. Provide verbal instruction, informational posters, cards, etc.			
Ensure that personal protective equipment (PPE) is easily accessible to staff.			
If the supply of PPE is limited, prioritize staff caring			

for cases.			
Provide medical/surgical masks to all suspected & confirmed cases during transport; reinforce cough etiquette when mask use is not tolerated.			
Provide clear identification of and restriction to the rooms, routes and buildings used in connection with patient care. (Restrict access).			
Ensure adherence to IPC guidelines related to handling laboratory specimens, food preparation, laundry and cleaning services and waste management.			
Limit visitors to those essential for patient support and ensure that they take the same IPC precautions as the health-care workers.			

Standard Precaution and Guidelines: According to WHO guidelines:-

Always apply standard and droplet precautions when working in direct contact with suspected or confirmed cases.

Droplet precautions:

- Wear a medical/surgical mask, if working within,
 ≤ 1 metre of the patient
- Emphasize hand hygiene before and after patient contact and immediately on removal of the mask.

Standard precautions:

For procedure with a risk of splashes on the face and body, PPE should include:

- Facial protection either a mask & eye visor or goggles, or a face shield
- A gown and clean gloves, and hand hygiene before and after patient contact & after PPE removal.

Laboratory services: Maintenance of the essential laboratory services is necessary for the appropriate clinical management of both pandemic and other patients.

Recommended action	Under review	Under process	Completed
Ensure the continuous availability of basic laboratory testing (e.g. complete blood count, chemistry profile,			

electrolytes, blood gas analysis, blood culture & sputum examination).			
Identify back-up laboratory personnel and/or alternative laboratory services			
For the purpose of hospital-based surveillance, ensure mechanisms for the prompt provision of laboratory data to the physicians and health authorities Establish a laboratory referral pathway for the identification, confirmation monitoring of epidemic pathogens.			
Establish transportation procedures for specimen referral in accordance with national and international transport regulations and requirements.			
Ensure the application of bio safety measures			

Surveillance: Monitoring and Planning

A notifiable disease is one for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease.

Healthcare facilities, laboratories, nursing homes, and other entities must report such diseases, as mandated by state or local statute.

Notifiable disease data are used for monitoring trends, program planning, evaluation, policy development, research, and monitoring the effectiveness of prevention and control activities.

In its current form reporting of notifiable disease is very variable. The method of clinician-initiated passive surveillance is burdensome to healthcare practitioners, which can result in increased reporting delays, data incompleteness, and inaccuracies due to omissions and errors. Electronic-laboratory reporting systems, which are based on laboratory test results, address many of these limitations and are currently used in the MAX Hospital.

Checklist:

Recommended Actions	Under review	Under process	Completed
Appoint a hospital supervisor with the overall responsibility for activities related to reporting of notifiable diseases.			
Ensure timely reporting of cases by MRD (medical record department) to government authorities under standard guidelines.			
Streamline the appropriate			

method of reporting i.e. clinician initiated passive reporting or electronic laboratory reporting.			
Investigate reports sent to government authorities whether comply with the standardized case definitions through monitoring.			

Post-mortem care: An effective planning for managing an increased need for post mortem care and disposition of deceased patients is required at the time of epidemic outbreak

Checklist:

Recommended Actions	Under review	Under process	Completed
Identify an area in the facility that could be used as a temporary morgue			
Anticipate supply of needed body bags and shroud packs through Mortality estimates			
Formulate plans for expanding morgue capacity by discussing with local contacts.			

CONCLUSIN:

With the help of in depth discussions with all concerned authorities of the Hospital and analysis of the survey conducted it was explored that derailment of the functioning of the hospital is often observed during epidemic due to following reasons:

1. Increased patient flow(excess demand)
2. Scarcity of resources to meet the increased patient flow(manpower, time, equipments etc)
3. Absence of efficient in patient management strategy

Further to ensure and enable the hospital to provide the best attainable standard of medical care for all patients and those in need of care in all situations a checklist is structured for each department involved in effectively managing patient flow at the time of epidemics or emergencies.

Annexure: 1 (Questionnaire for Hospital Administrators)

HOSPITAL ADMINISTRATION

Formation of an Epidemic control group for an effective management of emergency operations during epidemic/pandemic?	Yes/ No
Did hospital estimate increase in demand for hospital services during a pandemic?	Yes/ No
Did hospital Identify ways of expanding patient capacity during epidemics according to the estimated demand?	Yes/No
Did proper Root Cause Analysis (RCA) of unresolved issues and incidents take place?	Yes / No
Did hospital conduct regular counselling session for patients' attendant during epidemic?	Yes / No

Highlight the most prominent challenge for administration during an epidemic outbreak-

Annexure: 2 (Questionnaire for Emergency Doctors)

Emergency Department

Did hospital identify an area within the emergency to accommodate patients during epidemic?(isolation room)	Yes/ No
Did hospital appoint a triage nurse for proper identification of patients?	Yes/ No
Did hospital establish a separate evaluation room for examining suspected cases?	Yes/No
Did hospital ensure application of standard precaution of infection control by health care service providers?	Yes / No
Did hospital ensure timely receiving of blood sample by prioritizing epidemic patients?	Yes / No

Highlight the most prominent challenge for Emergency department during an epidemic outbreak-

Annexure: 3 (Questionnaire for Pharmacy)

Pharmacy

Did pharmacy maintain estimation of the consumption of essential equipment, supplies and Pharmaceuticals, (e.g. amount used per week) during epidemics?	Yes/ No
Did pharmacy identify space within the hospital for the storage of additional supplies?	Yes/ No
Did pharmacy establish continuity of supplies by intimating vendors on timely basis?	Yes/No
Was there an effective coordination between hospital networks and transportation services to ensure continual supplies?	Yes / No
Was there any shortage of supply during epidemics?	Yes / No If yes mention the measure taken –

Highlight the most prominent challenge for Pharmacy department during an epidemic outbreak-

Annexure: 4 (Questionnaire for In-Patient Department)

In Patient Department (Ward/ ICU)

Did hospital maintain proper patient care by maintaining negative pressure in case of swine flu epidemic?	Yes/ No
Did hospital ensure that health care workers, patients and visitors are aware of hand hygiene & cough etiquette through verbal instructions?	Yes/ No
Did the Team Leader effectively brief nurses on their role and responsibilities during an epidemic outbreak?	Yes/No
Did nurses and staff of the hospital use PPE (Personal Protective Equipment i.e. masks, gloves, gowns, eye protection) to limit the spread of infection during an epidemic?	Yes / No
Did hospital ensure identification of vaccinated staff through badges etc?	Yes / No

Highlight the most prominent challenge for In Patient department during an epidemic outbreak

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