

Summer Training
at
Zydus Hospital, Ahmedabad



From 1 April to 30 May

A Report on

**INVENTORY ANALYSIS OF HOSPITAL PHARMACY AND TURN AROUND TIME OF OP
AND IP PHARMACY**

by

Nilesh Dhanotiya

**MBA Pharmaceutical
Management 2018-2020**



School of Pharmaceutical Management

The IIHMR University, Jaipur

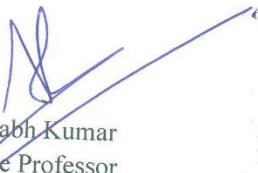
2019

CERTIFICATE

This is to certify that **Nilesh Dhanotiya** has undergone Summer Training at **Zydus Hospital** from 1st April 2019 to 31st May 2019.

The candidate himself completed the project assigned to him in summer training. His approach to project was sincere and proactive. This Summer Training is in partial fulfillment of the course requirement recommended for the award of MBA in Pharmaceutical Management.

I wish him success in all his future endeavors.


Dr. Saurabh Kumar
Associate Professor
IIHMR University, Jaipur


Dr. Sandeep Narula
Dean- in- Charge (Associate Professor)
Pharmaceutical Management
IIHMR University, Jaipur



ZHHRPL/HR/INTERN/SUPPLY CHAIN/1/2019

Date: 30th May 2019

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Nilesh Dhanotiya**, of IIHMR University has completed Internship in the **Department of Supply Chain** from our Hospital under the guidance of **Mr. Mukesh Patel – Lead, Supply Chain**.

The topic of Training was **“Inventory & Material Management by Analysis of ABC and VED Reports”** and **“Turnaround Time of IP and OP Pharmacy”**. The duration of Training was from **1st April 2019 to 30th May 2019**.

During above period we found him very sincere and hardworking.

We wish him all the best for his future endeavor.

For, Zydus Hospitals and Healthcare Research Pvt. Ltd.

Sachin Nair
Lead – Human Resources

HUMAN RESOURCES

Zydus Hospitals & Healthcare Research Pvt. Ltd.

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Registered Office: 16, Azad Society, Ambawadi, Ahmedabad - 380 015, Gujarat. | www.zydushospitals.com

Acknowledgements

Firstly, I would like to show my deepest thankfulness to each one those who provided me utmost support for completing of this project.

I would love to extend my thankfulness to my organizational supervisor **Mr. Mukesh Panchal** for providing me guidance and advice which played the vital role in completing my internship.

I express my gratitude to **Mr. Nirav Rajput**, Associate Purchase of Pharmacy department for his valuable suggestion, support and keen interest throughout my study. He took out his precious time for guiding us in the research work till the completion of my internship.

My special gratitude goes to Mr. Vishal Talreja, IP pharmacy in charge for helping me to learn new things.

My sincere thanks to University Mentor **Dr. Saurabh Kumar Banerjee**, Associate Professor for his continuous support and guidance which kept motivating me throughout the internship.

I am very much thankful to all the staff of Zydus hospital for their support and cooperation.

Nilesh Dhanotiya

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Acronyms/Abbreviations

- 1. ABC-ALWAYS BETTER CONTROL**
- 2. HML-HIGH, MEDIUM, LOW**
- 3. FSN-FAST/SLOW/NON-MOVING**
- 4. XYZ ANALYSIS- COEFFICIENT VARIATION OF THE PRODUCT**
- 5. SCM- SUPPLY CHAIN MANAGEMENT**
- 6. GRN- GOOD RECIEPT NOTE**
- 7. IP- INPATIENT PHARMACY**
- 8. OP- OUT PATIENT PHARMACY**
- 9. PO-PURCHASE ORDER**
- 10. RTS-Return to stock**
- 11. EOQ- Economic Order Quantity**
- 12. VED-VITAL, ESSENTIAL, DESIARABLE**

ZYDUS HOSPITAL

INTRODUCTION

Zydus Hospitals is a 550 bed Super specialty medical institution spanning 16 floors and 2 basement floors. This world class & highly sophisticated medical establishment offers all major medical specialties, subspecialties, investigation & diagnostics facility, rehabilitation & physical therapy care under one roof. Hospital's design ensures higher energy efficiency by allowing greater permeation of sun light throughout the day and harnessing solar energy for hot water provisioning throughout the hospital complex.

Quality

Zydus Hospitals brings in a tradition of Trust & Faith, being among the leader in pharmaceuticals vertical, they now extend their services to the society through a chain of multispeciality hospitals, offering world class infrastructure, highly skilled and experienced medical specialists, caring & compassionate nursing staff and technology which matches the best in the world.

They are committed to All Round Quality, from their patient care services to medical facilities they are taking stride aiming at achieving highest level of Quality Certifications.

Their Anand unit is the first private hospital to receive NABH Certification in the district. The flagship multispeciality unit in Ahmedabad has been accredited by NABH in Sept 2016. They are committed to medical excellence & transparency across all the walks of hospital with "Patient First" approach.

SALINT FEATURES OF HOSPITAL

"Zydus Hospitals has all around specifically named the best of American/Europe Trained Medical Specialists, Paramedics, Nursing and Administrative Staff. This would be among the bunch emergency clinics in its association which have committed full time medicinal pros. This will guarantee total nonstop consideration and accessibility".

Vision Statement:

"To be a main supplier in medicinal services administration conveyance to the network. We will accomplish 1500 beds under our administration continuously 2020 and become a most favored goal for extensive restorative consideration and treatment."

Mission Statement:

"To give world standard human services answers for the network by utilizing progresses in therapeutic research science and innovation and reception of best administration rehearses."

Core principles:

The individuals from the Zydus Hospitals hold the accompanying qualities to be the establishment of their character.

1. Patient Centric

They are Patient Centric. They put the requirements of the patient first in the entirety of their activities.

2. Adaptable to Change

They welcome improvement; their methodology is constantly positive with a 'can-do' soul.

3. People-Driven

They manufacture the capacities of their kin. This is key to their development in business

4. Committed to Deliver

They give their best in all that they attempt and are resolved to convey on schedule.

5. Innovative in What they Do

They advance through their thoughts, methodologies and endeavors - at each chance.

6. Humble

They stay unobtrusive and humble in their accomplishments. Their work represents itself with no issue.

7. Value-Driven

They look for worth and augment their additions by utilizing their assets prudently.

❖ Floor details of Zydus hospital, Ahmedabad

FLOORS	DEPAERTMENT
00	A. ZYDUS HEALTH CHECK UP B. RADIOLOGISTICS IMAGING C. EMERGENCY & ER OT D. ADMISSION & BILLING, CAFETERIA, PHARMACY
01	A. OPD, EEG & EMG B. OPD, ECHO, TMT, ECG C. PHYSIOTHERAPY & REHAMBILITATION, DENTAL D. OPD
02	A. ENDOSCOPY, LITHOTRIPSY & URODYNAMICS B. MOTHER AND CHILD CARE C. DIALYSIS D. FOOD COURT
03	A. SURGICAL ICU -3A B. OPERATION THEATER COMPLEX C. OPERATION THEATER COMPLEX D. TRANCEPLANTICU & SURGICAL ICU-3

04	A. RELATIVE STAY AREA, STORES B. CENTRAL STERILE SUPPLY DEPARTMENT C. MEDICAL RECORD DEPARTMENT D. BLOOD BANK
05	A. OPERATION THEATER COMPLEX B. OPERATION THEATER COMPLEX C. OPERATION THEATER COMPLEX D. CVTSICU-5D
06	A. CATHLAB & CARDIAC ICU-6A B. CARDIAC ICU C. CVTS ICU-6C D. CVTS ICU-6D
07	A. CRITICAL CARE UNIT -7A B. PEDIATRIC ICU & NEONATAL ICU C. LABOUR DELIVERY COMPLEX D. NEURO ICU
08	A. EXECUTIVE TWIN SHARING B. EXECUTIVE TRIPLE SHARING C. EXECUTIVE TRIPPLE SHARING D. EXECUTIVE TWIN SHARING

09	A. STANDARD BED 901 TO 919 B. STANDARD BEDS 920 TO 935 C. AUDITORIUM D. ADMINISTRATION
10	PREMIUM ROOMS
11	PREMIUM ROOMS
12	PREMIUM ROOMS
13	PREMIUM ROOMS
14	SUITS
15	SUITS

SUPPLY CHAIN OF HOSPITAL

Supply Chain Management (SCM) is that the designing and management of all activities concerned in acquisition and sourcing and everyone supplying management activities. considerably it, also includes coordination and collaboration with channel, which may be suppliers, intermediaries, third party service suppliers, and customers. offer chain management integrates offer and demand management inside the organization.

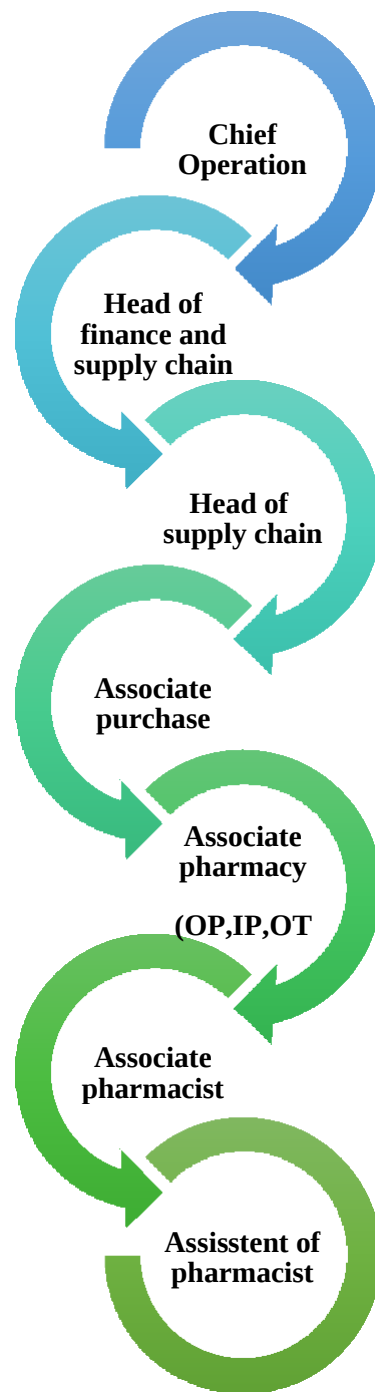
The Hospital offer chain provides the suggests that through that prescription medicines are delivered to patients. Supply chain management (SCM) of care sector is presently at its process moment. Being a extremely fragmented sector in Republic of India, it's a extremely difficult task to integrate the various processes.

“The care offer chain involves the flow of the many completely different product varieties and therefore, the participation of many stakeholders. the most purpose of the care offer chain is to deliver product during a timely manner, so as to satisfy the requirements of suppliers. supported their functions, stakeholders within the care offer chain may be divided into 3 major groups:

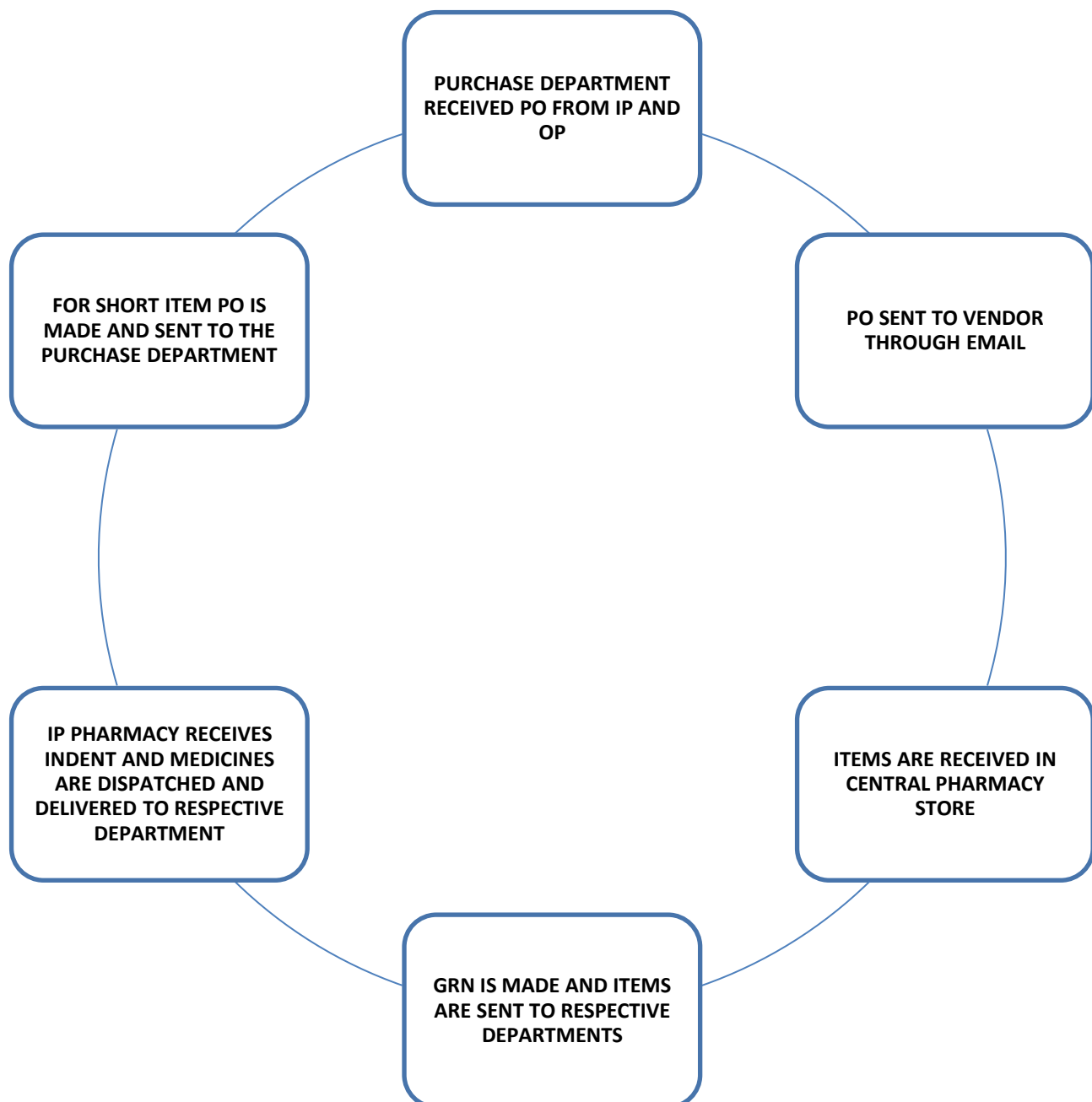
producers, purchasers, and providersciated with its offer chain. care holds a significant stake within the service economy”.FUNCTIONS OF HOSPITAL PHARMACY:

1. Forecast of demand
2. Selection of reliable suppliers
3. Prescribing specifications of the required medicament
4. Quality control of purchased goods
5. Distribution of medicaments in the wards
6. Dispensing of medicaments to out-patients
7. Drug information source in hospitals
8. Implement recommendations of the pharmacy and therapeutic committee

ORGANOGRAM OF SUPPLY CHAIN DEPARTMENT



FLOW CHART OF HOSPITAL SUPPLY CHAIN



PROJECT REPORT-A

ABSTRACT

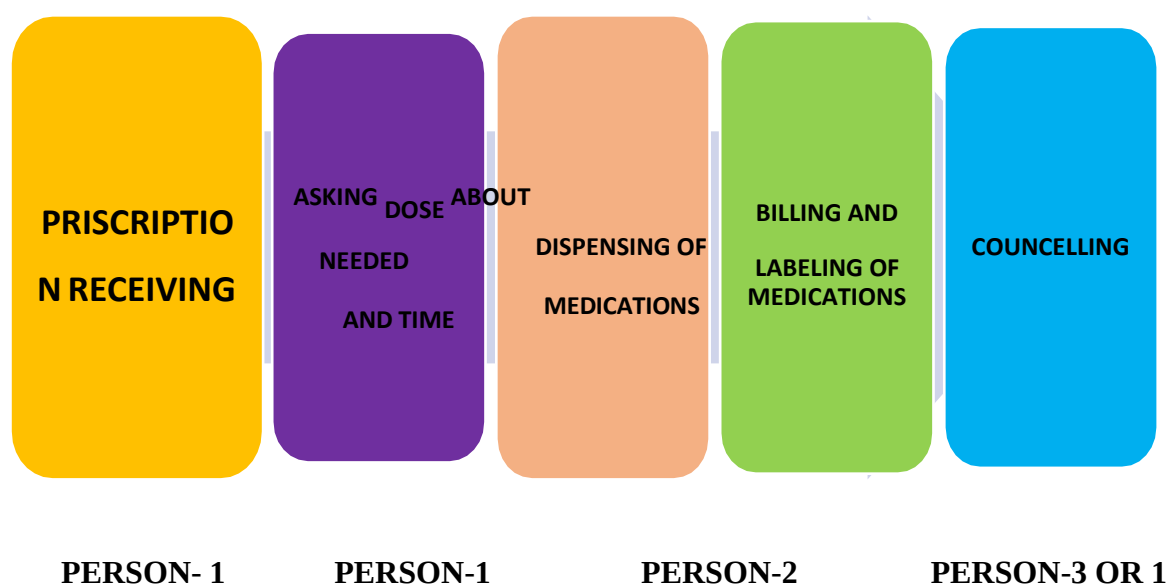
Drug turnaround time is the interim from the time a medicine request is composed electronically to the time the prescription was regulated. Observing drug turnaround time in inpatient and outpatient settings enables association to gauge the effect of their proficiency of patientcare. The point of the examination is to evaluate the turnaround time in inpatient pharm act and outpatient drug store to recognize the normal time to do different procedure at inpatient drug store and OP drug store To discover the postponements in the request and conveyance arrangement of IP Pharmacy (In-tolerant drug store) and OP (outpatient drug store) and make sense of the normal complete time devoured in conveying medications and medicinal consumables to the patients and furthermore To discover the pinnacle long periods of indent. A period movement study was done in the inpatient drug store and outpatient drug store at ZYDUS clinic. An example estimate oft300 indents was taken in patient drug store and test oft100 remedy was taken in outpatient drug store by utilizing nonprobability advantageous inspecting technique. Both essential and optional information has been utilized in the investigation. The optional information was gotten from the HINAI WEB CONNECTED CARE SOFTW ARE, which was utilized in the drug store. Microsoft exceed expectations was utilized for information examination. Conclusion: The overall TAT of OP was round 11min. As we came to know that highest number of indents were received by IP pharmacy was on Monday and Friday. The results of the study will benefit in improving TAT of the pharmacy indents and most importantly the patient care.As we can see that dispatch time and delivery time is more than expected but overall average TAT for IP pharmacy is 66 min with some outliers. Because of the pneumatic delivery system, the TAT has been in Control. The highest number of indents were received between 7 AM to 8 AM. So that is the busiest time of the day.

INTRODUCTION

Drug mistake is delineated as "any preventable occasion that will result in improper medicine utilization or hurt to persistent while the prescriptions are inside the administration of human services callings. "Turnaround time (TAT) is the absolute time taken in the middle of the accommodation of a procedure/task for execution and the arrival of the total yield to the client/client. Turnaround time is one of the measurements used to assess working framework planning calculations. Prescription mistake is characterized as seems to be "any preventable occasion that may prompt improper drug use or mischief to understanding while the meds are in the control of the social insurance proficient". Numerous investigations have appeared electronic procedures for medicine requesting and medication apportioning are more proficient than Paper based frameworks since they are: (1) Instantly conveyed to the drug store when contrasted with manually written remedies by the doctor. (2) They are simpler to peruse when contrasted with duplicates of doctor's penmanship. (3) The required fields are altogether finished. (4) It is more clear to the drug specialist, diminishing the requirement for confirmation by telephone calls to the doctor who endorsed the medication. Studies have appeared there was 64% of decrease in turnaround time when electronic procedures are utilized.

A Study on Turnaround Time of IP and OP Medicines at Zydus Hospital

FLOW PROCESS OF OUTPATIENT PHARMACY



❖ RATIONALE

Each Health association will love to have their own Pharmacy to satisfy the client need. It has been extremely basic territory of the Hospital. Roughly 40 percent of medical clinic cost, for example in any event around half of the emergency clinic materials spending plan is represented drugs and pharmaceutical supplies. Accessibility of the correct medication at the perfect time at ideal spot is the way to the medicinal services offices. Outcomes of deferrals in prescriptions can be heartbreaking to understanding due to non-accessibility of the correct medication at the perfect time.

❖ RESEARCH QUESTION

Does the hospital pharmacy system comply with the standard turnaround time in medication supply in the in-patient pharmacy and out-patient pharmacy department?

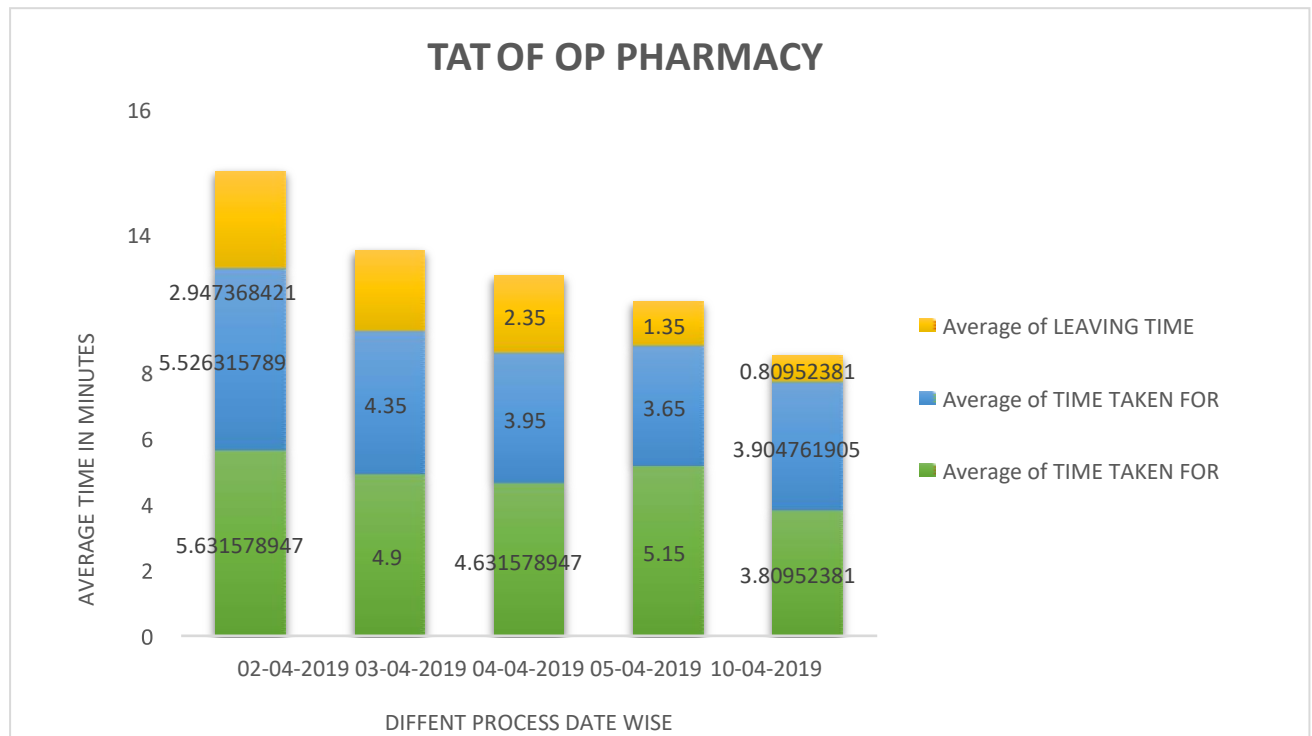
❖ OBJECTIVES

1. To identify the TAT of OPD pharmacy
2. To identify the TAT of IPD pharmacy.
3. To identify the factors which are responsible for delay of TAT.
4. To identify the peak hours of IP PHARMACY.
5. For comparison of actual TAT with standard TAT IN OP and IP pharmacy.
6. To identify the gap time between all the processes in TAT.

❖ DATA COLLECTION AND METHODOLOGY

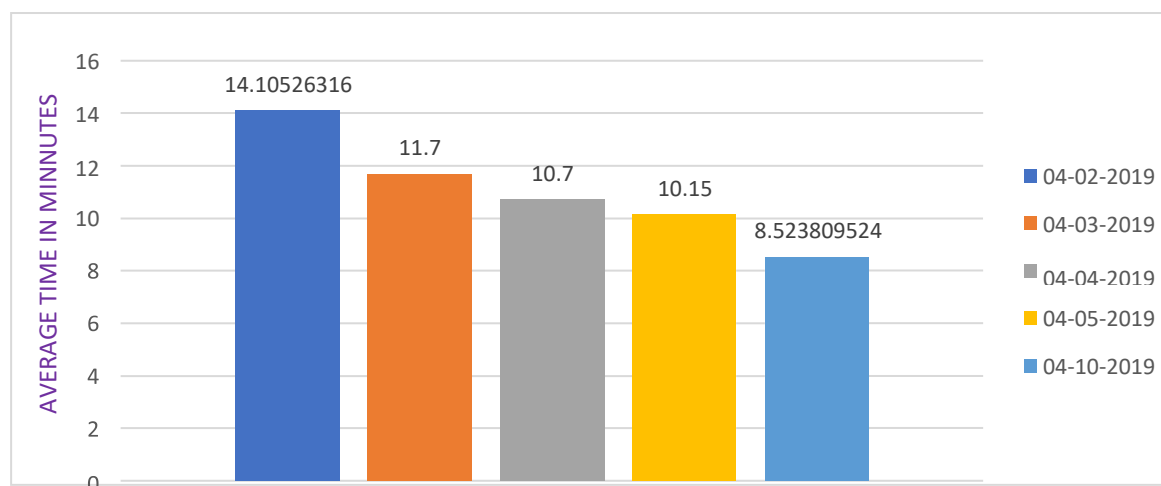
A Prospective Observational study in the In-Patient Pharmacy Department and out-patient pharmacy department of Zydus hospital, Ahmedabad. Sampling was done by using nonprobability convenient sampling method. Both primary and secondary data has been used in the study. The secondary data was obtained from the HINAI WEB CONNECTED CARE SOFTWARE, which was used in the pharmacy. The study was undertaken for a period of 14 days with a sample of 300 indents from in-patient department and 100 patients from out-patient department. The data collection was done manually in the in-patient department and from google forms in out-patient department. Pharmacy. The data was analyzed by using Excel. The collection of data approval for conducting the study was obtained from HOD of Supplychain.

DATA ANALYSIS AND INTERPRETATION

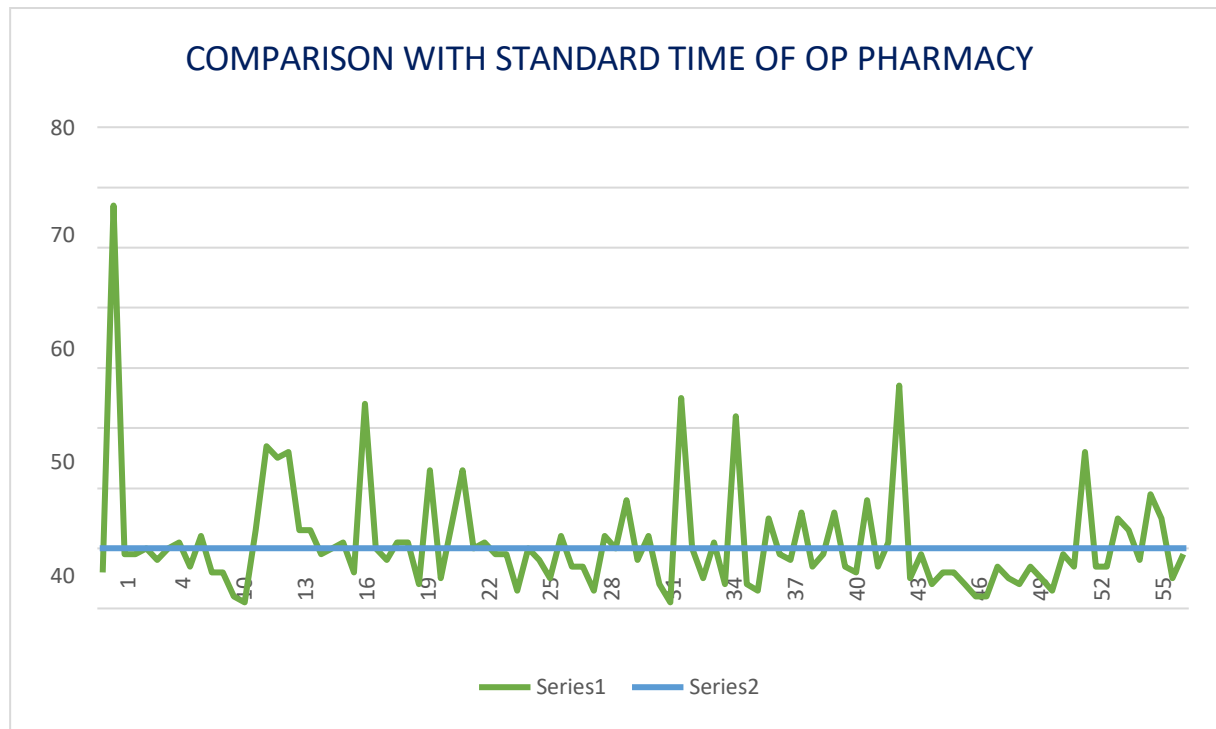


- Hear in the chart it is depicted average time for every process done in the outpatient pharmacy on the daily bases.
- As we can see the average dispatch time and billing time is highest on 2nd of April.
- To reduce the average dispatch and billing time the management should recommend automated online prescription by doctor and conformation of patient should be sent to the pharmacy about the number of days for which they want the medicine

EVERYDAY AVERAGE TAT OF OP



As we can see the overall TAT of OP is around 11min. It varies around
+3 to -3min day-wise



The standard TAT of OP pharmacy is 10 min.

But the actual time varies on the daily bases and there are some outliers too.

PER DAY INDENT FREQUENCY

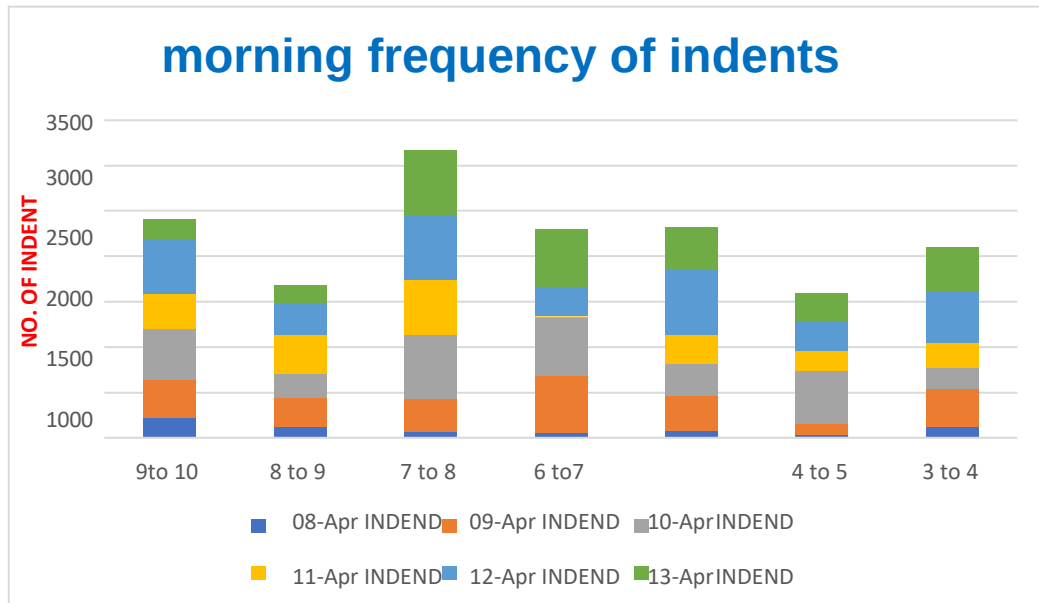
INDENT	DAY
8623	MONDAY
6700	TUESDAY
8226	WEDNESDAY
6458	THURSDAY
8610	FRIDAY
7222	SATURDAY

HOUR WISE INDENT FREQUENCY

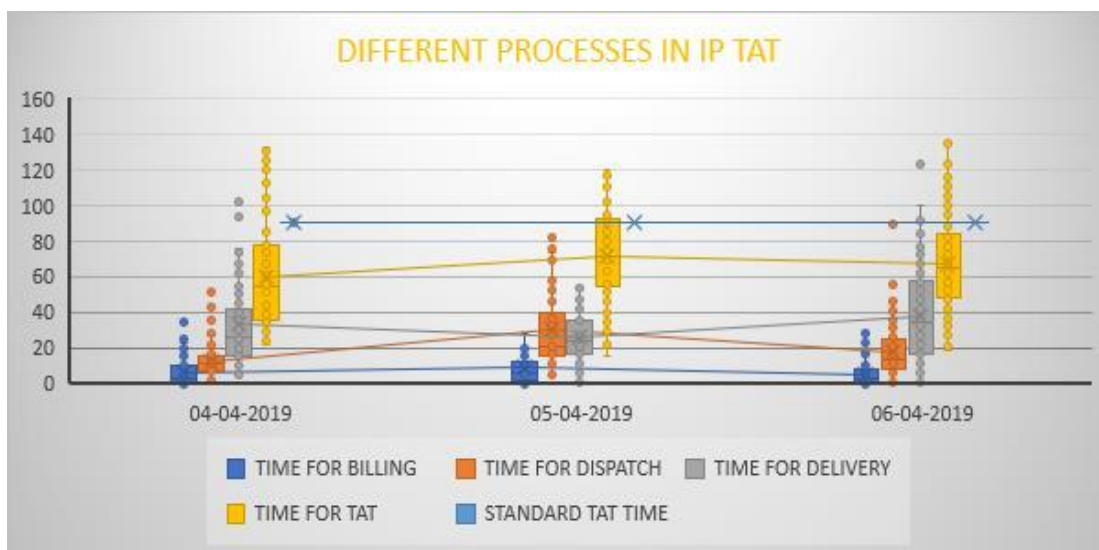
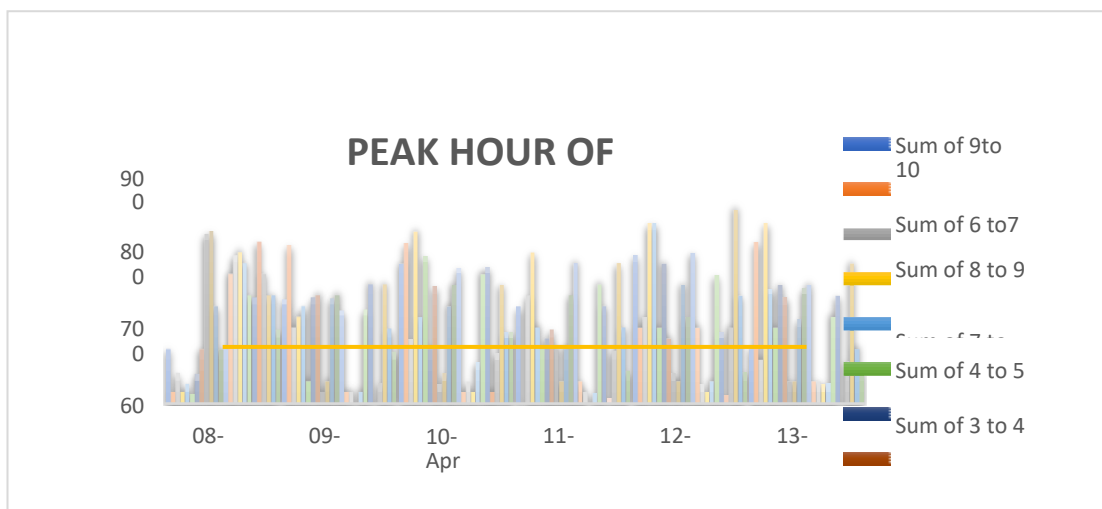
DATE	08-Apr	09-Apr	10-Apr	11-Apr	12-Apr	13-Apr
HOURS	INDEN D	INDEN D	INDEND	INDEN D	INDEND	INDEND
9 to10	221	412	572	386	591	224
8 to 9	120	323	259	435	354	196
7 to 8	65	366	702	604	719	721
6 to7	52	631	639	13	319	648
5 to 6	77	389	349	324	720	457
4 to 5	37	112	589	220	322	319
3 to 4	119	422	233	266	574	483
24 to 01	224	452	468	295	280	424
23 to 24	675	67	77	235	122	97
22 to 23	687	109	122	91	106	91
21 to 22	389	419	408	240	487	336
20 to 21	223	453	491	438	343	459
2 to 3	221	371	540	576	606	491
19 to 20	532	65	63	97	326	90
18 to 19	591	63	88	55	79	94
17 to 18	624	17	55	10	49	78
16 to 17	439	373	537	495	512	367
15 to 16	568	69	165	44	106	81
14 to 15	422	495	544	398	286	432
13 to 14	648	15	70	23	33	12

We can see in the table and in graph that the highest number of indents

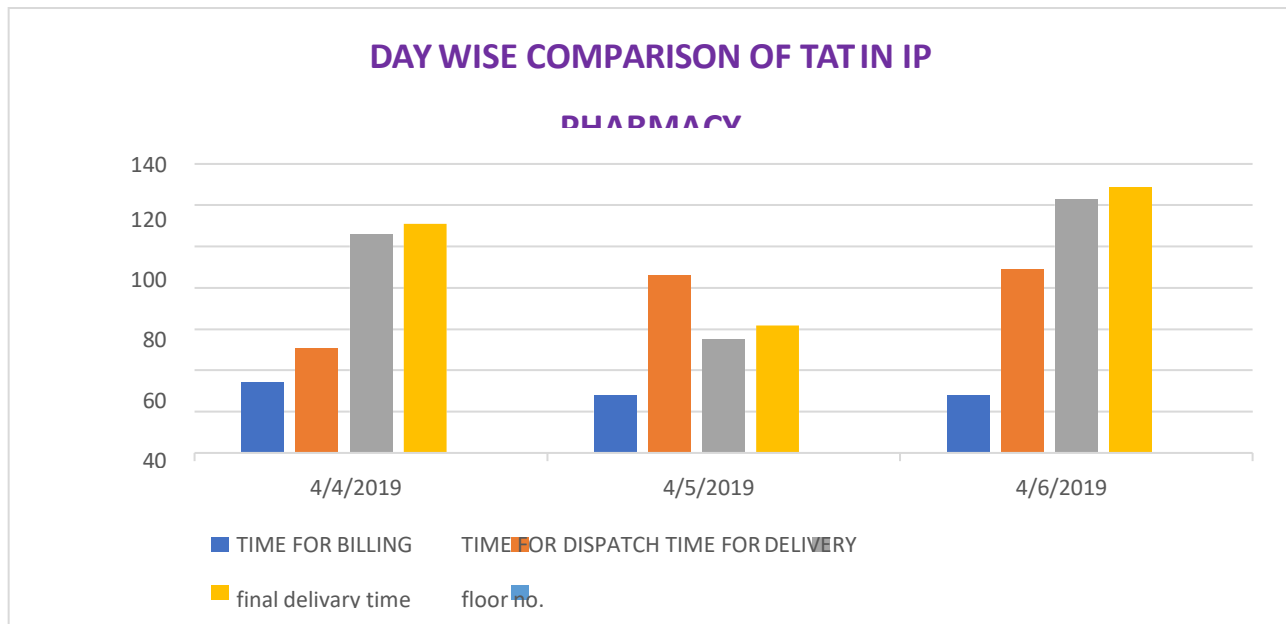
were received between 7 AM to 8 AM. So that is the busiest time of the day.



And 12 AM to 1 AM is the time where highest number of indents are received by the IP pharmacy.

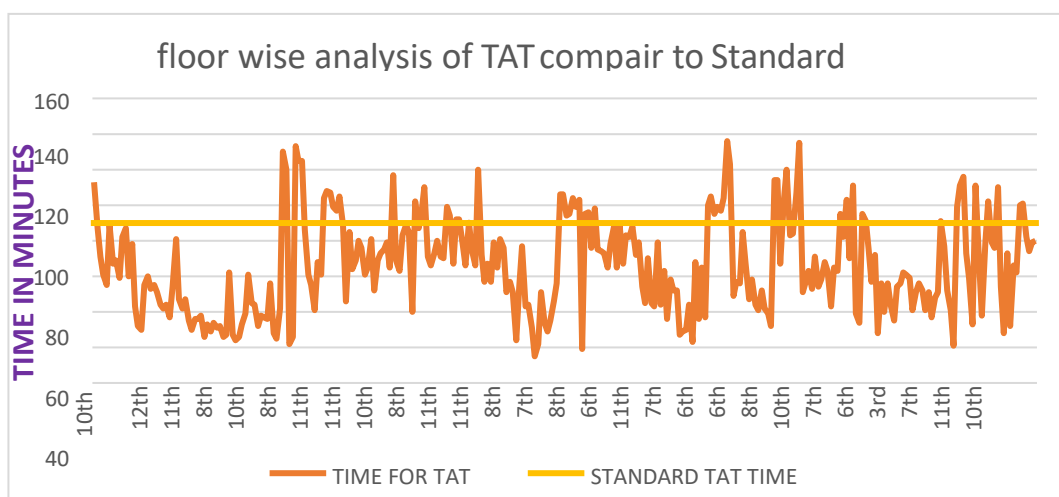


- The Standard average TAT for IP pharmacy is 90 min according to NABH.
- As we can see that dispatch time and delivery time is more then expected but overall average TAT for IP pharmacy is 66 min with some outliers
- Because of the pneumatic delivery system, the TAT has been in control.

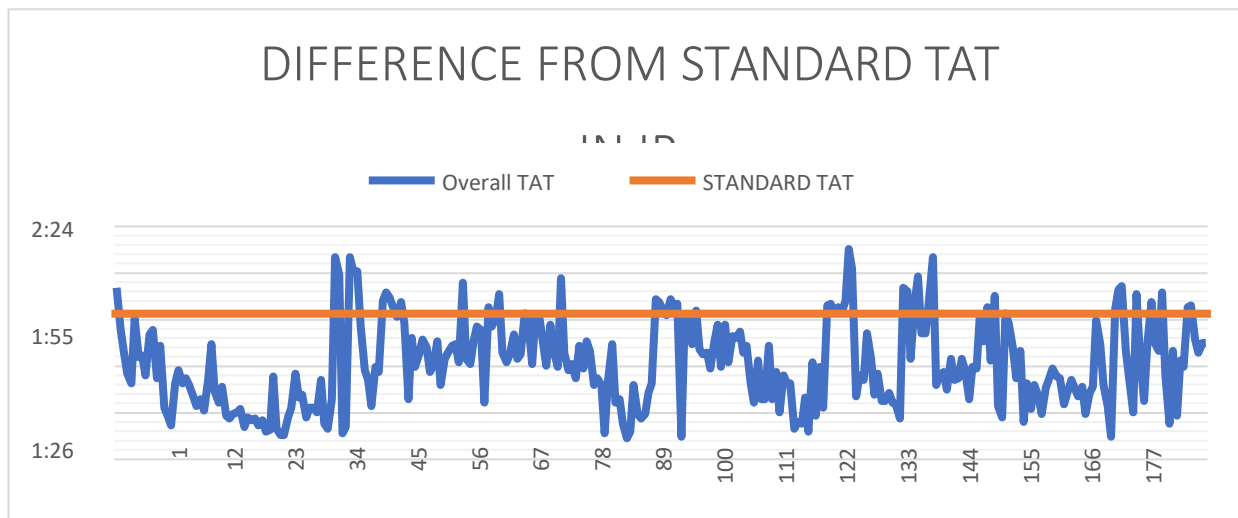


As we can see that delivery time and dispatch time is highest in all these three days of observation.

And some days the dispatch time is more than delivery time which is not a good sign for optimum delivery system.



- From above graph we can interpret the TAT for each floor and compare that with standard time for TAT.
- We can see that 10 TO 15 % OF indents go above the standard timing.



- If we compare to standard overall TAT of IP pharmacy is very good

Yes, some outliers are always there but we can correct them by

doing all the intermediate processes on time and use the system optimally.

❖ RECOMMENDATION AND CONCLUSION

FOR OP PHARMACY

PROMPTNESS

HELPED BY A
SINGLE PERSON AT
SINGLE WINDOW

REGULAR
STOCKING

RTS BEEN SHOULD
BE ADDED

UPDATED
FORMULARY IN THE
INVENTORY

SHOULD SET (EOQ)
FOR
UNAVAILABILITY OF
MEDICINES

ENOUGH
KNOWLEDGE OF
PHARMACIST

EVERYDAY
FEEDBACK SYSTEM
FOR EMPLOYEE BY
PATIENTS

IMPLEMENTATION FOR IP PHARMACY

- 1. Indent should be printed and dispatched immediately as they arrive in the system so that attendants do not have to wait for them.**
- 2. Packed indent should be kept in a separated bin/bucket so that attender does not need to find for their indent.**
- 3. Return to stock should be done every couple of hours to avoid high workload.**
- 4. A separate bin should be provided for return to stock also.**
- 5. Double entry system should be done by both sides to avoid pneumatic errors.**
- 6. we should send the packed indent as soon as possible to their respective wards.**
- 7. Nursing department should be provided proper knowledge about medication so that can reduce the medication error while sending indent electronically.**
- 8. optimum item should be written in the indent so that can reduce the medication return to IP departments**

PROJECT REPORT-B

ABSTRACT

Inventory Management of medications plays a critical role in clinic the executives. Medication inventory control of emergency clinic drug store is exceptionally fundamental to give constant strong administrations. The stock administration of medications is basic, as it is antagonistically influenced by the utilization rate and acquiring cost of medications. The point of the examination is to keep up a base interest in inventories to boost the productivity and to keep up an ideal size of stock for effective and smooth running of Hospital drug store. To assess the stock coastwise. Inspecting was finished by utilizing nonprobability helpful examining technique. Both essential and optional information has been utilized in the examination. The optional information was acquired from the HINAI WEB CONNECTED CARE SOFTWARE, which was utilized in the drug store. – Secondary information of most recent three months was gathered by HMIS (HINAI) which contains 3315 things. Out of 3315, 7% (247), 11% (372) and 81% (2696) things were observed to be in A, B and C classes separately whose use of a quarter of a year was observed to be 106121151, 12435149.7 and 5580365.17 individually. VED report is additionally gathered from HMIS which contains 2015 things. Out of 2015, 30% (611) things, 55% (1108) things and 15% (293) things were observed to be from V, E and D class individually whose use of a quarter of a year was observed to be 70% (47638645.06), 28% (19146284.86) and 2% (1255965.129) separately. At that point, joined ABC-VED examination was performed and the correlations of results were displayed. HML examination we found that we have 4% of things in surprising expense list, 5% of things in medium and 92% of things in the ease list.

INTRODUCTION

Pharmacy store is horribly important for the clinics since it gives backup administrations to the emergency clinics. The need of drug store will increment with the extension of clinic in size. No medical clinic will exist while not drug store. since the assets are limited, there's should use the overall assets reasonably. The point of clinic drug store the board is to keep up the persistent give of prescription for the duration of the time. a great deal of assortment of patients might be presented with improved medication the executives just if there should be an occurrence of balanced medication. Logical ways should be acclimated expand the originate from venture at least worth.

Each medication might be thought of significant and there's a need to deliver frightfully abnormal state of administration. Accordingly, the administration should assemble conservative approaches of medication the executives for conventional usable conditions to fulfill the interest changes. High worth and utilization medicine are accessible need that causes pleasant clinical and financial effect. At beginning, it's important to spot most costly drug. Drug store stock administration might be a convoluted anyway significant technique at interims the arrangement framework. while not sufficient drug store stock administration rehearses, clinics run the opportunity of not being able to supply patients with the premier satisfactory prescription once it's generally required. moreover, drug stores' administering examples and medication decision choices could have a prompt outcome on the reasonableness of consideration. Using prescription that are non-contracted or not on the model could likewise be costlier to the patient or could finish in a not exactly anticipated remuneration. Also to quiet wellbeing and money related issues, requesting prohibitive needs concerning medication recognizability, stock inclusion and stock administration hoist the significance of keeping up successful administration over medication inventories in the present consistently extending consideration consistence environment. Drug stores will the executives numerous components at interims the drug store stock administration and drug store income cycles that may bolster higher results for patients and improve absolute bottom line for offices. This whitepaper gives sees on driving practices and inside controls concerning procural, charge depiction and upkeep, interest frameworks, discernibility, stockpiling, transfer and isolation of obligations. These administration components will give a reason for steady quality, higher fiscal execution and improved prohibitive consistence once implemented reasonably and clung to all through every day tasks. Stock administration includes a significant job inside the give chain. Among shifted SCM issues, stock administration might be a greater degree significant to the entire give chain.

Stock administration has been perceived joined of the preeminent important capacities that has colossal effect on their general execution. give chain stock administration is focused on end-client request and goes for up customer administration though bringing down pertinent wort

DIFFERENT TYPES OF INVENTORY METHODS

No.	Category	Criteria	Application
1	ABC Analysis	Annual (Consumption rate* Price Rs/Piece)	For material which go into the production
2	XYZ Analysis	Closing stock value of inventory at the time of physical stock verification	A category status e.g. A category in X: watch C category in X: reduce stock level
3	HML (High, Medium, Low) Analysis	Unit price	To keep in check high cost items.
4	VED Analysis (Vital, Essential and Desirable)	Criticality or Loss of production	Spare and manufacturing equipment are maintained and controlled by this method.
5	FSN Analysis (Fast, Slow and Non-Moving)	Issues from store give idea. Dispose non-moving inventory	It is used to fast moving items.
6	SDE Analysis (Scars, Difficult and Easily available)	Procurement difficulties (Source of Procurement)	To keep vigil on accessibility, ought to be remembered in stock keeping trouble in acquirement and may pursue forward purchasing
7	GOLF Analysis (Govt., Ordinary, Local and Foreign)	Govt.- Lead time more for retrieval, advance payment Foreign- Procedure long through bank, port, permission, duty etc.	Government supplies need patience to get material; canalizing agency can be used, foreign procurement lead time factor counts.

8	SOS Analysis (Seasonal and Off- Seasonal)	Soya bean, farm produce, high of season price, low in harvest season.	Should buy in harvest season to get price advantage and good quality supply.
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RESEARCH QUESTION

Is the hospital pharmacy comply with inventory management criteria of hospital regulations?

OBJECTIVES

1. To maintain a minimum investment in inventories to maximize the profitability.
2. To maintain an optimum size of inventory for efficient and smooth running of Hospital pharmacy.
3. To evaluate the inventory coastwise

DATA COLLECTION AND METHODOLOGY

A Prospective Observational study in the In-Patient Pharmacy Department of Zydus hospital, Ahmedabad. Sampling was done by using nonprobability convenient sampling method. Both primary and secondary data has been used in the study. The secondary data was obtained from the HINAI WEB CONNECTED CARE SOFTWARE, which was used in the pharmacy. – Secondary data of last three months were collected by HMIS (HINAI). Data was transferred in MS EXCEL and perform different inventory management techniques like ABC, VED, XYZ and HML analysis. The collected data was intered into excel and analyzed using MS Excel.

Flow chart of Methodology

Step 1: **Data Collection**- consumption report is collected from HMIS which contains 3315 items.

Step 2: **ABC analysis** -ABC analysis was used to categorize the drugs according to their relative importance. Three categories are formed in which category A contained high value drugs whereas category B contained intermediate and category C contained lower value drugs.

Step 3: **VED analysis** -VED analysis was performed to categorize the drugs by their critical value. Drugs that are more critical and act as lifesaving comes under category V whereas

essential drugs whose importance is lower than V comes under category E and drugs which are used for minor or limited illness comes under category C.

Step 4: Coupling of ABC and VED analysis A (3×3) matrix was formed by the coupling of ABC and VED analysis.

Step 5: HML ANALYSIS:- The High, medium and Low (HML) classification follows the same procedure as is adopted in ABC classification. Only difference is that in HML, the classification unit value is the criterion and not the annual consumption value. The items of inventory should be listed in the descending order of unit value and it is up to the management to fix limits for three categories.

DATA ANALYSIS AND INTERPRETATION

ABC ANALYSIS

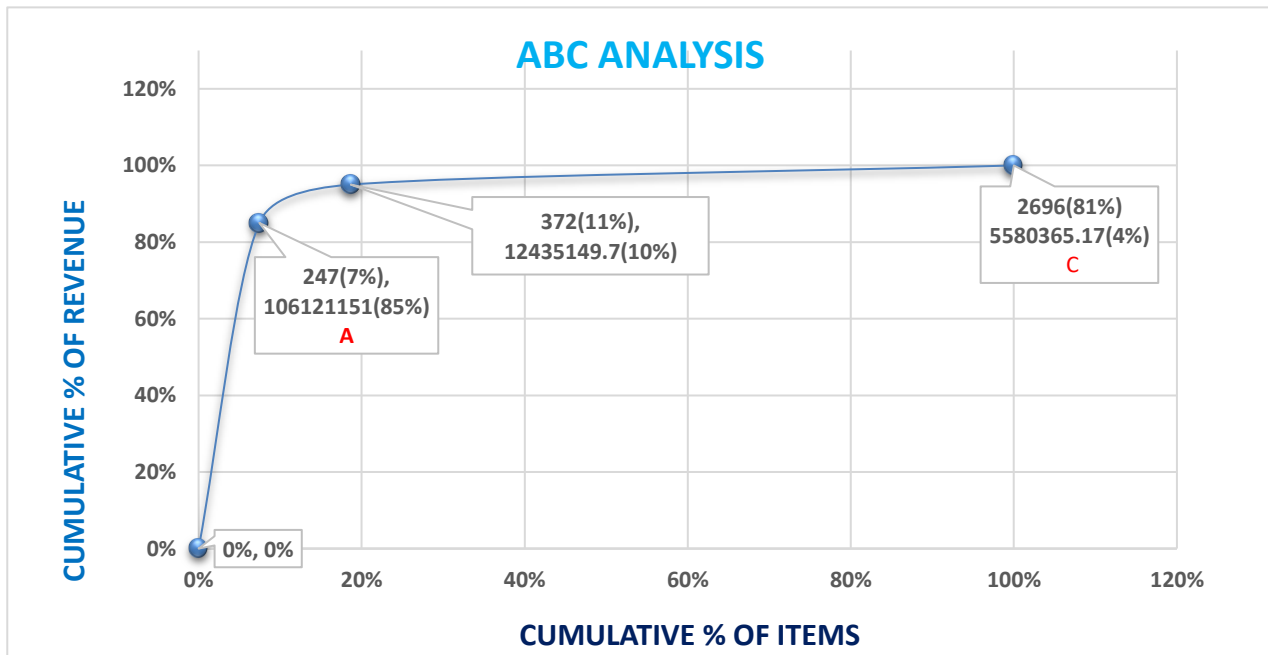
	STANDARD BY NABH	
CLASS	QUANTITY	REVENUE
A	10	70
B	20	20
C	70	10

- As we can see in the table NABH has set up certain criteria for the inventory in hospital pharmacy.

CLAS S	QTY	% QTY	Cumulative OF ITEM	% REVENUE	% REVENUE	Cumulative OF Revenue
A	247	7%	7%	106121151	85%	85%
B	372	11%	19%	12435149.7	10%	96%

C	2696	81%	100%	5580365.17	4%	100%
TOTAL	3315	100%		124136666	100%	
L						

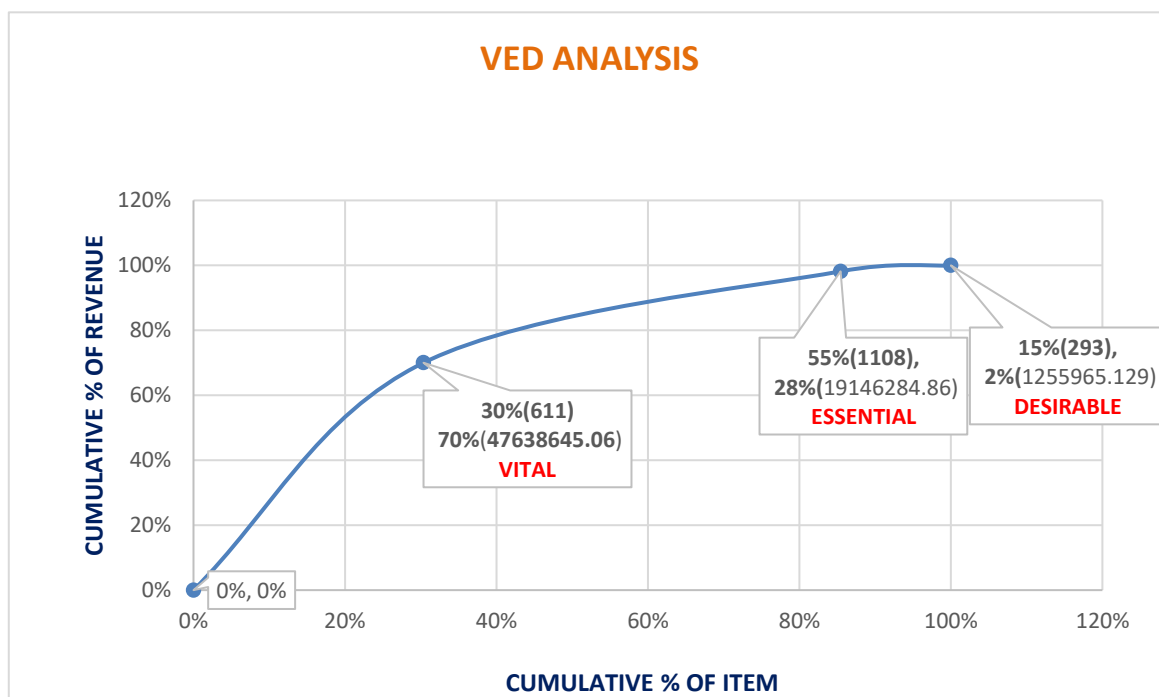
Table of ABC analysis



The graph of ABC analysis shows that 7% (247), 11% (372) and 81% (2696) items were found to be in A, B and C categories respectively whose expenditure of three months was found to be 106121151, 12435149.7 and 5580365.17 respectively. The cut-offs were not exactly at 70/20/10% and differed marginally, which is permissible.

Table of VED analysis

VED CLASS	cumulative						CUMULATIVE
	QTY	% QTY	% OF	REVENUE	%	% OF	
			ITEM		revenue	REVENUE	
VITAL	611	30%	30%	47638645.06	70%	70%	
ESSENTIAL	1108	55%	85%	19146284.86	28%	98%	
DESIRABLE	293	15%	100	1255965.129	2%	100%	
TOTAL	2012	100%		68040895.05	100%		

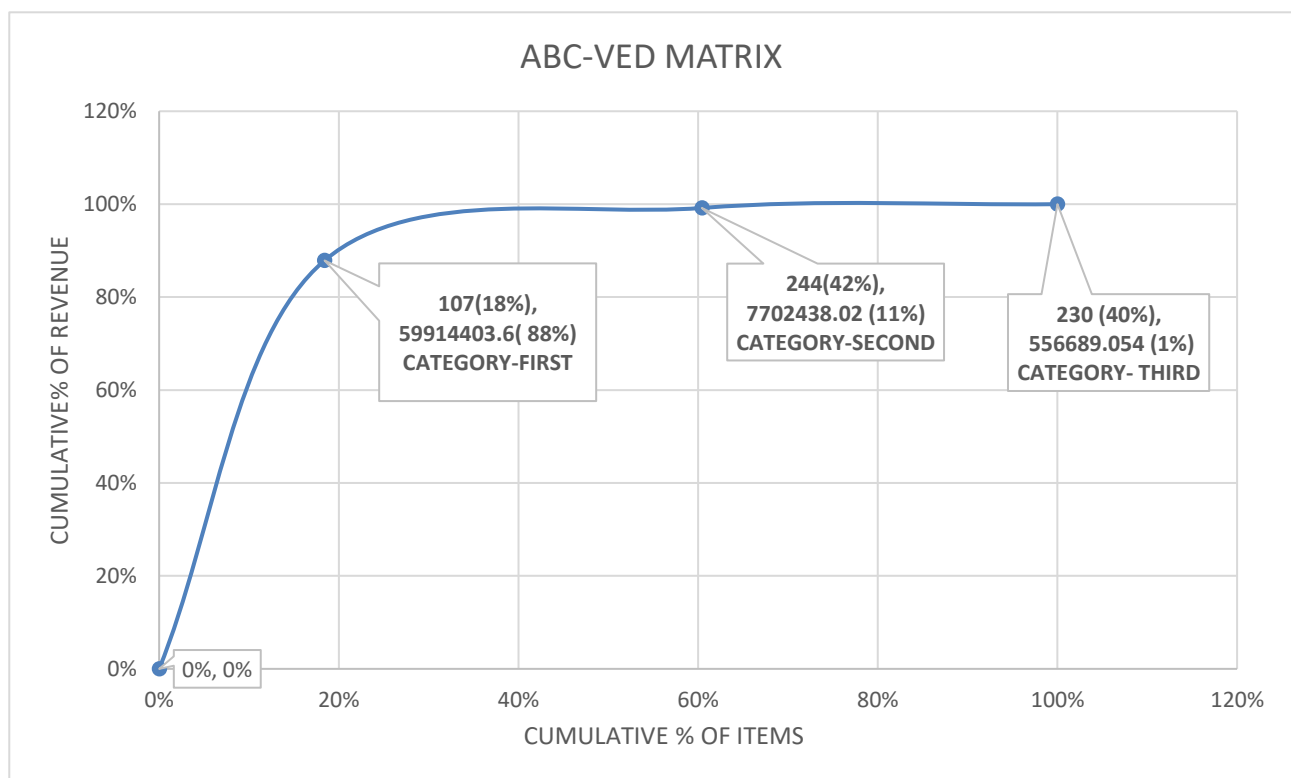


The VED analysis graph shows that 30% (611) items ,55% (1108) items and 15% (293) items were found to be from V, E and D class respectively whose expenditure of three months was found to be 70% (47638645.06),28% (19146284.86) and 2% (1255965.129) respectively. There are 2012 items in drug formulary whose expenditure was 68040895.0

Class	Quantity	%Quantity	Cumulative %	Revenue	% Revenue	Cumulative % revenue
CLASS1	107	18%	18%	59914403.6	88%	88%
CLASS2	244	42%	60%	7702438.02	11%	99%
CLASS3	230	40%	100%	556689.054	1%	100%
TOTAL	581			68173530.6	100%	

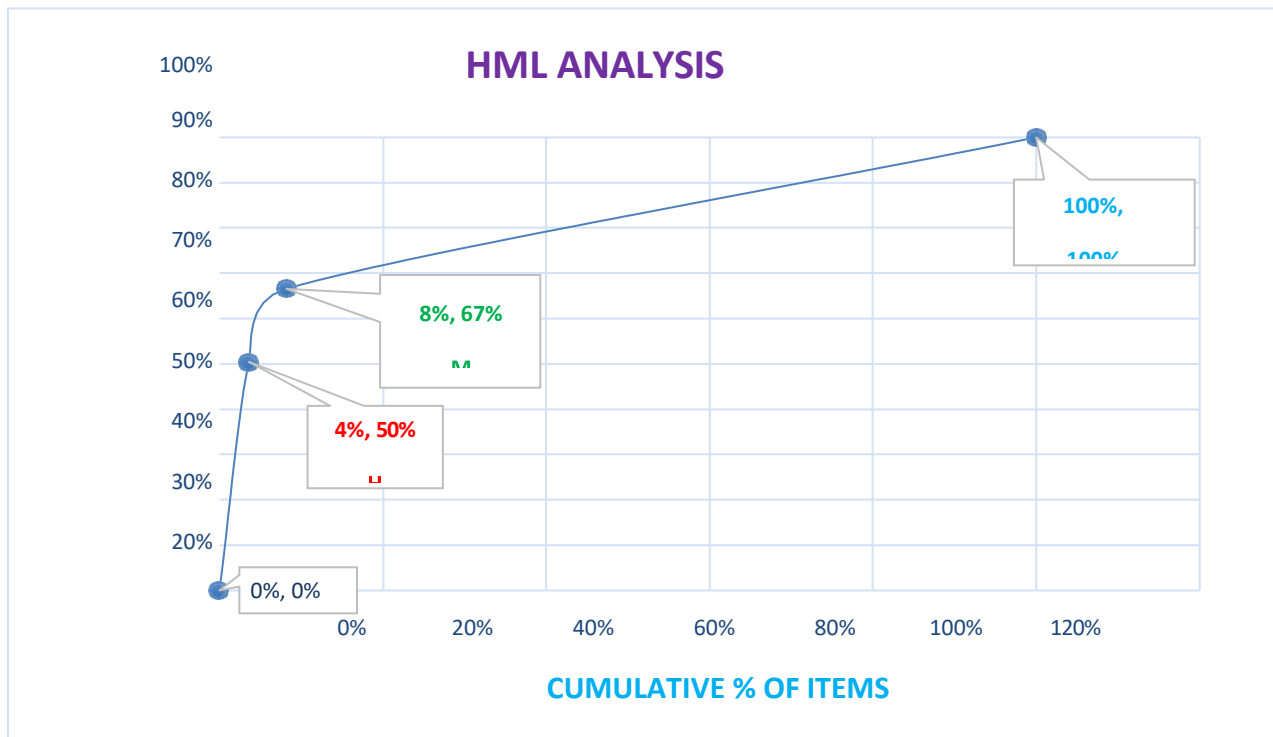
In a combination of ABC and VED analysis, the matrix makes it possible to focus on 107 (18%) items are belonging to category I for strict managerial control as these items are either expensive or Vital. The quarterly expenditure of these items was 88% of total expenditure. Class 2 is having 244 (42%) items whose quarterly expenditure was 7702438.02

(11%) and class 3 is having 230 (40%) of items whose quarterly expenditure was 556689.054 (1%) of total expenditure.



HML- ANALYSIS

CLASS	ITEMS	% OF ITEMS	CUMULATIVE % OF ITEMS	COST	% OF COST
H	18	4%	4%	51270.17189	50%
M	23	5%	8%	16390.06968	16%
L	459	92%	100%	33935.10273	33%
	500	100%		101595.3443	100%



❖ As we know that inventory of VED report has been classified into three sections

- 1) High cost
- 2) Medium cost

3) Low cost

So, from analysis we found that we have 4% of items in high cost list, 5% of items in medium and 92% of items in the low-

Conclusion

ABC analysis is the method which is used for identifying the items which have largest impacts on organization's overall inventory cost. ABC is very important inventory model and recommended by many researchers as it is also dealing with consumption of materials. Inventory management has several benefits like control of over stock materials, better material procurement procedure, better space management, reduced lead time purchasing of required quantity materials and provides right incoming quantity of inventory with better material handling .VED analysis identified the critical items of the Hospital pharmacy which is needed for patient safety.

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