Assessing and Improving Discharge Process

By

Nidhi Nishith Patel

Dissertation submitted for the partial fulfillment of the

MBA Hospital and Health Management

Academic year, 2015-2017

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

IIHMR UNIVERSITY

TO WHOMSOEVERMAY CONCERN

This is to certify that **Ms Nidhi Nishith Patel** student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at **Zydus Hospitals, Ahmedabad** from 6-02-2017 to 5-05-2017.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.

Dean, Academics and Student Affairs
The IIHMR University, Jaipur

Assistant Professor 10/05/2017
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Zydus Hospitals
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The certificate is awarded to

Ms. Nidhi Patel

In recognition of having successfully completed her
Internship in the department of

Medical services

and has successfully completed her Project on

"Assessing & Improving Discharge Process"

Feb 6th – May 6th 2017
At
Zydus Hospital
Ahmedabad

She comes across as a committed, sincere & diligent person
who has a strong drive and zeal for learning

We wish her all the best for future endeavors

Dr. Medhavini Ayachit
Lead - Medical Services

Rajiv Ranjan
Lead - Human Resource

HUMAN RESOURCES

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled Assessing and Improving Discharge Process and submitted by **Ms.Nidhi Nishith Patel** Enrollment No **IIHMR_U/01/2015-17/0309** under the supervision of Dr Mohan Bairwa - Assistant Professor for award of MBA in Hospital and Health Management of the University carried out during the period from 2015 to 2017 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

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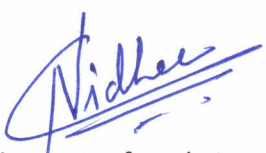
THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that all ethical issues have been considered while collecting data for my dissertation titled "Assessing and Improving Discharge Process"



Signature of student

Abstract

In this study, hospital discharge flow of ward patient is understood by a Baseline Study and than the various delay causing areas are identified. After brainstorming few of the interventions are finalized and implemented as well as new initiatives were taken to fasten up the process and later its effectiveness is also checked by comparing the results.

Objectives

- To understand the discharge process at Zydus Hospitals, Ahmedabad.
- To assess the turnaround time for the discharge process at the hospital.
- To analyse the Factors causing delay at each step of discharge process.
- To improve the discharge process by carrying out intervention, hence reducing Turnaround time.

Materials

- **Study Type**- Interventional study
- **Study location**- Zydus Hospitals, Ahmedabad.
- **Study duration**- 1st March to 30th April, 2017.
- **Sampling Method-** Convenient Sampling

  Samples were under consideration of following inclusion and exclusion criteria.

  Inclusion:
  - All the Inpatient discharges.

  Exclusion:
  - Discharge process of casualty admissions, daycare process/procedure admissions, newborn admission, ICU admission, DAMA and Death cases were excluded from the TAT data collection.
  - Patients discharging at night and sunday discharge are excluded.

- **Sample Size**- Total number of discharges were 875, out of which 421 discharges in Pre-intervention phase and 454 in post intervention phase, which is about 50% of the total discharges occurred during study period.

- **Data Collection Method**- Data was collected by observation of the discharge process at each level, HIMS (HINAI) of Zydus hospital and interviewing staff in. A Tabulated TAT assessment sheet was made in which data was fed.

- **Study Respondents**- The departmental staffs who were directly involved in the discharge process were considered.

- **Data Analysis Technique:**

  Firstly, a Baseline study was done to find out the TAT of march and factors causing delay in discharge process. This data was than converted into excel sheets and various analysis was done and problem areas were found out.

  Than with help of This Baseline data, possible reasons of delay was analyzed and possible intervention ideas was looked for after brainstorming sessions with the management.

  Than the experimented phase, similarly the data was collected and comparison was done to check the effectiveness of the interventions.

Conclusion

The present study aims at understanding analyzing and improving the discharge process at Zydus Hospitals by using the turnaround time as a tool for evaluation of efficiency discharge flow. The study shows a customized analysis of discharge process at the hospital in consideration of various departments which were directly involved in the discharge process. The study point-outs the possible delay causing area in discharge process. In the post Intervention phase few interventions was made and which lead to a considerable improvement in Turnaround time of Post intervention discharges , But still there is scope of improvement in various steps of discharge process and recommends suggestions to overcome those delay.

Acknowledgement:

This project could not have been possible without the help of some important people, who supported in accomplishment of the project.

First and foremost, I am grateful to Dr Mohan Bairwa- Assistant professor, IIHMR-Jaipur for guiding me to complete my dissesrtation successfully.

Secondly, Zydus Hospitals and Lead Human Resources Mr Rajiv Ranjan and Lead Medical Services Dr. Medhavini Ayachit for providing internship opportunity.

I am indebted to Dr Sajan Nair (COO) for continuous support and valuable guidelines, without which the project would not have been possible. Thank you Sajan sir for all the support you gave me.

I am grateful to my mentor Ms Seema Singh (Associate Medical Services), who readily extended her helping hand and support during this project.

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Ms Nidhi Patel

20th Batch MBA Hospital and Healthcare Management, Institute of Health Management Research-

Table of Contents

1.Introduction

Organizations have to closely review the environment and continuously plan to gain a competition advantage due to increasing competition in today's market and business environment. Organizations need to adjust their operations and manage structure to retain customer (patient) and maintain profitability and survive competitiveness, especially when the competitive market associated with cost and unsatisfied customers.

Likewise, being one of the largest service sector, hospitals often come across situations where the available resources fail to deliver desired output, resulting in the increasing bed demand against the capacity. As a resultant there will be an undesirable delay, Post pone of the treatment or cancellation of admission, Patient dissatisfaction and damage to the loyalty, hospital revenue is compromised and competitive edge.

To improvise the availability of the beds in the hospital, the most vital process to work on is patient discharge process. A good discharge process is a must for a hospital to ensure patient satisfaction, quality process towards patient care, bed availability, customer loyalty.

Discharge process is the final part of treatment procedure during patient's length of stay, which leaves patient with upmost satisfaction if it is a Timely discharge.

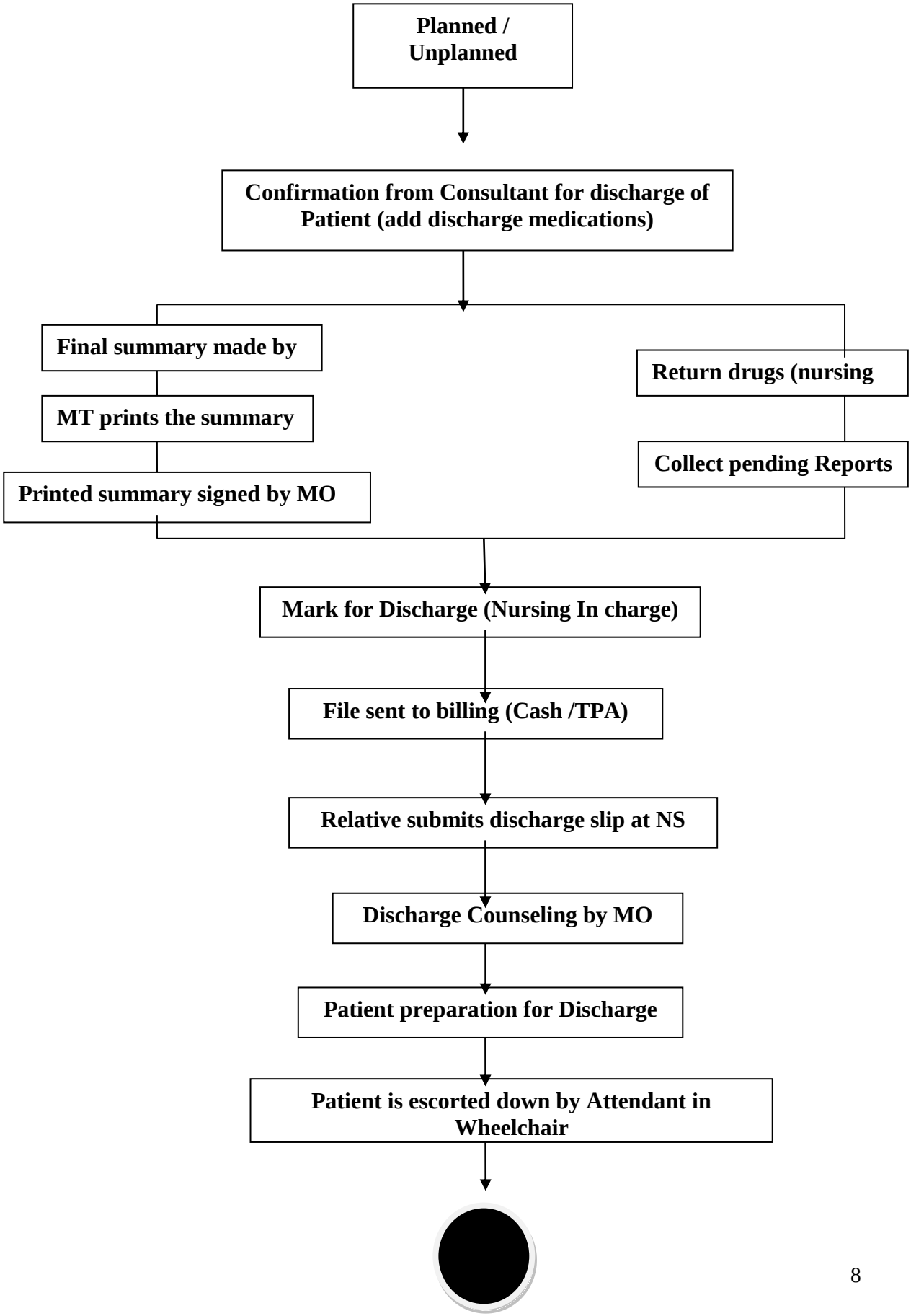
'A fast discharge process can ensure early availability of patient beds, which in turn, can reduce the waiting time of patient admissions or even reduce the incidence of patient rejection due to unavailability of beds' (Nagaraju 2005).

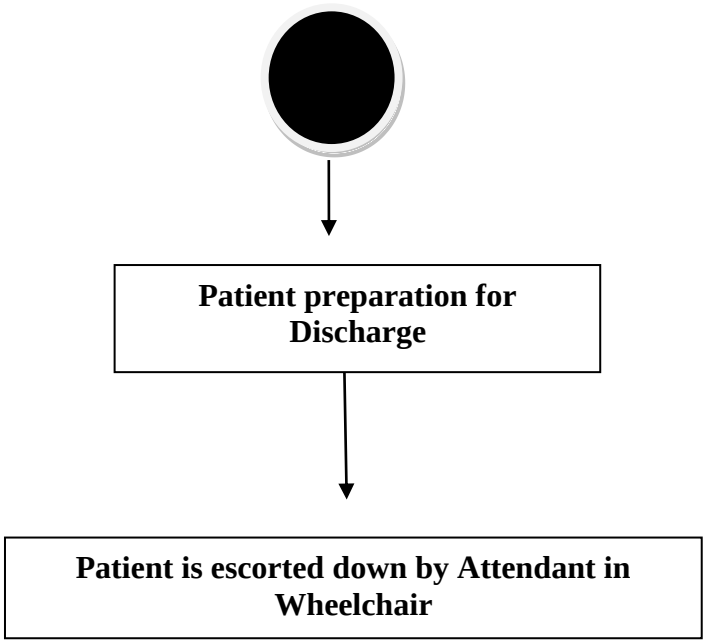
Turnaround Time as per the discharge process flow at Zydus Hospital-"Time when Consultant confirms discharge to the time when final billing is done" Monitoring discharge turnaround time allows hospital to measure the efficiency of bed management and effectiveness of the operating process within the hospital.

The discharge process of the hospital consist of various events involving various departments and the discharge team include members of higher authority that is Consultants to the lower authority employees like attendants, which make it a complex process, hence coordination between all these departments and all the member of discharge team is must for a smoother discharge flow.

The Discharge process Flow of Zydus Hospital is better explained in a flow chart form which is as follows-

Discharge process flow at Zydus Hospital, Ahmedabad





The discharge Process Flow of the Hospital is various phases which includes various departments and Participation of various category of employees and its active contribution. There are majorly two different ways by which a patient is admitted to ward, that is by OPD-Outpatient department and by ED-Emergency Department Majority of the admissions are done by OPD. All stable patients are admitted to ward while critical patients are admitted in ICU, once the patient is stable they are shifted to ward, but it is not compulsory that all the ICU patient are shifted to ward.

Discharges were mainly to two types that is DAMA- Discharge against Medical Advices and Normal Discharges which may be Planned discharge or Unplanned discharge. DAMA discharge occur when the Consultant do not agree to discharge patient but the patient wants to leave in any case.

Planned discharges are those discharge, of which the consultant have intimidated before and unplanned discharge is one which is confirmed unexpectedly. Usually in the morning, the consultant comes for round in wards and confirms all the major discharges after round. After confirmation for discharge from consultant, discharge medication is added. Than the MO- Medical Officer makes the hand written summary in which discharge medications are added. This summary is than passed on MT- Medical Tran scripter, who will convert the hand written summary into the printed

form and which is than rechecked by MO and junior consultants and signature is done. Later this summary is transported back to the respective ward by the attendant.

On the other hand this process occurs simultaneously, the Medicine return and collection of pending report are done. Medicine return requisition is done in the HIMS is done by assigned staff or the nursing in charge of the station. Then these unused sealed medicine are sent back to the impatient pharmacy department by pshute (Pneumatic System) or by attendant as per the size and content of the return bag. Once the return is accepted the pharmacy clearance is done and the pending reports are collected from radiology department and than Mark for Discharge is done for that patient from HIMS-hospital information management system (Hinai). And the patient file is prepared to send to billing department.

Once mark for discharge is done nothing can be indented on the name of that patient and hence all the transaction are shut down, also billing department gets intimidated about the discharge one mark for discharge is done.

The patient relative is directly called from billing department as per their respective mode of payment, if cash patient than on cash counter and if insurance patient than on TPA desk.

Once the billing clearance is done the patients relative is given a discharge slip which is to be submitted at nursing station by the relative. Once the relative submit the slip, MO Counsel's the patient and relatives regarding the summary and discharge medications.

After counselling is done the patient preparation is done, ID belt is removed and than the patient is escorted till the main gate on the Wheelchair.

By looking at the entire discharge flow the major event timings may helps us to find out loop holes in the system and we can know the exact reason of delay.

2. Problem Statement

It was analyzed that discharge process consistently lied in high problem causing areas of the hospital by management. A scope for improvement in the discharge process becomes most important for a patient centric approach. Need arises for assessment and analysing the discharge process and address the delay causing areas of the hospital and improving the discharge process, quality and patient satisfaction.

3. Research Questions

i. What is the Turnaround time of discharge process at Zydus Hospital?
ii. What are the factors causing delay in discharge process?
iii. How to Reduce Turnaround Time?

4. Objectives

- To understand the discharge process at Zydus Hospitals, Ahmedabad.
- To assess the turnaround time for the discharge process at the hospital.
- To assess the average time taken to complete discharge process at various levels of the discharge event.
- To analyse the Factors causing delay at each step of discharge process.
- To improve the discharge process by carrying out intervention, hence reducing Turn around time.
- To assess the physical left out of patient from room.

5. Literature review

- Levesque and McDougall (1996) defines customer Satisfaction as an "overall customer attitude towards a service provider" and "When customers are satisfied, they are more likely to return, while dissatisfied customers are more likely to go elsewhere".[7]

- Nancy Kurma(2009) carried out various interventions in her study out of which, the most effective intervention was the color coding of patient as per the bed occupancy. This intervention helped in estimating patient discharge date which in terms is very useful to calculate patient flow.[1]

- In the Study 'Faster Turnaround time' by Angelo Pellicone & maude Martocci (2006), used fish bone diagram to analyse the causes of delay in the discharge process.[5]

- Sima Ajami & Saeedeh Ketabi(2007) stated in his conclusion that the consultant round should be distributed so as to avoid queing . A queue is described as the place where customers wait for a server to be free. Since customers' arrival and service times are stochastic they sometimes experience different waiting times, and therefore the average waiting time can be used as a factor in the analysis of a system's performance. The average number of customers waiting in the queue, known as the average length of queue and the percentage of busy periods for the server, known as the utilisation rate, are other performance factors in queuing systems. Also he stated that expected date of discharge should be given by consultant to avoid delay.[2]

- Khyati Udayai & Piyush Kumar(2012) carried out time motion study of to identify the delay at each part of discharge process and he calculated the average score. As well as used Six Sigma application (DMAIC) and intervened the gaps.[8]

6. Research methodology:

The study was divided in two phases, Firstly a Baseline study was done that is the Pre intervention phase and Post Intervention Phase.

In **Pre intervention phase,** Baseline study was done to undertand process flow of discharge at Zydus hospitals, by process mapping. Fish Bone Diagram (Cause-Effect Diagram) was made to understand factors causing delay in discharge process. Scatter Chart of Discharge informed time and final billing time and physical left out of patient from room was made to estimate the cluster time at which maximum events occur. Also Data was collected as per Tabulated TAT sheet and later converted in Microsoft Excel. The sheet Contains information stated as below

- Name of patient
- Treating Consultant
- Type of Discharge (Planned/Unplanned)
- Ward
- Discharge Informed Time
- Summary Time by MT
- Mark of Discharge Time
- Final Billing Time
- Time at which patient physically leaves room
- Mode of Payment

All these data was collected for all the discharges included in sample size, and than this data was analyzed to find out the expected reasons of delay and TAT.
With the help of the outcomes of Baseline study, few Intervention ideas were thought for by Brainstorming session with management out of which few was implied in Post intervention phase which are as follows-

- Prior preparation of Rough summary is done by Medical Officer and Medical Tran scripter. Everyday the next day's expected discharges were looked for and it's summary status was checked and a push was done to prepare all the necessary preparation for discharge.

- Medical Tran scripter, shift was managed to increase the coverage. Previously the MT on floors were available from morning 9 o'clock to evening 8 o'clock, this coverage was increases to 7 o'clock in morning to 10 o'clock ant night.

- **Color Coding Initiative-**

  The concept of the color codes red, yellow and green is recognized worldwide. The difference of interpreting them depends on the subject that they are being applied to, indicating a negative stance by red and a positive one by green.

  This color codes were linked to each phase of patient stay at hospital and its probability to get discharge. Red color was linked to new admissions, which has very less probability to discharge, Yellow color was linked to the phase to patient stay where his/her expected discharge date is not confirmed and Green code is indicated to phase where the expected discharge dates are confirmed, i.e one or two day prior to discharge.

  All the color code indicate various activities to be completed in each phase, in yellow phase pink summary by medical officer is to be made. In Green phase, prepare Rough Summary or Final Summary (confirmed discharge), Collect Pending Reports, Return Medicines. The color codes were marked on the board at nursing station with Stickers to these three Colors.

- On Job Training session was done to educate the staff involving in discharge process. Importance of Timely discharge was explained and tips were given to overcome barriers which caused delay. Also the color coding initiative was explained.

- New Billing Counter was made for Cash Patient at 8^{th} floor, by the management which turned out to be a very useful intervention.

- Visuals Stating-' Thank You For Planned Discharges' was stuck at all nursing station for consultants, which motivated the consultant to do more planned discharges.

In Post intervention, these intervention was carried out and data was collected in Tabulated TAT assessment sheet. At the end the results were compared to the baseline phase and effectiveness of the intervention was checked.

7. Results and Conclusion:

7.1 Pre Intervention Results-

1. Discharge Informed Time on time scale:

Findings showed that the Discharge informed time majorly clustered around 10:00 am as most of the Discharge were confirmed after the consultant rounds.

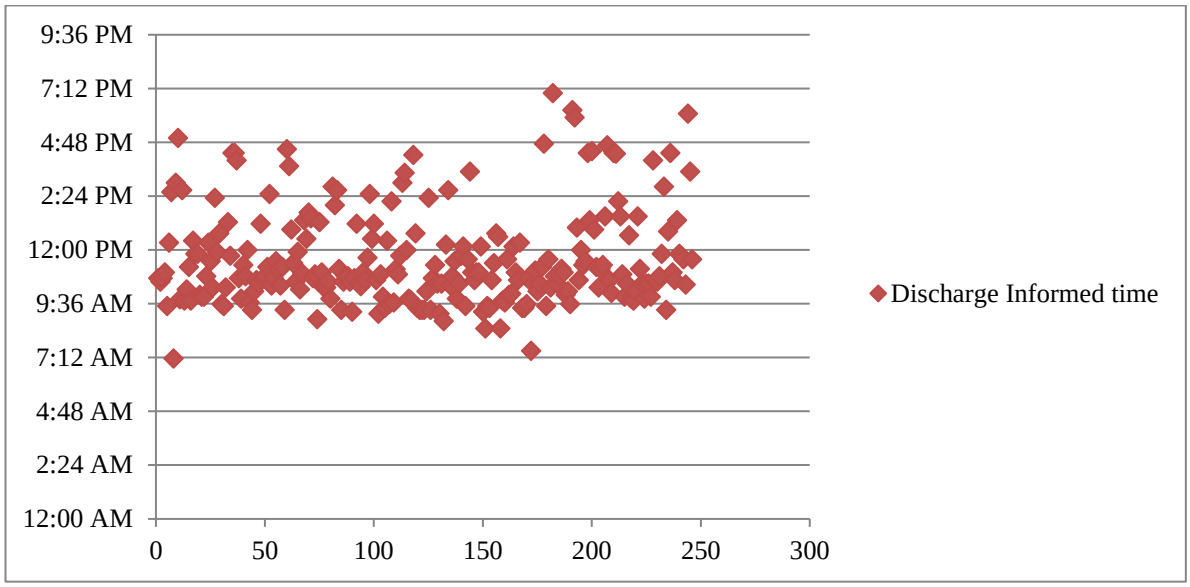


Chart 1 Discharge informed Time on time scale:

2. Final billing Time on time scale:

Findings showed that the billing time was clustered around 12:00 pm while patient physically left time was clustered around 1:30 pm, which indicated that patient there was a huge gap of time between both the events. Although the billing is done patient is physically present in the room, which indicated that time taken for patient preparation and counseling is more leading to occupied bed.

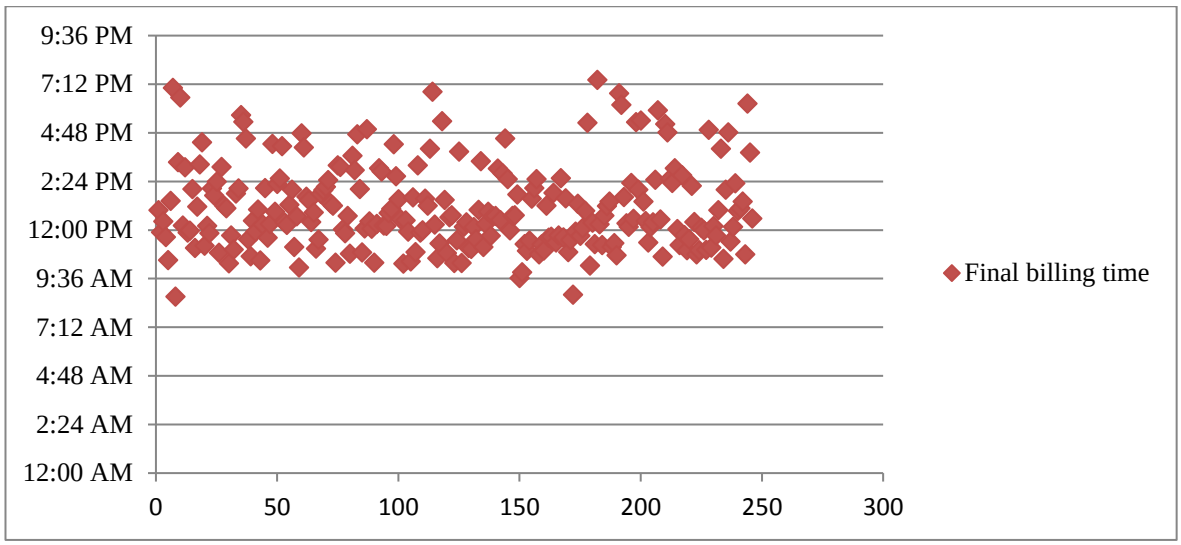


Chart 2 Final billing Time on time scale:

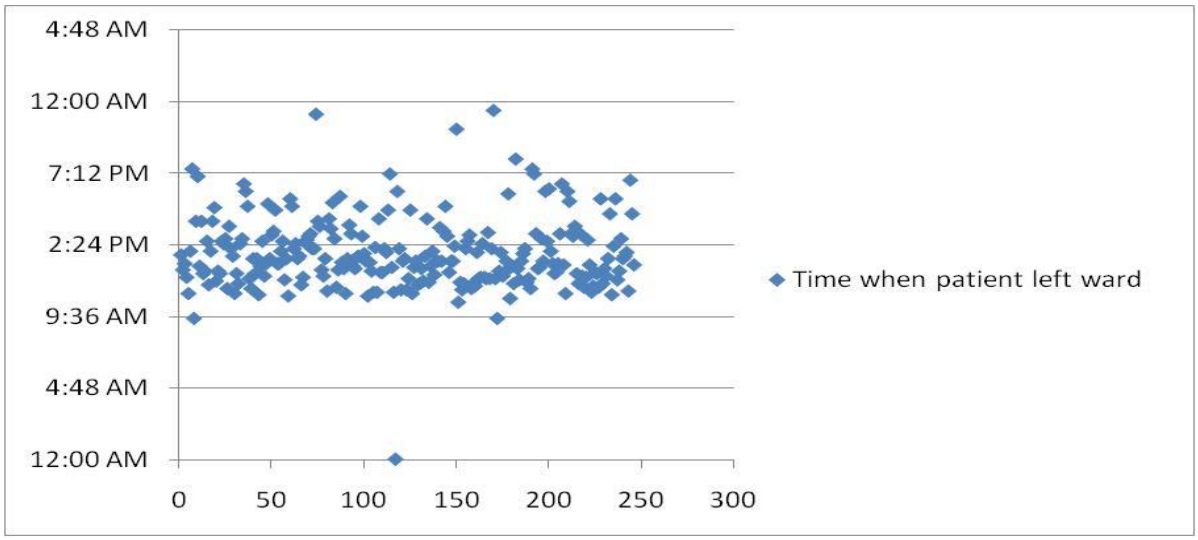


Chart 2 Time when patient physically Left.

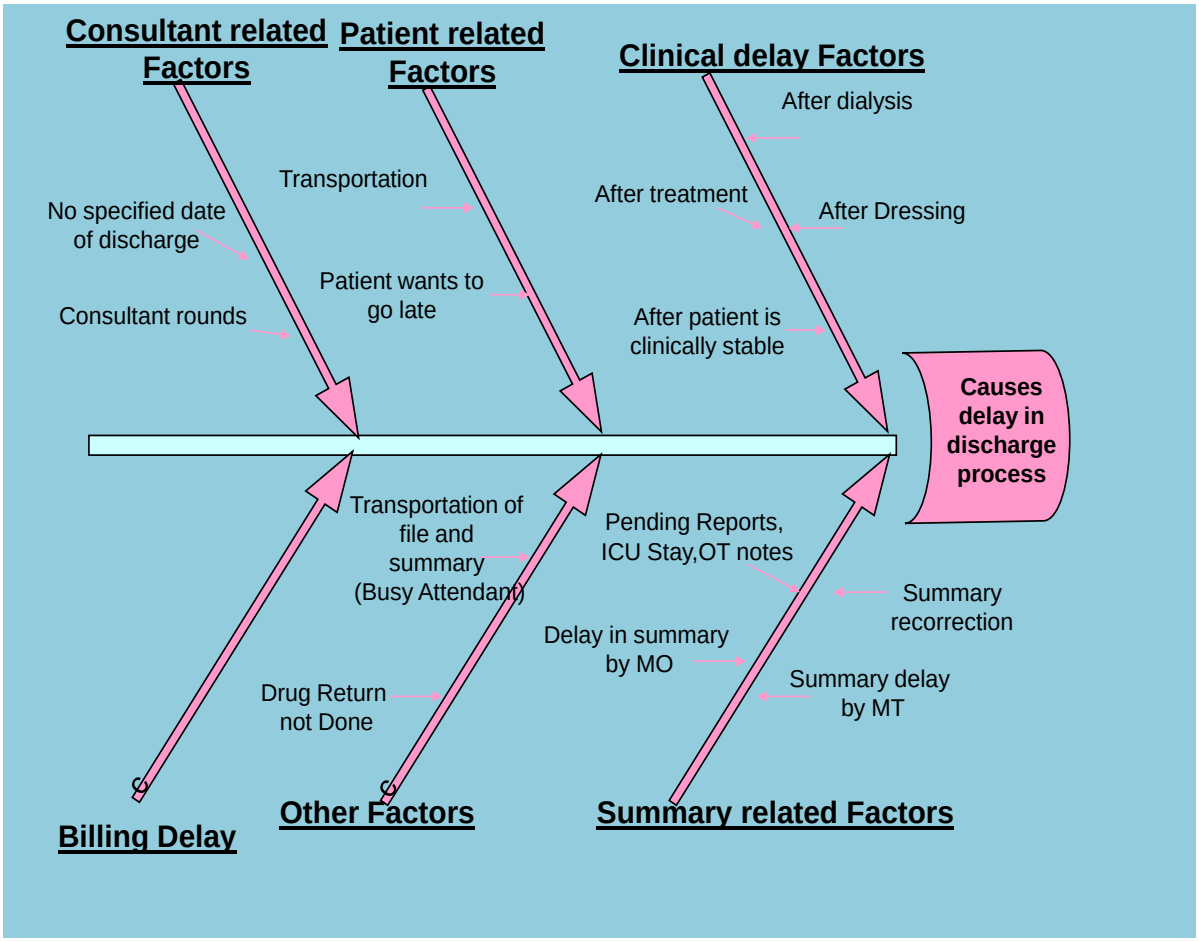


Figure: Fish Bone (Cause-Effect) Diagram showing causes of delay in discharge process.

The Cause Effect diagram showed the following as the expected delay causing area-

- Summary Related cause
- Patient related
- Clinical delay
- Consultant related
- Billing related

3-Factors Causing Delay in Insurance Patient of March-

As shown in Table and Chart There are various factors causing delay in these patient. Maximum delay was experienced because of Billing i.e 20 % while 4% and 3% delay was experienced because of Summary Delay and Mark for discharge delay.

Factors causing Delay	Percentage	Frequency
Summary Delayed	3.90%	8
Mark for Discharge Delayed	3.40%	7
Billing	19.70%	40
Delayed Summary+Billing	2.90%	6
Mark for Discharge Delayed+Billing	1.40%	3
Timely Discharge	68.40%	139

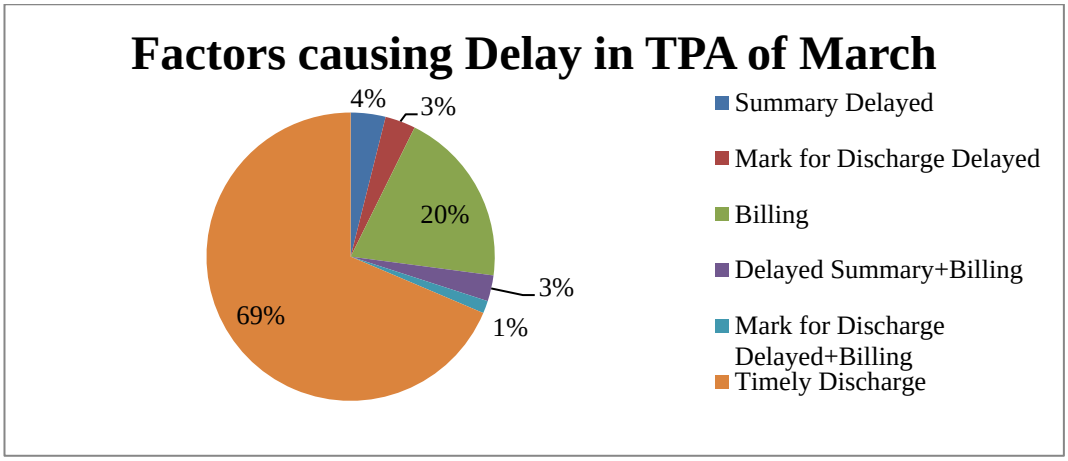


Chart 3-Factors Causing Delay in Insurance Patient of March –

4-Factors Causing Delay in Cash Patient of March-

As shown in Table and Chart There are various factors causing delay in these patient. Maximum delay was experienced because of Billing i.e 22 % while 3% delay was experienced because of Mark for discharge delay.

Factors causing Delay	Percentage	Frequency
Summary Delayed	1.80%	4
Mark for Discharge Delayed	3.20%	7
Billing	22.01%	48
Delayed Summary+Billing	3.20%	7
Mark for Discharge Delayed+Billing	1.80%	4
Timely Discharge	68.30%	149

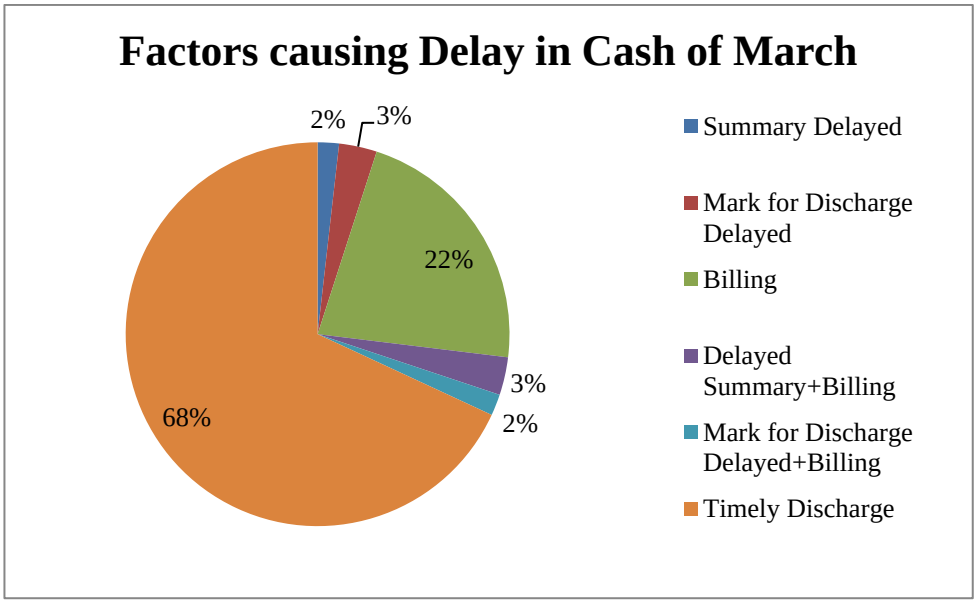


Chart 4 – Factors causing delay in Cash patient of March

7.2 Post intervention Phase Results-

Interventions were done and data was collected which stated following results-

5-Factors causing delay in Insurance Patient in April-

In following chart and Table, it is concluded that Maximum delay was experienced because of Billing that is 24% while delayed summary caused 3.8% delay.

Factors causing Delay	Percentage	Frequency
Summary Delayed	3.80%	8
Mark for Discharge Delayed	0.90%	2
Billing	24.50%	51
Delayed Summary+Billing	1.44%	3
Mark for Discharge Delayed+Billing	1.90%	4
Timely Discharge	67.30%	140

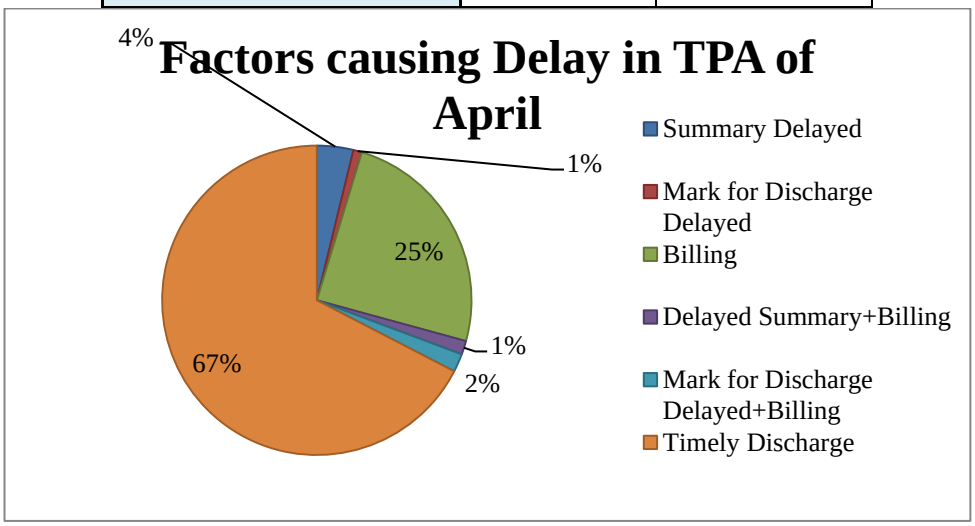


Chart 5 showing Factors causing delay in insurance Patients

6-Factors Causing delay in Cash Patient in April-

In following chart and Table , it is concluded that Maximum delay was experienced because of Billing that is 22% while delayed summary caused 3.2% delay and mark for discharge delay was 4%.

Factors causing Delay	Percentage	Frequency
Summary Delayed	3.20%	8
Mark for Discharge Delayed	4.06%	10
Billing	22.30%	55
Delayed Summary+Billing	0.40%	1
Timely Discharge	69.90%	172

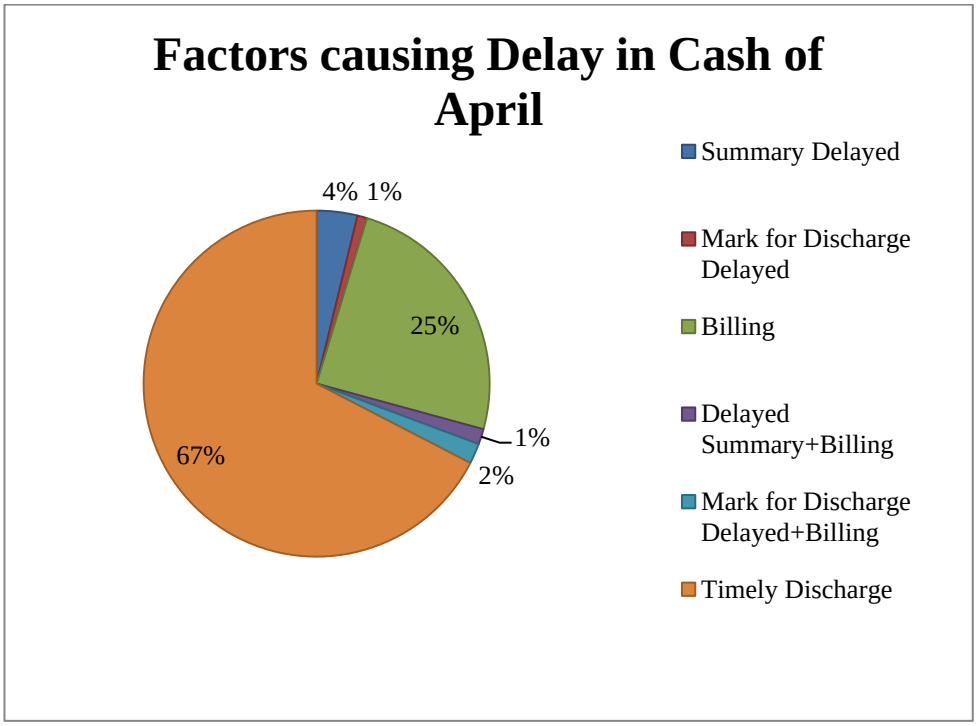


Chart 6- Factors causing Delay in Cash of April

7-Comparison of Planned V/S Unplanned Discharges of March and April-

The results proved that there was Decrease in unplanned discharges of April 10%.

Month	Type of discharge	Percentage	Count
March	Planed	76.70%	323
	Unplanned	23.20%	98
April	Planed	86.70%	394
	Unplanned	13.20%	60

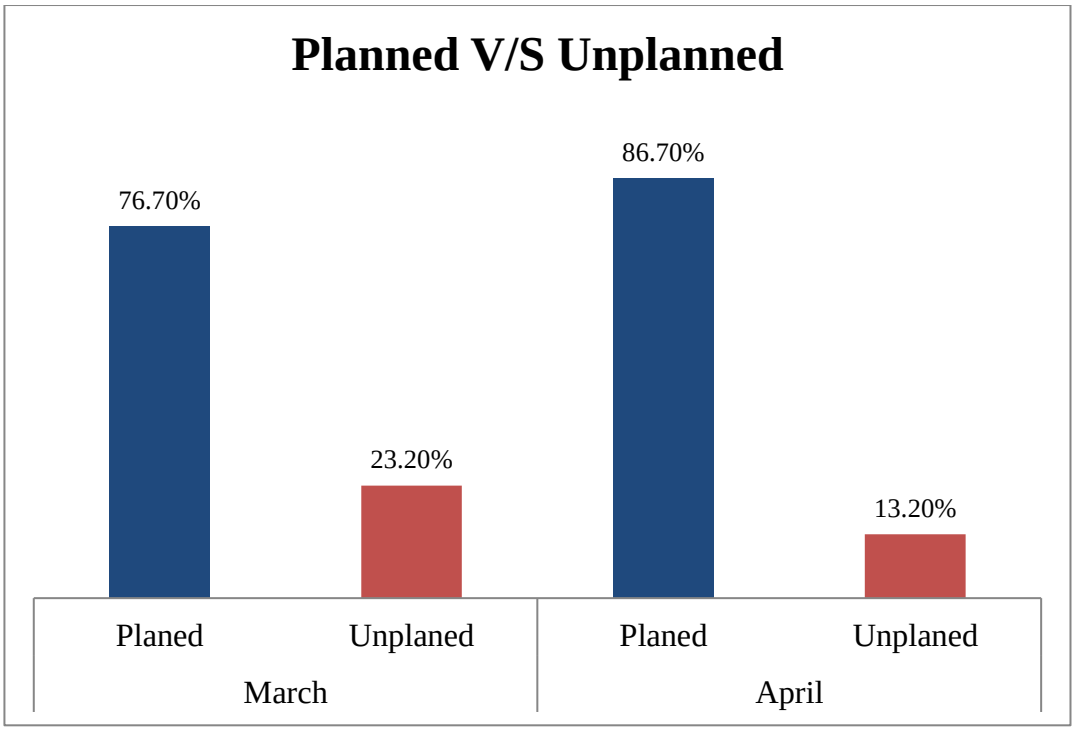


Chart7- Comparison of Planned V/S Unplanned Discharges of March and April

8- Comparison of Turnaround time of March and April-

As shown in table, after the interventions done in the discharge process TAT of Cash patient is improved by 5 minutes and TAT of Insurance patient is improved by 11 minutes as a result of interventions which was done.

Months	Type	TAT in Minutes
March	Cash	95
	Insurance	262.9
April	Cash	90.8
	Insurance	251.9

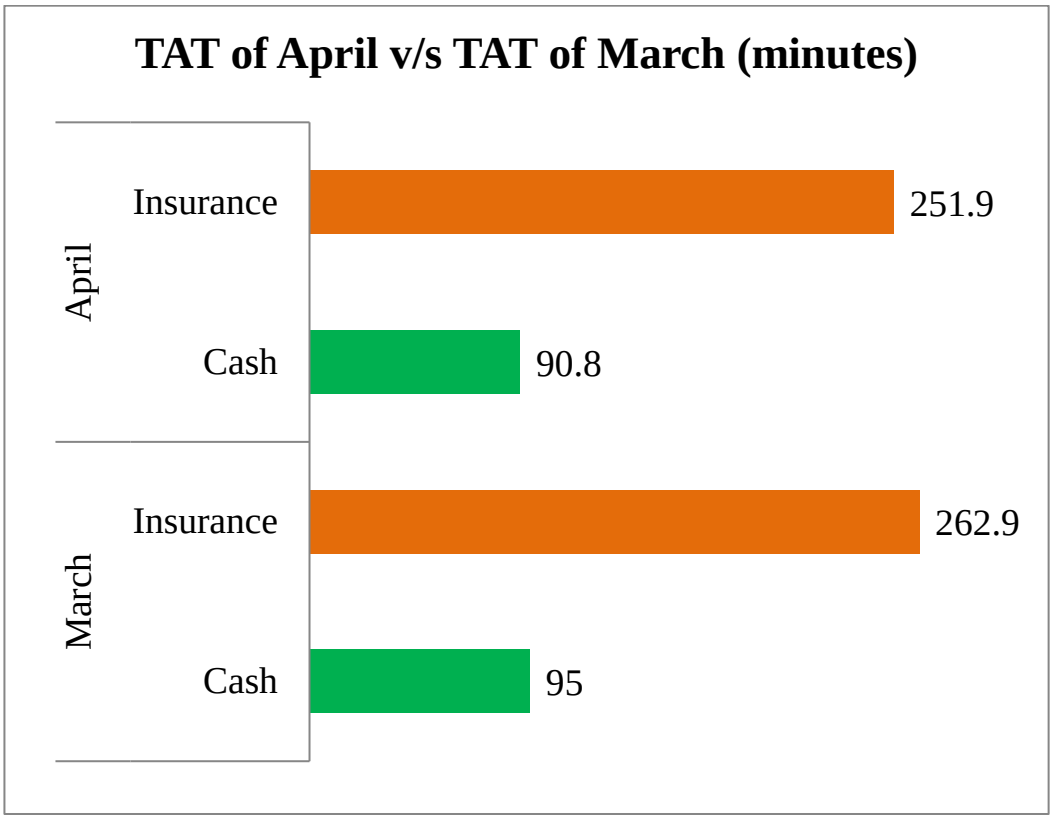


Chart 8- comparison of TAT April v/s TAT March.

9- Comparison of time taken in Mark For Discharge from Discharge informed Time of March and April-

TAT(minutes)=Mark for discharge-Discharge Informed Time

As Shown in Table and Chart, Time taken for Mark for discharge is reduced by 2 minutes, and in Insurance Patients it is reduced by 10 minutes.

Months	Type	TAT in Minutes
March	Cash	23
	Insurance	62.4
April	Cash	21
	Insurance	52.04

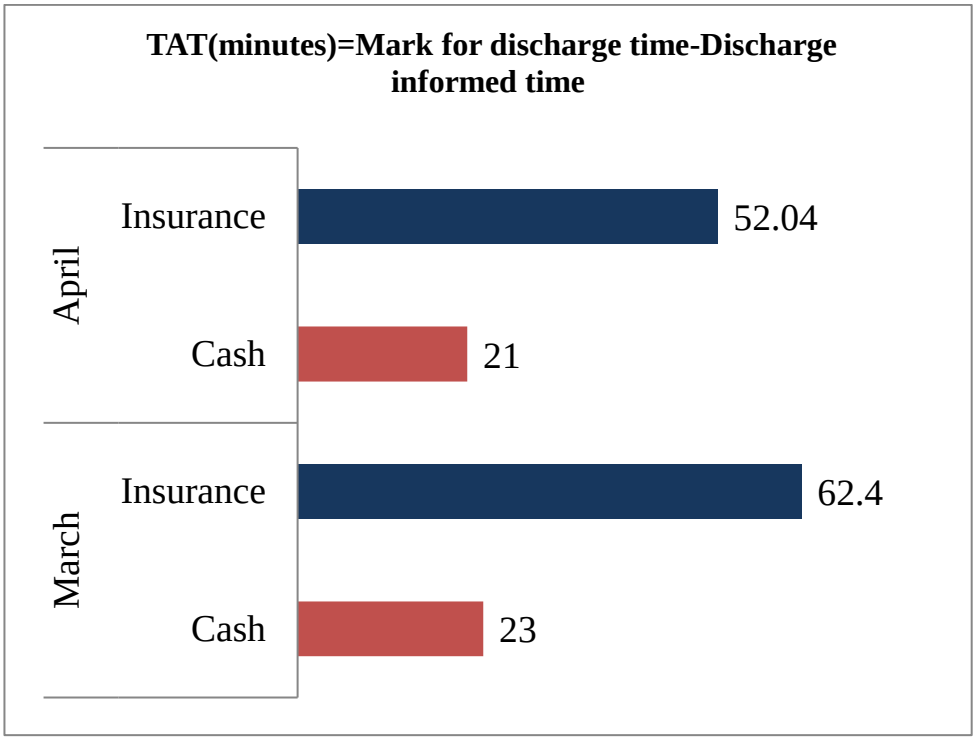


Chart 9- Comparison of time taken in Mark For Discharge from Discharge informed Time of March and April.

10- Comparison of Billing Time of March and April-

In Cash Patients, there is 3 minutes Improvement in Billing time and in Insurance Patients There is 1 minute Improvement in billing Time as shown in Following Table.

Months	Type	TAT in Minutes
March	Cash	72.4
	Insurance	200.49
April	Cash	69.7
	Insurance	199.88

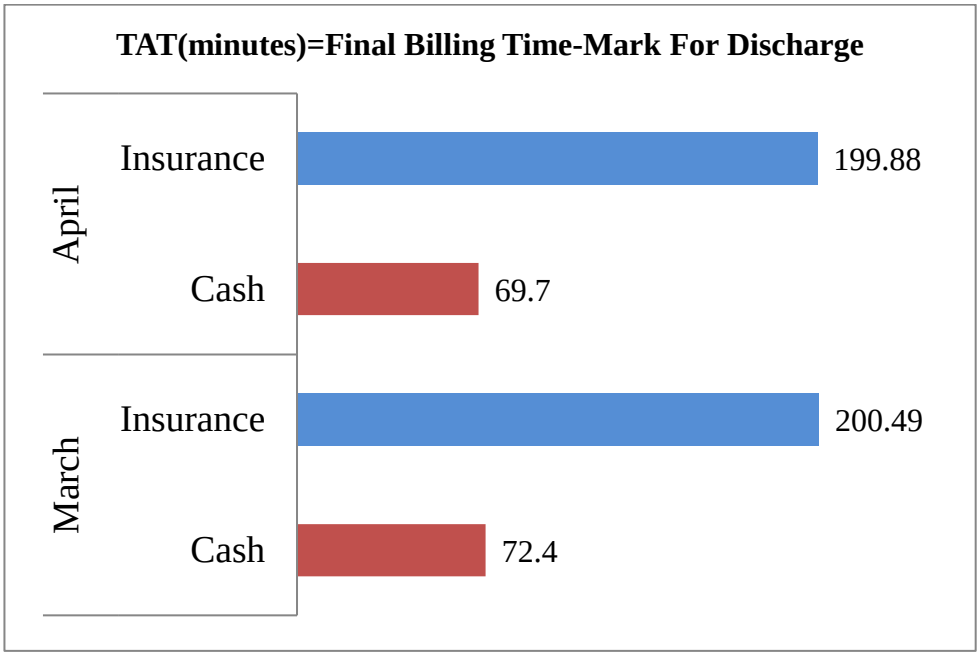


Chart10- Comparison of Billing Time of March and April

11- Discharge process Flow of Cash Patient-

The timely discharge and delayed discharge that occurred in march was 68.3% and 31.6% and that of april was 69.9% and 30.1%. Hence only 1.5% timely discharges are increased with the help of interventions.

Discharge flow	March	April
Timely Discharge	68.3%	69.90%
Delayed	31.60%	30.1%

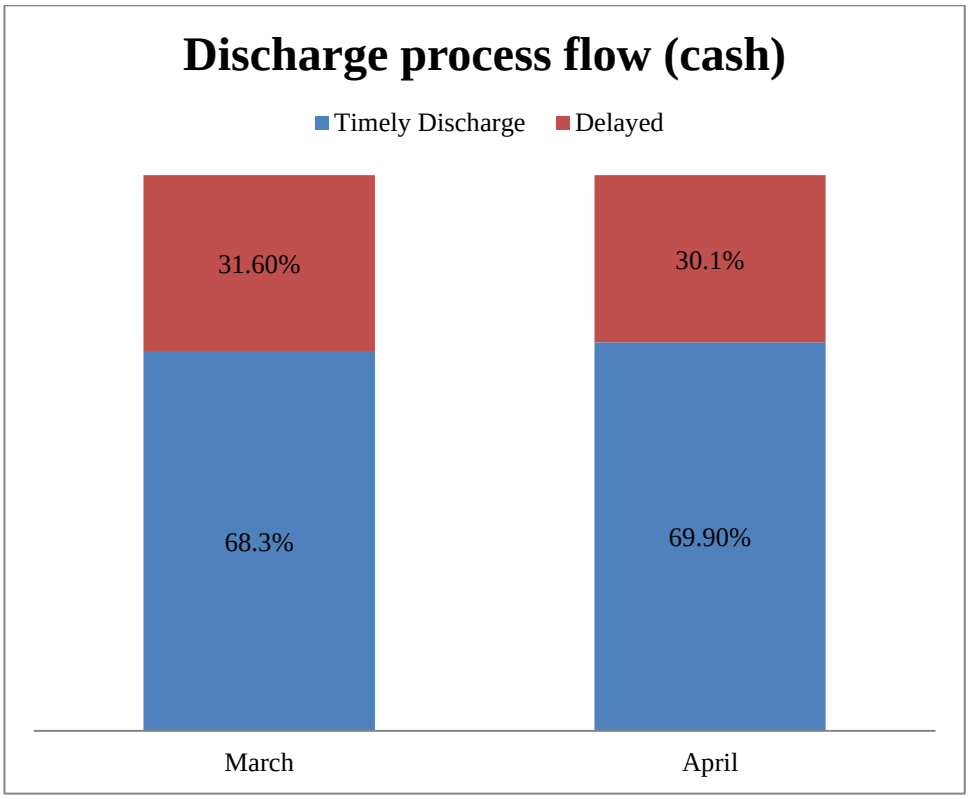


Chart 11- Discharge process Flow of Cash Patient

12-- Discharge process Flow of Insurance Patient-

The timely discharge and delayed discharge that occurred in march was 68.4% and 31.6% and that of april was 67.6% and 32.4%.

Discharge flow	March	April
Timely Discharge	68.40%	67.60%
Delayed	31.6%	32.4%

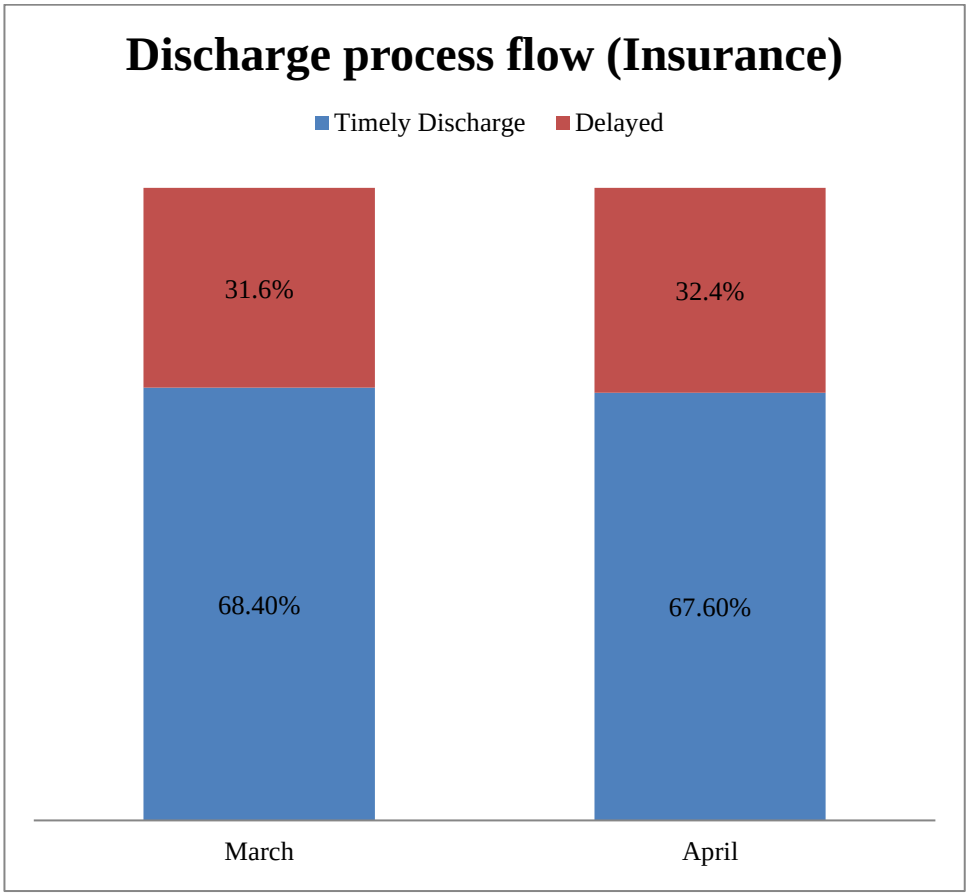


Chart 12- Discharge process Flow of Insurance Patient

8. Discussion-

As described earlier, discharge process is a complex process because coordination of all the members involved in process is must for a smooth and timely discharge. In the pre intervention phase the recognized factors for delay were delayed summary, delayed mark for discharge, billing delay, summary delay and billing, delayed mark for discharge and billing. The TAT came around 95 minutes for cash and 263 minutes for Insurance patients in baseline study. There was 68% of timely discharges occurring in the month of march that clearly states that only 68% of discharge occur within average TAT minutes.

In the post intervention phase the average TAT- turnaround time is remarkably decreased to 90 minutes for cash patients and 252 minutes for insurance patients but the matter of discussion is whether the delay causing factors are decreased? The ratio of timely discharges improved?

In the results portion is clearly seen that the TAT of April is reduced from TAT of March. The identified factors causing delay also reduced but it is not remarkable. The other evidence is that the proportion of timely discharge and delayed discharge in March and april shows a very thin line of difference i.e improvement between them. This makes us think over that the interventions that are done are definitely effective but the actual untouched problem area still prevail which causes delay which is none other than billing.

The billing delay was previously identified as one of the major factor causing delay, but there may be some other factors relating to billing which are not identified. It also can be predicted that these factor are somewhere or the other hindering and so we are not able to see the actual effectiveness of the interventions.

With the results section of the study we can conclude that the billing delay is one of the major delay causing area, which should be analyzed in much more depth. This also proves that the discharges which were timely done, now have become more smoother and its TAT has also reduced. For example chemotherapy patients or patient

with confirmed expected discharge like DJ stunt removal etc, have become more smoother and faster but the cases which where getting delayed with billing are still a problem, In fact they are the only problem causing area. And so by pushing the system this way have definitely helped but only by making good the best and not helping the bad ones.

The actual problem is still there which needs to be re analyzed and intervened so that we can fix the gap and improve the ratio of timely discharge and not only reduce the TAT.

One of the other major problem areas that were identified was Physical walk out of Patient from room. With the raw data that was obtained of physical walkout of patient reflected on the scatter chart shows that it is scattered all over evenly which makes us think that the physical left out of the patient must be late than what actually he has paid for. There is no system entry for the room vacant time, which makes us question about the reliability of data that is collected by observation and interview of staff.

While observation on floors there were several cases seen in which patient wanted to go late, whit reasons like transportation issue (ambulance not arranged, late train, waiting for a relative to pick up), Patient want to go after having lunch, spiritual reasons were observed for late walk out of patient from room even though billing is cleared.

9. Conclusion-

The present study aims at understanding analyzing and improving the discharge process at Zydus Hospitals by using the turnaround time as a tool for evaluation of efficiency discharge flow. The study shows a customized analysis of discharge process at the hospital in consideration of various departments which were directly involved in the discharge process. The study point-outs the possible delay causing area in discharge process. In the post Intervention phase few interventions was made and which lead to a considerable improvement in Turnaround time of Post intervention discharges, but the ratio of timely discharge still need to be worked on to make the discharge process more smooth. still there is scope of improvement in various steps of discharge process and recommends suggestions to overcome those delay.

10. Recommendation-

- Training Program
- Expected date of discharge should be estimated by Consultants.
- An assessment of billing phase with time motion study which me help in finding the exact delay causing area.
- A more detailed analysis of patient vacant time by more reliable component of data.

11. References

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12. Appendix

Tabulated TAT sheet

Date					
Name of Patient					
Planned Discharge (Y/N)					
Declared by consultant					
Summary by MT					
Mark for discharge					
Final billing time					
Time when patient left ward					
TAT					
Mode of Payment (cash/TPA)					
Remarks					