

**Summer Training at
Max Super Specialty Hospital,
Saket, New Delhi**

**Study on Incidence of Hospital Acquired Infections in an ICU and to Give
Recommendations and Suggestion for the Same**

**By
Mehak Jamwal**

**Under the guidance of
Dr. Anoop Khanna**

**MBA Hospital and Health Management
2015-2017**



**The IIHMR University, Jaipur
2016**

CERTIFICATE

To Whomsoever It May Concern

This is to certify that **Dr. Mehak Jamwal**, student of MBA-HM in Hospital and Health, from The IIHMR University, Jaipur has undergone Summer Training Project at **Max Superspeciality Saket** from **1st April to 31st May, 2016**.

The Candidate has successfully carried out the study designated to her during summer training and her approach to the study has been sincere, scientific and analytical. This training is in fulfillment of the course requirements.

I wish her success in all his future endeavors.



Col (Dr.) Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur



Mr. Anoop Khanna
Professor
The IIHMR University, Jaipur



CERTIFICATE OF COMPLETION

This is to certify that

Dr. Mehak Jamwal

has been associated as an

INTERN

with the department of

MEDICAL ADMINISTRATION

for a period of

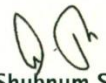
1st April 2016 to 31st May 2016

at

Max Super Specialty Hospital,
Saket

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


Head of the Department


Dr. Shubnum Singh

Dean – Nursing, Allied Health, & Wellness Programs
Max Healthcare, New Delhi


Ms. Brigitte Wuethrich
General Manager
Max Institute of Medical Excellence
Max Healthcare

DECLARATION

I do hereby declare that I am a student of 1st year, MBA in Hospital and Healthcare Management, IIHMR University, Jaipur, Rajasthan session 2015-2017.

I would like to state that I have carried out my Internship on the topic " A STUDY ON INCIDENCE OF HOSPITAL ACQUIRED INFECTIONS IN AN ICU AND TO GIVE RECOMMENDATIONS AND SUGGESTION FOR THE SAME " at Max Superspeciality Hospital, Saket from Jan 2013 to Dec 2015 under the guidance of Dr. Bansidhar Tarai, MD (Senior Consultant, Microbiology) 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.MEHAK JAMWAL

IIHMR University

(2015-2017)

ACKNOWLEDGMENT

A summer project is a golden opportunity for learning and self development.

I consider myself very lucky and honored to have wonderful people leading me through the completion of this project.

I would like to take this opportunity to express my immense gratitude to Dr. Nalini kaul, for her guidance and giving me this opportunity to complete my internship from the esteemed hospital.

I consider myself fortunate for having been provided an opportunity to undergo summer training at Max Super Specialty Hospital, Saket, New Delhi and wish to express my indebted gratitude to my mentor, Dr. Sahar Qureshi, Assistant General Manager Operations, MSSH, East Block .

I also wish to extend a special thanks to Dr. Bansidhar Tarai, MD, Senior Consultant (Microbiology), Pan Max – Coordinator, who in spite of being extraordinarily busy with his duties, took time to hear, guide and keep me on the correct path and allowing me to carry out my project work at their esteemed organization during the training.

I take this opportunity to express my profound gratitude and keep regards to my Mentor, Dr. Sandeep Mor, Deputy Medical Superintendent, for his guidance and constant encouragement during the course of project.

Lastly, I thank Almighty, my family and friends for their constant encouragement without which assignment would not be possible.

Dr. MEHAK JAMWAL

TABLE OF CONTENTS

1. ABBREVIATION	
2. GENERAL FINDINGS	
3. HOSPITAL AS AN CONCEPT	
4. REVIEW OF LITERATURE	
5. RATIONALE	
6. OBJECTIVES FOR DOING STUDY	
7. RESEARCH METHODOLOGY	
8. DATA ANALYSIS & RESULTS	
9. OBSERVATIONS AND FINDINGS	
10. RECOMMENDATIONS	
11. CONCLUSION	
12. REFERENCES	

Abbreviation:

MSSH - MAX SUPERSPECIALTY HOSPITAL

GDA - GENERAL DUTY ASSISTANT

HIS - HOSPITAL INFORMATION SYSTEM

COW - COMPUTER ON WHEELS

CAUTI - CATHETER ASSOCIATED URINARY TRACT INFECTION

SSI - SURGICAL SITE INFECTION

CLABSI - CATHETER LINKED ASSOCIATED BLOOD STREAM INFECTION

VAP - VENTILATOR ASSOCIATED PNEUMONIA

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.

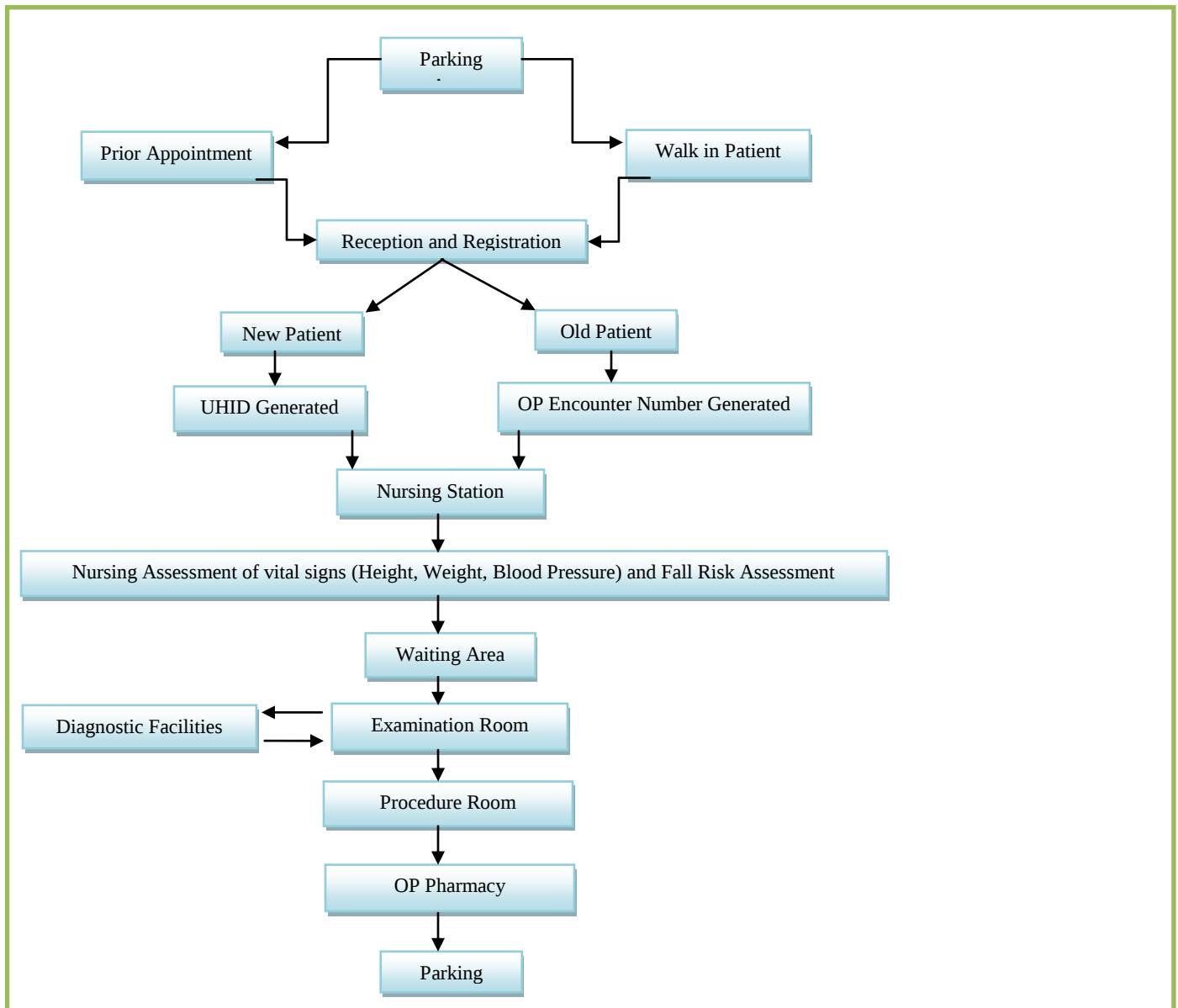
OUT-PATIENT DEPARTMENT

- Each INSTITUTE of Max Saket hospital has its own OPD area as well as IPD area / day-care area wherever applicable with doctor's 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.

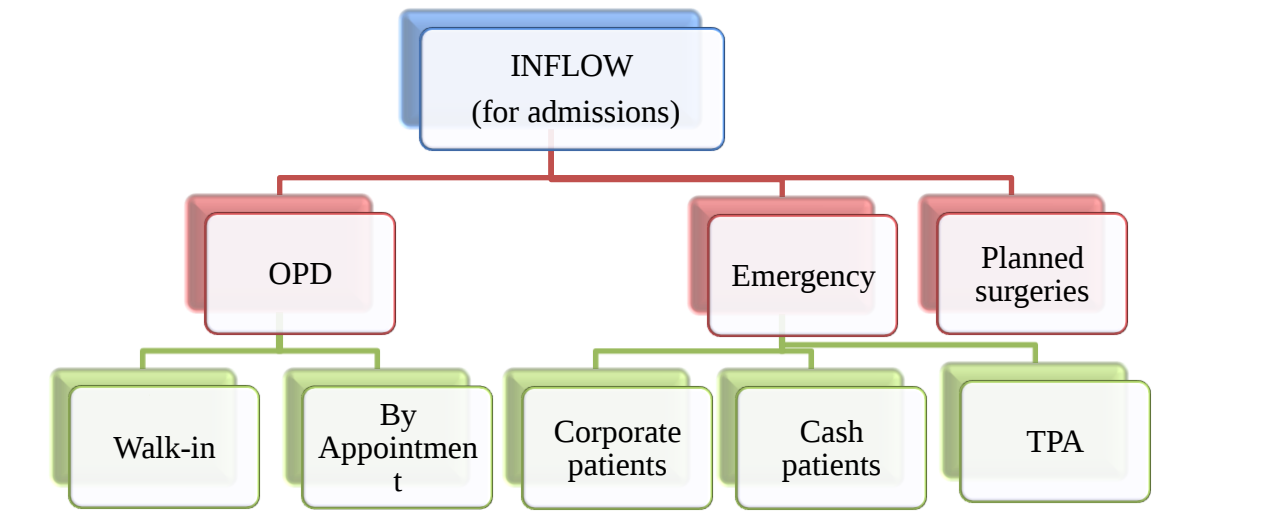
The general process flow that is followed in all the OPDs is as follows:



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

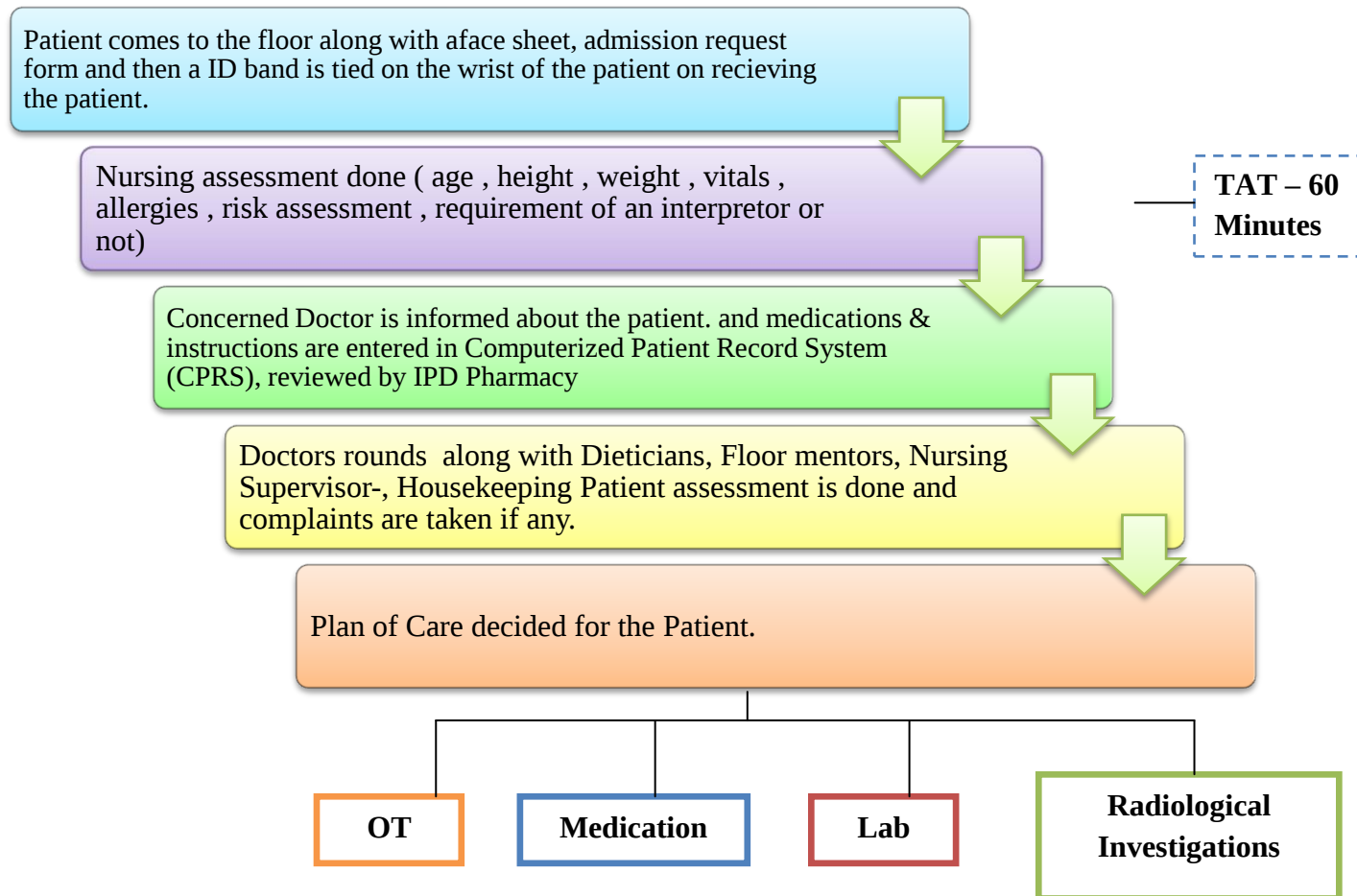


IN-PATIENT DEPARTMENT (IPD)

- 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

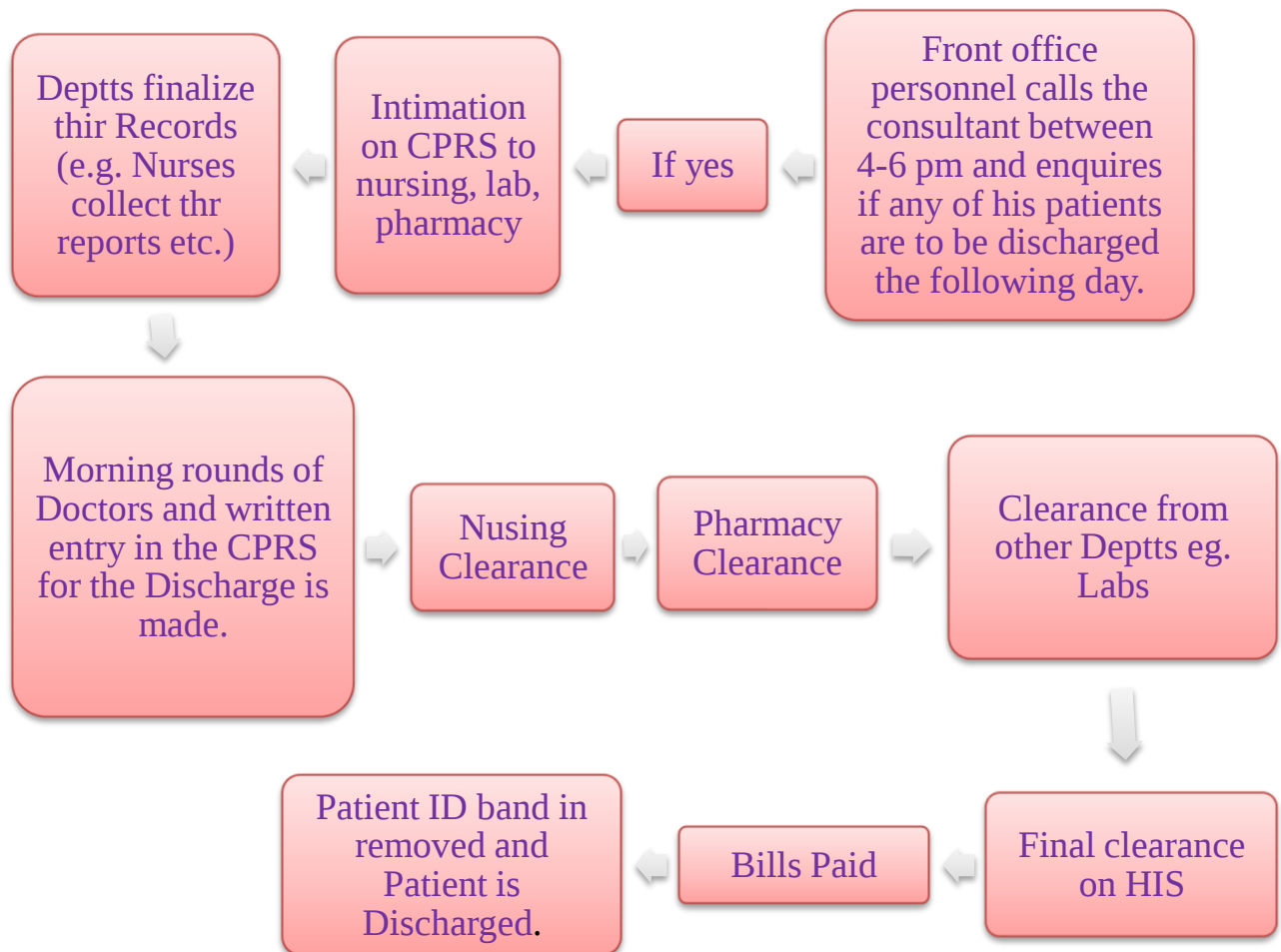
- Administration Staff
 - Floor Mentor
 - Support Staff
 - Ward Secretary
 - Bed Manager
 - Nurses' names with shift timing and designation(8-10 nurses per shift)
- Crash Cart parked next to the nursing station
- Computer on wheels (COW) - 4
- Cupboards with forms- down time form, investigation track 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

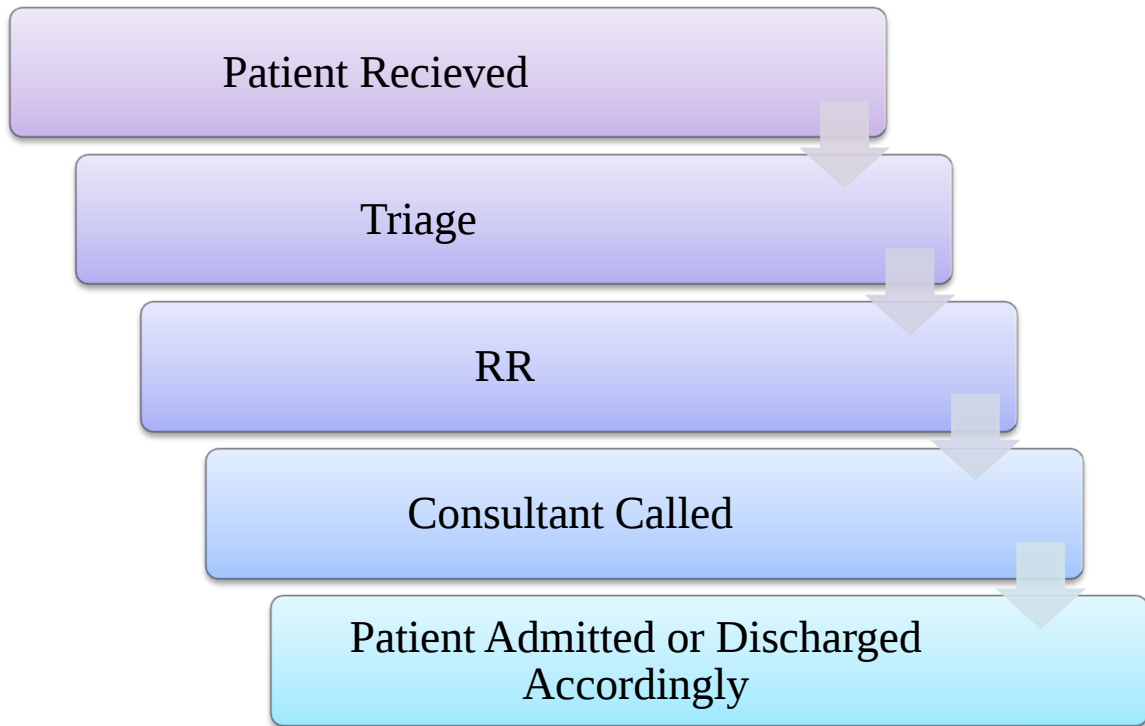
Infrastructure:

- 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 THEATRE COMPLEX

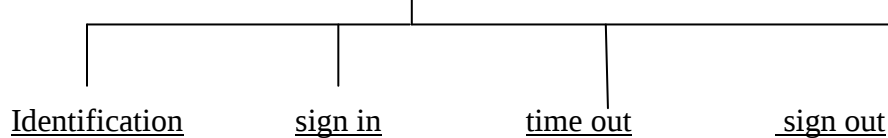
Operation theatre complex of East wing is located on first and second floor. Operation theatre complex has 11 operation theatre assigned to various departments. Cardiac, oncology , bariatric laparoscopic, gynaecology, ENT and plastic surgeries are performed in these operation theatres. Operation theatre 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 staffs of Operation Theatre are 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 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

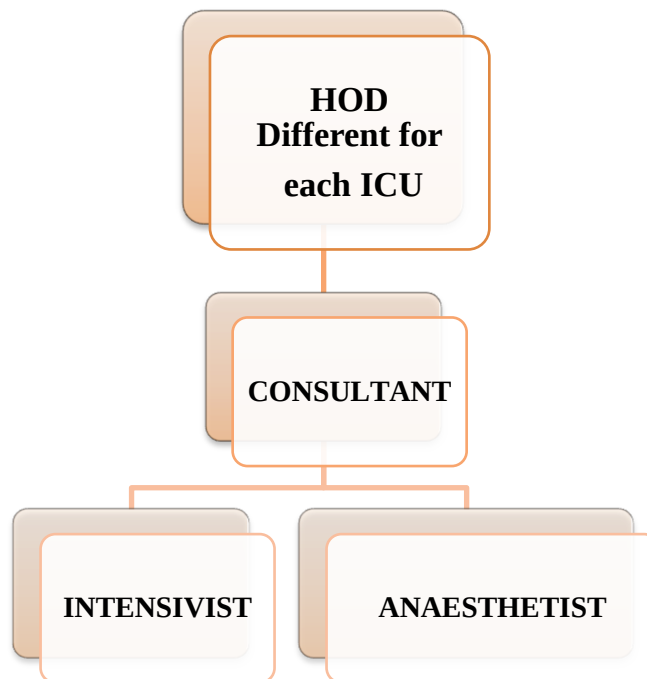
INTENSIVE CARE UNIT (ICU)

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

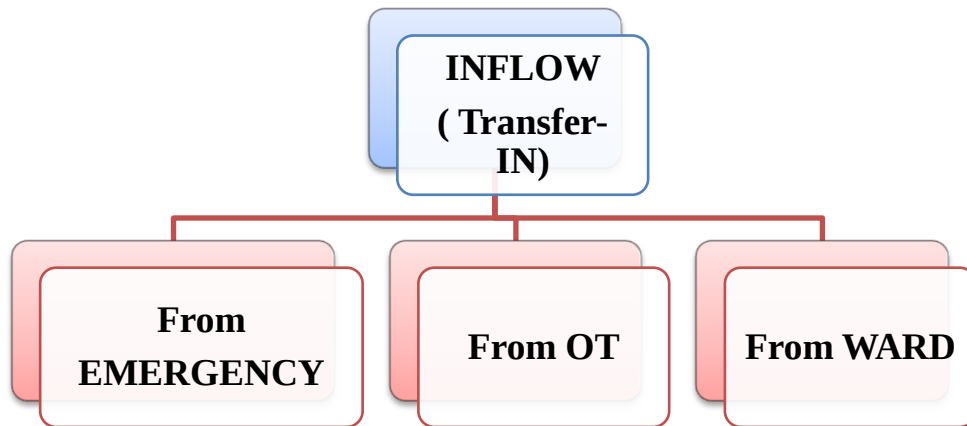
1. Respiratory ICU – 8 Bedded
2. Medical ICU – 8 Bedded
3. Neonatal ICU – 8 Bedded
4. Apex Coronary Care - Bedded
5. Stroke and Neuro Medical ICU - Bedded
6. Neurosurgical ICU – 8 Bedded
7. CTVS ICU - Bedded

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

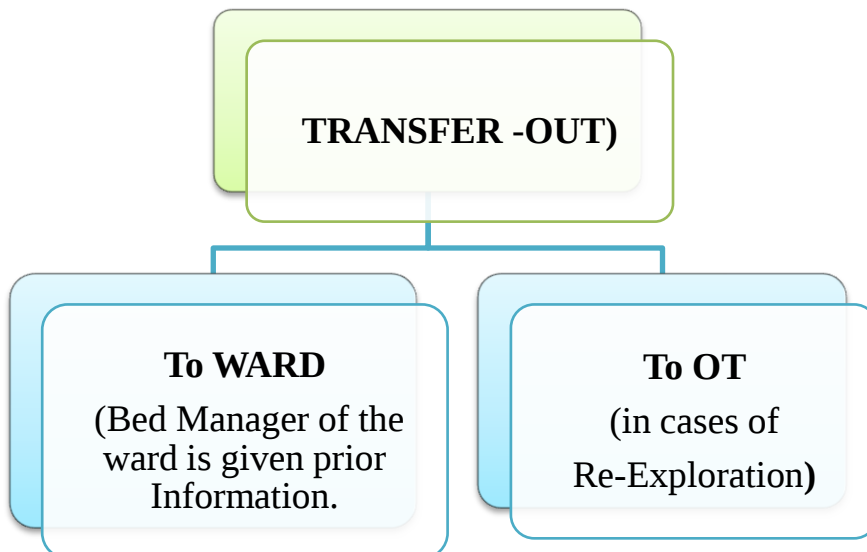
Hierarchy



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:

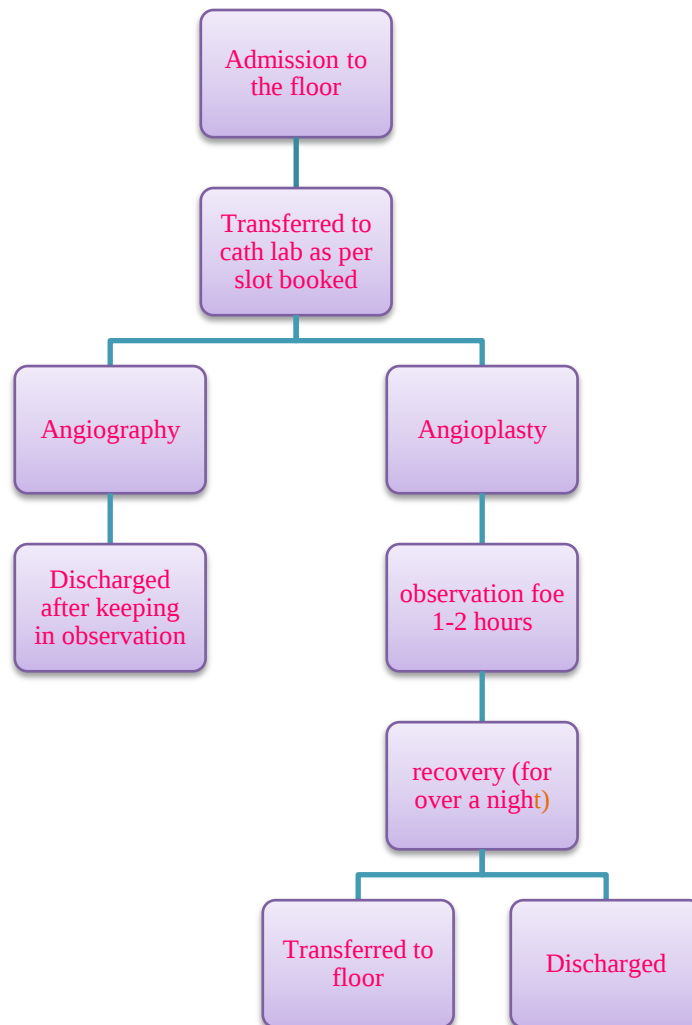
1. Cath lab 1
2. Cath lab 2
3. Technical room
4. Observation area

5. Technician room
6. Store room and utility room
7. Observation area-7 Beds
8. Instrument washroom

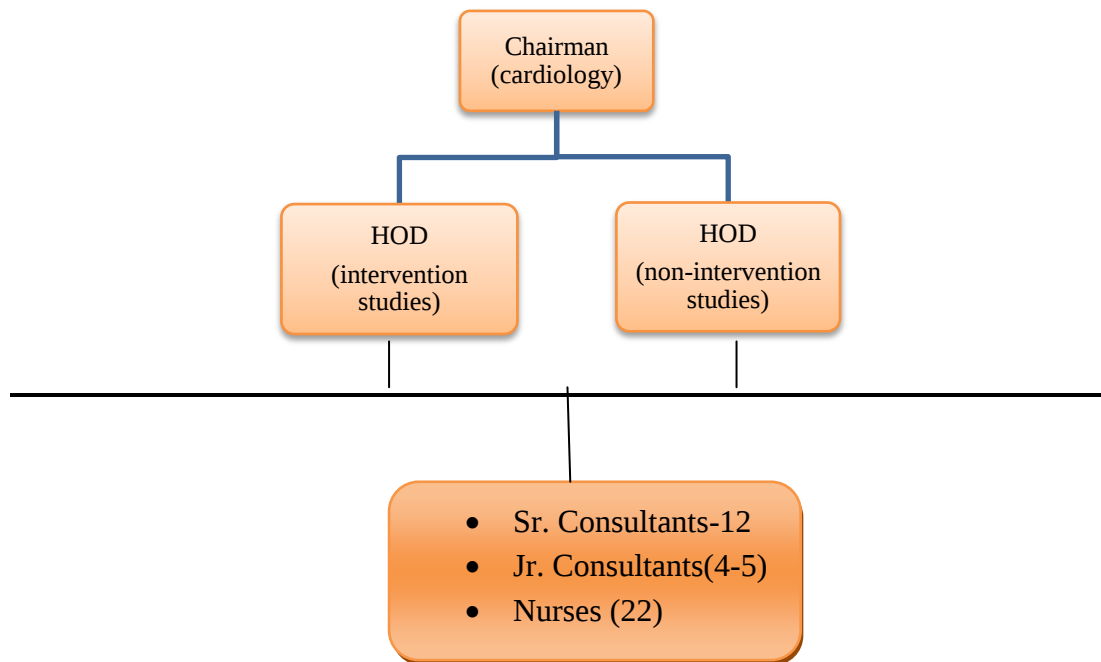
Location: Cath lab is located on the first floor with the vicinity areas as

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

○ **Process Flow of Patient**



Staff



RADIOLOGY DEPARTMENT:-

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

The total staffs working in the Radiology Department are 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)

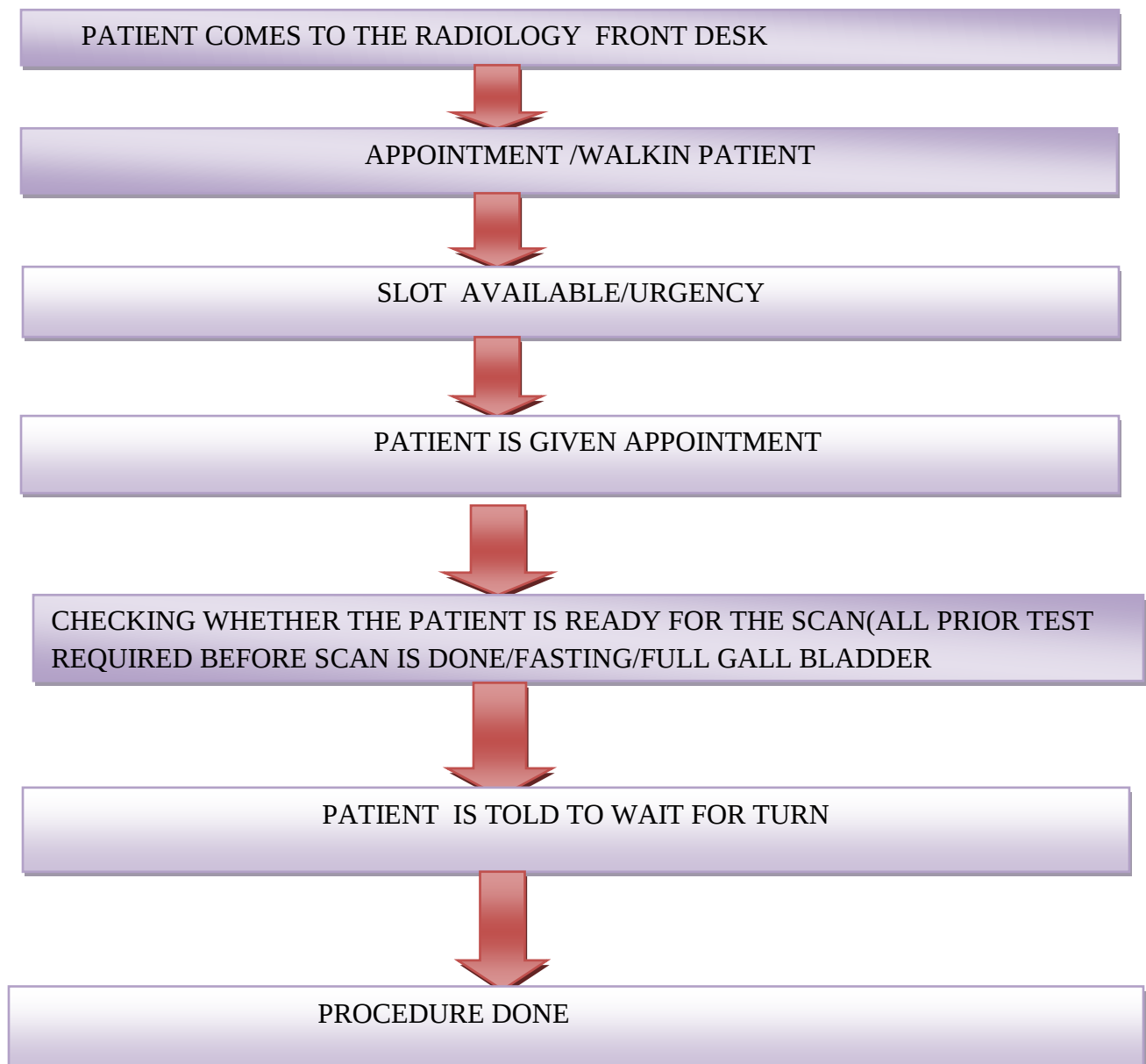


Figure:-Process flow in radiology department for outpatients

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.

DEPARTMENT OF LAB SERVICES

INTRODUCTION-

An ISO 9001:200 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.

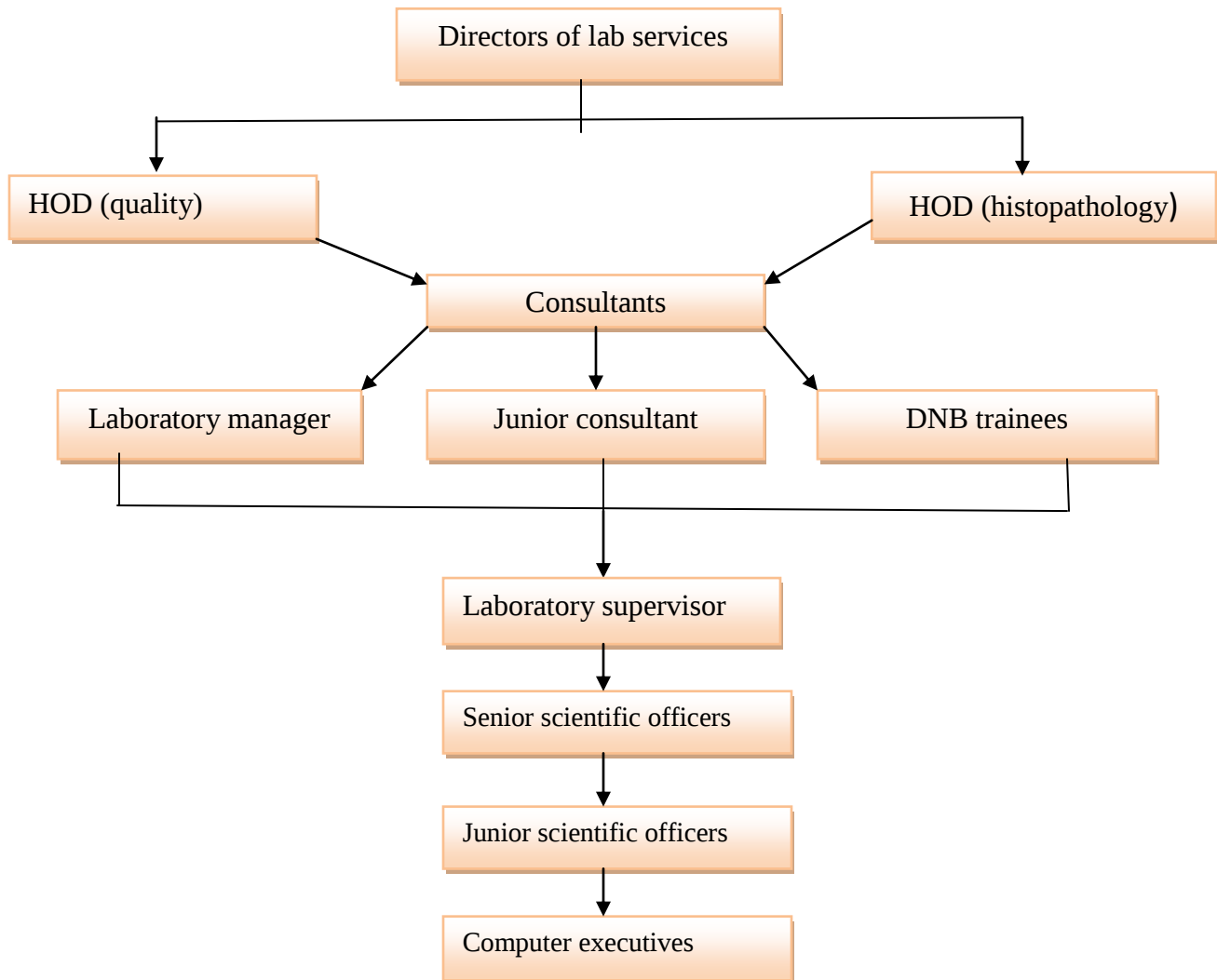
LABORATORY COMPRISES OF THE FOLLOWING DEPARTMENTS-

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

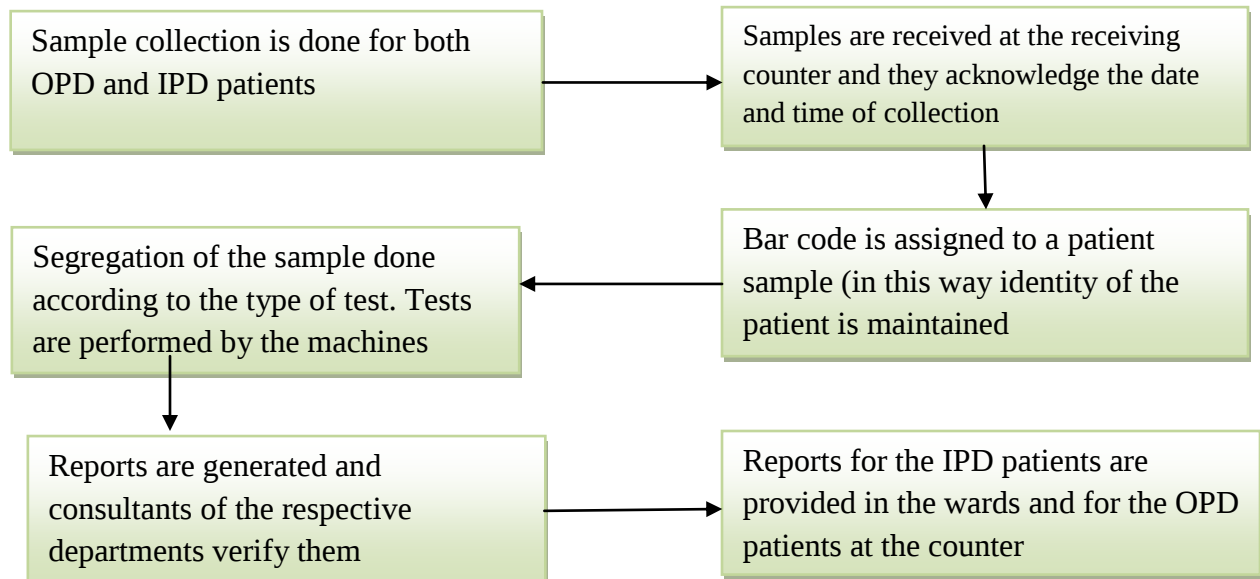
HIERARCHY- The Department of Lab Is Broadly Divided In Two Departments

- Lab medicine

- Histopathology



PROCESS FLOW-



LABORATORY INFORMATION SYSTEM-It is connected with hospital information system

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

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

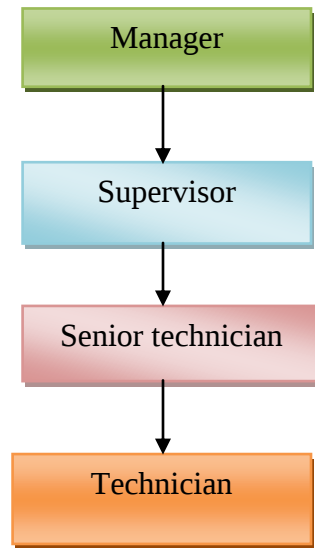
INTRODUCTION-

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.

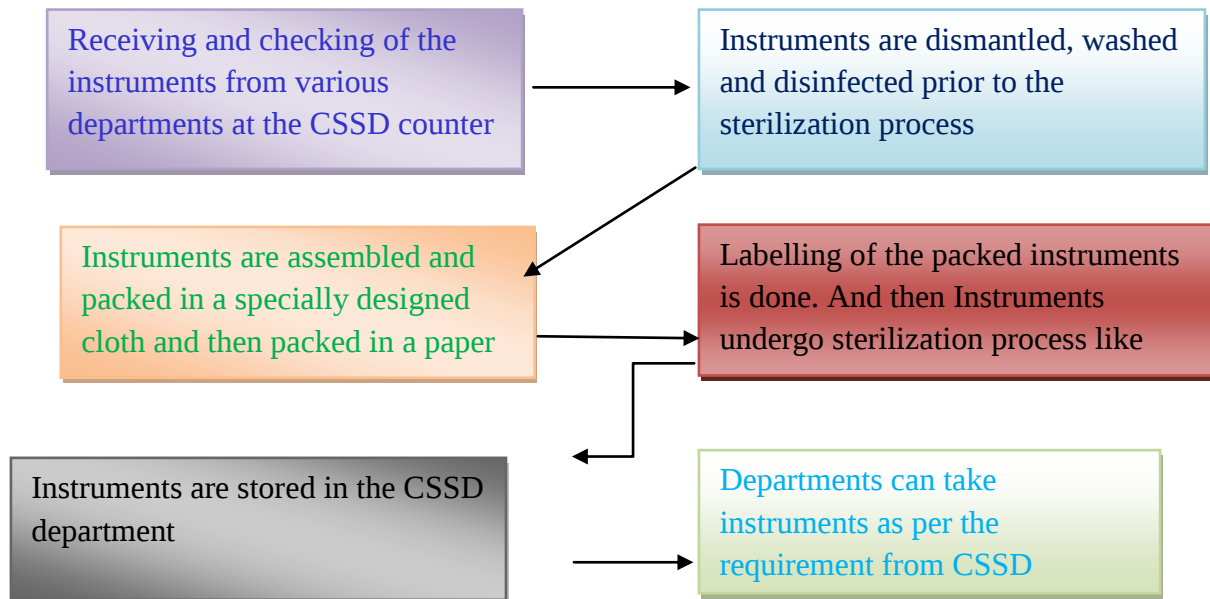
ZONES PRESENT-

- 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-

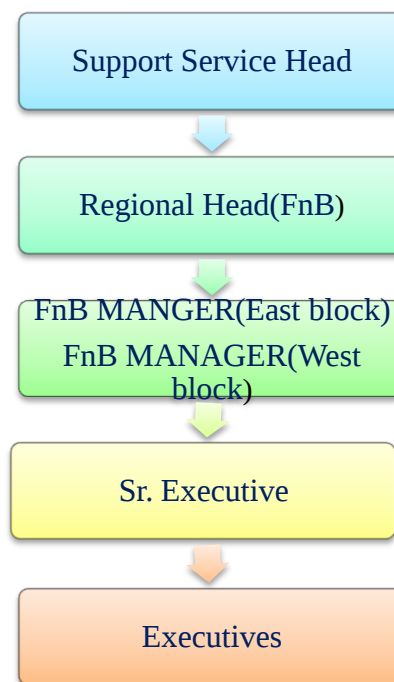
QUALITY INDICATORS-

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



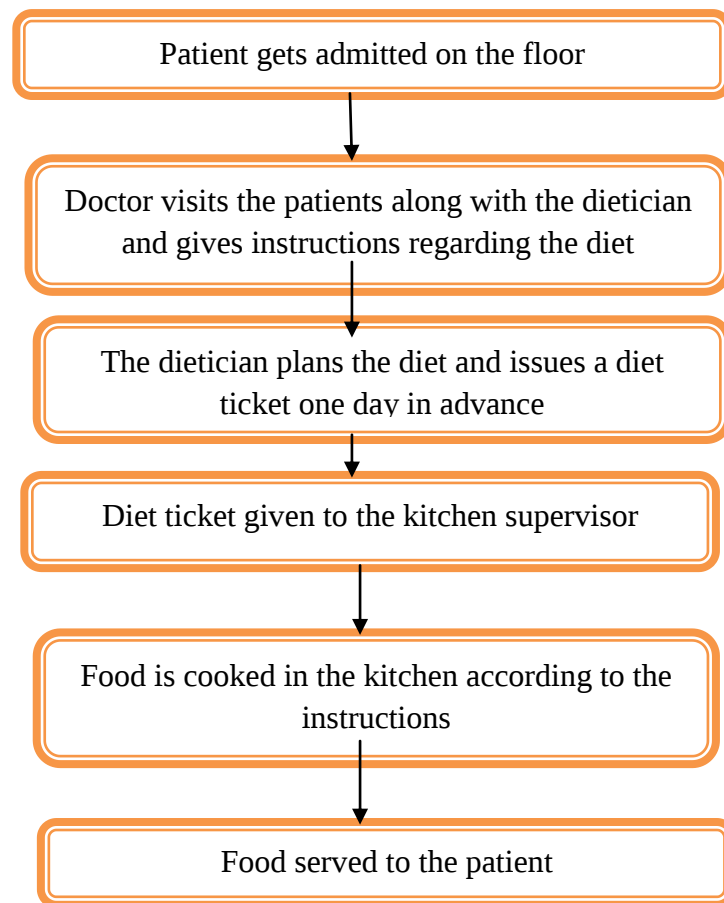
Time table for the diet of the patient

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

6-7PM	Soup
8-9PM	Dinner

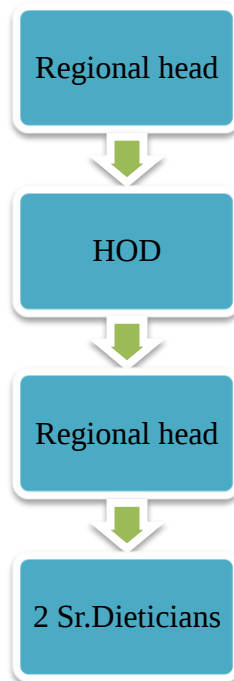
- Dinner of the same day, breakfast and lunch of the next day are decided prior in the evening and diet tickets are issued by the dietician and given to the chef.
- Apart from these if patients wants to have something extra, those can be provided to the patient after consulting dietician, but for an 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

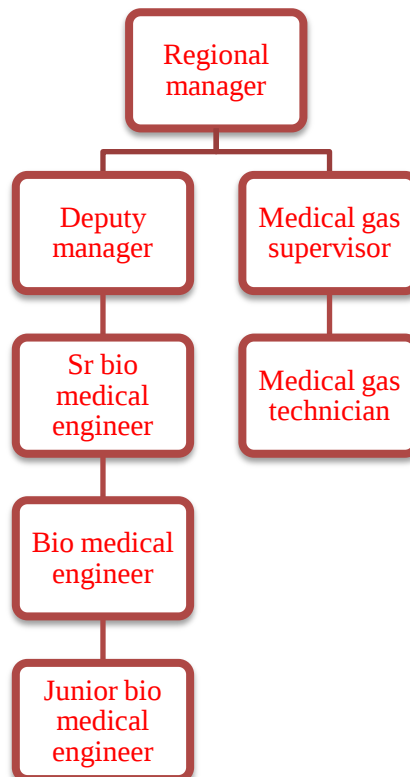
- The department plans diet for all IPD patients in accordance with the primary consultant's opinion on the same.
- Staff- 13 in total.
- Hierarchy



- 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 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)

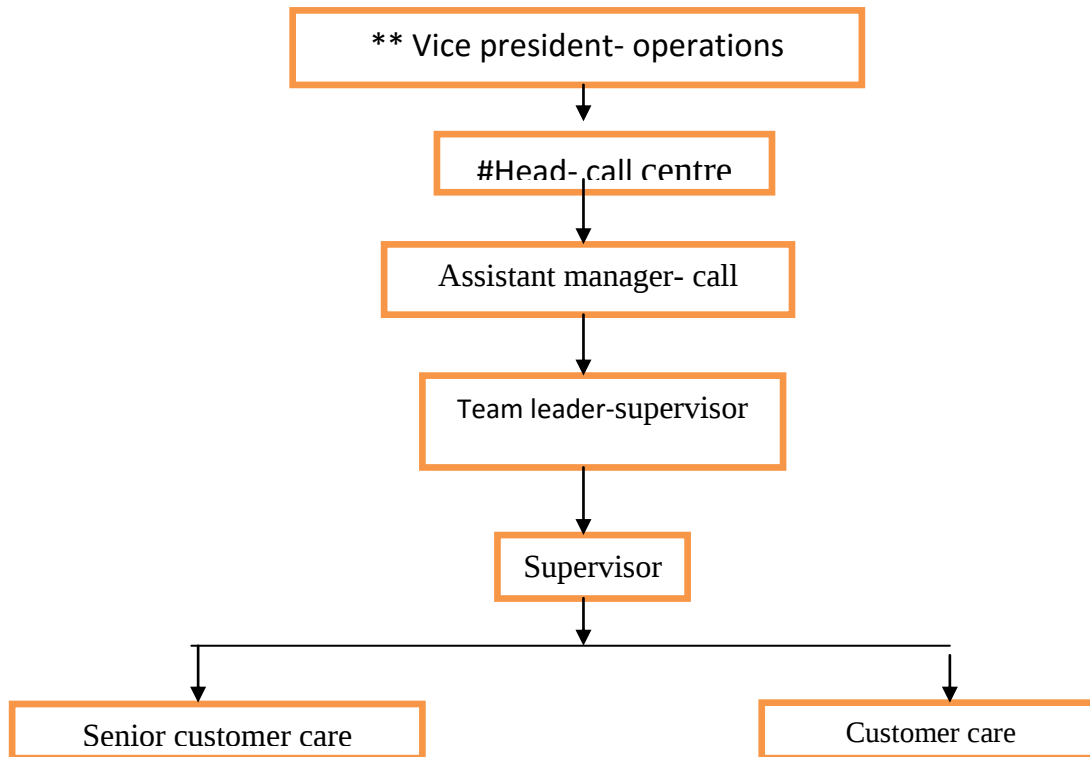
CALL CENTRE

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.

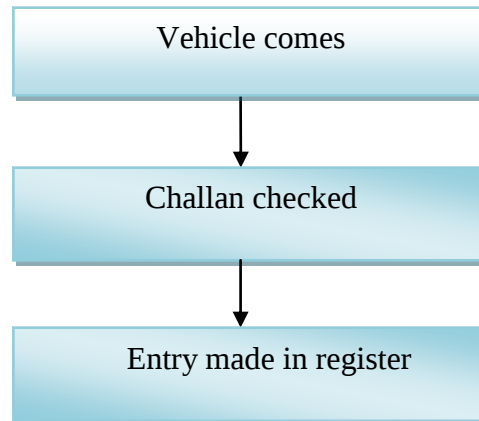
Functions of Security Department:-

1. Security management:-

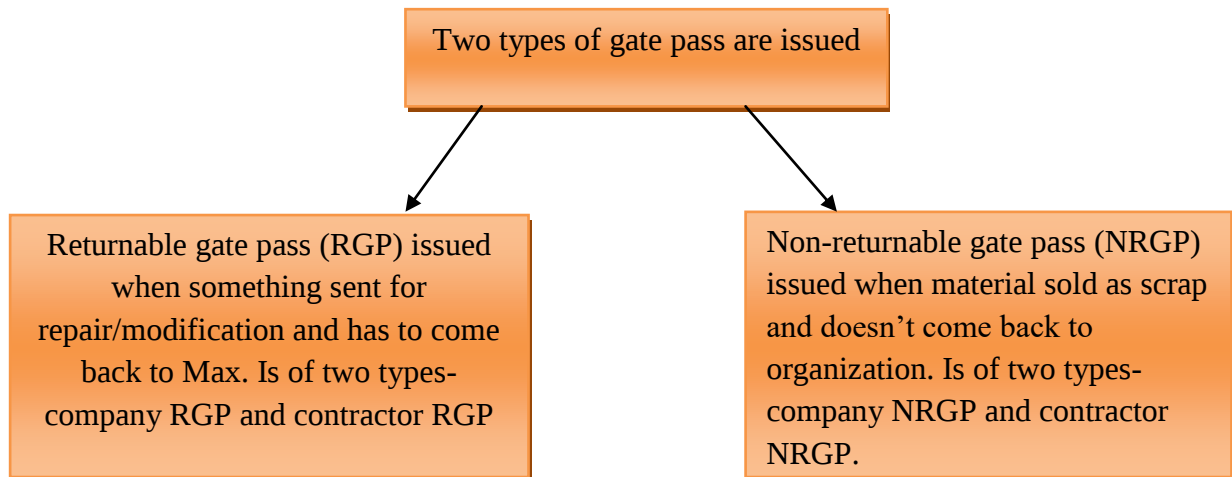
- Selection of people(guards and supervisors)
- Deploying of security staff to different floors and departments
- Checking of people entering hospital
- Turnout and grooming of security staff
- Training of security staff
- MLC handling
- Dispute handling

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



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

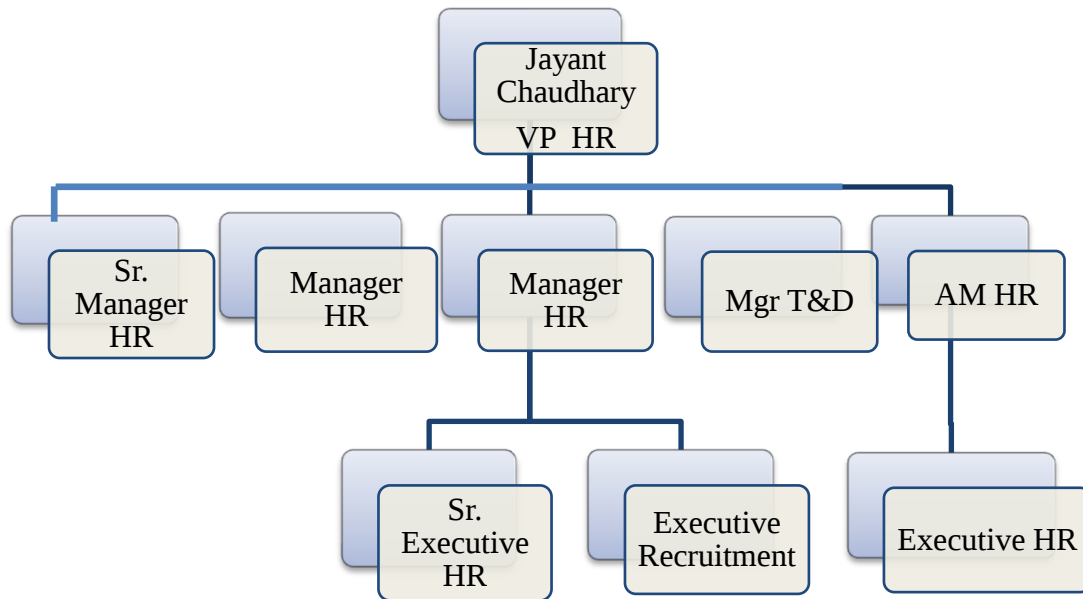
Human resource management (HRM or simply **HR**) is a function in designed to maximize employee performance in service of their employer's strategic objectives. HR is primarily concerned with how people are managed within organizations, focusing on policies and systems.

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:

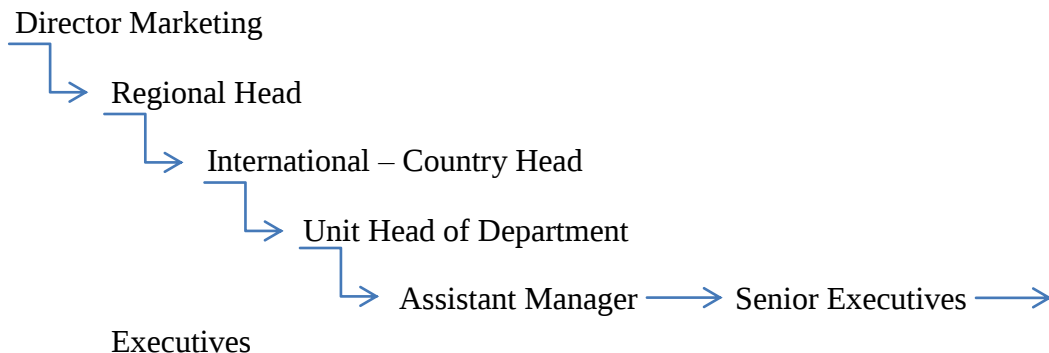
- Max hospital conducts free outreach OPDs in other countries, at least 1-2 per year
- Max hospital also has tie ups with different hospitals in these countries

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:



INTRODUCTION

HOSPITAL AS A CONCEPT

Hospitals and healthcare services are vital components of any well-ordered and human society, and will indisputably be the recipients of societal resources. A hospital is a health care institution providing patient treatment by specialized staff and equipment facility. Hospitals are usually funded by the public sector- health organizations (for profit or nonprofit), health insurance companies, or charities, including direct charitable donations. Today, hospitals are largely staffed by professional physicians, surgeons, and nurses, whereas in the past, this work was usually performed by the founding religious orders or by volunteers.

World Health Organization (WHO) defined Hospital as, an integral part of the social and medical organization, the function of which is to provide for the population complete health care, both curative and preventive, and whose outpatient services reach out to the family and its home environment. The hospital is also a centre for training of health workers and for bio-social research. Simply, hospital is an institution providing medical and surgical treatment and nursing care for sick or injured people. The modern concept of hospital visualizes it, as one of a comprehensive system of preventive and curative medicine and as an institution devoted not only to inpatient treatment, but also to ambulatory and domiciliary use.

While health care has become more effective it has also become more complex, with greater use of new technologies, medicines and treatments. Health services treat older and sicker patients who often present with significant co-morbidities requiring more and more difficult decisions as to health care priorities. Increasing economic pressure on health systems often leads to overloaded health care environments.

Evaluation of healthcare provision is essential in the ongoing assessment and consequent quality improvement of medical services. Traditionally, assessments have ignored the reports of patients in preference to technical and physiological reports of outcome. More recently, however, healthcare systems have sought to achieve a balance in services that offer not only clinically effective and evidence based care, but which are also judged by patients as acceptable and beneficial.

Unexpected and unwanted events can take place in any setting where health care is delivered (primary, secondary and tertiary care, community care, social and private care, acute and chronic care). Every 10th patient experiences preventable harm or adverse events in hospital, causing suffering and loss for the patient, their families and health care providers, and taking a high financial toll on health care systems. Safety is part of the quality agenda and therefore a dimension of the quality culture, requiring broad commitment from both the organization and the community.

Nowadays safety is considered as foundation of high quality health care. Patient safety is a new healthcare discipline that emphasizes the reporting, analysis, and prevention of medical error that often leads to adverse healthcare events. The frequency and magnitude of avoidable adverse patient events was not well known until the 1990s, when multiple countries reported staggering numbers of patients harmed and killed by medical errors. Improving patient safety is one of the most urgent issues facing healthcare today.

The hospitals should be places of safety, not only for patients but also for the staff and for the general public, is of the greatest importance. Quality of hospitals and healthcare services is also of great interest to many other bodies, including governments, NGOs targeting healthcare and social welfare, professional organizations representing doctors, patient organizations, shareholders of companies providing healthcare services, etc

Patients in intensive care units (ICUs) have a higher risk of acquiring Health care associated infections (HAIs) as compared to those in non-critical care areas. ICU-acquired infection rate is five to ten times higher than hospital-acquired infection rates in general ward patients. Considerable increased mortality, morbidity and major costs are associated with ICU-acquired infections. This results from the acute severity of illness of Intensive Care Unit patients, prolonged hospital stay, immune-suppression, increased use of antimicrobials and frequent exposure to therapeutic procedures like endotracheal intubation with mechanical ventilation, nasotracheal intubation, intravenous lines, central venous lines and urinary catheterization. The most common Health Care Associated Infections (HCAIs) in Intensive Care Unit patients are respiratory tract infections (RTIs), urinary tract infections (UTIs) and bloodstream infections (BSIs) and are most often associated with the use of invasive devices. The Intensive Care unit are an area of considerable antibiotic use in which antibiotic-resistant organisms are prevalent.

Their prevalence and rates of resistance can vary enormously depending on geographic location as well as location among ICU types. For proper management of ICU-infections, it is important to have updated knowledge about prevalence of the causative agents and their antimicrobial susceptibility patterns in institution-specific Intensive Care Unit and updating with the latest technology for the management of nosocomial infections. The study aims to review the knowledge among the staff at max hospital about the nosocomial infection and policies followed to encounter them and measures that can be taken to attain minimum level of Health care associated Infections.

Surgical site infections (SSIs) are the most common post-operative complications even in hospitals with most modern facilities and standard protocols of preoperative preparation and antibiotic prophylaxis. About 3-5% of patients who undergo elective surgery, develop SSIs. These are the third commonest nosocomial infections and account for approximately 10-40% of all health care associated (HAI) infections. In 2002, US centre of disease control have estimated. These infections have a tremendous impact on morbidity and mortality as SSIs doubled the patient's risk of death after surgery. Extra bed occupancy is an important factor responsible for increasing financial cost associated with these infections because of additional postoperative hospital stay of about 7-10 days which result in extra.

REVIEW OF LITERATURE

The World Health Organization offers several definitions of a nosocomial infection/ healthcare – associated infection:

" An infection acquired in a hospital by a patient who was admitted for a reason other than that infection / an infection occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission". This includes infections acquired in the hospital but appearing after discharge, and also occupational infections among staff of the facility.

As a general timeline, infections occurring more than 48 hours after admission are usually considered nosocomial. Nosocomial infections are also divided into two classes, endemic or

epidemic. Most are endemic, meaning that they are at the level of usual occurrence within the setting. Epidemic infections occur when there is an unusual increase in infection above baseline for a specific infection or organism. Nosocomial infections occur worldwide, both in the developed and developing world. They are a significant burden to patients and public health. They are a major cause of death and increased morbidity in hospitalized patients. They may cause increased functional disability and emotional stress and may lead to conditions that reduce quality of life. Not only do they affect the general health of patients, but they add a huge burden financially. The greatest contributors are costs due to increased stays of patients with nosocomial infections. The increased length of stay varies from 3 days for gynecological procedures to 19.8 days for orthopedic procedures. Other costs include additional drugs, the need for isolation, and the use of additional studies. There are also indirect costs due to loss of work. Nosocomial infections are most frequently infections of the urinary tract, surgical wounds, and the lower respiratory tract. A World Health Organization prevalence study and other studies have shown that these infections most commonly occur in intensive care units and in acute surgical and orthopedic wards. Infection rates are also higher in patients with increased susceptibility due to old age, underlying disease, or chemotherapy. Patients are exposed to a variety of microorganisms during a hospital stay, but contact between a patient and an organism does not necessarily guarantee infection. Other factors influence the nature and frequency of infections. Organisms vary in resistance to antimicrobials and in intrinsic virulence. Bacteria, viruses, fungi, and parasites can all cause nosocomial infections. There are multiple ways of acquiring such an organism. The organisms can be transferred from one patient to another (cross-infection). They can be part of a patient's own flora (endogenous infection). They can be transferred from an inanimate object or from a substance recently contaminated by another human source (environmental transfer). The organisms that cause nosocomial infections are often drug-resistant. The regular use of antimicrobials for treatment therapy or prophylaxis promotes the development of resistance. Through antimicrobial-driven selection and the exchange of genetic resistance elements, multi-drug resistant strains of bacteria emerge. Antimicrobial-sensitive microorganisms that are part of the endogenous flora are suppressed, while the resistant strains survive. Many strains of pneumococci, staphylococci, enterococci, and tuberculosis are currently resistant to most or all antimicrobials which were once effective. In high-income countries, approximately 30% of patients in intensive care Units (ICU) are affected

by at least one health care-associated infection. In low- and middle-income countries the frequency of ICU-acquired infection

Is at least 2-3 fold higher than in high-income countries; device-associated Infection densities are up to 13 times higher than in the USA. Newborns are at higher risk of acquiring health care-associated infection in developing countries, with infection rates three to 20 times higher than in High-income countries.

In 1992, CDC revised its definition of ‘wound infection’, by creating the definition, ‘surgical site infection’, to prevent the confusion between the infection of a surgical incision and the infection of a traumatic wound. Surgical site infections (SSIs) are defined as infections of skin or underlying soft tissues at the surgical site, occurring within 30 days following National Healthcare Safety Network (NHSN) operative procedure in which an incision was closed primarily. An NHSN operative procedure is a procedure that is performed on a patient who is an NHSN inpatient (A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days) or an NHSN outpatient (A patient whose date of admission to the healthcare facility and date of discharge are the same calendar day); and takes place during an operation (defined as a single trip to the operating room (OR) where a surgeon makes at least one incision through the skin or mucous membrane including laparoscopic approach, and closes the incision primarily before the patient leaves the OR). Primary closure is defined as closure of all tissue levels during the original surgery, regardless of the presence of wires, wicks, drains, or other devices or objects extruding through the incision. However, regardless of whether anything is extruding from the incision, if the skin edges are not fully reapproximated for the entire length of the incision (e.g., are loosely closed with gaps between suture/staple points), the incision is not considered primarily closed and therefore the procedure would not be considered an operation. In such cases, any subsequent infection would not be considered an SSI, although it may be an HAI if it meets criteria for another specific infection site (e.g., skin or soft tissue infection).

CDC classifies SSIs in three categories: superficial incisional, deep incisional and organ/space SSI.-1:2 Superficial incisional SSI Infection occurs within 30 days after any NHSN operative procedure, and involves only skin and subcutaneous tissue of the incision and patient has at least one of the following:

1) purulent draining from the superficial incision.

2) organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision (incisional drainage)

. 3) atleast one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness or heat, and superficial incision is deliberately opened by surgeon, and is culture positive or not cultured.

4) Diagnosis of superficial incisional SSI by the surgeon or attending physician.

There are two specific types of superficial incisional SSIs: 1. Superficial Incisional Primary (SIP) –a superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB).

2. Superficial Incisional Secondary (SIS)–a superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site incision for CBGB). Deep incisional SSI Infection occurs within 30 or 90 days after the NHSN operative procedure and involves deep soft tissues (fascial and muscle layers) of the incision and patient has atleast one of the following:

1) Purulent drainage from the deep incision but not from the organ/space component of the surgical

2) A deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture positive or not cultured and when the patient has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), localized pain, or tenderness, unless site is culture- negative.

3) An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

4) Diagnosis of a deep incisional SSI by a surgeon or attending physician. There are two specific types of deep incisional SSIs:

1. Deep Incisional Primary (DIP) – a deep incision SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB): clean, clean-contaminated, contaminated and dirty wounds.

1. Clean wounds- when no inflammation.

2. Deep Incisional Secondary (DIS) – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site incision for CBGB).

3. Organ/Space SSI Infection occurs within 30 or 90 days after the NHSN operation and infection involves any part of the anatomy (organs or spaces), other than the skin incision, fascia or muscle layers that is opened or manipulated during an operation and at least one of the following:

1. Purulent drainage from a drain that is placed into

2. Organisms isolated from an aseptically obtained culture or fluid or tissue in the organ/space.

3. An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

4. Diagnosis of an organ/space SSI by a surgeon or attending physician.

Operative wound classification was developed by US National Research Council group in 1964.

The Societal Impact of HealthCare associated Infections

One study estimates that bloodstream nosocomial infections are the eighth leading cause of death, assuming a nosocomial infection rate of 5%, of which 10% are bloodstream infections and an attributable mortality rate of 15%. In absolute numbers, if the overall attack rate was 5%,

and 25 million patients were admitted each year, 1.75 million people would acquire nosocomial infections each year. If 10% of these were bloodstream infections, 175,000 would get these serious infections each year. If the attributable mortality rate of nosocomial infections is 20% and the infection rate is 5%, an estimated 350,000 life years would be lost annually. Another source reports an incidence of 2 million new cases of nosocomial infections per year, leading to an estimated 20,000 deaths per year. They also estimate that nosocomial infections more than double the mortality and morbidity risks of any patient admitted to a hospital. The costs to society can also be studied in terms of dollars spent. Assuming an incidence of 2 million nosocomial infections per year, the estimated added expenditure is in excess of \$2,000,000,000 per year. One study showed that length of stay for a patient with a *Staphylococcus aureus* infection was increased by nearly three times the average length of stay for any other type of hospitalization. This increased length of stay also means increased costs. Treating a *methicillin -resistant Staphylococcus aureus* (MRSA) infection costs 6-10% more than treating a *S. aureus* infection that is sensitive to methicillin (MSSA). Patients with MRSA infections also have a higher attributable death rate than MSSA patients. These statistics support the argument for increasing efforts to reduce the incidence of hospital-acquired infections so that the associated societal costs will also be reduced. As a public health problem, nosocomial infections will become increasingly important in the future. Crowding and population size are increasing, and impaired immunity is becoming more frequent. New microorganisms will develop, and existing microorganism will develop even greater resistance.

RATIONALE

This report is indented to find out the various nosocomial infections encountered in ICU's in Max Saket Super Speciality Hospital, Saket as Nosocomial infections is one of the major contributing factors that adds to the cost of patients and major cause of mortality and mortality in patients leading to increase in average length of stay and adds to cost in maintenance for the

hospital as well. Reducing the nosocomial infection in ICU's can lead to increase in significantly enhancing the hospital's image . establishing a standard protocol procedure for controlling the nosocomial infections in ICU's will help in promoting efficiency amongst the employees and helps in establishing a significant position of the hospital amongst competitors.

OBJECTIVES

1. To observe and analyze the various infection control practices followed at Max Super Specialty Hospital, Saket.
2. To search for areas of problem and find reasons for the same.
3. To reduce potential length of stay of patients.
4. To prevent patients from readmissions.
5. To give recommendations for further improvement in infection control practices and minimize Healthcare acquired infections (HAIs).

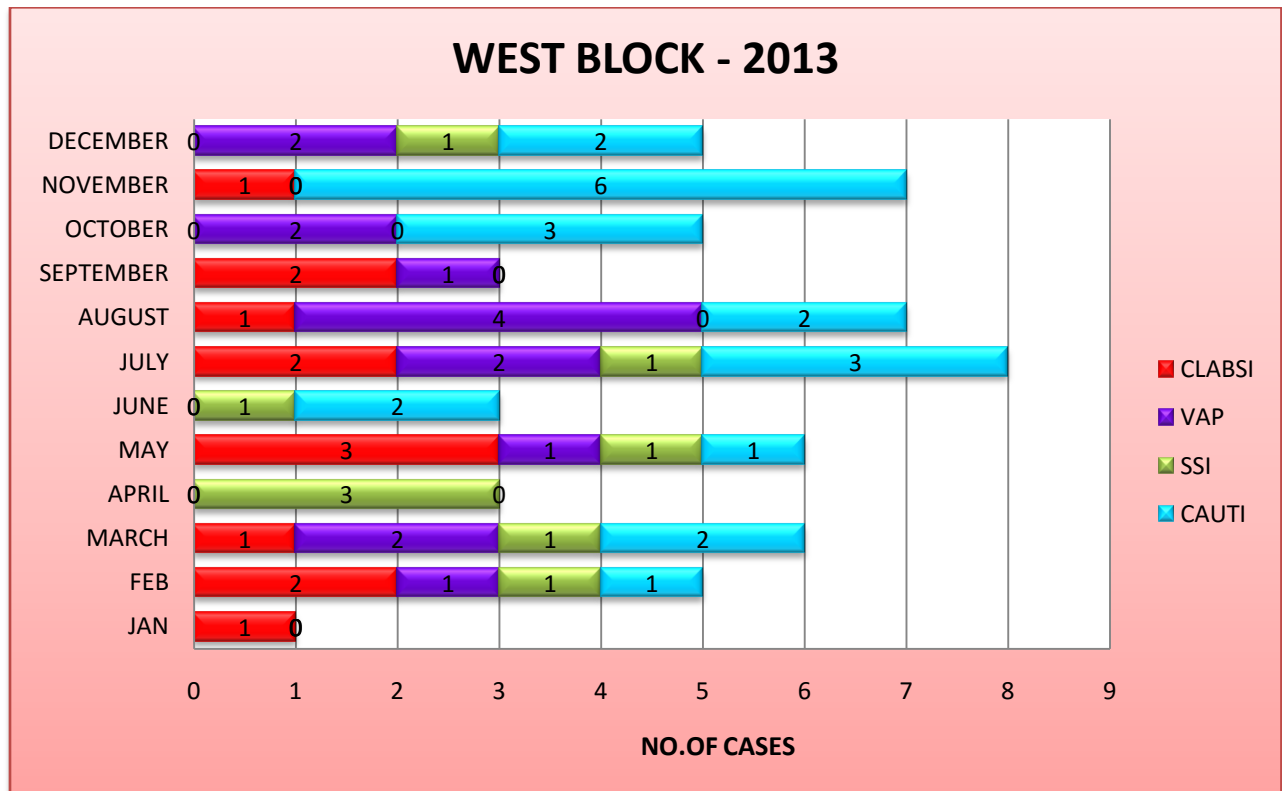
RESEARCH METHODOLOGY

- **Type of study** : Descriptive cross-sectional and comparative study.
- **Study population** : patients with hospital acquired infection in an ICU from jan 2013 to march 2016.
- **Study area** - All ICU's at Max Hospital, East & West wing, Saket, Delhi

- ***Duration of Study*** - 4 weeks
- ***Type of Data*** - Quantitative& Qualitative
- ***Inclusion criteria-***
 - Doctor's & Nurses practising in ICU's at Max Hospital, East & West wing, Saket.
 - Standard Protocols Followed by Doctors and Nurses and assigned Infection Control Nurses at Max Saket Hospital.
- ***Exclusion criteria-***
 - Doctors and Nurses working in rest area of the Hospital
- ***Data collection*** - secondary and Quantitative (3 weeks)
- ***Data entry-*** Manually
- ***Data Analysis-*** Using bar charts, pie charts.
- ***Sample size***– 300 In patients from January 2013 to Dec 2016
- ***Technique*** – Data collected.

DISCUSSION AND RESULTS

TABLE 1. DATA ANALYSIS

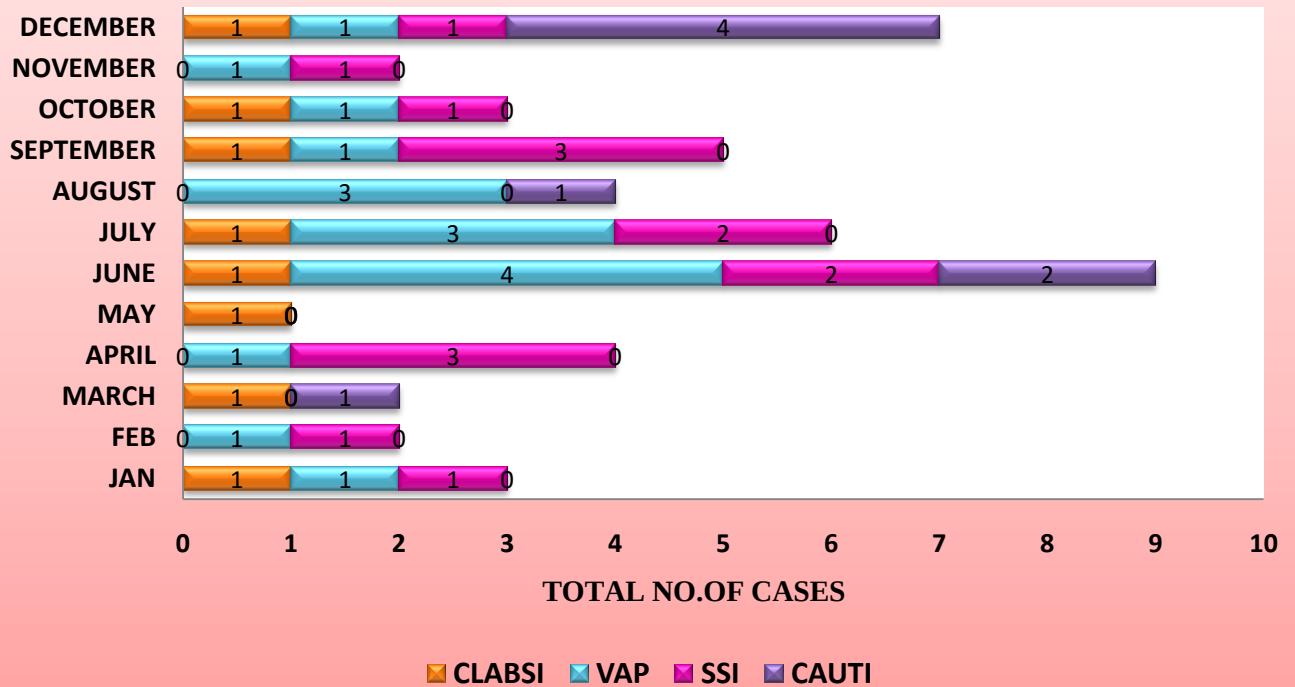


INFERENCE:

AFTER ANALYSING IT IS OBSERVED THAT WEST BLOCK 2013 NOVEMBER HAS THE MAXIMUM NO.OF CUTI CASES.

TABLE 2.

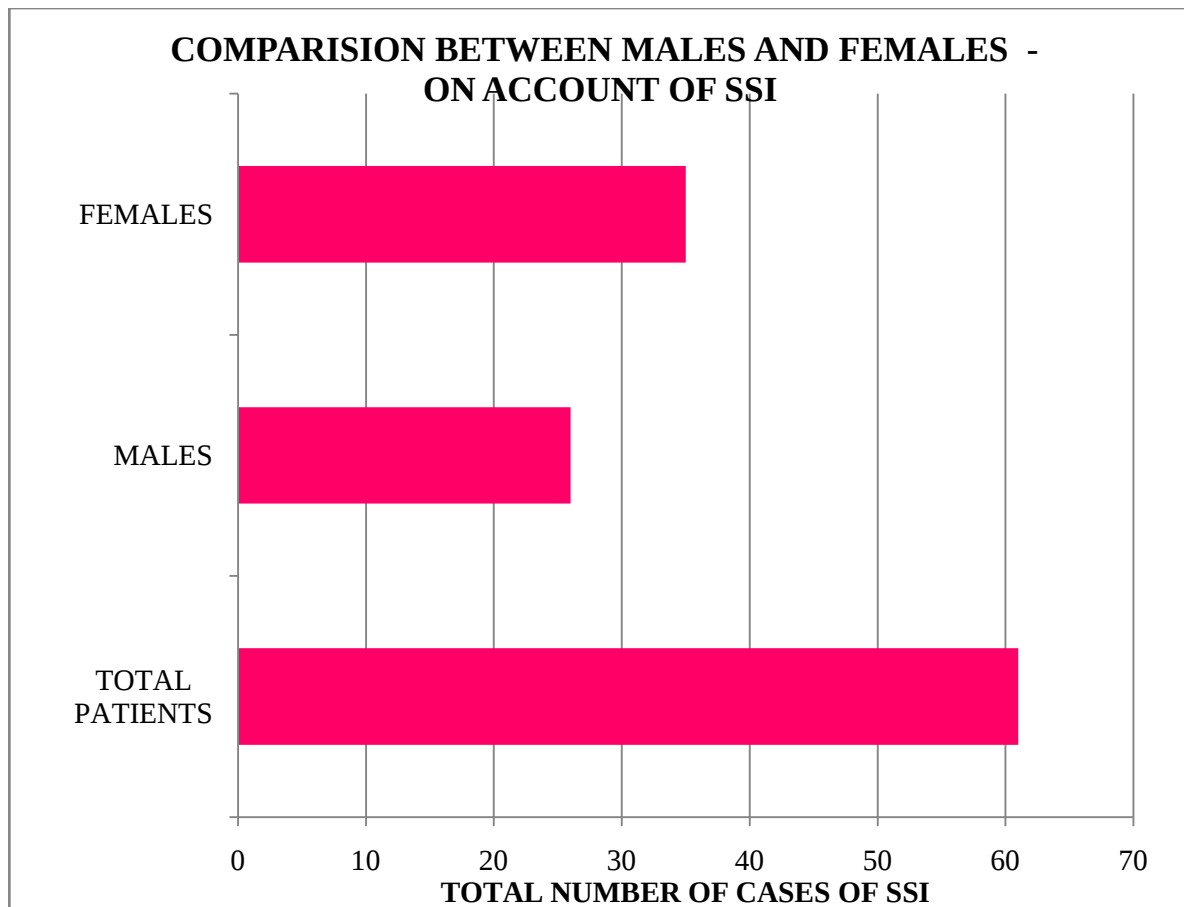
EAST BLOCK - 2013



INFERENCE:

ON ANALYSIS IT IS OBSERVED IN EAST BLOCK 2014 JUNE MONTH HAS THE MAXIMUM NUMBER OF REPORTED VAP, SSI AND CAUTI .

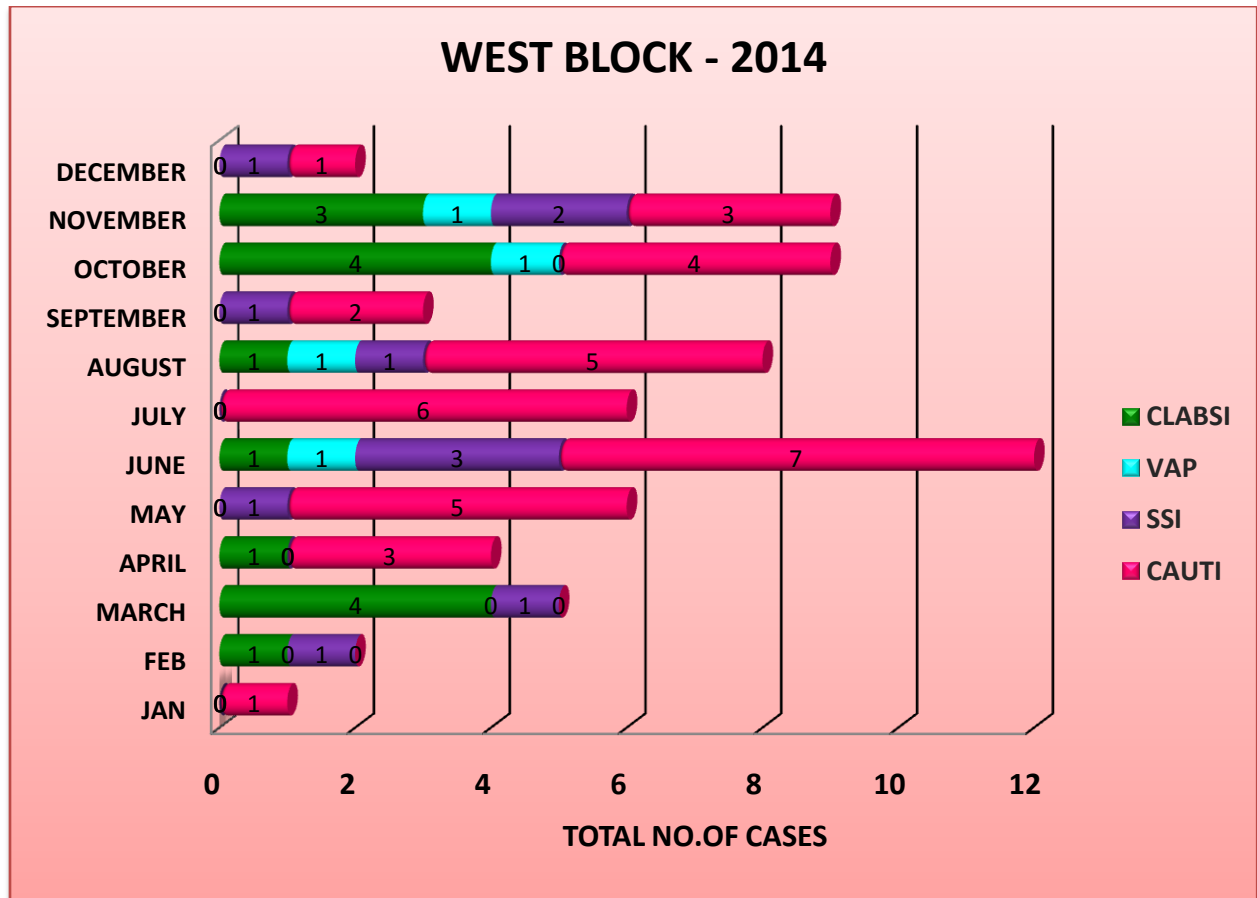
TABLE 3.



INFERENCE:

OUT OF TOTAL PATIENTS SURGICAL SITE INFECTIONS ARE MORE PROMIENT FEMALES.

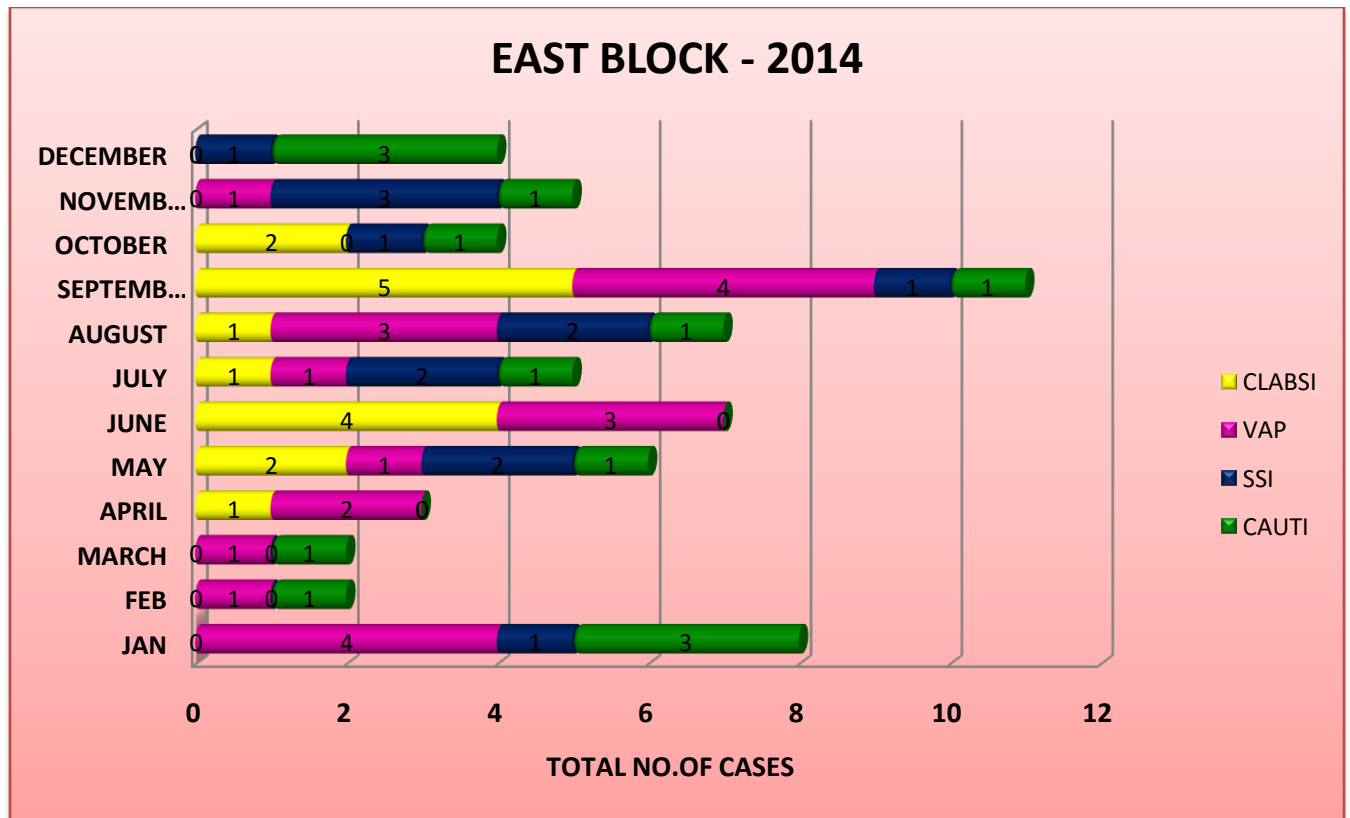
TABLE 4.



INFERENCE:

AFTER ANALYSING IT IS OBSERVED IN WEST BLOCK THAT JUNE 2014 HAS THE MAXIMUM NUMBER OF CAUTI CASES. AS IN COMARISION TO JULY AND AUGUST.

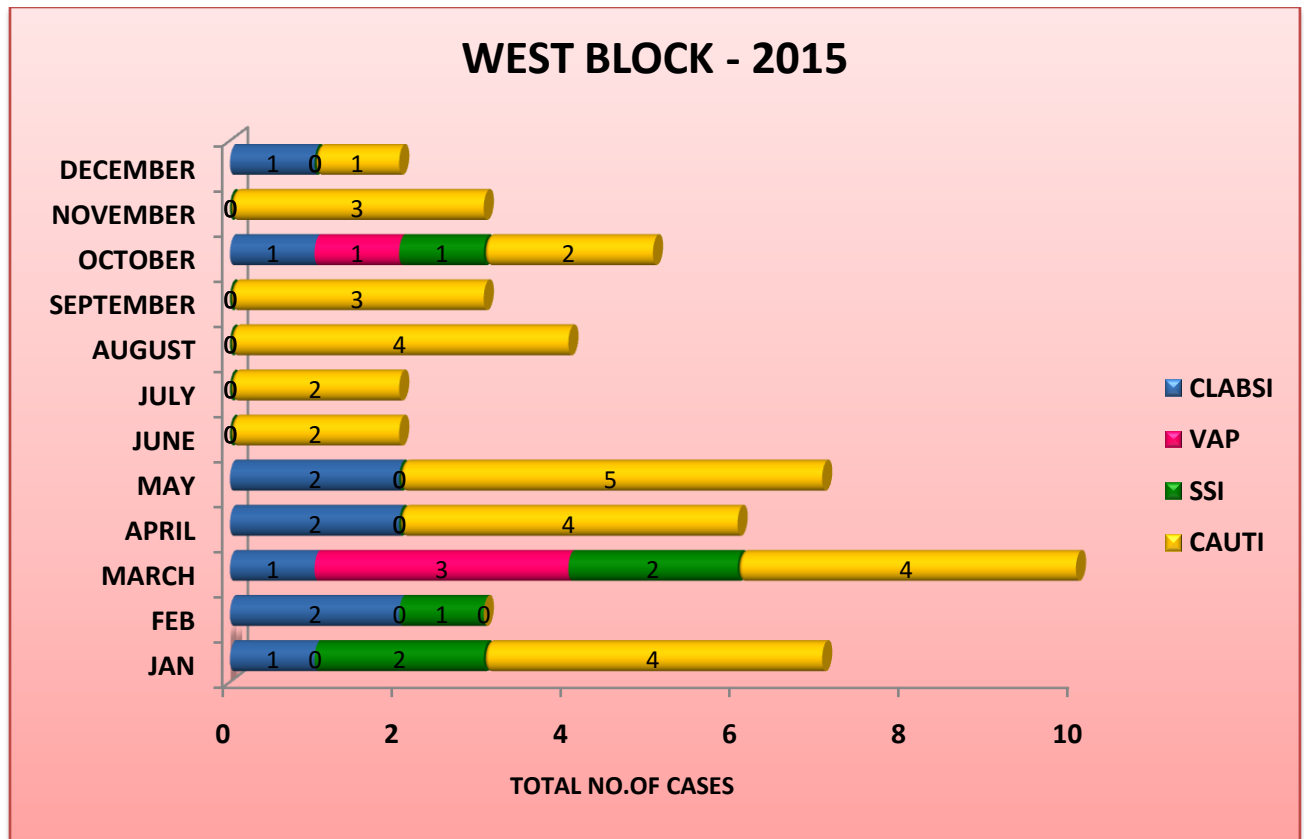
TABLE 5.



INFERENCE:

AFTER ANALYSING IT IS OBSERVED IN EAST BLOCK THAT SEPTEMBER 2014 HAS THE MAXIMUM NO.OF CLABSI CASES IN COMRISION TO JUNE.

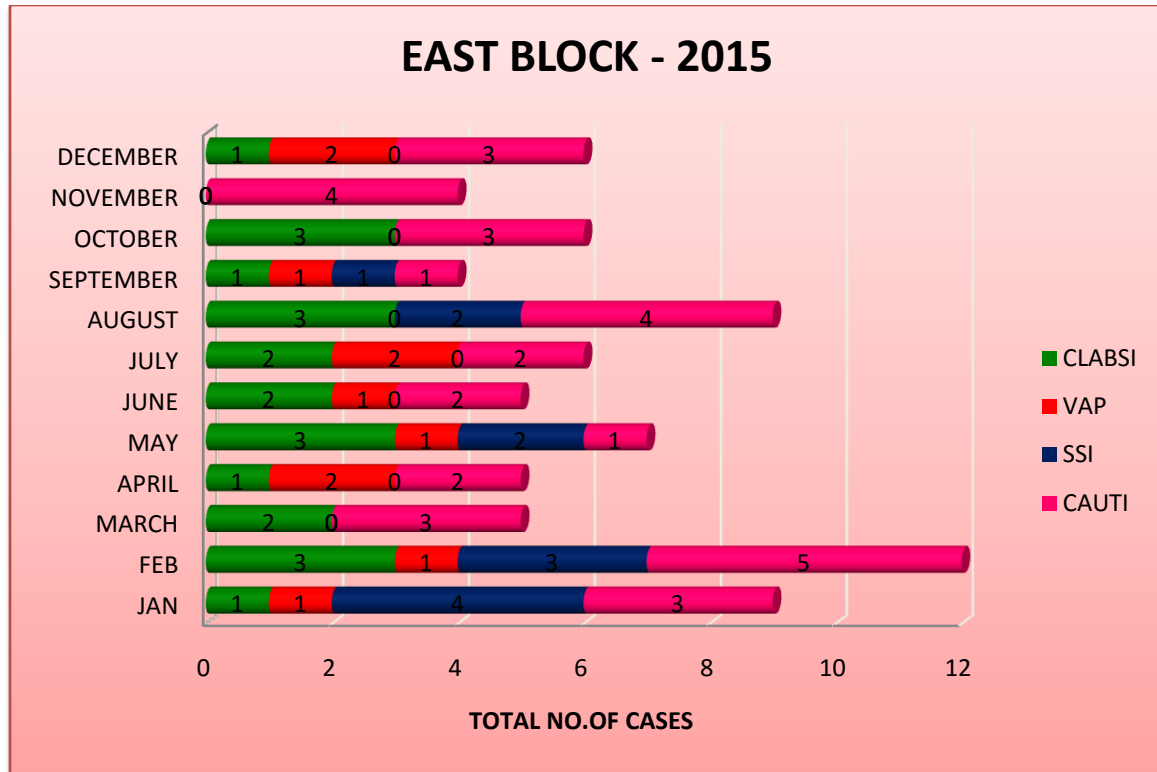
TABLE 6.



INFERENCE:

ON ANALYSING IT IS OBSERVED WEST BLOCK 2015 JAN, MARCH, MAY HAS THE MAXIMUM NO.OF CAUTI CASES.

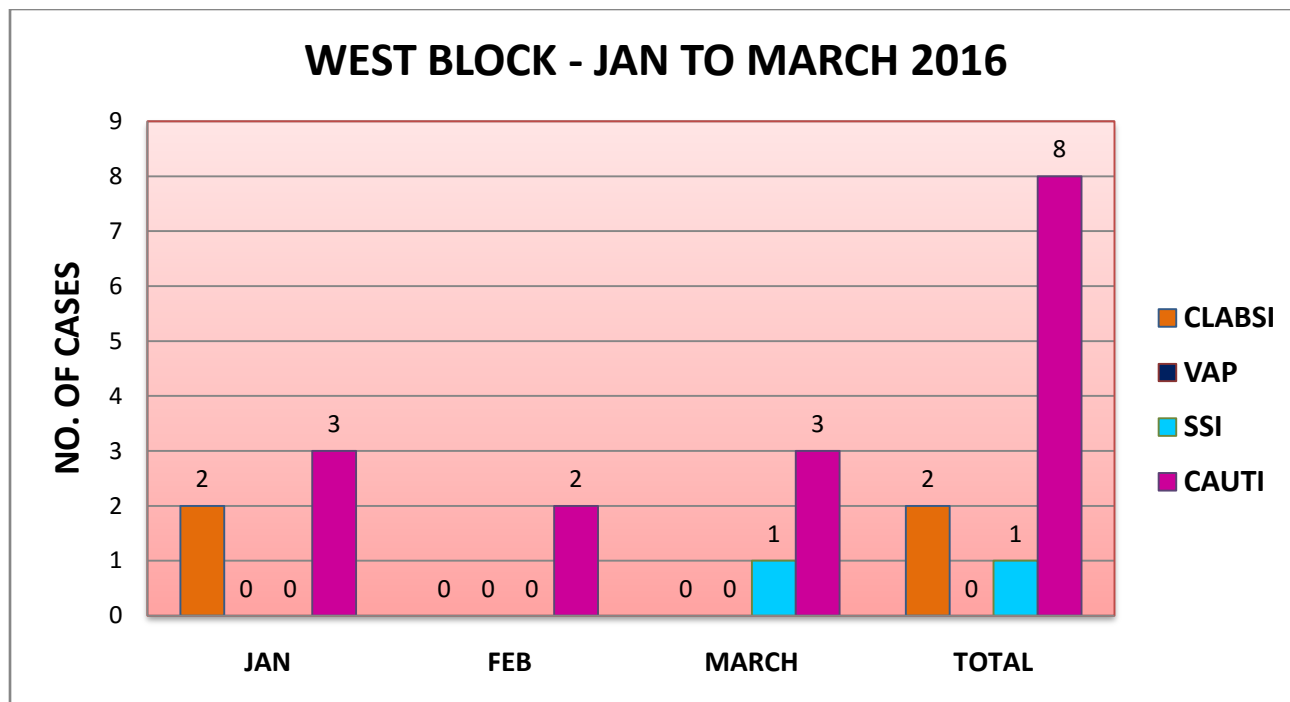
TABLE 7.



INFERENCE:

ON ANALYSING IT IS OBSERVED EAST BLOCK 2015 FEBRUARY AND AUGUST HAS THE MAXIMUM NO.OF CAUTI CASES.

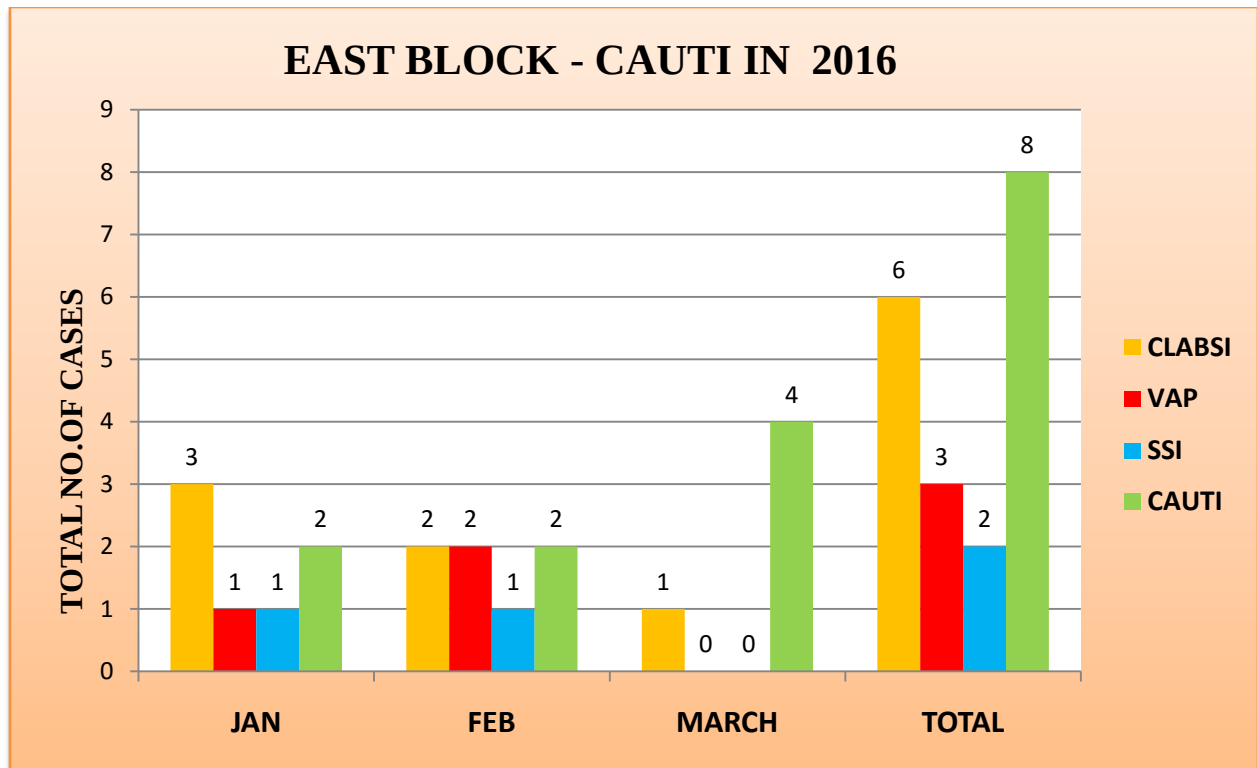
TABLE 8.



INFERENCE:

ON ANALYSIS IT IS OBSERVED IN THE WEST BLOCK IN THE YEAR 2016 CAUTI CASES WERE MAXIMUM IN THE MONTH FROM JAN TO MARCH.

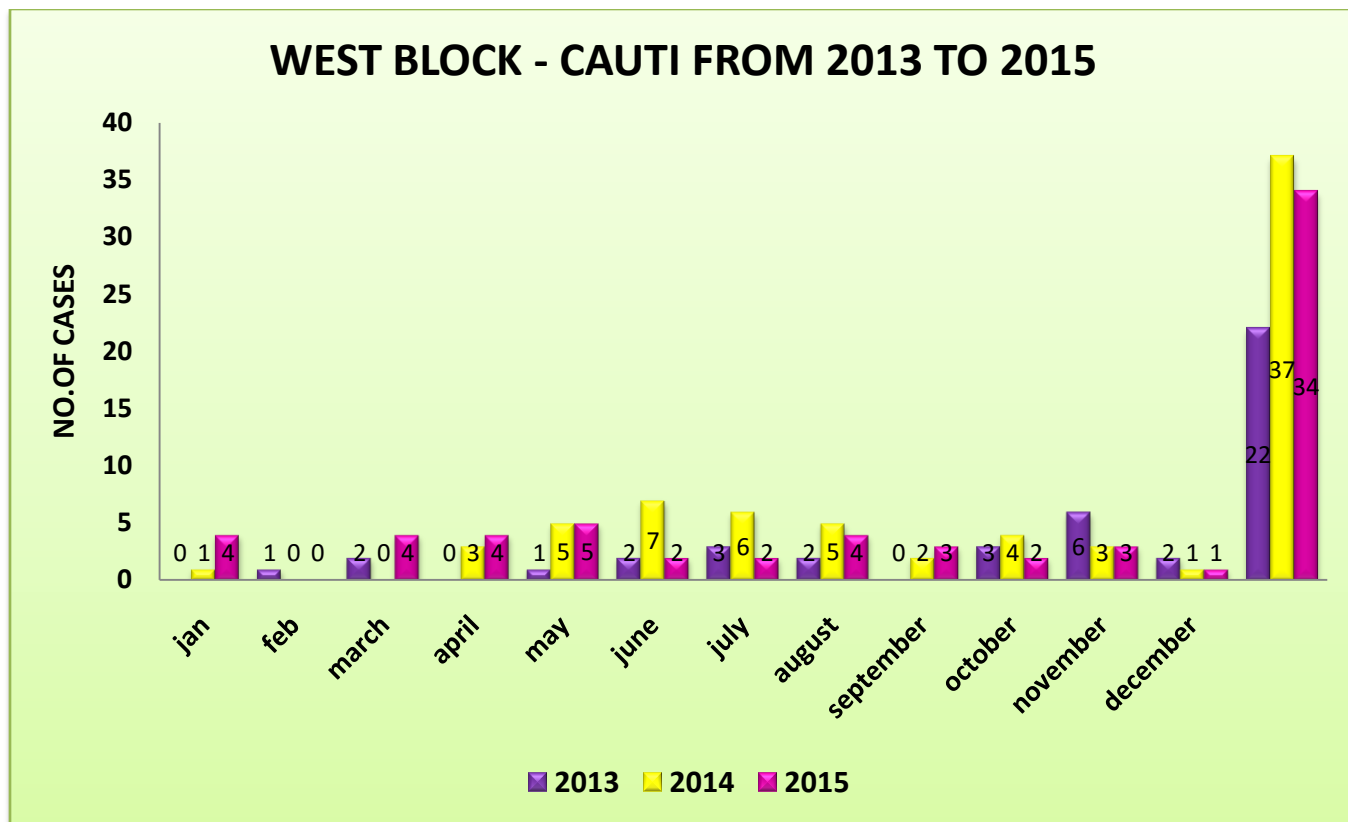
TABLE 9.



INFERENCE:

ON ANALYSIS IT IS OBSERVED THAT IN EAST BLOCK CAUTI CASES WERE MAXIMUM IN THE MONTH OF MARCH 2016.

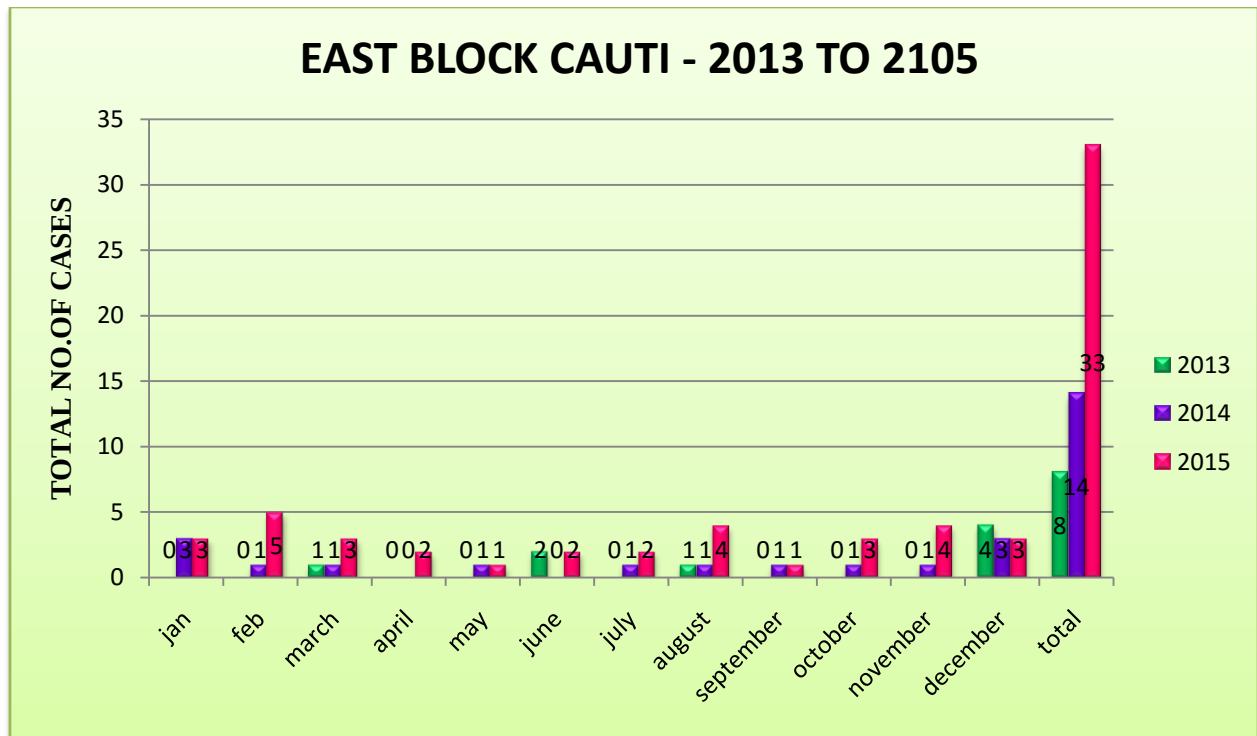
TABLE 10.



INFERENCE:

ON ANALYSIS IT IS OBSERVED THAT IN WEST BLOCK CAUTI CASES WERE MAXIMUM IN YEAR 2014. HOWEVER REUCION IN THE INCIDENCE OF CAUTI WERE SEEN IN 2015 IN WEST BLOCK. IN MONTH OF JUNE AND JULY CAUTI WAS MOSTLY SEEN.

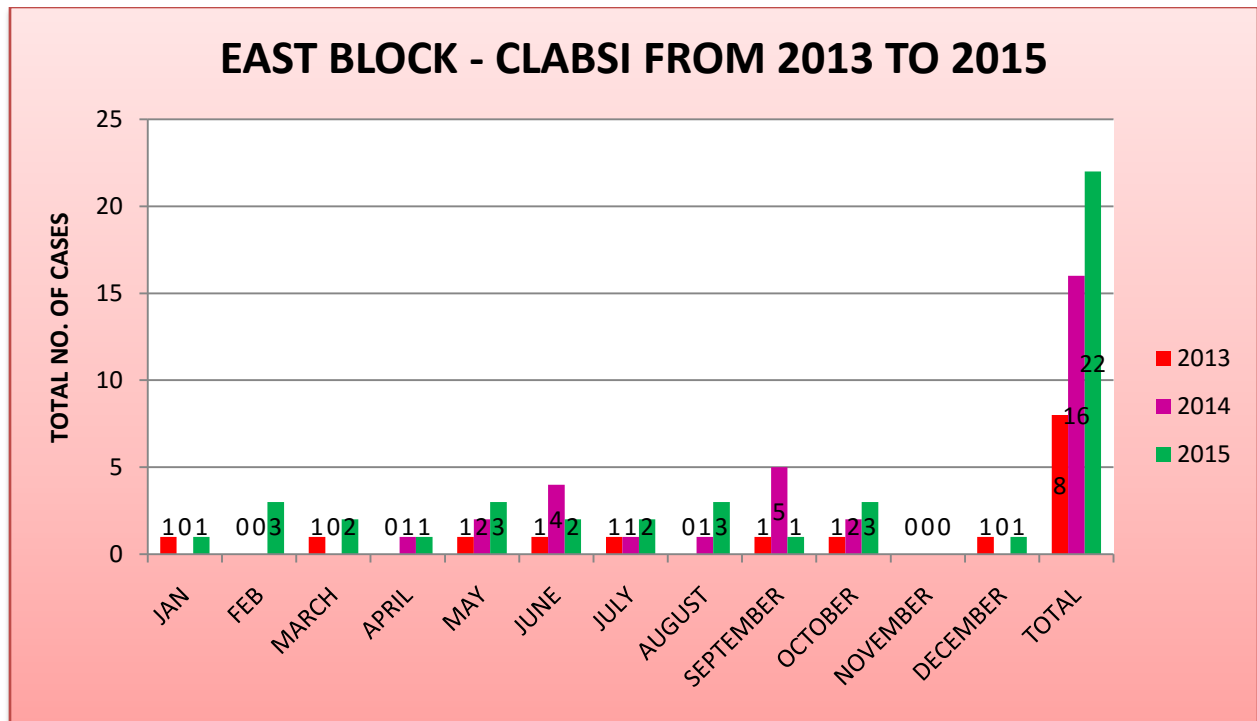
TABLE 11.



INFERENCE:

ON ANAYSIS IT IS OBSERVED IN EAST BLOCK CAUTI CASES HAS INCREASED FROM 2013 TO 2015 TREMENDOUSLY.

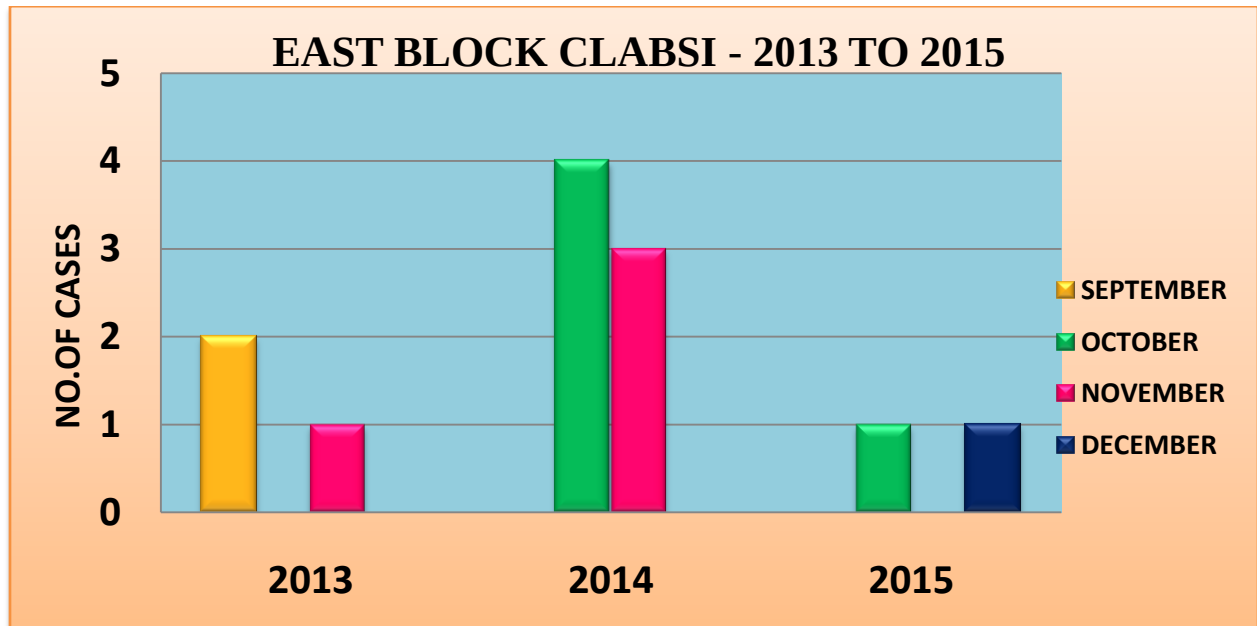
TABLE 12.



INFERENCE:

ON ANALYSIS IT IS OBSERVED IN EAST BLOCK INCIDENCES OF CLABSI HAS INCREASED TREMENDLOUSLY FROM 2013 TO 2015.

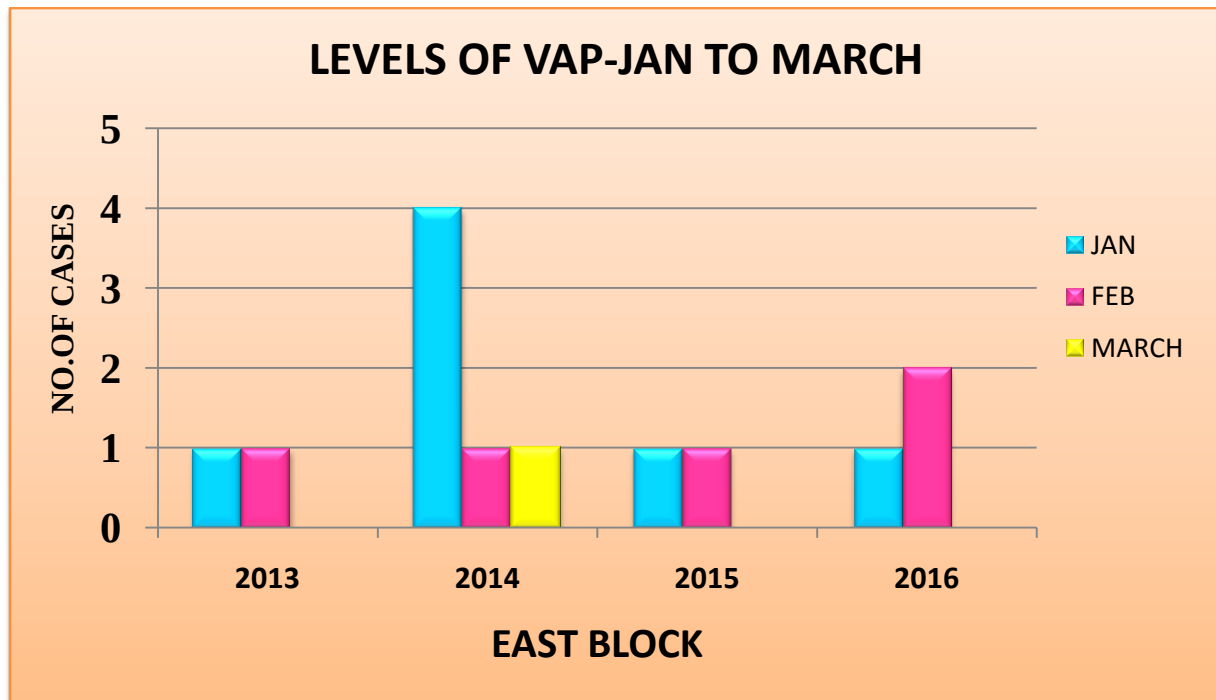
TABLE 13.



INFERENCE:

ON OBSERVATION IN EAST BLOCK INCIDENCE OF CLABSI HAS BEEN SEEN MAXIMUM IN MONTHS OF OCTOBER AND NOVEMBER 2014.

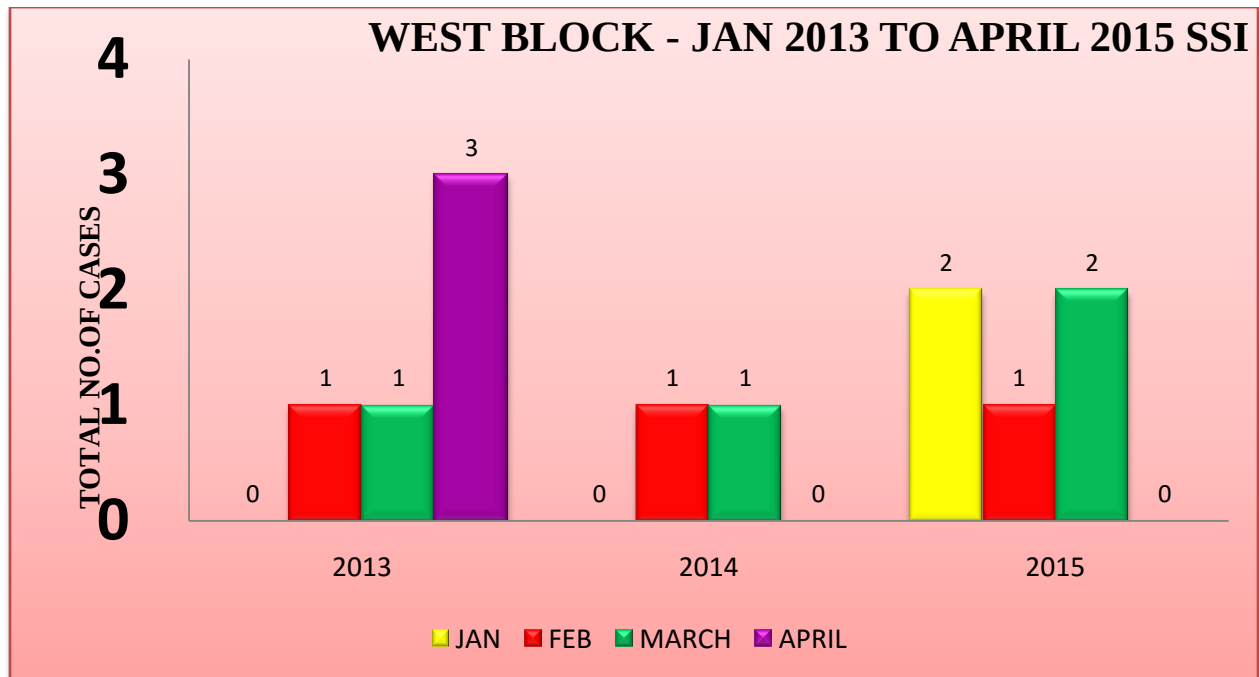
TABLE 14.



INFERENCE:

ON ANALYSIS IT IS OBSERVED IN EAST BLOCK HIGH LEVELS OF VAP WAS OBSERVED IN JAN IN THE YEAR 2014. HOWEVER THE INCIDENCE OF VAP HAS REDUCED IN THE YEAR 2016

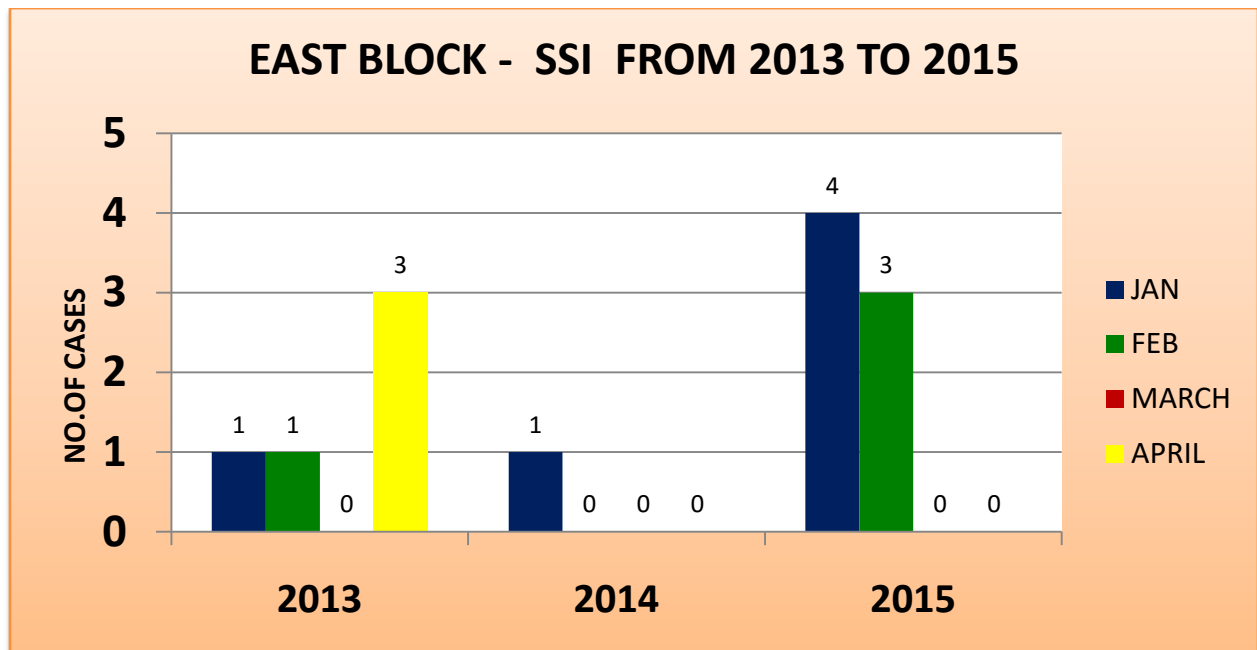
TABLE 15.



INFERENCE:

ON ANAYSIS IT IS OBSERVED SSI LEVELS WERE INCREASED TREMONDOUSLY IN MONTH OF APRIL 2013 . HOWEVER SSI HAS INCREASED IN 2015 FROM JAN TO MARCH .

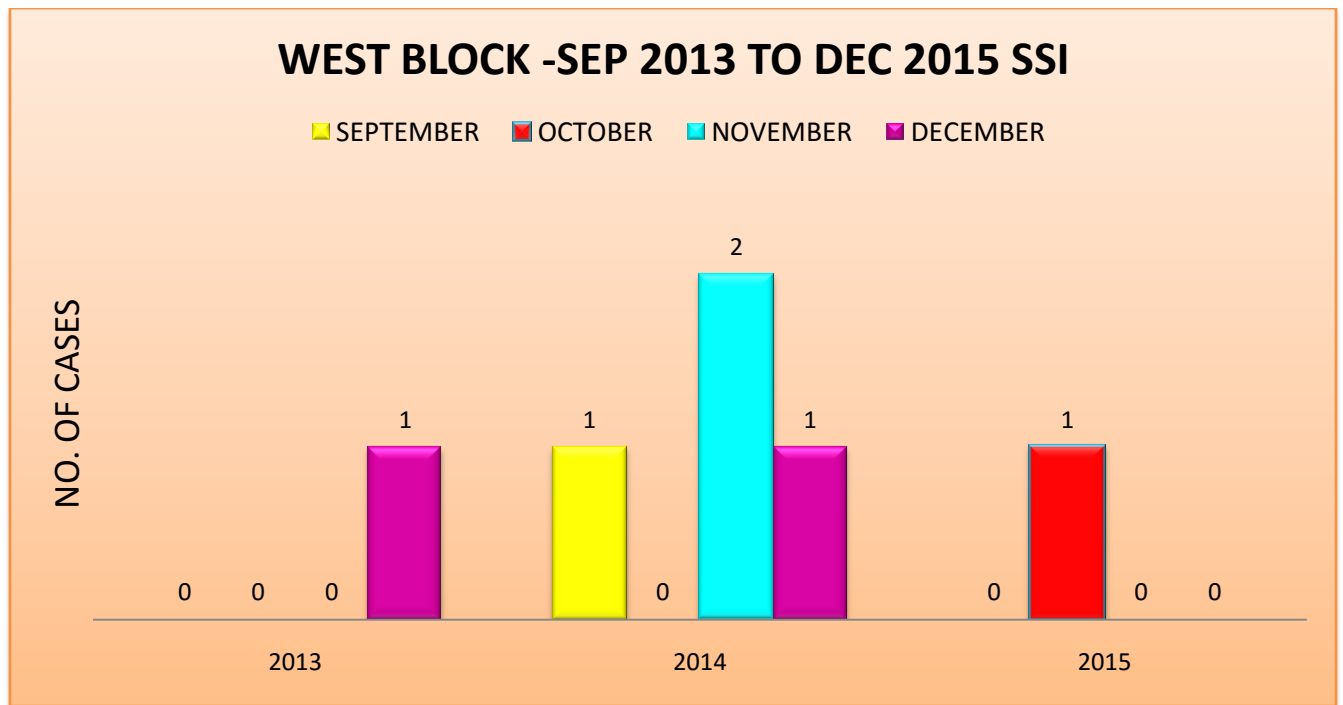
TABLE 16.



INFERENCE:

ON ANALYSIS IT IS OBSERVED IN EAST BLOCK INCIDENCE OF SSI HAS INCREASED TREMENDOUSLY IN THE MONTHS OF JAN TO FEB 2015 .

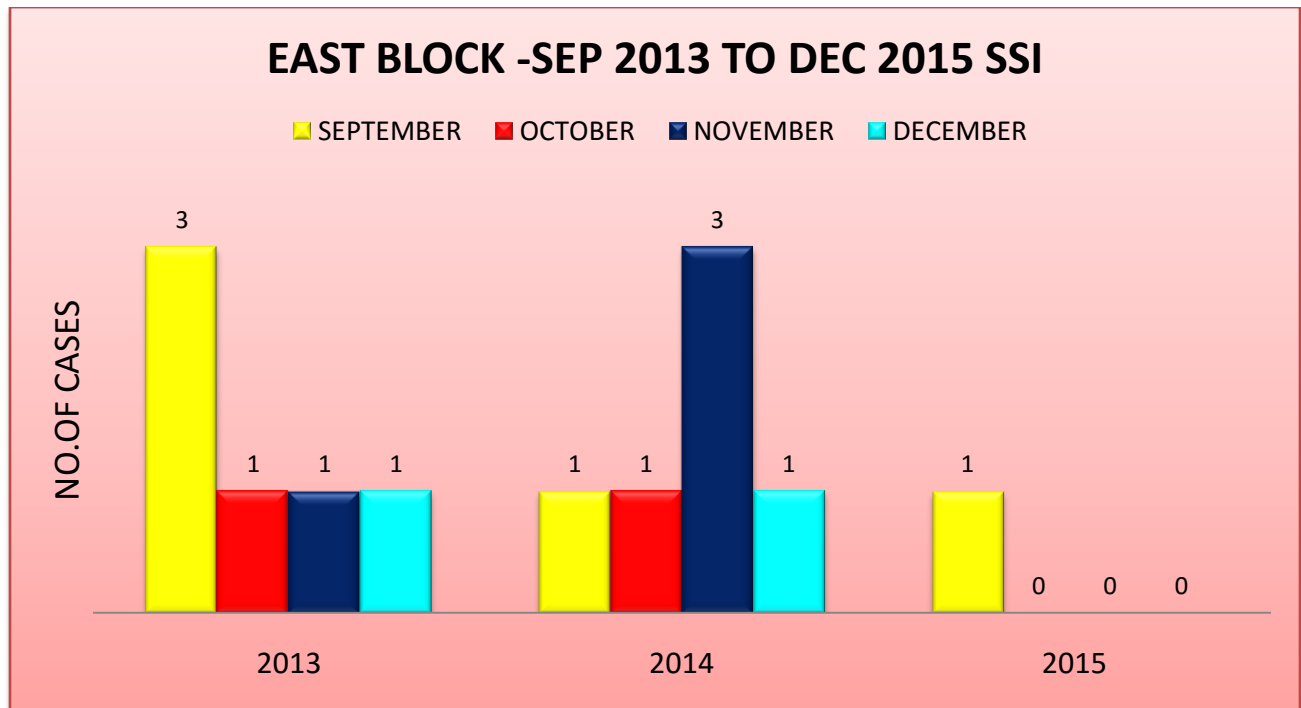
TABLE 17.



INFERENCE:

ON ANALYSIS IT IS OBSERVED THAT SSI WAS FOUND MAXIMUM IN MONTH OF NOVEMBER 2014.

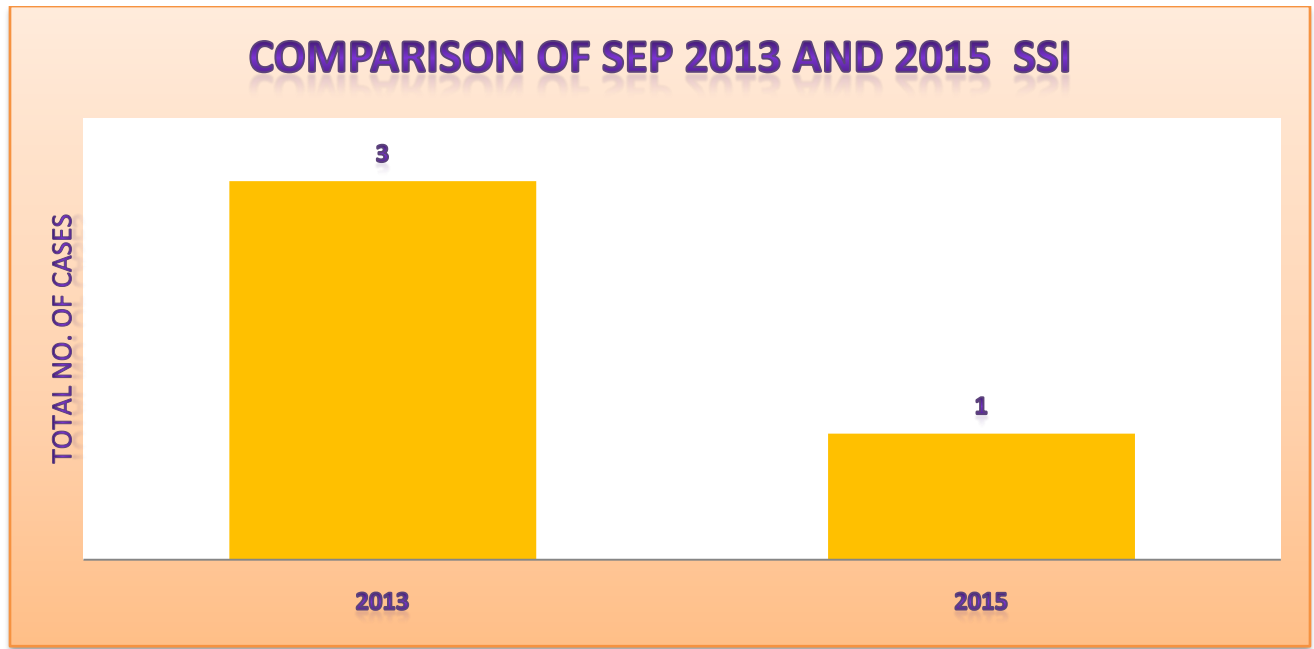
TABLE 18.



INFERENCE:

ON ANALYSIS IT IS OBSERVED INCIDENCE OF SSI WAS MAXIMUM IN JAN 2013 AND IN NOVEMBER 2014.

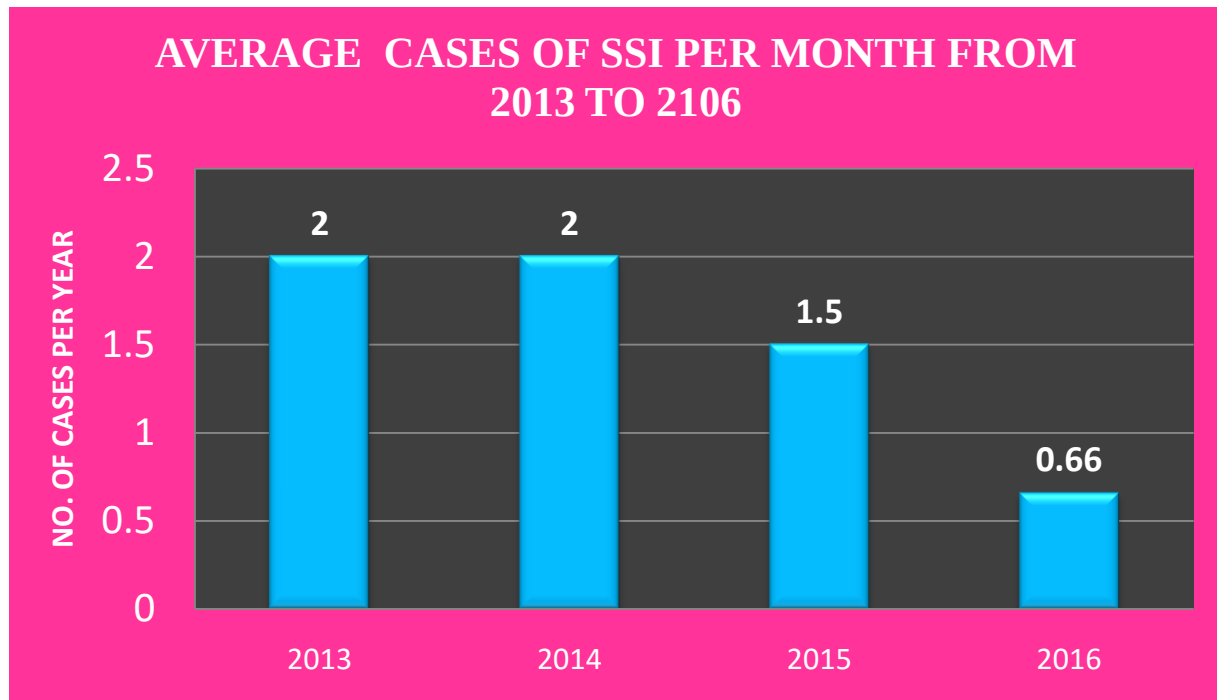
TABLE 19.



INFERENCE:

ON COMPARISION OF INCIDENCE OF SSI IN THE MONTH OF SEPTEMBER
LEVELS HAS REDUCED TREMENDOUSLY FROM 2013 TO 2015

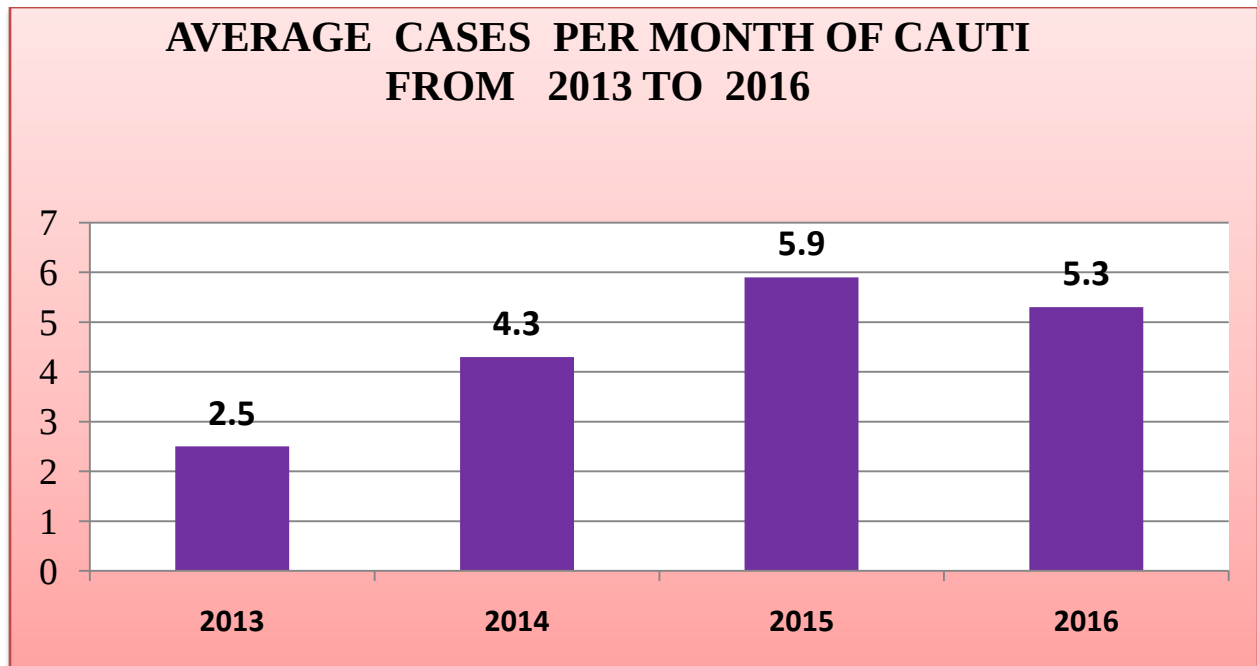
TABLE 20.



INFERENCE:

THE INCIDENCE OF AVERAGE CASES OF SSI PER MONTH FROM 2013 TO 2016 HAS REDUCED TREMENDOUSLY.

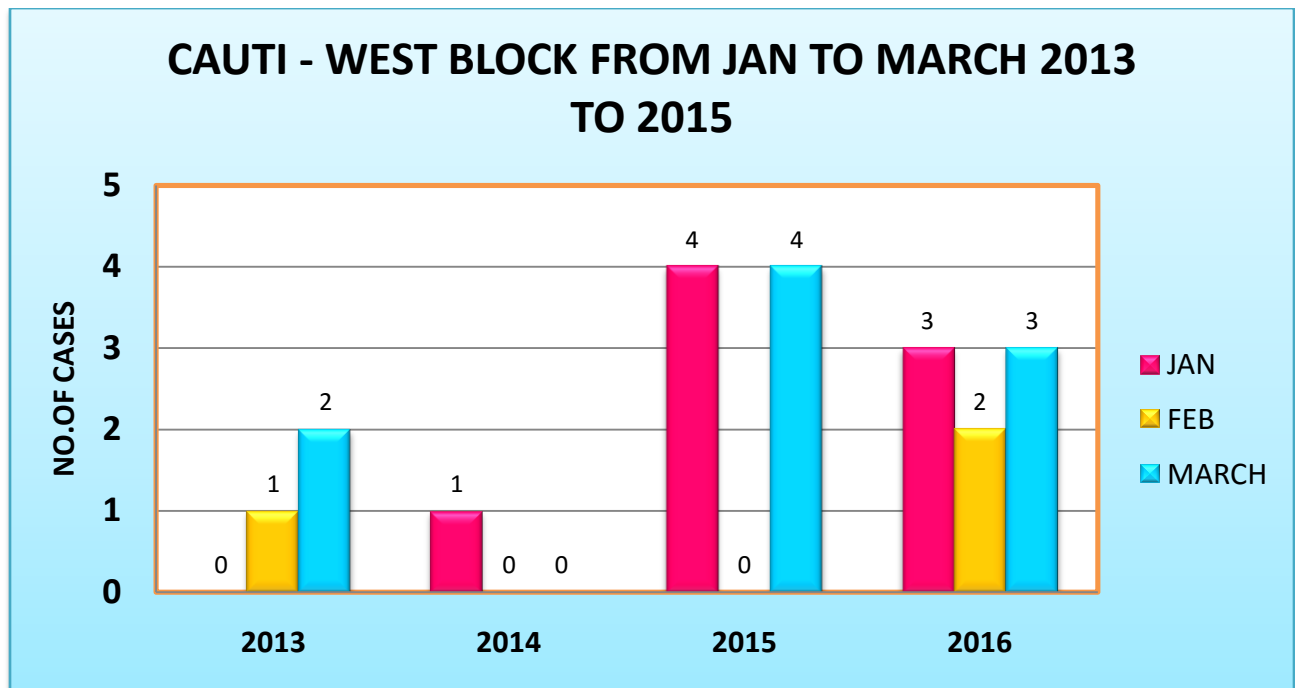
TABLE 21.



INFERENCE:

THE INCIDENCE OF AVERAGE CASES OF CAUTI PER MONTH FROM 2013 TO 2016 HAS INCREASED TREMONDOUSLY.

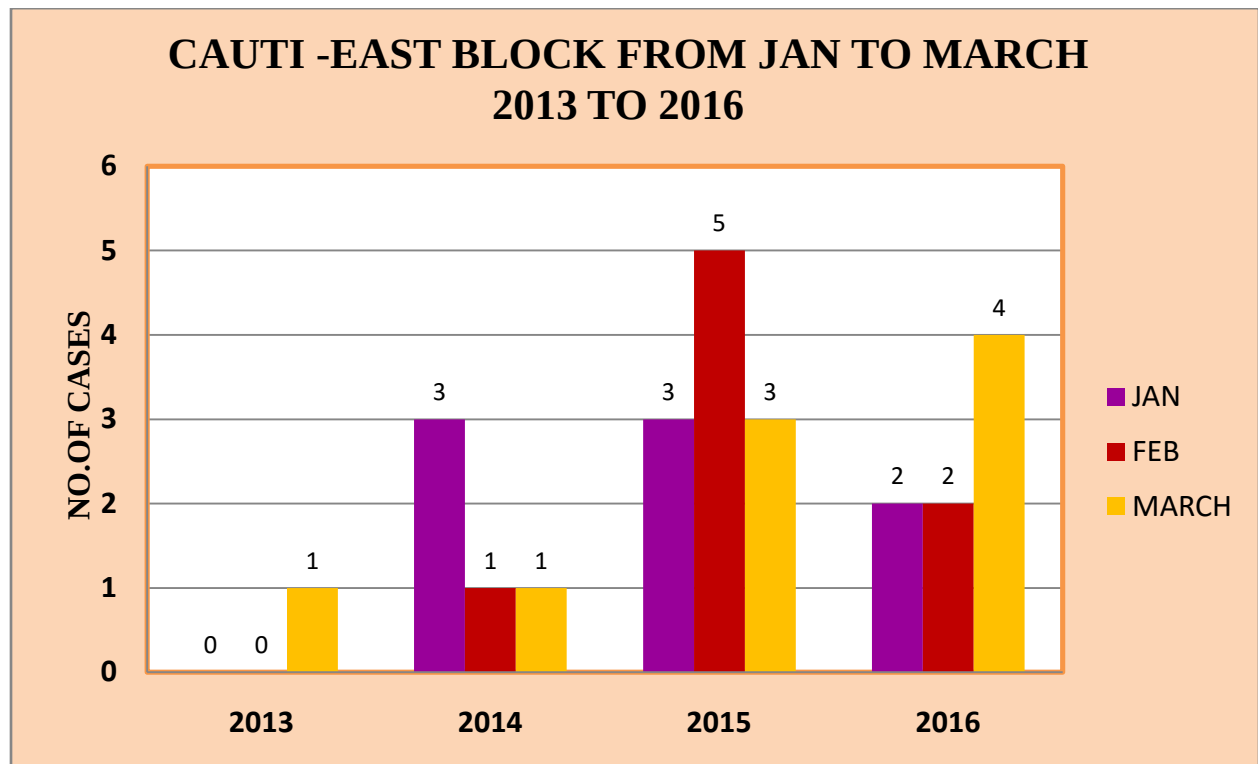
TABLE 22.



INFERENCE:

ON ANALYSIS IT WAS OBSERVED THAT IN WEST BLOCK CAUTI CASES WAS INCREASED TREMENDOUSLY IN MONTHS JAN AND MARCH 2015.

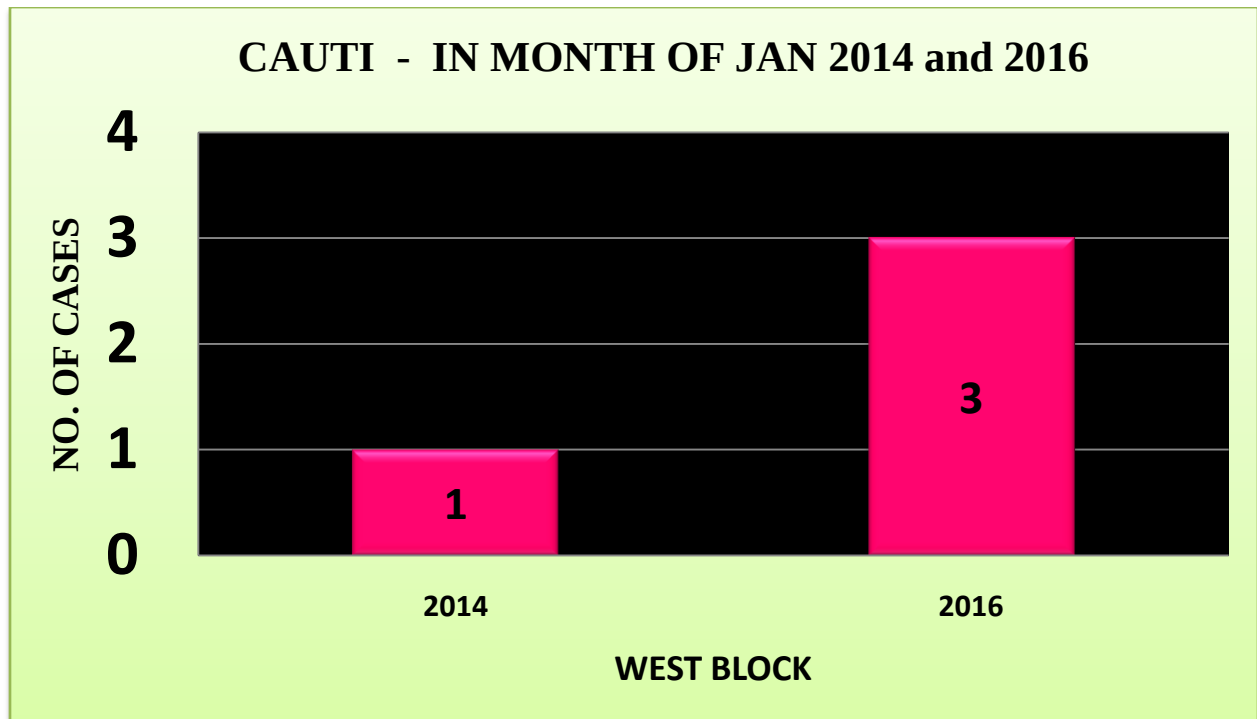
TABLE 23.



INFERENCE:

ON ANALYSIS IT IS OBSERVED IN EAST BLOCK CAUTI HAS INCREASED TREMENDOUSLY IN MONTHS FEB IN 2015 AND IN MARCH 2016.

TABLE 24.



INFERENCE:

ON COMPARISON OF 2014 AND 2016 IT WAS OBSERVED IN WEST BLOCK CAUTI HAS INCREASED TREMENDOUSLY.

OBSERVATIONS AND FINDINGS

HOSPITAL INFECTION CONTROL

1. The organization has a well-designed, comprehensive and documented infection control programme aimed at reducing/eliminating risks to patients and their attendants, visitors and the health care providers:

- a) Currently there is a hospital infection control committee on infection control the meeting of which is held every month.
- b) There is a documented infection control programme.
- c) There is an infection control task force which is involved in surveillance activities.
- d) There are designated infection control nurses.

2. The organization has an infection control manual which is periodically updated:

- a) There is infection control manual. It has all policies and procedures related to infection control activities in the hospital and identify high risk areas in the same.
- b) Even though surveillance activities like swab culture is done in various areas like OT & ICU there is a need of strengthening the surveillance activities by including rounds, air and water quality checks in high risk areas like CSSD & kitchen.
- c) Policies and procedures related to CSSD activities must be prepared and included in the manual.

3. The infection control task force is responsible for surveillance activities in identified areas of the hospital

- a) There is data collected on surveillance activities. The infection control nurse maintains the surveillance data on infection control.
- b) This is being uniformly done. Information is sent to appropriate authorities.
- d) Monitoring the effectiveness of housekeeping services (infection control) is being done.

4. The organization takes actions to prevent reduce the risk of HealthCare Associated Infections (HCAI's) in patients and employees.

5. Proper facilities and adequate resources are provided to support the infection control programme

a) Hand washing facility is adequate. Scrubs are provided with elbow/foot operating tap. Also drier/tissue papers are provided. Hand washing pictures are displayed. Also hand washing areas are kept clean.

b) Hand washing should be monitored regularly.

c) Policies and procedures on isolation and barrier are available. Staffs are aware of isolation/barrier activities, who are the patients to be admitted in isolation room. Isolation rooms are available in wards. These rooms are more organized and cleaned. They are displayed "ISOLATED ROOM".

d) Adequate gloves, masks and disinfectants are available. The usage must be monitored by infection control team.

6. The organization takes appropriate actions to control infection outbreak.

Hospital has documented procedures on handling such outbreaks. It is prepared and implemented.

7. There are documented procedures for sterilization and protocols to be followed in the intensive care units in the organization

There is an established documented procedure.

8. Statutory provisions with regard to Bio Medical Wastes (BMW) are complied with

a) The hospital is authorized by DPCC (Delhi Pollution for management and handling of bio-medical waste.

b) Biomedical waste segregation is done with the help of color codes and instructions are properly displayed in waste segregation areas. This is displayed uniformly throughout the hospital.

c) The waste is cleared at least twice in a day. Trolleys are used with covered bins of different color to transport waste.

- d) All the wastes must be weighed before handling over to the outsourcing service.
- e) Bio-medical waste treatment is outsourced which is authorized to treat biomedical waste.

9. The infection control programme is supported by the organization's management and includes training of staffs and employee health

- a) Designated infection control nurses are there.
- b) Facilities like gloves, mask etc are available.
- d) Soap solutions are provided in all hand washing areas instead of soap
- f) Proper system of pre and post exposure prophylaxis is implemented throughout the organization. This must be applicable to all staffs working in the organization including outsourced services.

SUGGESTIONS AND RECOMENDATIONS

1. Educate Doctors about Hand Hygiene; implementing standard precautions, particularly best hand hygiene practices at the bedside. Hand washing should be monitored regularly and continuous encouragement should be done.
2. Patient and his attendant should be educated and the importance of Hand Hygiene Practises should be explained to them.
3. Infection control nurses should not adhere 100% on CAUTI bundles, SSI bundles.
4. There should be increase in knowledge regarding HCAI and routes of transmission, barrier nursing and hand washing techniques, hospital waste management, and importance of infection control team.
5. Peer-to-peer learning will help in reducing the health care associated.

As quoted in a study peer to peer learning helped [California hospitals participating in the Patient Safety First initiative](#) reduce ventilator-associated pneumonia by 57 percent, catheter-associated urinary tract infections by 24 percent, and sepsis mortality rates from 22.58 out of 100 in 2009 to 16.62 in 2012, according to a report from the National Health Foundation.

6. Consider Utilizing copper surfaces on bed rails, tables, IV poles and nurse call buttons.

Copper surfaces could [reduce infections by as much as 60 percent](#), as seen in a study from researchers from the Medical University of South Carolina and published last year in *Infection Control and Hospital Epidemiology*.

The electrical conductivity of copper "literally steals the electricity inside the microbes, rendering them inactive," researcher Michael Schmidt, Ph.D., said in a Medical University of

South Carolina announcement, as *FierceHealthcare* previously reported. "They literally die because they run out of juice."

7. An observer usually a nurse should use a checklist to ensure that evidence based practises are followed - Hand washing before line placement

- Full barrier precautions
- Avoiding line placement at the Femoral Site
- Using Chlorohexidine to cleanse the site.
- Removing unnecessary lines.

(Using the above practice it has been seen that the infection rate reduces by almost 70%, mean rate of infection reduces from 4.5 per 1000 days to 1.3 per 1000 beds using central line in a study conducted by John Hopkins University's School of Medicine & Bloomberg)

9. Complying with the Recommendations of the Antimicrobial use Committee regarding the use of antibiotics.

10. Improving & Promoting staff education and accountability; conducting research to adapt and validate surveillance protocols followed in the hospital.

11. Conducting research on the potential involvement of patients and their families in HCAI reporting and control.

12. There are only five infection control nurses. Employing more nurses for infection control team will minimize the work load of IC nurse, so that work is made effective.

13. The infection control nurse maintains the surveillance data on infection control. Each ward in-charge and separate ICU's data should also be maintained the same.

14. It is suggested to provide the feedback regarding rating to medical and nursing staffs (can be through circulars, newsletters etc)

15. Experienced and well trained staffs only should be allowed to treat “ISOLATED” patients. Adequate gloves, masks and disinfectants are available. The usage must be monitored by infection control team.
16. Outsourcing staffs should also be educated about infection control so that development of infection can be minimized to the least.
17. There should be initial orientation for new staffs that includes staff from every department that has linkage to the ICU’s e.g. Housekeeping, Food & Beverage on infection control. Training and educating newly recruited staffs will minimize infections in and around hospital.
18. There should be increase in knowledge regarding HCAI and routes of transmission, barrier nursing and hand washing techniques, hospital waste management, and importance of infection control team.
19. Nurses have a critical role to play in prevention and infection control and they should have scopes for continuous professional development.
20. Infection Control Nurses should be participating in the development & operation of Regional & National Infection Control Initiative.

CONCLUSION

The study revealed that current physical facilities available for infection control are good and meets the NABH standard level. The study also provides baseline infections of Healthcare

Associated Infections & associated risk factors for future surveillance. If the measures followed are continuously updated and upgraded the infection level can be further reduced. This can be done by giving training awareness Training Programme on Standard Requirements, guidance on implementation of infection control programmes. The awareness about infection control should also be developed among visitors. The awareness about the infection has to be created that will help in decrease of infections and control of the same.

REFERENCES

1. WHO/CDS/CSR/EPH/2002.12; Prevention of hospital-acquired infections

A practical guide 2nd edition, World Health Organization, Department of
Communicable Disease, Surveillance and Response

2. WHO. Health care-associated infections. Fact sheet.

http://www.who.int/gpsc/country_work/gpsc_ccisc_fact_sheet_en.pdf (accessed August 2012)

3. Provoking “Eureka” moments for effective infection control strategies; **DIDIER PITTET**

- 4 . The urgent need for infection control programmes in Indian health care; **NANDAKUMAR JAIRAM, MAHESHKUMAR M LAKHE** (Columbia Asia Hospitals, India)

5. An investigation of the incidence of Nosocomial infections among the patients admitted in the intensive care unit of a tertiary care hospital in Rajasthan, India. **Dileep Kumar Sharma^{1*}, Yogendra Kumar Tiwari¹, Nitya Vyas² and Rakesh Kumar Maheshwari²**

6. Centre for Disease Prevention and Control (CDC) and National Healthcare Safety Network (NHSN) <http://www.cdc.gov/nhsn/>

7. WHO, Infection Control

http://www.who.int/csr/bioriskreduction/infection_control/en/index.html

8. Prevalence of Hospital Acquired Infections in a tertiary care hospital in India

*Malhotra S, Sharma S, Hans C (Department of Microbiology, PGIMER and Dr RML Hospital) New Delhi.