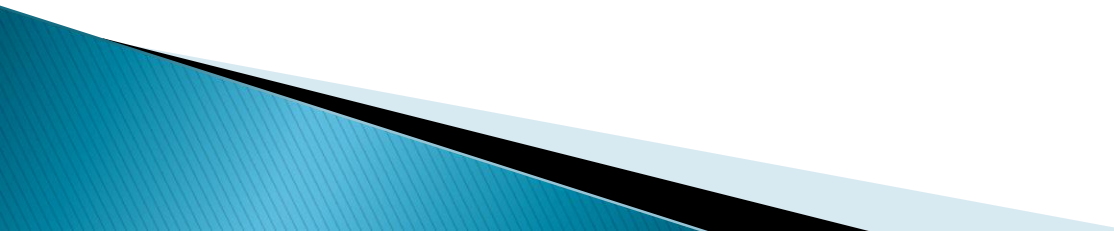


COLUMBIA ASIA HOSPITAL



- ▶ Columbia Asia started operations in 1996. Currently it has 28 medical facilities across Asia; 11 in Malaysia, 11 in India, 3 in Vietnam and 3 in Indonesia. The company believes in setting up mid-size hospitals built in residential areas for accessibility and efficiency, and to better serve the respective communities.
- 

- ▶ Columbia Asia is an international healthcare group operating a chain of modern hospitals across Asia. Columbia Asia Hospitals Pvt. Ltd. is one of the first healthcare companies to enter India through 100% foreign direct investment (FDI) route. The Columbia Asia Group is owned by more than 150 private equity companies, fund management organizations and individual investor. Columbia Asia hospitals are an entity of the Columbia Asia Pacific.
 - ▶ Columbia Asia group consists of referral, multispeciality hospitals and clinics.
- 

- ▶ Columbia Asia Hospital – Salt Lake, a multi-specialty facility is located in the up market Salt Lake locality of Kolkata. It commenced operations from July 2008 and in a short period has become the preferred healthcare provider for people from Eastern India and is considered as one of the best hospitals in Kolkata. The 94-bedded hospital is well equipped with Operating Theatres, Advanced Digital Catheterization lab, Dialysis Center, 24x7 Services like Laboratory, Radiology, Pharmacy & Emergency Services with round the clock reporting facility, NICU facility, Telemedicine and Tele-radiology facilities & facility for Chemotherapy.

Physical layout of hospital

Basement Floor

CSSD
Chief engineers Office

Ground Floor

- Customer Care office
- Reception & Waiting Area
- Emergency
- Pharmacy
- Cafe
- **First Floor**
- Nurse station 1
- Lab
- Radio
- OPD 1-6

Second Floor

- OR 1
- OPD 7-10
- NICU
- HDU
- Nurse station 2
- **Third Floor**
- OR 2,3,4
- ICU
- CCU

Fourth floor

- Clinic 11
- Rooms- 401-409
- **Fifth Floor**
- Clinic 12
- Gastro Clinic
- Rooms 501-509

Sixth Floor

- Dialysis unit
- Rooms 601-609
- **Seventh Floor**
- Rooms 701-711

Eighth Floor

- Rooms- 801-809
- CNS office
- **Ninth floor**
- **Administrative offices**
- Training room
- Conference room
- Console

Tenth Floor

- Cafe columbia
- Dietician and cafe managers Office

Process Mapping and Identification of bottlenecks leading to increased turnaround time of patients for consultation in Outpatients department

▶ 1.INTRODUCTION

- ▶ The Columbia Asia hospital, Saltlake outpatient clinic is confronted with long waiting times for patients, overtime for doctors and nurses during clinic sessions, and peak workloads for its counter personnel. Research on outpatient clinics shows that waiting times are patients' main dissatisfaction with hospital services (Huang, 1994). According to doctors and personnel, overtime and peak workloads are potential threats for the quality of care and the quality of labor, because they increase stress and time pressure. This case study focuses on understanding the current process flow in the outpatient clinic, analyzing the waiting time, finding out the reasons while trying to propose solutions for the same.

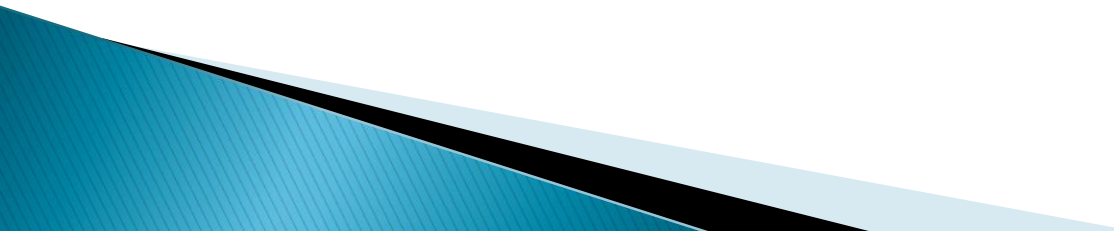
2. RATIONALE

- ▶ Outpatient clinics are essential services for hospitals. They perform a gatekeeper role and are often a patient's first contact with a hospital. This study will help to understand the process flow, and identify the delays at different touch points of the patient. In order to maximize the utilization of Outpatients department, it is essential to know the process flow and understand the reasons leading to delay and increase in patient waiting time. The study also focuses on identifying of bottlenecks in the current process with appropriate suggestions for improvement.
- 

▶ 3. RESEARCH QUESTION

- ▶ This study was undertaken in the outpatients department pertaining to Opd consultation only,
 - What is the current process flow for consultation?
 - Are there any bottlenecks leading to delays in the current process?
 - If there are bottlenecks what are the causes of these delays in the current process flow?
 - What can be the possible solutions to improve the process flow?

▶ 4. OBJECTIVES

- To observe and analyze the process flow of the opd
 - To search for areas of problem and find reasons for the same.
 - To give recommendations for further improvement in the process flow and minimize the patient waiting time.
 - To assess the patient's satisfaction regarding the OPD services of the selected hospital.
- 

- ▶ **6.METHODOLOGY**– The study would involve two elements
- Study of the process flow of the department and analysis of the gaps in the process
- A patient satisfaction survey conducted to assess satisfaction of the patients with the Department

- ▶ The following study was conducted for a period of 4 weeks. The study adopts a descriptive, observational and ex post facto case study approach. In depth review of hospital outpatient process for consultation was from feb 16, 2017 to 28th feb, 2017 was made. Interviews with management and records staff were conducted to validate the secondary data and to gather information required to construct the structural model of the routings in and out of OPD. Direct observations were used to model patient average arrival and length of total time. The survey population of the study were the Opd-patients for consultation in Columbia Asia Hospital ,Kolkata during the period of the study. In all, 341 patients were surveyed for this study. The full study was divided in the following phases:

- ▶ **Phase I:** Study of existing functioning of Out Patient Department and understand the waiting time.
- ▶ **Phase II:** To shadow the patients and collect data while also studying the functioning of the console, Opd coordinator and understand their role in the scheduling and queue management, also to collect data for patient satisfaction questionnaire
- ▶ **Phase III:** To analyze the data, intervene the present system, if required, and to suggest solutions for the same.
- ▶ The study adopts a descriptive, observational and ex post facto case study approach
- ▶ **Study Design:** An Observational cross sectional study
- ▶ **Sampling:** Purposive sampling, a non-probability sampling technique in which the researcher selects a group of people because they have particular traits that the researcher wants to study was used.
- ▶ A non-probability purposive sampling technique would be followed.
- ▶ **Sample Size:** 341
- ▶ **Study location:** Columbia Asia Hospital, Saltlake, Kolkata
- ▶ **Inclusion Criteria:** All OPD patients coming for consultation in the hospital during the course of the study.
- ▶ **Exclusion Criteria:** All health checkups, laboratory, x-ray, diagnostic and other over the counter procedure patients

▶

▶ **7.Data Collection:**

▶ **Type of data collection–Quantitative and qualitative**

▶ **Technique** – Direct Observation of Operations and collection of primary and secondary data.

▶ **Tool** – Observation, stakeholder interviews, dashboard

▶ The data collection was done by following a patient from the time of registration ,till the time the patient enters the consultants room for consultation. Though this method is very intense but helps to study functional accuracy of the hospital.

▶ **1)Source of Data**

▶ The process flow analysis would be done by garnering information from three main sources

✓ Interviews with the stakeholders

- ✓ Customer care Staff (managers, supervisors, assistants)

- ✓ Doctors

- ✓ Nurses

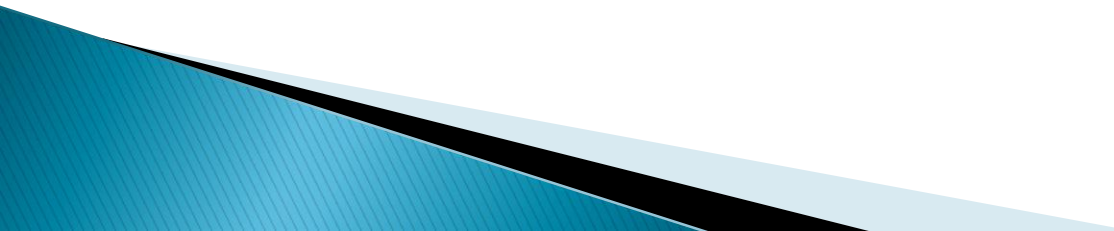
✓ Departmental Manuals (Standard operating protocols)

✓ Shadowing the stakeholders and tracking all the processes involved.

- ▶ **Primary Data**

- ▶ The time taken at each and every step is noted with the help of a watch from entry into the Opd till the entry into the consultants chamber.
- ▶ Patient satisfaction questionnaire will be collected from Patients and Patient's attendant

- ▶ **Secondary Data**

- ▶ The registration and billing data for each patient was taken from the system.
 - ▶ Other sources of data was –
 - ▶ OPD Staff (Interviewing the stakeholders)
 - ▶ Standard operating manuals of the hospital
- 

▶ Dashboard:

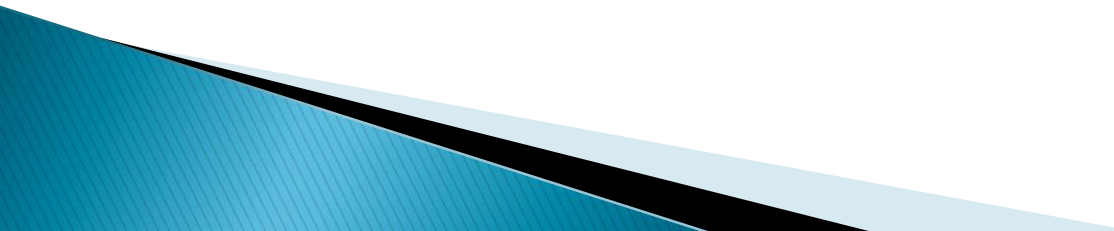
- ▶ A prestructured dashboard was formulated to capture the delays in the opd process for consultation. The dashboard is formulated to capture the waiting time of the patients coming for consultation.
- ▶ The turnaround waiting time was analyzed on the basis of recording the following timings like–

Dashboard

Time (T)	Detail
T1	Appointment time
T2	OPD Start
T3	Reporting time of doctors
T4	Billing and registration time
T5	Nursing assessment Start time
T6	Nursing assessment stop time
T7	Patient reports to coordinator start
T8	Patient Enters OPD
T9	Patient Enters OPD
T10	Patient Exits
T11	Nursing giving prescription

Turnaround Time TAT (Tn)	Definition
T3-T2	Doctor Reporting Delay
T5-T4	TAT for initial nurses assessment
T8-T4	TAT for consultation
T8-T1	Overall Wait time for patient
T9-T1	Overall Wait time for patient (According to Doctor progress notes)

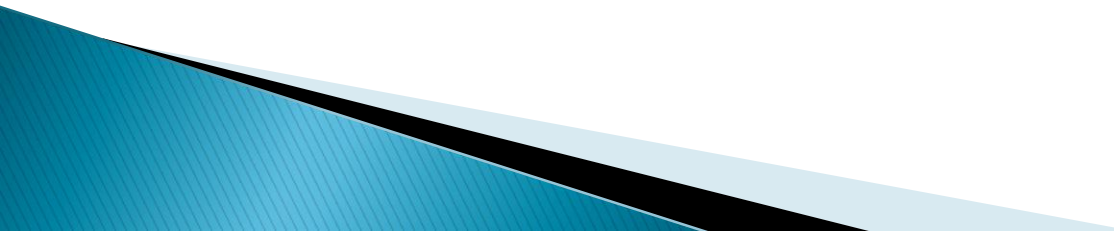
▶ Mapping of the Processes

- ▶ The mappings of the processes involved in the department were done mainly by three methods;
 - i. Interviews with the stakeholders (Doctors, OPD Staff, Nurses)
 - ii. Studying of the Departmental Manuals (Standard operating protocols)
 - iii. Shadowing the stakeholders and tracking all the processes involved
- 

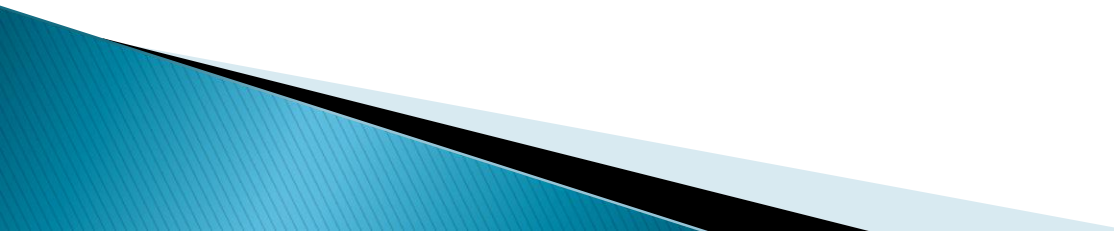
Process flow

For in depth understanding , I grouped the processes into: Appointment-scheduling processes, Processes at the counter(Registration and billing), Nurses processes(Nurses Initial Assessment)and doctors' processes. Nurses processes concern the actions performed on the patient by nurses personnel before or after the doctors' consultation processes.

For better and in-depth understanding, I have grouped the processes into the following-

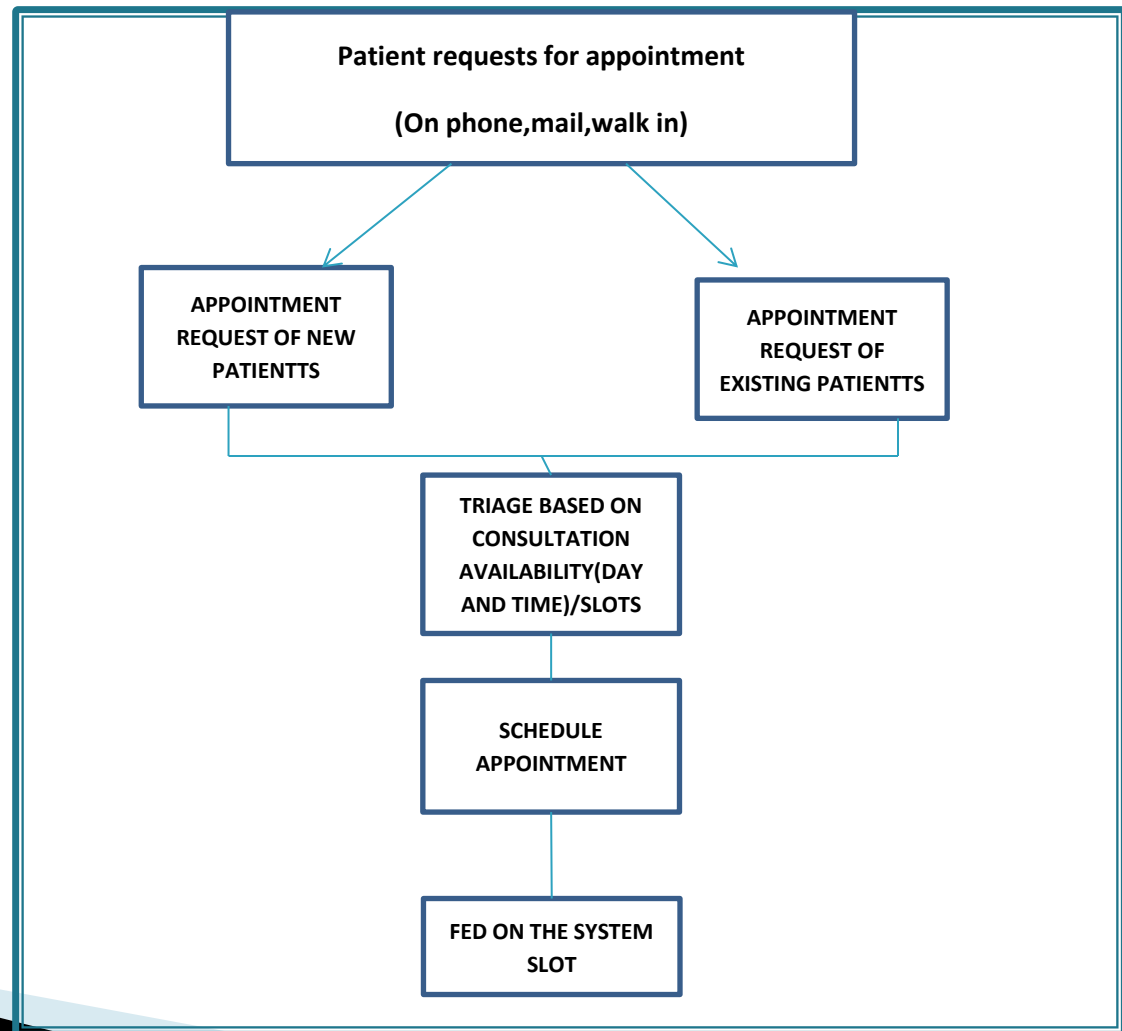
- **Appointment Scheduling process(Handled by Console/Reception)**
 - **Registration process and billing process(Handled by Customer Care)**
 - **Nurses initial assessment process(Handled by Nurses)**
 - **Queue Management process(Handled by Customer care)**
 - **Doctors Consultation process(Handled by Doctors)**
- 

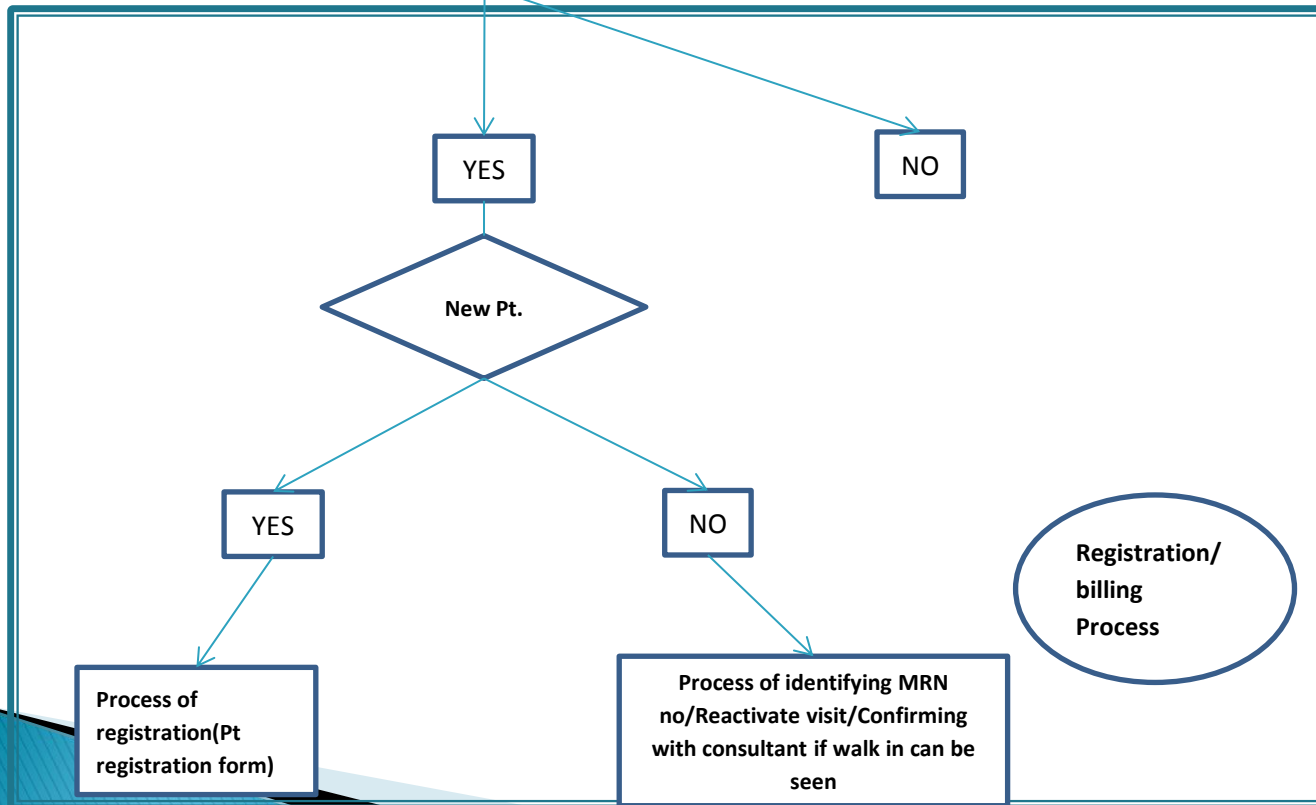
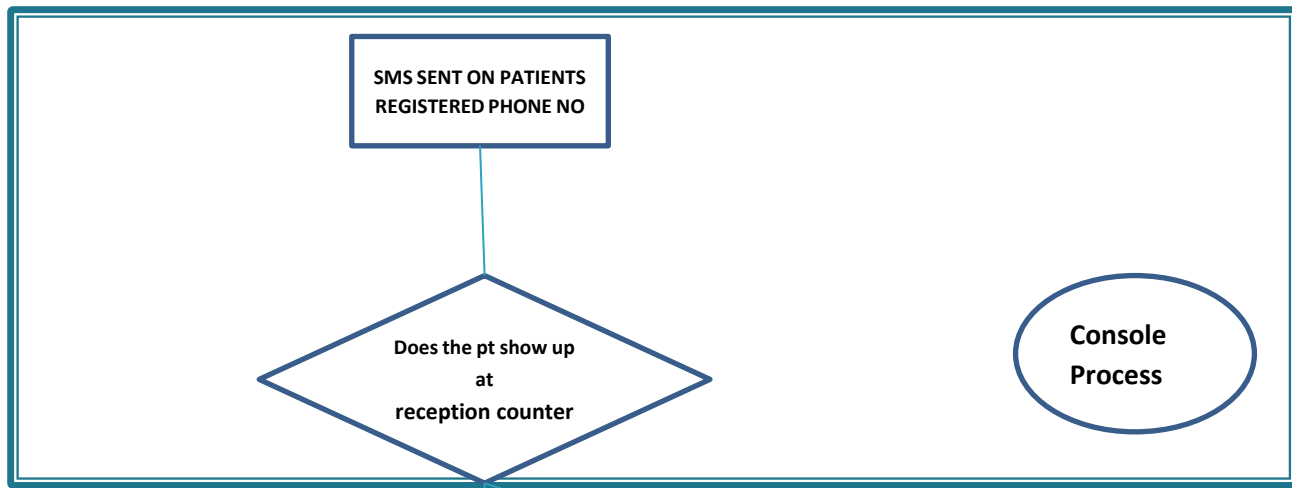
▶ **A)Appointment-scheduling processes(Detail description)**

- ▶ Patients request appointments at the counter or console in the outpatient clinic, by self, phone or by email. Upon an appointment request, the scheduler performs a number of tasks
- determines the patient's consultation type and preference,
 - determines which doctor(s) is/are able to treat this patient,
 - determines an appropriate time slot code for this appointment,
 - and schedules the patient.
- 

Current Process flow diagram at the hospital

APPOINTMENT SCHEDULING PROCESS (COUNTER PERSONNEL “CCA”)





Care 21 Appointment module

Care21 Application COLUMBIA ASIA HOSPITAL - SALT LAKE, KOLKATA

Front Office Clinical Hosp Admin OE & Billing Collection & Refund Reports Admin Tools

Appointment L Report Viewer Patient Appoin

Existing Patient Scheduling New Patient Scheduling

Check Scheduler

☒ Doctor ARINDAM.G - ARINDAM GANGULY

☐ MRN KOLK-

Name

March, 2017 April, 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Date Selected 30/03/2017

Date	Time	PatientName	VisitType
30/03/2017	1:01 PM	MRINAL KR BH...	Admission

Edit Appointment Cancel Appointment

Appointment Scheduling

New Patient Scheduling

Name

Appt. Rec. No. KOLK-

Passport No

Sex - Select - Date of Birth 29/03/2017

Street1

Street2

Street3

Street4

Tel

Email

Specialty - Select -

Doctor - Select -

Appt Date 29/03/2017 Appt Time 12:00 AM

Duration Visit Type Consultation

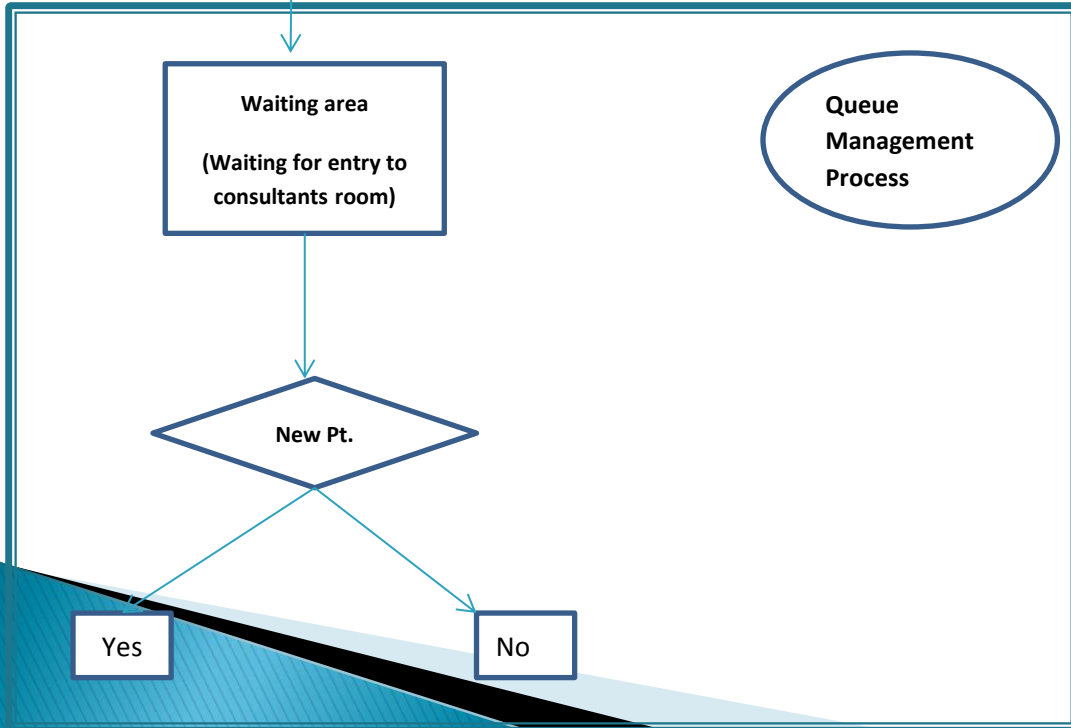
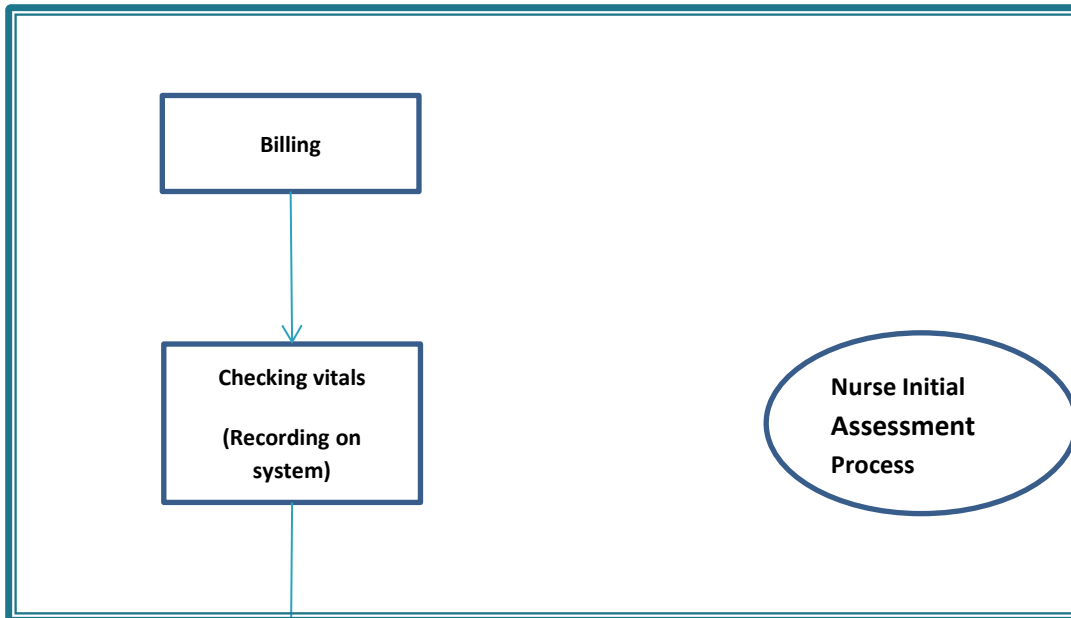
Remarks

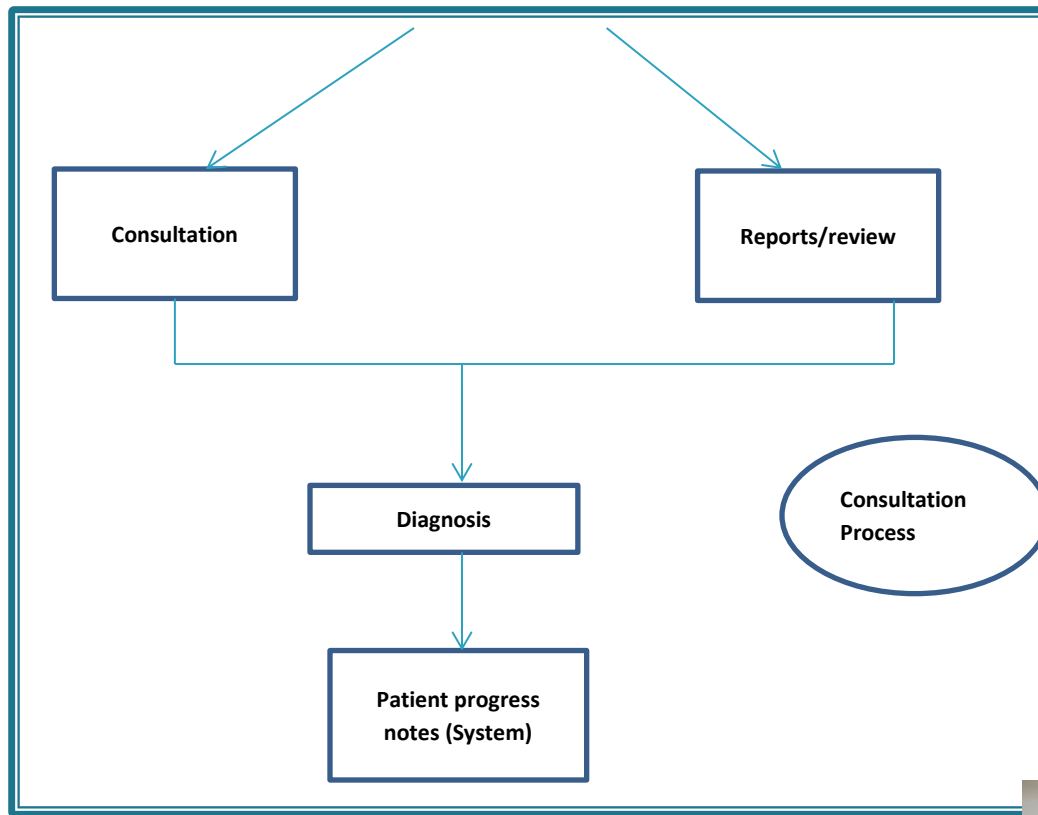
Confirm Appointment Clear Close

Ready EISHAS

Start

3:56 PM 03/29/2017





Analysis and Results

1)TAT for initial nurses assessment

<u>AVERAGE</u>	<u>MIN</u>	<u>MEDIAN</u>	<u>MAX</u>
00:09:45	00:02:00	0:06:00	1:45:00

Interpretation of graph

Turnaround time for Nurses Initial Assessment (T5-T4)



The above graph explains the average, minimum and maximum waiting timing of the patients for initial assessment in the Opd when they arrive for consultation. It was calculated by subtracting from the nurses initial assessment start timing, the billing and registration timing. It measures the nurses initial assessment delay timing. Out of a sample of 341 patients studied, Average time for nurses delay was 9 mins 45 sec which is decent

The minimum waiting time was 0:00:00 mins

The maximum waiting time for assessment was 1 hours 45 mins which is definitely a concern for the hospital

2)TAT for consultation

AVERAGE	MIN	MEDIAN	MAX
00:51:19	00:00:00	0:42:00	3:39:00

Interpretation of graph

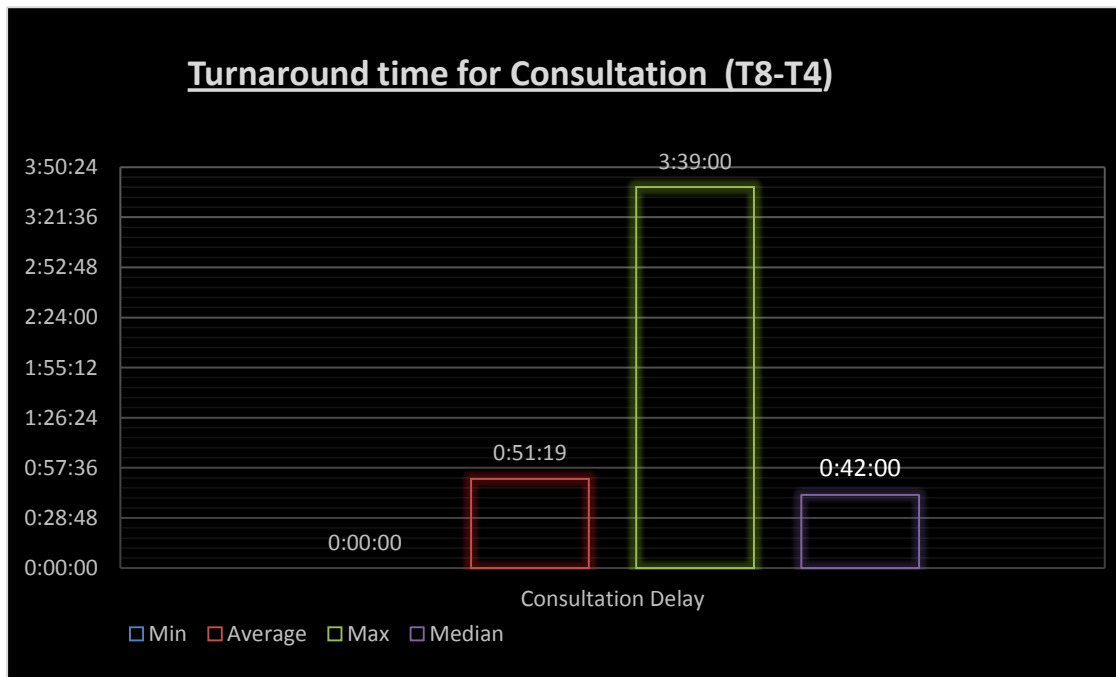
The above graph explains the average, minimum and maximum waiting timing of the patients for consultation in the Opd. It was calculated by subtracting from the time of patient entering the consultant room ,the billing time. It measures the delay for consultation timing.

Out of a sample of 341 patients studied,

Average delay for consultation was 51mins 19 secs which is a major cause of concern

The minimum waiting time was 0:00:00 mins

The maximum waiting time for consultation was 3 hours 39 mins which is definitely a concern for the hospital



3)Total Patient wait

AVERAGE	MIN	MEDIAN	MAX
00:51:54	00:02:00	0:41:00	3:59:00

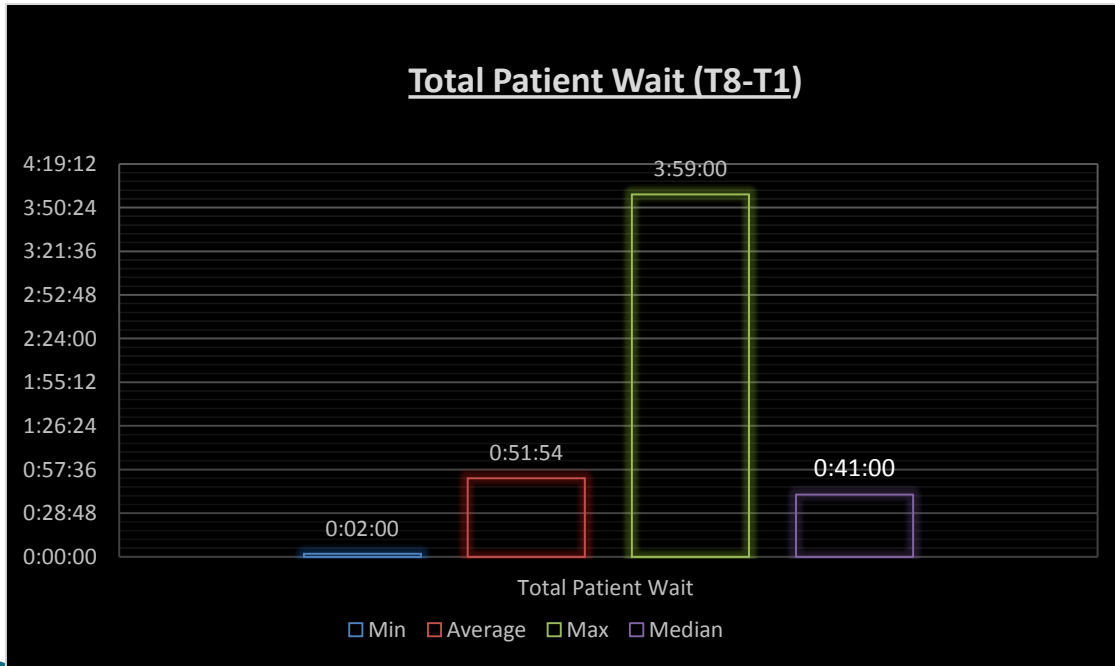
Interpretation of graph

The above graph explains the average, minimum and maximum waiting timing of the total patient wait for consultation. It was calculated by subtracting from the time the patient enters the consultant chamber, the appointment time given to the patient. It measures the total patient wait timing.

Out of a sample of 341 patients studied, Average total patient wait timing was 51 mins 54 secs which is a major cause of concern

The minimum waiting time was 0:02:00 mins

The maximum waiting time is 3 hours 59 mins which is definitely a concern for the hospital



4)Doctor reporting delay

AVERAGE	MIN	MEDIAN	MAX
00:47:27	00:00:00	0:39:00	2:50:00

Interpretation of graph

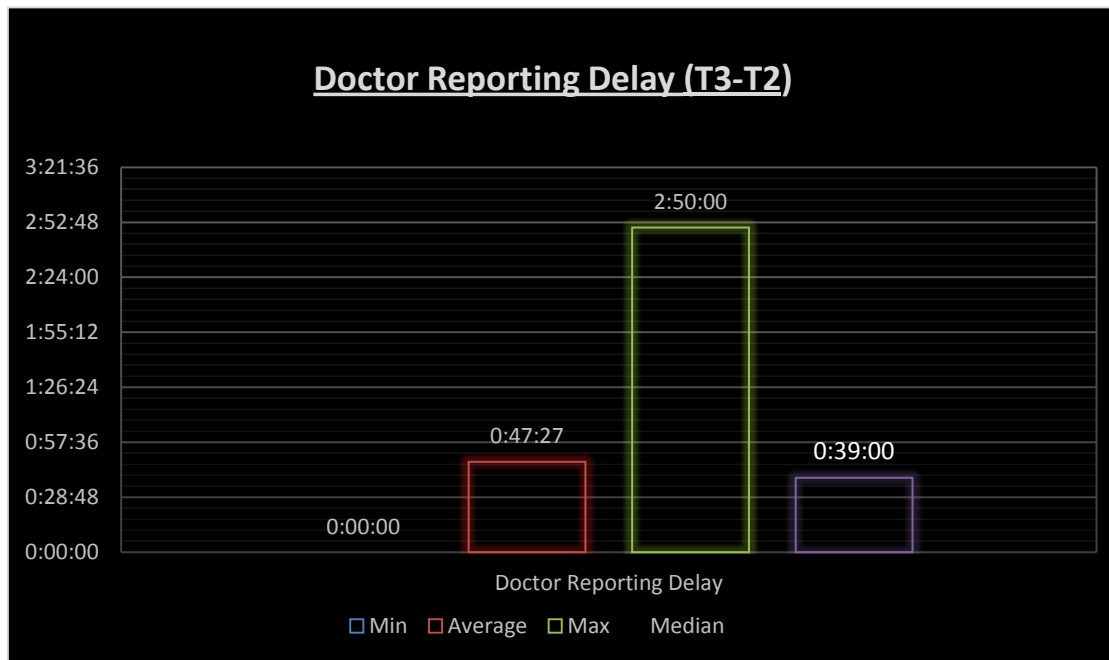
The above graph explains the average, minimum and maximum delay by the doctors reporting to the Opd for consultation. It was calculated by subtracting from the opd start timing the reporting time of doctors. It measures the doctor reporting delay in the start of consultation

Out of a sample of 341 patients studied,

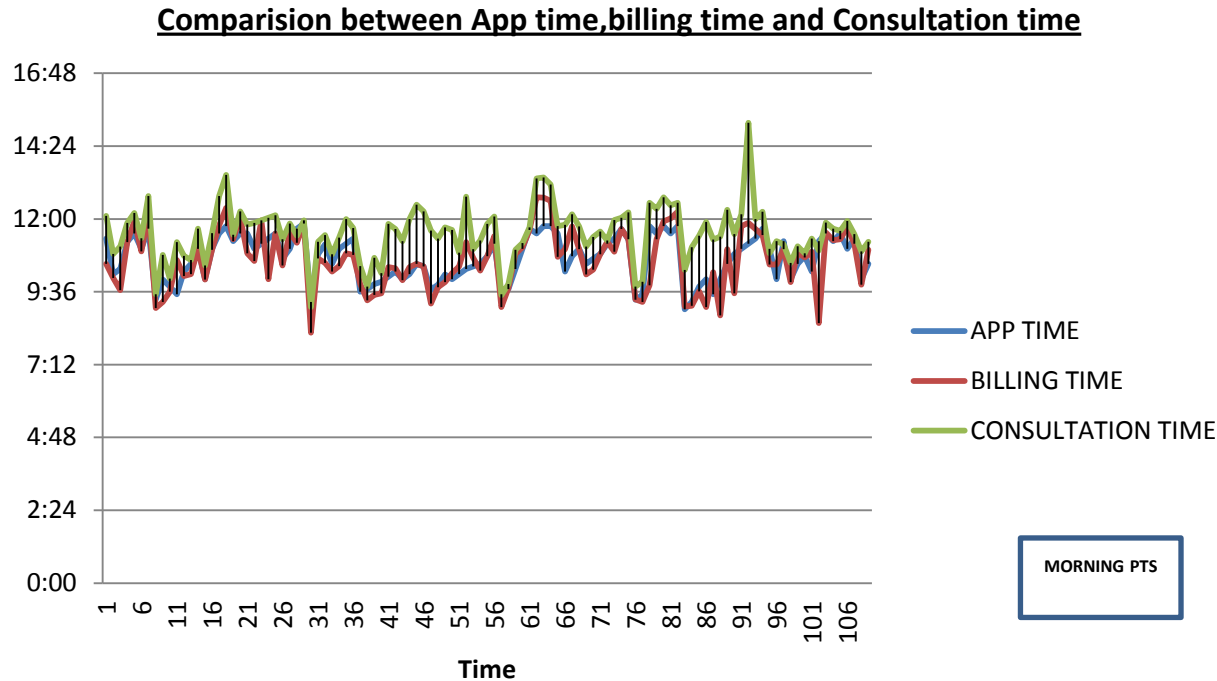
Average delay in doctor reporting to Opd is 47 mins 27 secs, which is a major cause of increase in patient waiting time

The minimum delay in doctor reporting was 0:00

The maximum delay in doctor reporting was 2 hours 50 mins which is surely a cause of concern for the hospital



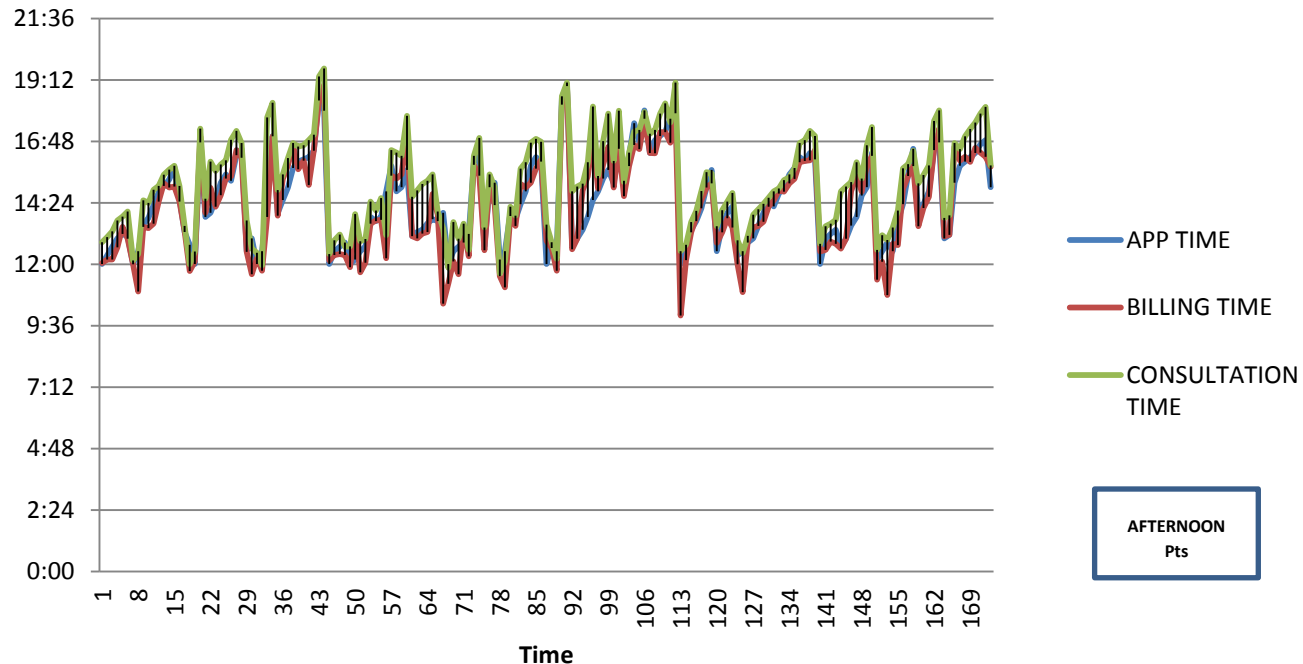
5)Comparison between Appointment time, Billing time and Consultation time



Interpretation of graph

The above line graph for morning patients displays the comparison of the appointment time, billing time and the consultation time which clearly indicates that the discrepancy between the appointment time and the patient reporting time is less as compared to the consultation time for receiving the mode of treatment which tries to exclude any cause of major delay in patient reporting at the scheduled appointment time in the hospital.

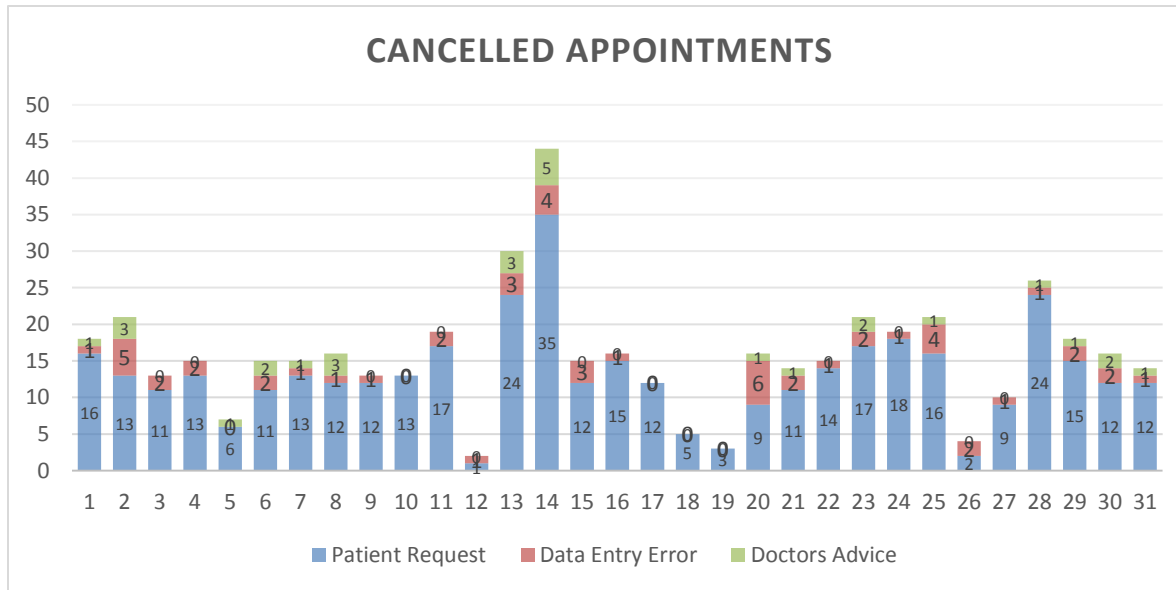
Comparison between App time,billing time and Consultation time



Interpretation of graph

The above line graph for afternoon patients displays the comparison of the appointment time, billing time and the consultation time which clearly indicates that the discrepancy between the appointment time and the patient reporting time is less as compared to the consultation time for receiving the mode of treatment which tries to exclude any cause of major delay in patient reporting at the scheduled appointment time in the hospital.

Cancelled appointments and their reasons



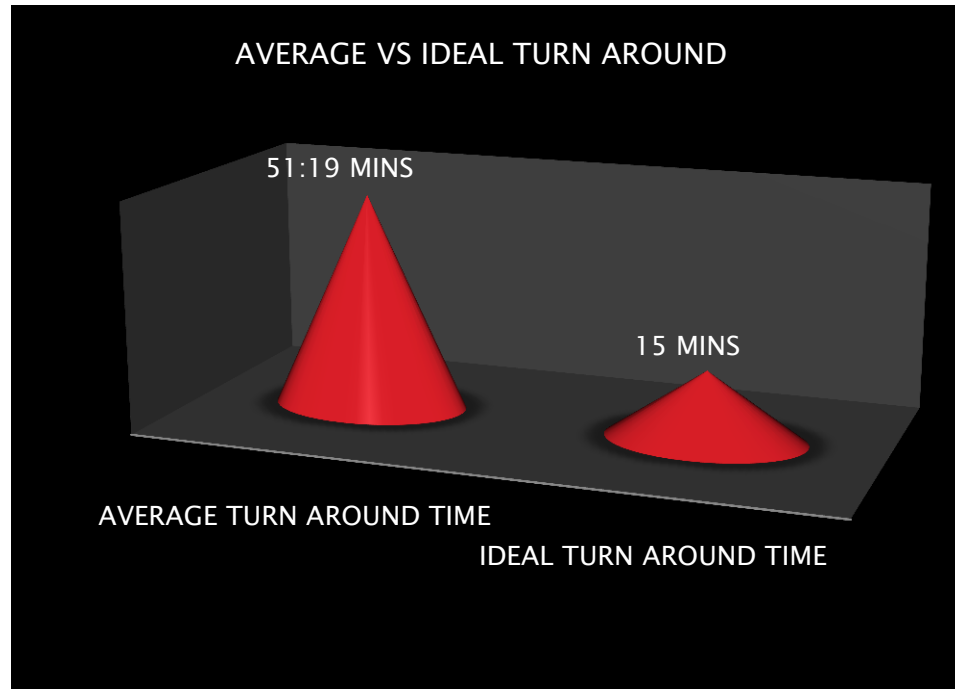
Interpretation of graph

The afore chart describes the cancelled appointments and the reasons for the same which was taken from the system data during the course of the study.

It can be well be justified from the chart that the major reasons for the cancelled appointments were patient request, data entry error and doctors' advice.

It can be well described from the graph that majorly the reason for cancellation of the appointments are due to patient request. This surely indicates a major cause of concern for the hospital and justifies the need for the study.

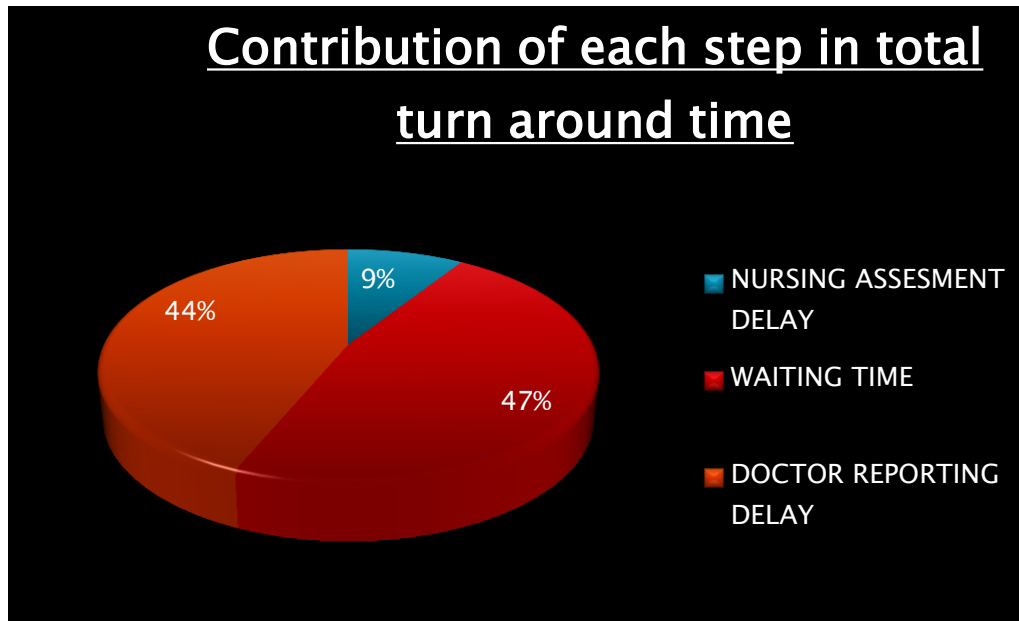
SUGGESTED TURN AROUND TIME V/S AVERAGE TURN AROUND TIME



Interpretation of graph

The turnaround time as per the department is 15 mins but the calculated average turnaround time is much more than the stipulated time and comes around 51 mins 54 secs which is definitely a cause of concern for the department.

Contribution of time taken at each step in total turn around time:

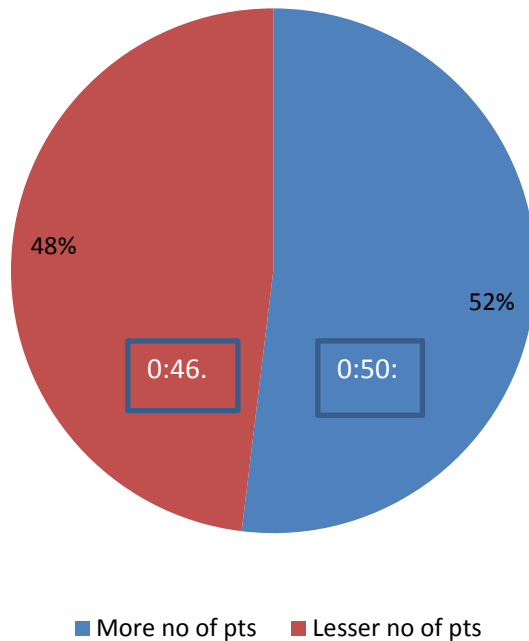


Interpretation of graph

Out of the total turnaround time the maximum portion of time is taken in patient waiting for the consultant which is almost 47% then time taken for doctor to report to the OPD is 44% of the total turnaround time and the least time is consumed by the nurses initial assessment which is 9% of the total. So clearly major portion of the time is consumed by the patient waiting for the consultation which is a cause for concern for the functioning as well as image of the hospital.

Comparison of the waiting time for consultant with lesser number of total patients(1,3,4,5,6) to the waiting time of patients for consultants with more number of patients(31,29,28,26,24)

Waiting time for pts for consultant having lesser no of pts compared to more no of pts



Interpretation of graph

Afore pie chart compares the total wait of the patients for consultation for consultant with lesser number of appointments(1,3,4,5,6) to the consultants with more number of patients(31,29,28,26,24).The comparison also shows that for the consultants having lesser number of total scheduled patients for a day, the average waiting time is 46 mins 33 secs compared to consultants having more number of patients, where the average waiting time is 50 mins 17 secs.This clearly rules out the assumption that a consultant having a heavy Opd has more waiting time as compared to consultants having very few number of patients.

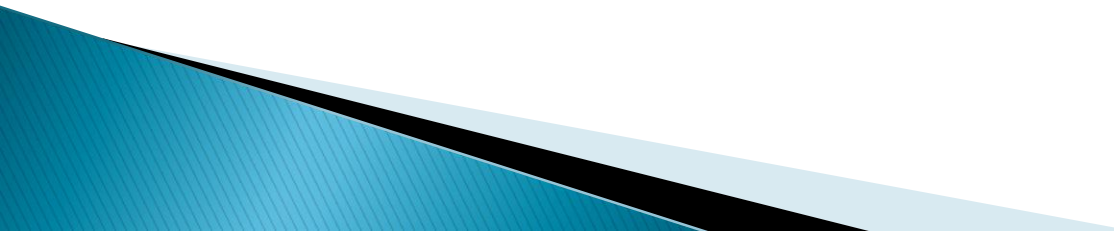
10)OBSERVATIONS AND FINDINGS

Delay in process flow at different stages is one of the key factors that hinders optimal flow of patients and has a significant impact on the economic outcome of the hospital. During the course of this study 4 major delays were identified after collection of the data through different sources and the reasons for the same were later analyzed and probable solutions were then proposed.

DELAYS



▶ 1)Appointment scheduling and slot allotment process

- “Name” currently used as patient identifier for giving appointments due to which ample time is wasted to identify the patient when he finally reaches the hospital.
 - Rescheduling requests from consultants could be seen as an everyday affair in the console, leading to increased inconvenience to all the involved parties and frustration of all the staff and patients.
 - List of rescheduled doctors, not available doctors is made by the night shift assistants and call backs are done the next day which is leading to high inconvenience to the patients and increasing the number of drop outs.
 - There is no intercommunication between the different departments particularly for appointments of USG causing a lot of inconvenience to the patients.
- 

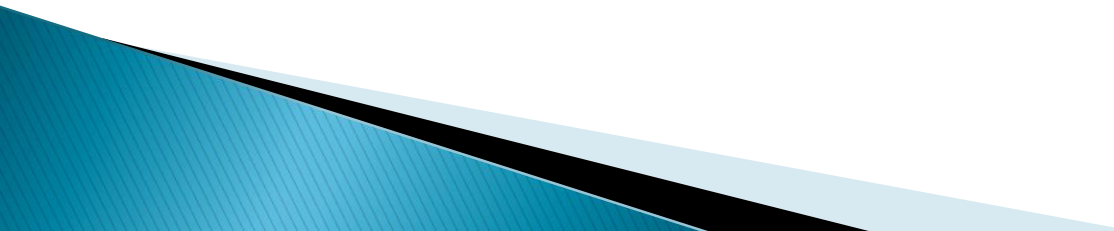
2) Billing and registration process

- A lot of order entry errors were observed during the course of the study.
- Registration form filling took at least 10 –15 mins of the patients time, due to the difficulty with the proficiency of the language .
- E-mail id fields were left empty for various patients leading to difficulty in final identification and delivery of various over the counter reports.
- Patient identifiers are not taken properly leading to difficulty and unnecessary waste during the next visit of the patient. In most cases only one telephone number is taken leading to other errors.

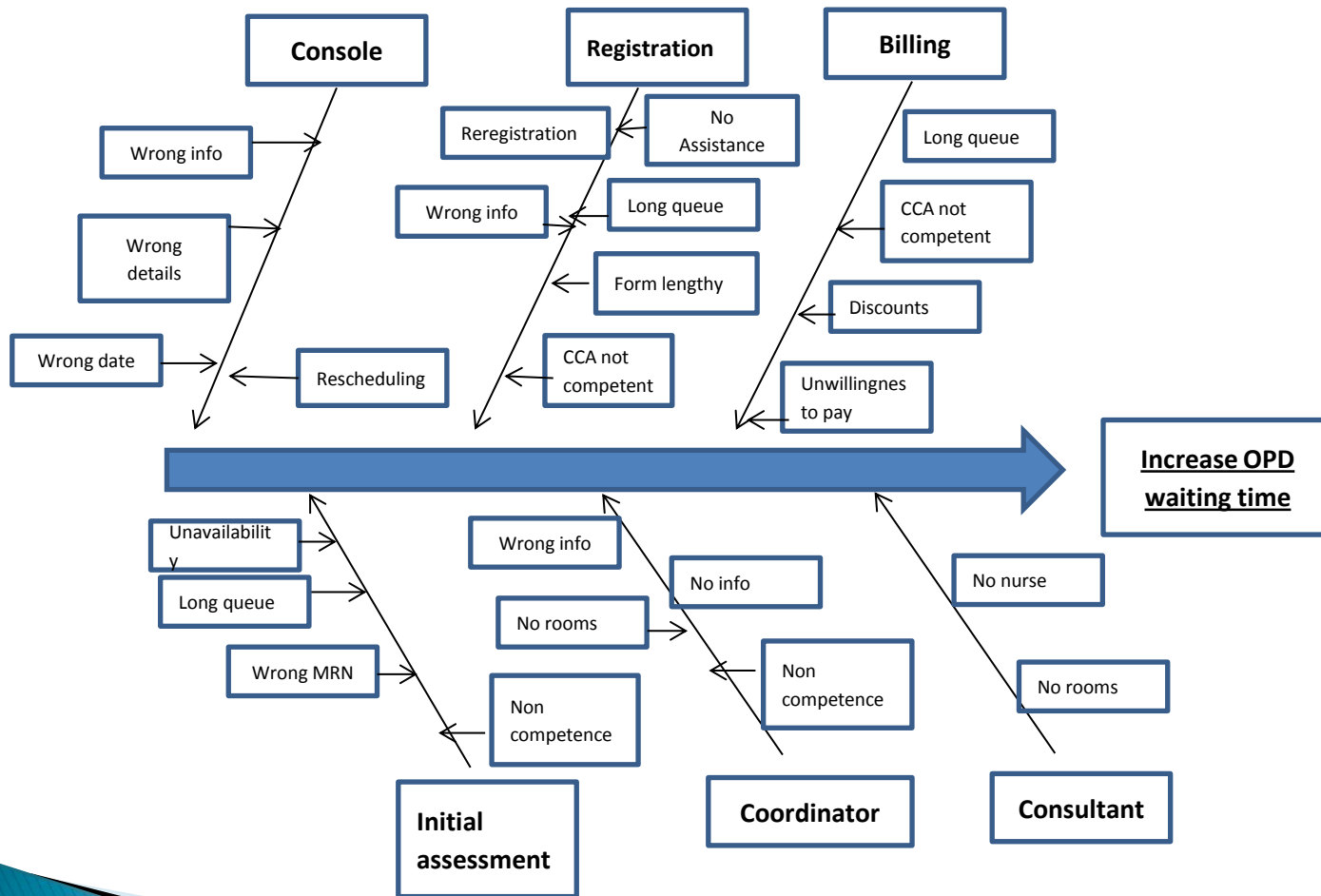
3)Initial Assessment and handing over of the prescription process and coordinator queue management process

- Not a lot of delay was observed during this process.
 - Mostly delay in dispensing of files to new patients could be observed.
 - The queue management process is in the hands of the CCA,the manual list creates a difficulty for the assistant to find out the requested consultant and the patient queue number.
 - The CCA also, in varied situations does not clarify to the patient the correct time of arrival of the consultant due to himself not being told the exact reason of reporting delay to the OPD.
- 

4)Doctor reporting delay and consultation process

- Doctors report to the OPD late without giving appropriate reasons for delay in reporting to the opd leading to overcrowding and waiting in the OPD.
 - There is no accountability for reasons for rescheduling of the OPDs, not even to the CMS, which is leading to chaos in the OPD.
 - Initial screening and vital recording also in most of the cases is done by the doctor himself, leading to increase in waiting time of patients and underutilization of two nurses at the workstation.
- 

Factors leading to increase in patient waiting time



11)Solutions to the delays with recommendations

1)Appointment scheduling and slot allotment process

Key stakeholder responsible for the process–Customer Care Assistant, Patients, Other interdepartmental communication

Key areas of work–Training of the assistants, Re-engineering the process

Recommendations

- What is required is to train the assistant to identify correctly the patient type(New, Existing) and to note down the correct Phone number.
- Instead of “Name” currently used as patient identifier for giving appointments, “Phone number” should be used which would significantly reduce the number of errors.
- In the patient scheduling appointment on the system for existing patients a new sub column of Tel No can be added which would reduce the chances of errors and take off the overload for the assistants and quicken the whole process flow.

2) Billing and registration process

Key stakeholder responsible of the process–CCA

Key areas of work–Training

Recommendations–

- A self-entering fields for registration such as Kiosk
- Another outpatients tab
- Bilingual language form

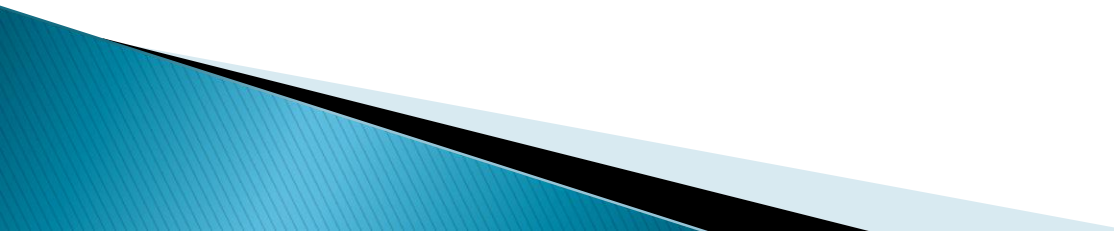
3) Initial Assessment and handing over of the prescription process

Key stakeholder responsible for the process–Nurse

Key areas of work–Reengineering the process

Recommendations–

Instead of nurses giving prescription, the consultant handing over the prescription.



4) Coordinator queue management process

Key stakeholder responsible for the process–Customer Care Assistant,
Other departmental intercommunication

Key areas of work– Training, Reengineering the process

Recommendations–

- Token system
- Color coding.

