Summer Training at
Columbia Asia Hospital,
Pune

Study on Patient Flow Process and Turn Around Time (TAT) of Patients in Out-Patient Department

By
Ruchi

Under the guidance of
Dr. Arindam Das

MBA Hospital and Health Management
2015-2017

The IIHMR University, Jaipur
2016

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

IIHMR UNIVERSITY

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Dr. Ruchi** student of MBA hospital and health management from The IIHMR University, Jaipur has undergone summer training at **COLUMBIA ASIA HOSPITAL PUNE** from **1st April 2016** 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.

The summer training is in fulfillment of the course requirements.

I wish her success in all her future endeavors.

Col (Dr) Ashok Kaushik
Dean, Academic and Student Affairs

The IIHMR University, Jaipur

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COLUMBIA ASIA

1st June, 2016

INTERNSHIP COMPLETION LETTER

This is to certify that **Ms. Ruchi** has successfully completed her Internship Programme in Operations Department in our hospital for the period of 2 months from 1st April 2016 to 31st May 2016.

During her Internship period she has completed her project on **"A Study on Patient Flow Process and Turn Around Time (TAT) of patients in Out-Patient Department".**

Her behaviour was found satisfactory during her internship period.

We wish her success in her future.

Yours Sincerely,
For Columbia Asia Hospital - Pune

Columbia Asia Hospitals Pvt. Ltd. PUNE 411014

Pankaj Wagh
Human Resource Manager

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CIN: U85110KA2003PTC033055

ACKNOWLEDGEMENT

It is a privilege for me to work in a prestigious organization like Columbia Asia, Pune. The two month training period has been a learning period which provided me with insights of the working of a hospital along with practical knowledge of various management functions and duties.

The success of this project required a lot of guidance and assistance from many people. I owe a great thanks to all those who have helped me at every step of the project.

I would like to thank **Dr. Shamim Khan** for giving me this opportunity to do an internship in this hospital. My sincere thanks **to Mr. Jayesh Nair** (Operations Manager) for being my mentor and **Miss Sonu Chopra**(Customer Care Manager) for being my project guide. They have been a source of inspiration and the completion of this project would not have been possible without their continuous encouragement and guidance.

I am also thankful to the customer care staff, nurses and all others who have enriched me with information and knowledge.

I'm grateful to my guide **Dr. Arindam Das**, Associate Professor, IIHMR Jaipur, and other departmental heads for their cooperation, support and wholehearted encouragement. Their assistance enabled me to overcome the difficulties faced during this project.

Dr. Ruchi

Pune

30th may 2016

DECLARATION

I, Dr. Ruchi, hereby declare that this project titled **'Study on Patient Flow Process & Turn Around Time of OPD at Columbia Asia Hospital, Pune'** is the outcome of my own work undertaken under the guidance of Mr. Jayesh Nair, Operation Manager, Columbia Asia Hospital, Pune. It has not been submitted earlier to any other University or Institution for the award of any internship Certificate or published any time before.

30th May 2016 Dr. Ruchi

TABLE OF CONTENTS

ABBREVIATION

OPD- Out Patient Department

IPD- In Patient Department

OT- Operation Theatre

ICU- Intensive Care Unit

NICU- Neonatal Intensive Care Unit

ER- Emergency Room

LDR- Labour Delivery Room

CSSD- Central Sterile Supply Department

TAT- Turnaround Time

ADR- Adverse Drug Reaction

NDPS- Narcotic and Psychotropic Substances

DTC- Drugs and Therapeutics Committee

VED- Vital, Essential, Desirable

RL- Responsibility Level

LASA- Look Alike Sound Alike

CMS- Chief Medical Services

CNS- Chief Nursing Superintendent

ICN- Infection Control Nurse

MOR- Management Operational Review

HVAC- Heating Ventilating and Air Conditioning

AHU- Air Handling Unit

HEPA Filter- High Efficiency Particulate Air Filter

DG- Diesel Generator

UPS- Uninterrupted Power Supply

In order to undertake this crucial project it was important for me to understand set protocols and find the gaps, if any, while implementing these protocols. It was the utmost importance for me to understand processes, however small, to come to any conclusion.

Aims:-

- To understand working of whole of the hospital and to seek opportunities that will provide wholesome experience
- To study hospital operations/medical services departments in detail
- To study process flow of drug distribution to IPD patients as well as the process flow of other departments

Primary objective of my summer internship program is to have experience and knowledge on the management and operational aspect of the hospital.

HOSPITAL PROFILE

COLUMBIA ASIA
21st Century Healthcare

The company is based in Kuala Lumpur, Malaysia and was founded in 1994. The company offer full-service hospital built in neighbourhoods, rather than the central city. Columbia Asia is the chain of hospitals in Asia, with 23 medical facilities across India, Malaysia, Vietnam and Indonesia. Columbia Asia's target market is fast-growing middle-income group. Columbia Asia hospitals are clean, efficient, affordable and accessible. The innovative design of Columbia Asia hospitals, from their manageable size to their advanced technology, is focused on creating the most positive experience for patients. Patient service, efficiency and medical excellence are all part of Columbia Asia's model to deliver the best medicine. Columbia Asia's highly skilled doctors and nurses deliver care in modern hospitals located close to where people live and work. Columbia Asia hospital specifically designed for the needs of patients and built for maximum comfort and efficiency. Patients benefit from advanced medical diagnostics, treatment and personal care that only comes in facilities where the focus is on each patient. Their transparent rate structure for medical procedures allows patients to know in advance how much their care will cost.

Columbia Asia, India

East

Columbia Asia Hospital- Salt lake, Kolkata

West

Columbia Asia Hospital- Pune

South

Columbia Asia Hospital- Hebbal, Bengaluru

Columbia Asia Hospital- Mysore

Columbia Asia Refferal Center- Yeshwanthpur, Bengaluru

Columbia Clinic- Doddaballapur

North

Columbia Asia Hospital- Patiala

Columbia Asia Hospital- Ghaziabad

COLUMBIA ASIA HOSPITAL, PUNE

Columbia Asia today serves more than one million patient every year. Hospital offer comprehensive clinical programmes that are supported by a list of ancillary services (ICU, NICU, referral lab, physiotherapy, teleradiology/telemedicine, pharmacy and imaging facilities). A comprehensive medical records system forms the core of the hospital information system (HIS) that supports clinical decision making.

Columbia Asia Hospital, Pune is a 100 bedded multi specialty facility situated close to IT parks at Kharadi. The hospital has highly qualified medical personnel and technicians to ensure healthcare delivery of the highest quality. The hospital's infrastructure along with internationally benchmarked standards of medical, nursing and operating protocols are the key component that will make it a preferred hospital in pune. A proprietary hospital information system and electronic medical record management assures error free and convenient patient records management, thereby greatly minimizing patient waiting time.

- **Mission:** "To deliver the best clinical outcomes in the most effective, efficient and caring environment"
- **Vision:** "We have a passion for making people better"
- **Moto:** "Customers First"
- **Values:** "Caring, Community Involvement, Excellence, Integrity and Team Work"

Scope of Services at Columbia Asia Pune:

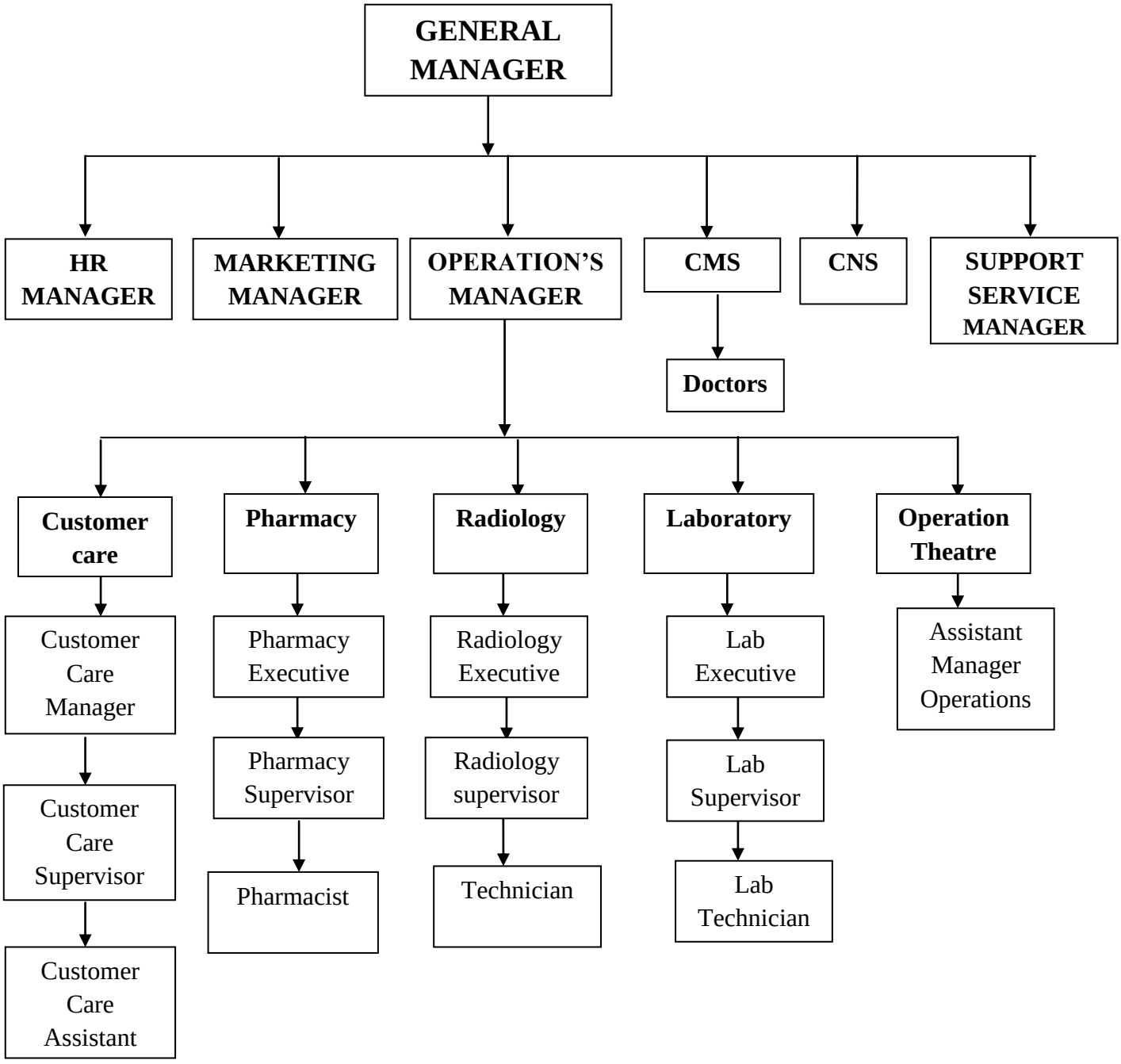
- Anaesthesia
- Arthroscopic Surgery
- Bariatric Surgery
- Cardiology
- Clinical Hematology
- Clinical Psychology
- Critical Care Medicine
- Dental Services
- Dermatology
- Emergency Medicine
- Endocrinology

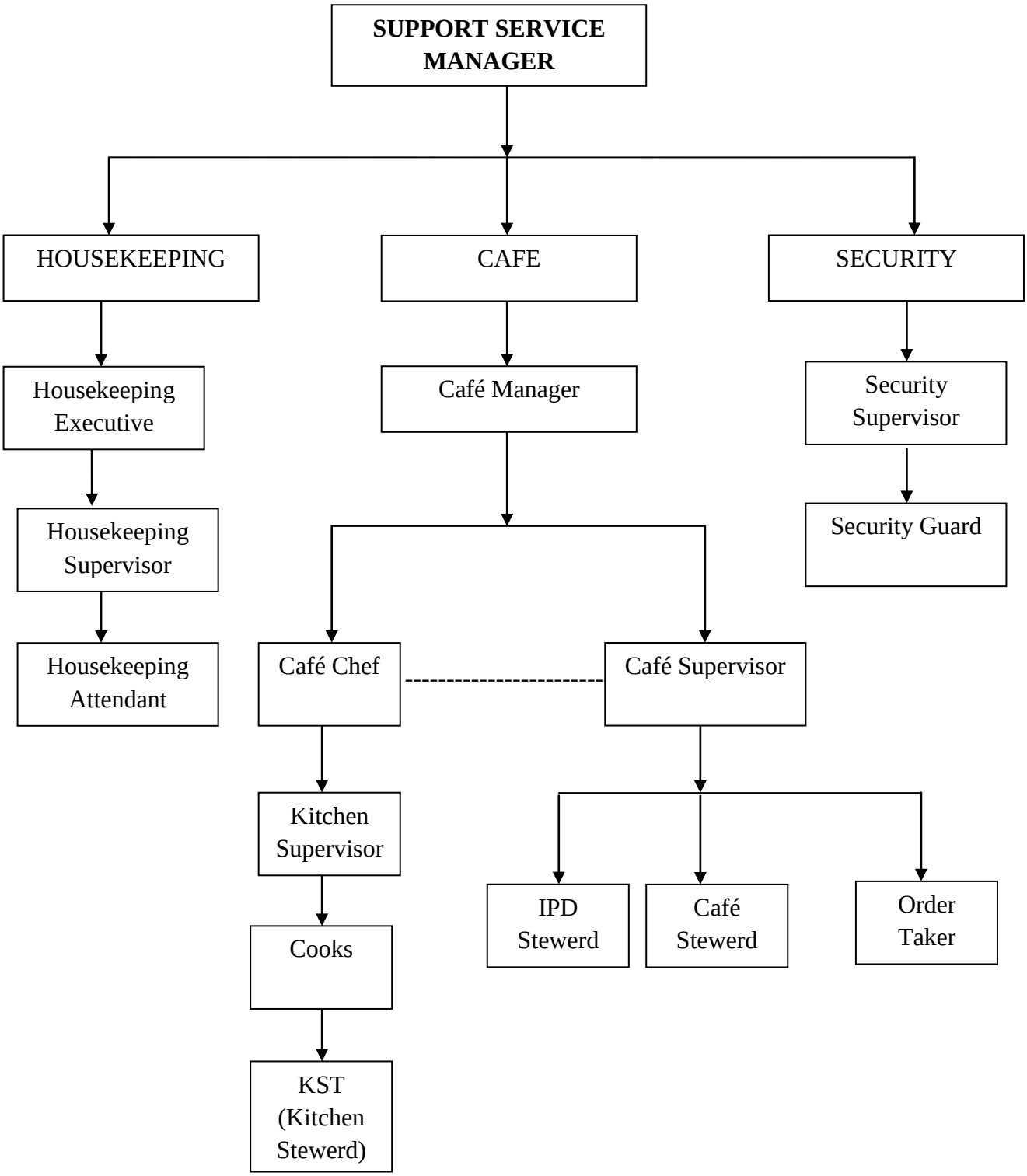
- ENT
- Gastroenterology
- General Surgery
- Hand Surgery
- Infectious Diseases
- Internal Medicine
- Interventional Radiology
- Interventional Neuro Radiology
- Laparoscopic Surgery
- Medical Oncology
- Minimal Invasive Surgery
- Neonatology
- Nephrology
- Neurology
- Neuro Surgery
- Obstetrics and Gynaecology
- Onco Surgery
- Ophthalmology
- Oral and Maxillofacial Surgery
- Orthopedics and Joint Replacement
- Pediatrics
- Pediatric Surgery
- Psychiatry
- Plastic and Reconstructive Surgery
- Pulmonology
- Rheumatology
- Spine Surgery
- Sports Medicine
- Urology
- Vascular Surgery

Services Not Offered:

- Burns
- Cardio Thoracic Surgery
- Nuclear Medicine and Radiotherapy

ORGANOGRAM OF HOSPITAL




SUPPORT SERVICE MANAGER
HOUSEKEEPING
CAFE
SECURITY
Housekeeping Executive
Café Manager
Security Supervisor
Housekeeping Supervisor
Security Guard
Housekeeping Attendant
Café Chef
Café Supervisor
Kitchen Supervisor
IPD Stewerd
Café Stewerd
Order Taker
Cooks
KST (Kitchen Stewerd)

DEPARTMENTS

The floor plan of hospital is as follows:

Basement:-

- HR Department
- Marketing
- Support Service Department
- Housekeeping Department
- Purchase Department
- EMRD

Ground Floor:-

- Customer Care
- Finance
- Insurance Department
- OPD
- Pharmacy
- Radiology
- Laboratory
- Accident & Emergency
- Cafeteria
- Dietician

First Floor:-

- Nursing Station- A,B,C,D
- IPD
- NICU
- Labour Ward
- Dialysis
- Physiotherapy

Second Floor:-

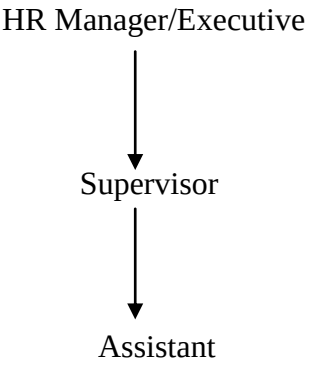
- Nursing Station- C,D
- OT
- CSSD

- ICU
- Cath Lab & Endoscopy

DEPARTMENT WISE OBSERVATION

HR Department

ORGANOGRAM:-



The services for this department include:

- Job recruitment & analysis
- Assessment of application
- Interview processes
- Joining formalities
- Performance appraisal
- Compensation & benefit
- Training & development
- Employer engagement & relation
- Management info system

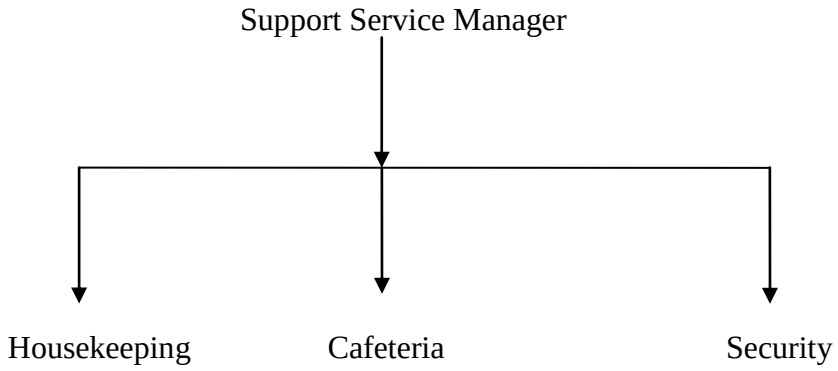
Marketing Department

ORGANOGRAM:-

The segment in which marketing is done includes corporate, refferal and international patients. The unique selling proportion of Columbia Asia is the In-house cafe, ethical practice and uniform price rate policy. Columbia Asia hospital is associated with 108 corporate including public sector units and school. It is also associated with nursing homes, clinics and doctors for referrals. Columbia Asia also serves international patients from different countries.

Support Service Department

ORGANOGRAM :-

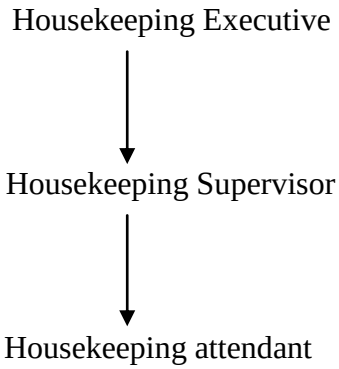


Services:-

- Support services shall consist of facility maintenance, bio-medical, housekeeping linen & laundry, security and food services
- Support services shall ensure that all fixed assets are tagged, that their movements are monitored and that proper records are maintained
- The hospital shall ensure that movement of items in and out of the premises is done after obtaining due authorization and with relevant supporting documentation

Housekeeping Department

Organogram (Housekeeping):-



Services:-

- The primary function of housekeeping department is to ensure overall cleanliness and maintenance of all areas of hospital
- The housekeeping department will use a combination of a efficient procedure, appropriate tools and methods with trained man power thereby ensuring a hygienic atmosphere in the hospital
- Deep cleaning (top to bottom) in critical areas like OT, ICU, NICU twice a month and in other areas once a month
- Room deep cleaning is done on Sundays
- Checklist is provided in each room, to be filled daily
- Different chemicals for different areas of the hospital, Basilocite for OT and BHU, R1 for washroom, R2 for floor cleaning
- Maximum cleaning is done before 10:30 am (before rush hours)
- Maximum 20 minutes per room

Linen & Laundry

- All the linen transferred to linen exchange sheet
- When the dirty linens are handed over to the vendor its entered into laundry exchange sheet (Three copies- Linen department, Security, Vendor)
- Five stocks are maintained-

  -Laundry stock

  -Patient stock

-Linen stock

-Store stock

- Linen Life Cycle- (min) 200/cycle and (max) 300/cycle

Cafeteria

- The food services shall be managed in-house and will be referred as Cafe Columbia
- The food services shall ensure that the food served is presentable, palatable and safe for consumption
- The hospital serves 6 meals a day to the patients, with dietician consultation (included in room charges)

  -Breakfast with tea/coffee

  -Mid-morning soup

  -Lunch

  -Snacks with tea/coffee

  -Dinner

  -Night cap milk
- Shop act licence and FDA licence
- Patient feedback is taken daily

Security

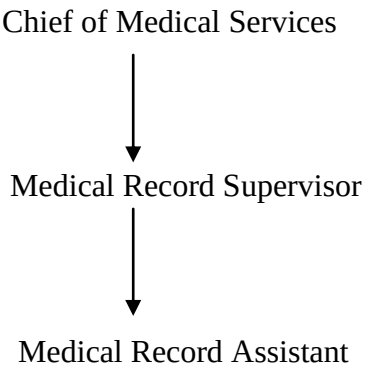
- The security department is responsible for the overall safety and security of the hospital infrastructure, the external customers and internal customers

EMRD (Electronic Medical Record Department)

The medical records department is responsible for maintaining medical records in a standardized and professional manner in order to protect patient confidentiality while allowing adequate access to providers in order to promote quality patient care.

Coding and release of information are some of the other major duties performed in medical records department.

ORGANOGRAM:-



Services:-

- Compiling of daily hospital census and reporting to authorized personnel
- Updating statistics of all OP and IP census to monthly statistics
- Collecting discharge files from all the wings
- Systematic maintenance of medical records
- Coding as per ICD norms

Customer Care

Services:-

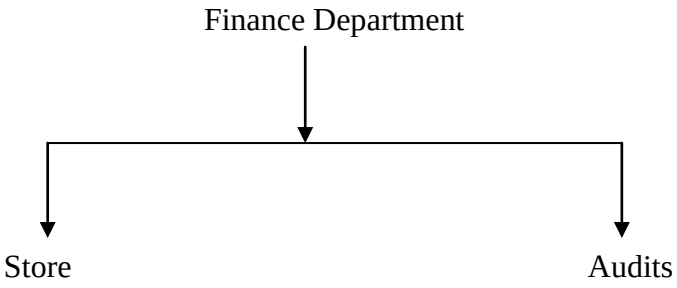
- **Enquiry Desk**- Enquiry is manned by a customer care assistant 24hrs/day, and is supervised by the customer care supervisor. Handles all doubts, new registration, enquiries and questions concerning the services Columbia Asia provides.
- **Console**- Handles internal calls (call transfers and enquiry) and external calls (call transfers, enquiry, scheduling appointments, rescheduling and dissemination of the information concerning health checks and other hospital services.
- **OPD**- Processing of appointment schedules and consultation with the respective consultants**.**

  Nurse Station (A) - Consultation payment and visit activation for OPD-A and health check-ups patients, vitals check

  Nurse Station (B) – Consultation payment, visit activation, vitals check, vaccination for OPD-B patients and payment for lab reports and radiology reports.

- **Inpatient Services-** Customer service assistant will guide and accompany the patient/patient attender through all formalities of the admission process.
- **Health Check-ups-** Offer different health check-up packages for men and women of different ages tailored to their requirements.

Finance Department



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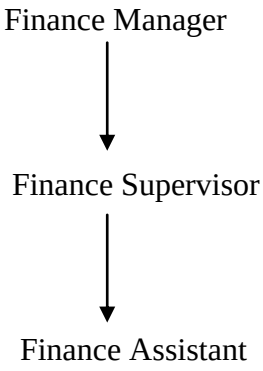


Services:-

- Finance department provides reports and analysis on expenditure and income throughout the year, setting budgets and providing financial information and support.

Pharmacy

Services:-

- Strict formulary followed-only 2 brands are allowed per molecule, formulary controlled centrally
- Only online prescription are allowed, no retail prescriptions are entertained
- Cash collected by an employee of finance department
- Possess NDPS licence
- Department/ wing wise indent schedule
- Drugs are arranged alphabetically
- NDPS drugs are kept in double lock & key
- Expiry & near expiry drugs and high value drugs are stored separately
- DTC committee for introduction of new formulations
- ABC, VED analysis implemented in the store
- Inventory count done weekly

Radiology

Services:-

- The department is committed to the high profile, high quality, precise, timely diagnosis and interventional procedures in a safe and caring environment
- Provide tele-radiology facilities that conform to the international standards of care to our referring consultants and hospital

EQUIPMENT:-

- CT Scan
- MRI
- Digital X-ray machine
- Mammography machine
- USG machine

Laboratory

The laboratory is a full service facility located on the ground floor near the OPD. It was NABL accredited

Serivices:-

The functional components of laboratory were-

- Microbiology
- Biochemistry
- Hematology
- Cytology
- Histopathology
- Immunology
- Serology

Accident and Emergency

Emergency medical services are dedicated to offering immediate, acute medical care out of the hospital or in an emergency room. The aim of emergency medical services is to provide treatment to those in need of urgent medical care.

At Columbia Asia Hospital, emergency department and emergency room is equipped with all the necessary facilities to administer the right emergency medical services.

WHEN TO CONTACT EMERGENCY MEDICAL SERVICES-

- Choking
- Breathing difficulty or stopped breathing
- Severe or mild head injury with/without loss of consciousness, vomiting or abnormal behavior like aggressiveness
- Injury to spine or neck
- Seizure that lasted for 3-5 minutes
- Bleeding that is not controlled and is heavy

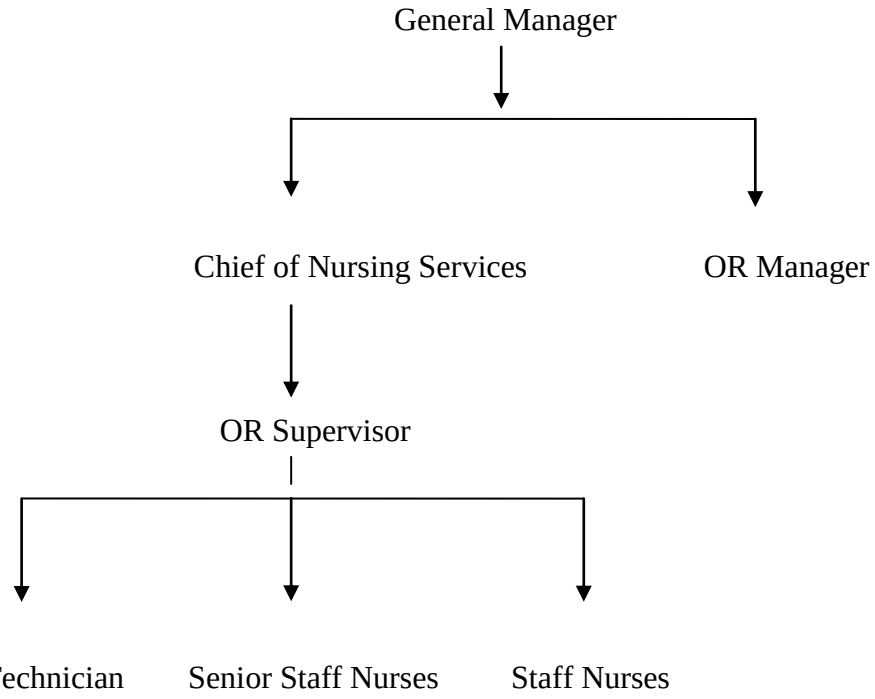
EMERGENCY CARE IN COLUMBIA ASIA HOSPITAL:-

Once the patient reaches the emergency room, the first step is to assess and stabilize the patient. The concerned specialist is informed and investigations are started. Depending on the treatment proposed patient may be admitted to ICU or ward. In some cases, patient may be treated as an out-patient. Support of the laboratory and radiology department is available round the clock.

Operation Theatre

The objective of operating room is to provide highest level of surgical care to patients undergoing surgical treatment.

ORGANOGRAM:-



PROCEDURE:-

- Pre-operative care
- Pre anaesthesia checkup
- Surgical procedure
- Post-operative care

CSSD (Central Sterile Supply Department

The Central Sterile Supply Department provides complex services including the preparation of sterile medical supplies for the surgery rooms.

The Central Sterile Supply Department provides specialized hygienic operations (complex pre-sterilization preparation, high-temperature sterilization, low-temperature sterilization) whose outputs are sterile medical supplies.

Services:-

- Disinfection, mechanical treatment, special treatment of all medical supplies
- Organizing and completing surgical instruments into sets
- Visual control of completeness, preparation and packing of surgery room cloths
- Moist heat sterilization
- Ethylene oxide sterilization

ICU (Intensive Care Unit)

It is located on second floor. There are one general ICU and one NICU. Intensive care unit cater to patients with severe and life-threatening illnesses and injuries, which required constant, close monitoring and support from specialist equipment and medication in order to ensure normal body functions. Patients may be transferred directly to an ICU from emergency department if required, or from a ward if the rapidly deteriorate, or immediately after surgery if the surgery is very invasive and the patient is at high risk of complications.

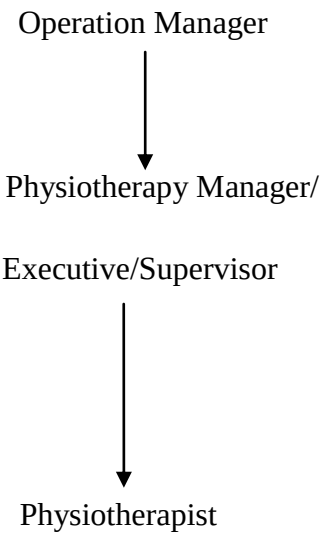
NICU (Neonatal Intensive Care Unit)

This specialty unit cares for neonatal patients who have not left the hospital after birth. Common conditions cared for include prematurity and associated complications, congenital disorders resulting from the birthing process.

Physiotherapy

The objective of physiotherapy is to provide effective rehabilitation for a variety of musculoskeletal, neurological, respiratory conditions and other medical problems related to physiotherapy for patients in Columbia Asia hospital. The physiotherapists within Columbia Asia Hospital are committed to providing a service that is responsive to the needs of the patients, innovative and based on current evidence and research.

ORGANOGRAM:-



Services:-

- Interferential Therapy (IFT)
- Ultrasound Therapy (UST)
- Short Wave Diathermy (SWD)
- Traction (Cervical and lumber)
- Wax Therapy (WXT)
- Moist Therapy (MOT)
- Combi Therapy
- Laser Therapy
- Continuous Passive Motion
- Shoulder Pulley and Wheel
- Wall ladder
- Parallel Bar and Mirror
- Quadriceps Table

- Gym Ball
- Multi Gym
- Exercise Therapy

CONCLUSION:-

A well organized and well maintained hospital, with all the amenities a multi-specialty hospital should possess. Located strategically near IT parks and townships. Customer centric approach ensures patient satisfaction. Good consultant empanelment has ensured steady increase in patient flow.

LIMITATIONS:-

- Not affordable to the middle class society
- No general wards
- Not tie ups with government insurance scheme likes CGHS, ESIC etc.
- Low OTC pharmacy sale as they don’t accept prescriptions from other hospitals or consultants
- Shortage of staff

INTRODUCTION

Out-Patient Facility is an important service that is provided in a hospital as it is generally the first point of contact of the patient and their attendant with the hospital. The first impression of a hospital for many patients is based on the services that are delivered in this department. Therefore, it has wider implications on the brand image of a hospital. Though it is not a major profit making centre but it generates revenue indirectly through diagnostic services and admission.

It provides a whole scope of services to patients to keep them in healthy state. Clinical Consultations are done in the OPD. Consultation includes history taking, clinical examination, diagnosing and providing prescription to the patients. The diagnosis is confirmed with the support of diagnostic services like radiology, laboratory, cath labs. Minor procedures are also carried out in this department. It also acts as a filter for indoor admissions. Besides curative care certain preventive services like immunization, promotive services like dietary counseling are carried out in this department.

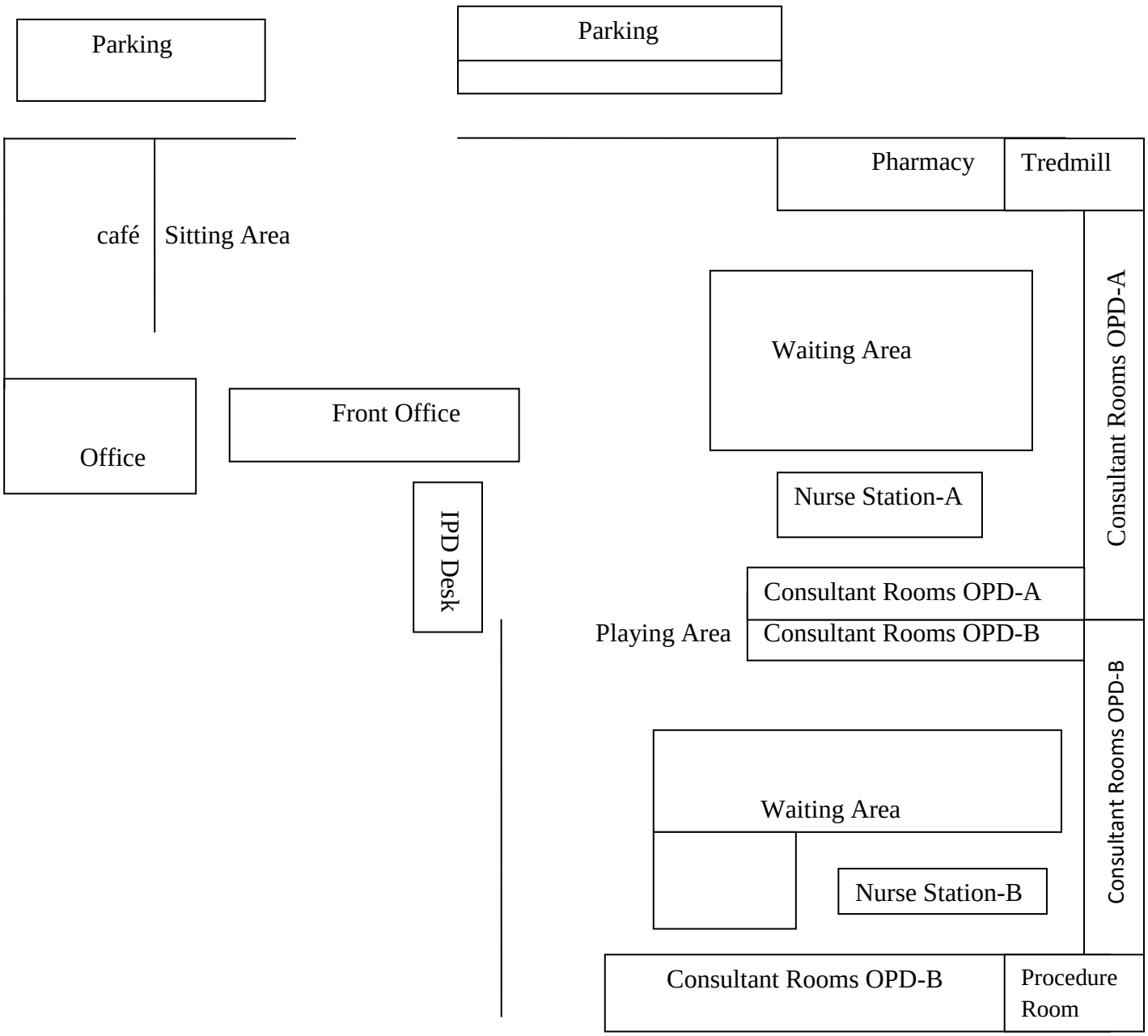
With technological advancement in diagnostics, medication, procedures and modification in reimbursement plans, the mode of healthcare is shifting from inpatient to out-patient settings. But queuing and long waiting time is a constant problem that is faced by patients leading to inconvenience and dissatisfaction.

With change in the healthcare settings over a period the focus is on patient centered care nowadays so maintaining proper and uninterrupted flow is a top priority of the management.

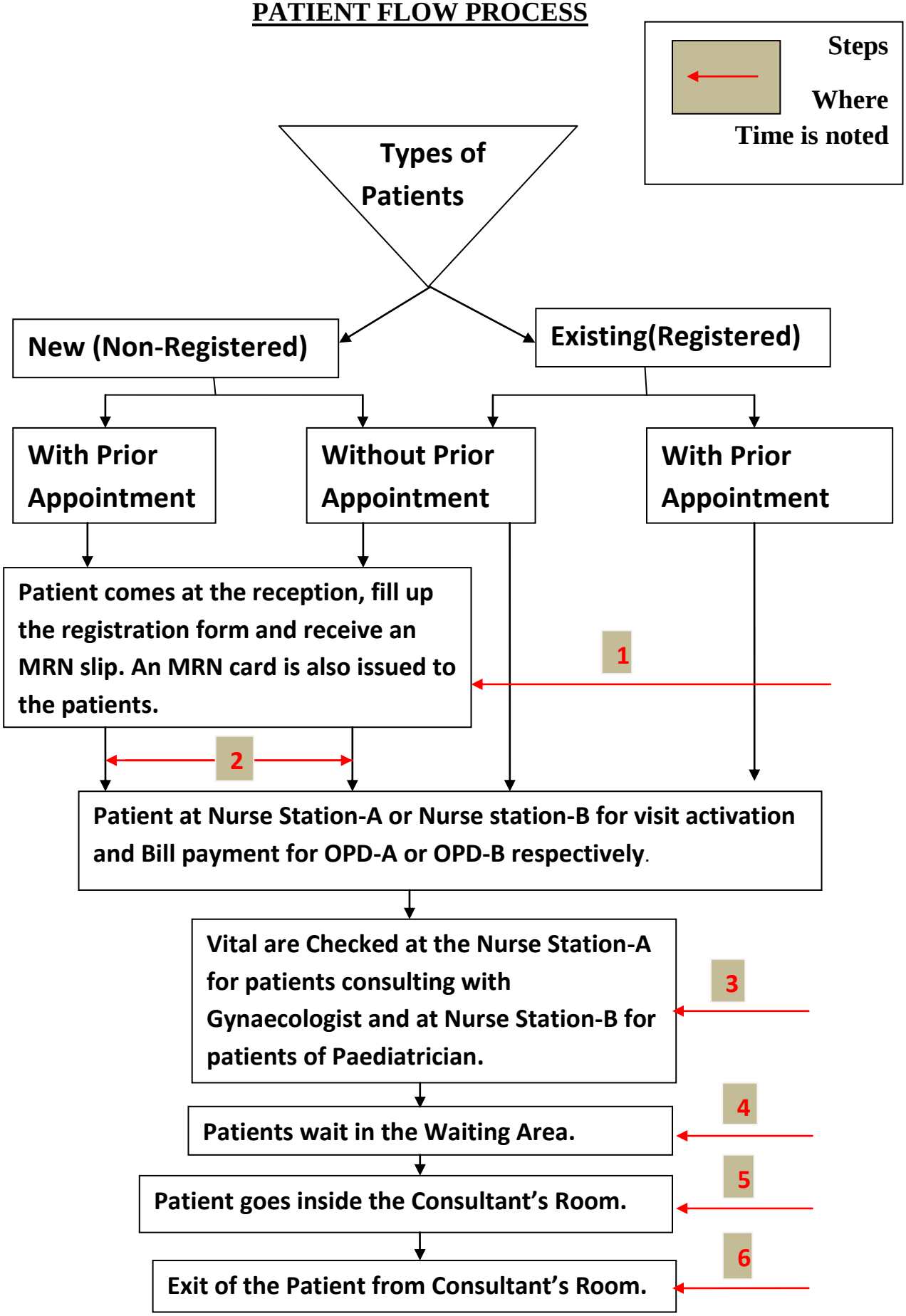
Since the number of patients is large and treatment should be given within a day so bottlenecks in the process can be taken care of only by proper management design.

In Columbia Asia Hospital also the problem associated with prolong waiting time and queuing is very large. So this becomes my area of interest for the project.

Layout of OPD



PATIENT FLOW PROCESS



RESEARCH QUESTION

How long do patients wait to receive consultation and what are the reasons of prolonged waiting time in the outpatient department of Columbia Asia Hospital, Pune?

OBJECTIVES

- To observe the patient flow process of the outpatient department.
- To identify the average waiting time spent by patient in the OPD before consultation.
- If it is high, to identify the problem areas leading to prolonged waiting time.
- To suggest solutions to these problems.

RATIONALE

OPD being the first point of contact with the patients, it acts as a window to all the healthcare services provided to the community. The care provided in this department is an indicator of the overall quality of the services of the hospital and is reflected by the satisfaction patient has with the time spent. This study may be able to generate time sensitive and clinic specific operational data that can be used by management to improve the patient flow and assess the quality of the services. It may also help in identifying point of delays and reason behind these delays that can help the management and the policy-makers to work on the areas that need improvement.

LITERATURE REVIEW

Definition-

Turn Around Time- In this study it is the total time from the time patient enters the hospital till he meets the consultant.

Waiting time- It is the time patient has to wait before availing a service. In my study the service is the consultation of the doctor.

Various studies have shown that there is negative relationship between long waiting time and patient satisfaction. In 2011, Umar et al, did a study on patient waiting time at the outpatient department in tertiary health institution, the Usmanu Danfodiyo University in Sokoto, Nigeria to assess patients satisfaction .Total 384 patients who participated in a questionnaire. It was showed that most of the patient waited for more than one hour to be seen by the doctor while only 118 (31%) stayed there for less than an hour and out of them only 83 (70%) were satisfied. However, majority of patients 173 (45%) were dissatisfied with the services in the OPD because of long waiting time.

Another study was done by MIT Sloan team (Massachusetts Institute of Technology in Cambridge, US) to investigate the reasons for long waiting time in OPD clinics at LV Prasda Eye Institute (LVPEI) in Hyderabad, India. This study was done to understand the patient waiting times. Patients suffered from obvious delays vary from 45 minutes to 6 hours. It made patients continually bored and anxious. All these played roll in patients' dissatisfaction and decreased clinical reputation of the clinic as found in patients survey (Kamil & Lyan, 2013).

These articles showed the need to measure the total waiting time of patient in the OPD and to identify and optimize the delays so as to improve the overall experience of the patients and make their visit more satisfactory. This will result in good reputation of the hospital as is evident in many studies.

RESEARCH METHODOLOGY

Study design and method

- **Type of study**- Cross-sectional Descriptive Study
- **Study Area**- OPD (Ground Floor) of Columbia Asia Hospital, Pune.
- **Duration of study**- 2 months (4th April to 30th May, 2016)
- **Study subjects**-

  Inclusion Criteria-Patients of the four doctors observed. One from OPD-A and three from OPD-B

  Exclusion Criteria- Patients of doctors other than the four under observation.
- **Sampling Design**

  Sampling Method- Non- probability sampling.

  Sampling Type- Convenient Sampling.

  Sample Size- 278 out patients of the doctors observed.
- **Data Collection Method**-

  Data was collected using both Primary and Secondary Sources. The primary data was collected through personal observation and discussion with the staff and the secondary source was CARE21 system of the hospital.
- **Data Collection Tools**-

  There are two data collection methods that were used as tools for the study. The first was the time and motion that measured time using stop watch at various steps in the patient flow process. It measured the time patient waited before consultation and the time for each consultation. The second tool was the staff informants. That tool provided the opinion on the reasons for the delays and helped in the recommendations to optimize these reasons.

  The format for data collection is provided in (Annexure 1)

A total of 278 patients were observed between 12th April, 2016 to 23rd April, 2016.

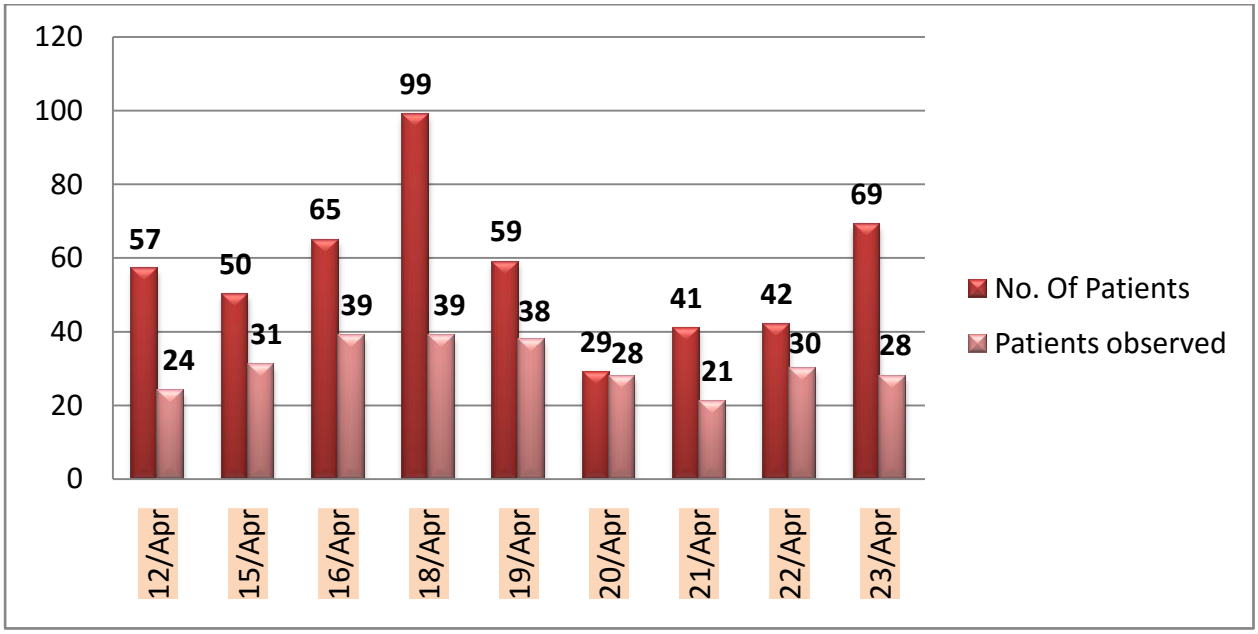


Figure 1-Total OPD of the doctors and the number of patients observed each day

The hospital has an appointment system for the patients to visit the doctors. However, some patients come as walk-ins who are also attended by the doctors. So in this study out of 278 patients observed, 216 are those who visited the OPD after taking appointment and rest 62 came as walk-in.

Orthopedic Surgeon	Gynecologist	Urologist	Pediatrician
83	87	42	66

Table 1-Doctor-wise number of patients observed that constitute the sample

- **Data Analysis and Interpretation tools-**

  Classification and tabulation transforms the raw data into useful information by organizing the data collected through time motion study.

  Mean and standard deviation is calculated for analysis of the data.

  Graphical analysis is done through bar graphs and pie charts.

  MS-Excel is used for all the analysis done and MS-Word is used to prepare the report.

DATA ANALYSIS AND INTERPRETATION

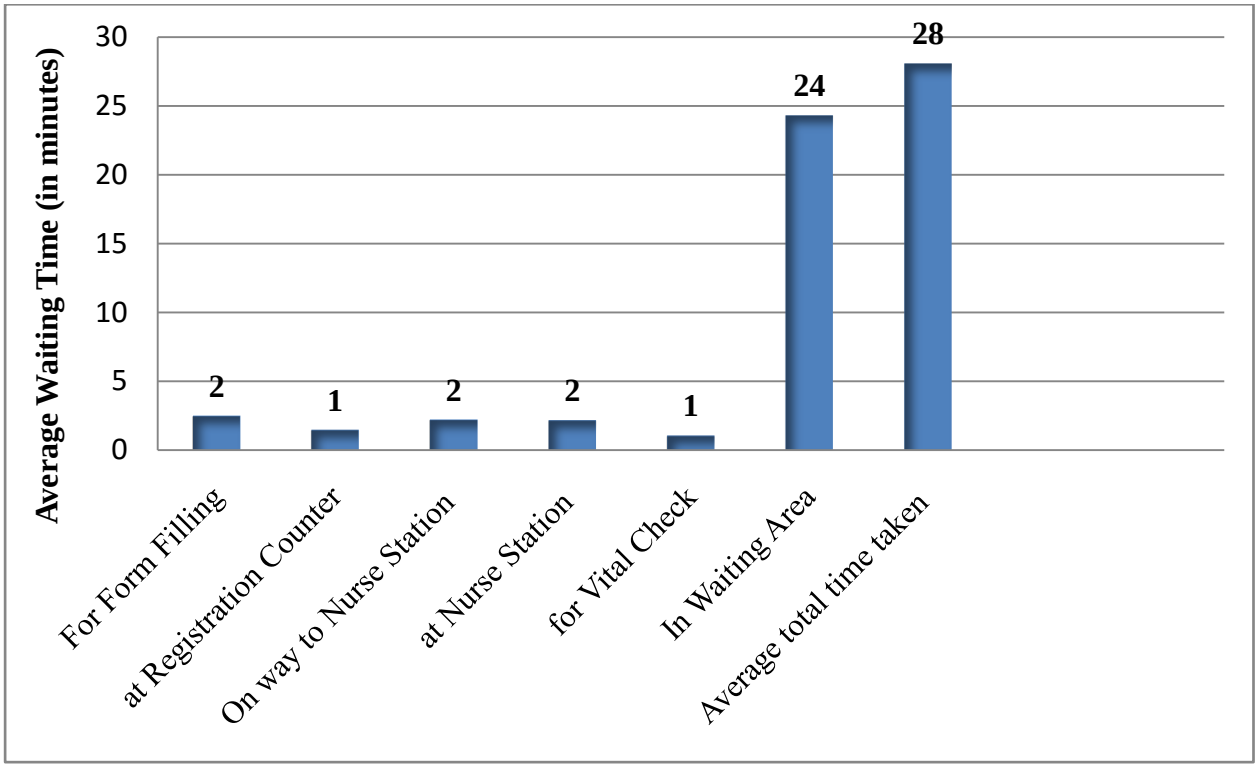


Figure 2-Average Waiting Time at each step in the patient flow process of the OPD

On an average patient had to wait for 28 minutes before going for consultation. The recommended time of the hospital is 20 minutes that means patient spent 8 minute extra in the OPD to see the doctor. This suggests there is a delay in the overall process.

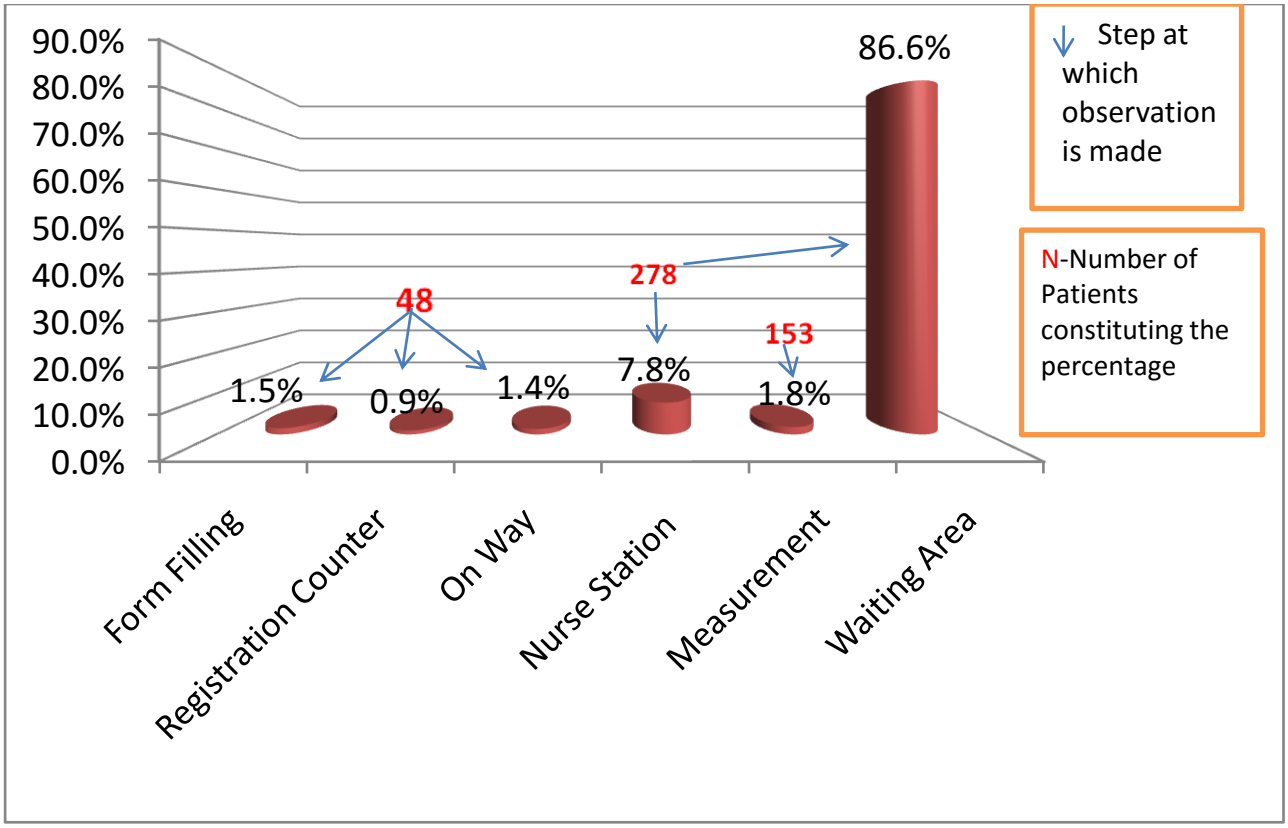


Figure 3- Waiting Time at each step as a percentage of Total Waiting Time

This graph showed that 86% of the total waiting time of the patient was spent in the waiting area. Next to it most of the time is spent at the nurse station for visit activation and bill payment. All other stations constitute a very small proportion of the total waiting time.

Doctor's Name	Sample Size	Waiting Time(in minutes)					Maximum Time	Minimum Time
		<=20	20-40	40-60	60-80	>80	(in minutes)	(in minutes)
Orthopedic Surgeon	83	35 (42%)	29 (35%)	14 (17%)	4 (5%)	1 (1%)	91.01	1.72
Gynecologist	87	40 (46%)	28 (32%)	12 (14%)	5 (6%)	2 (2%)	150.77	2.17
Urologist	42	19 (45%)	15 (36%)	3 (7%)	5 (12%)	0 (0%)	79.48	3.5
Pediatrician	66	29 (44%)	22 (33%)	8 (12%)	7 (11%)	0 (0%)	77.89	2.89

Table 2-Doctor-wise percentage distribution of patients in terms of different waiting time along with the maximum and the minimum waiting time

It showed that for orthopedic surgeon , 35 patients it took 20 minutes or less to meet the doctor. However, 29 patients waited for 20-40 minutes for their consultation. It took 40 to 60 minutes for 14 patients to see the doctor. 5 patients waited for more than 60 minutes. The maximum waiting time being 91 minutes.

Similarly for other three doctors around 45% waited for just 20 minutes to see the doctor which is well within the turn around time of the hospital. However majority of patients had to wait between 20-60 minutes before consultation. The maximum time patients had to wait is 151 minutes for doctor 2 which is very high as per hospital standards and it was 79 minutes 30 seconds and 78 minutes for doctor three and four respectively. This data highlighted that the waiting time was too long for some patients which led to patient inconvenience and dissatisfaction.

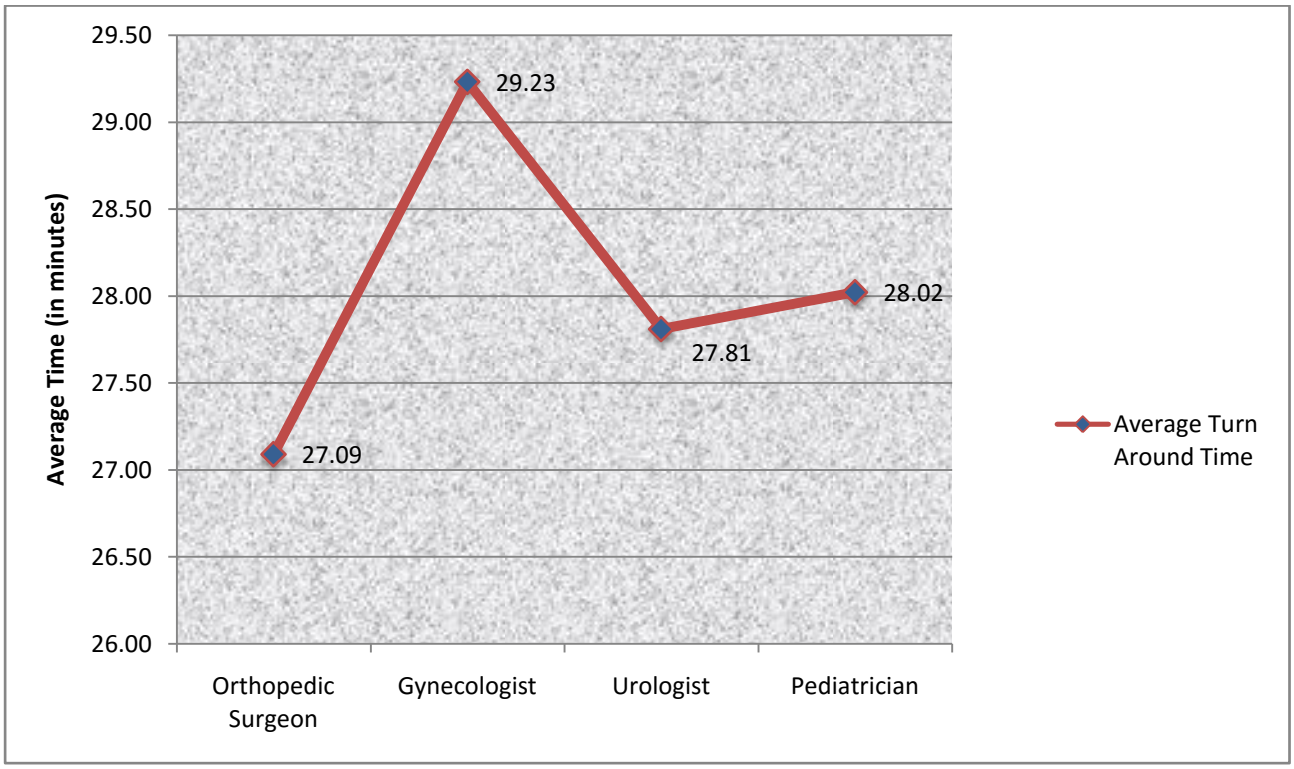


Figure 3- Average Waiting Time before consultation for each Doctor

It showed that a patient had to wait for around 27 minutes to see an orthopedic surgeon, 29 minutes for gynecologist, 28 minutes for both urologist and pediatrician which is more than the hospitals standards.

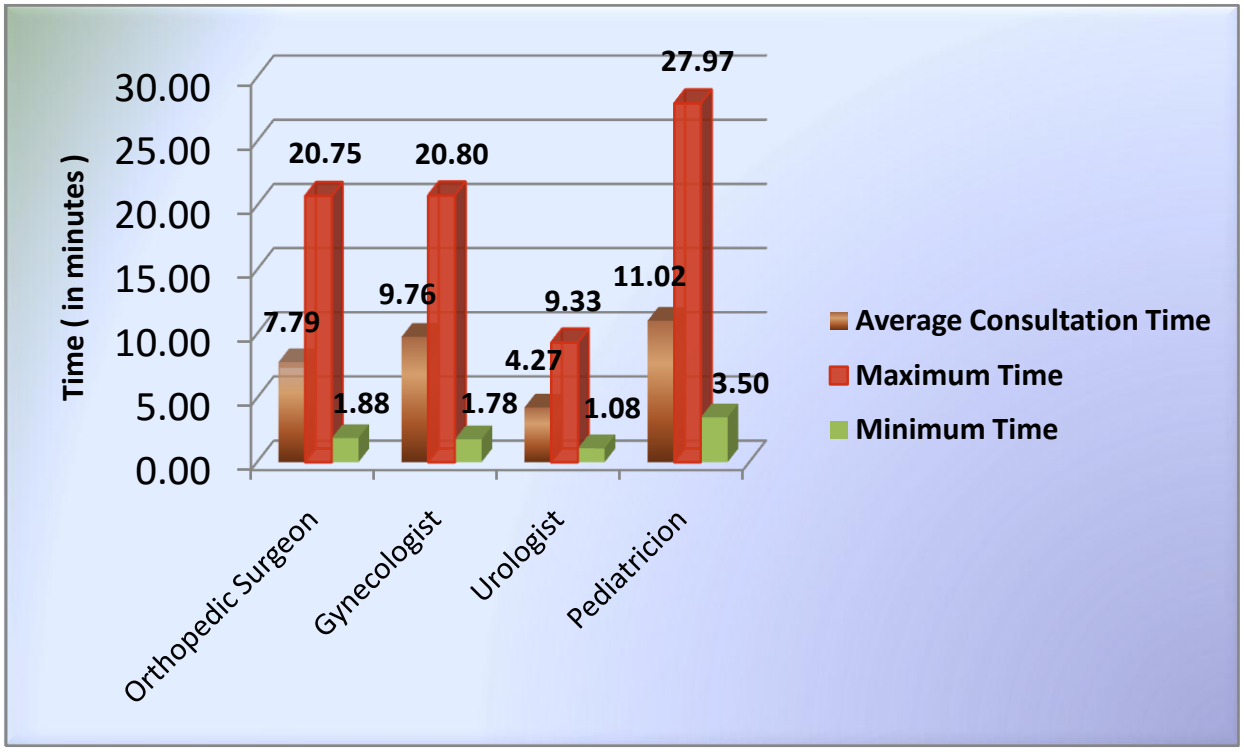


Figure 4-Average Consultation Time, Maximum and Minimum Consultation Time for Each doctor observed

This study showed that the average consultation time for each doctor is well within the appointment schedule of respective doctor. However for each doctor the maximum consultation time for each doctor was far more than the appointed slot and there were some other who had consultation time far less as was represented by the minimum consultation time.

OBSERVATION BASED REASONS FOR PROLONGED WAITING TIME

Patient Related-

- Human variation in filling up the registration form due to different demographic profile.
- Illegible handwriting of the patient.
- Over-loading of patients on some days.

Staff Related-

- Time spent on searching for pen/pencil for registration form
- Human variation in activating the visit activation and bill payment.
- Unavailability of nurse at the nurse station due to work in procedure room.

Equipment Related-

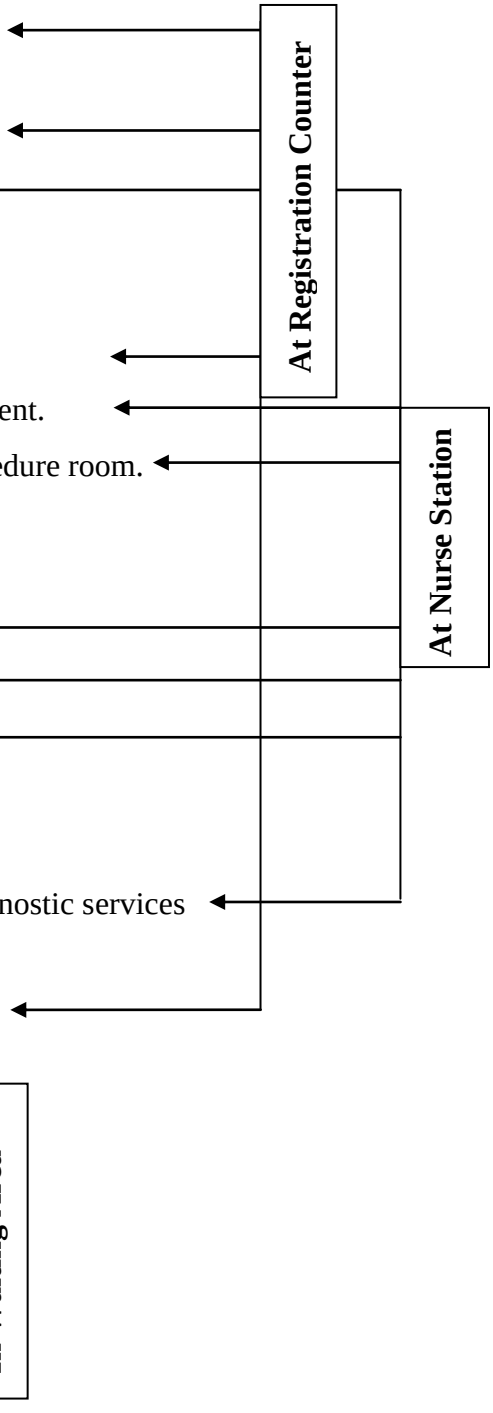
- Computer shut-down
- Non-working of MRN slip generation machine.
- Non-working and faulty readings on weighing machine.

System Related-

- Visit activation and billing of patients for consultation and diagnostic services like radiology and laboratory at a single counter.
- Some work of IPD patient such as registration at the reception.
- Unavailability of room for Consultant.

Doctor Related-

- Doctor late for duty.
- Doctor went on rounds during OPD hours.
- Extended Consultation Time for some patients.



RECOMMENDATIONS

- Observation showed that there were times when both nurses appointed on the nurse station were busy in procedure room leading to delay at the nurse station. Therefore, a separate nurse should be appointed for the procedure room so that delay at this step can be reduced.

- Human variation for MRN slip generation, visit activation and bill payment was seen. The delay due to these reasons can be minimized by regular training of staff.

- Long waiting queues were seen, this can be optimized by installment of KIOSK for appointed patients so that they can activate the visit on their own. Diverting some of the appointed patients will reduce the work load at the nurse station.

- Feasibility of KIOSK cannot be seen without a easier and accessible mode of payment, connecting MRN card with pre-payment facility can pave the way for this facility. However, patients' point of view about this new facility will determine the success of this service .Further qualitative study regarding preferred mode of payment needs to be done.

- Separate counter for visit activation and payment for diagnostic services both radiology and laboratory can greatly reduce the work load and the long qeues at the nurse station.

- All the work related to inpatients- registration, admission, report compilation, payment should be done on IPD desk. Assigning an extra staff at the IPD desk will share the work load of the desk and at the same the resources used at the front desk for this purpose can be utilized efficiently for OPD services, enquiry , internal and external call pick-ups.

- Registration of the new patients should be done by putting the information directly on the system by the customer care personnel. This will greatly reduce the time wasted at the counter due to different education base, time wasted in search of pen/pencil, illegible hand-writing.
  -Authenticity of the information can be confirmed either by asking for an ID proof or handing-over the MRN card only after confirmation by the patient.
  -If the above cannot be done, re-evaluate the registration form for marking the columns that are must for the patient to fill in the registration form or for assessing the feasibility of making it more concise and short. This will add to the convenience of the patient.

- Re-scheduling of appointment slot and well as the OPD timings after a discussion with the consultants may cater to the delay due to extended consultation time and the unavailability of rooms for consultants.

- A separate slot for rounds to check on inpatients is needed to avoid unavailability of doctors in the OPD during their consultation hours. At the same time doctors should be encouraged to be punctual. This can be done by non-monetary or monetary awards as it will give a long way to patient satisfaction.

- Ensuring proper communication about whereabouts of consultants during OPD hours and communicating the arrival of patients to the doctor in case s/he is in Operation theatre, emergency by vigilance and supervision.

- Centralization of the registration process and accessibility of MRN card at all the branches of Columbia Asia will decrease the inconvenience to the patients, work load of the staff as well as delay due to time spent on registration.

- Any delay due to equipment failure such as computer shut down, non-working of MRN slip generating machine, faulty readings on weight machine etc. can be avoided by checking of the proper working of the equipments on regular intervals.

- For pediatric patients, vaccination should be available in the OPD at all the days so as to avoid the delay in attending other patients due to second visit as well as to reduce the time taken to travel to pharmacy and back to OPD. This will also add to patient convenience.

- Sign boards should be put at proper places to guide the patients to the concerned area

- Automatic SMS facility regarding the payment for consultation will not only cut down the cost incurred and the time spent on generating payment receipts but also adds to the patients' and staffs' convenience.

Other Recommendations for engaging patients during the Waiting time-

- Information forms can be placed in the OPD containing answers to frequently asked questions regarding the waiting time or issues related to patient turn etc .
- Short animated videos can be played containing health related information to engage patients during waiting in the OPD. It can be done with the help of IT department.

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