

Impact of Knowledge, Attitude and Practices Concerning Pharmacy Discharge Medication

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EXECUTIVE SUMMARY

Electronic pharmacy refers to integration of digital technologies into hospital pharmacy services to enhance medication management, dispensing accuracy and patient safety. This system enables electronic prescribing, real-time inventory management, automated dispensing and seamless communication between physician, pharmacists and patients. It helps in clinical decision making through drug interaction alert, dosage optimization, tracking medication history. Discharge medication management is a critical component of patient care that ensures continuity of treatment during the transition from hospital to home. Pharmacist led intervention supported by electronic health record and clinical decision support system plays a vital role in identifying shortcomings, optimizing therapies and educating patients about proper medication use. Strengthening discharge medication practices through structured protocols and digital solutions can significantly improve patient safety and quality of care.

INTRODUCTION

Overview

Inpatient and outpatient pharmacy operations are distinct yet interconnected facets of pharmaceutical services within a healthcare system. They cater to different patient needs and often have specialized workflows and management strategies. Both inpatient and outpatient pharmacy operations strive for efficiency and patient safety. Streamlining departmental workflows in both settings can significantly reduce wait times for medication retrieval and improve patient satisfaction.

Inpatient pharmacy operations

Inpatient pharmacies primarily serve patients admitted to the hospital. Their operations are focused on ensuring the in-patients receive accurate and timely medication throughout their stay.

The scope of inpatient pharmacy includes:

Medication dispensing: Automated dispensing or dispensing medication for administration within the hospital setting. This often involves unit-dose dispensing, where medications are prepared individually, ready to be delivered as customized health-kit.

Clinical pharmacy services: Providing clinical support to health care teams, including medication order review, drug information services, therapeutic drug monitoring, and participation in patient rounds. Integrating hospital data with Pharmacy EMR

Formulary management: Managing the hospital's list of approved medications to ensure cost effectiveness and appropriate drug usage.

Sterile compounding: Preparing sterile medications such as intravenous (IV) solutions, and parental nutrition in a controlled environment.

Regulatory compliance: Adhering to strict regulations concerning drug storage, handling and dispensing within the hospital.

Inventory management: Maintaining a robust inventory of medications to meet the demands of various hospital units, often utilizing centralized distribution channels.

Automated dispensing stations: Some hospitals use automated dispensing stations on inpatient units to manage prescriptions, which remain under the control of main pharmacy unit.

Outpatient pharmacy operations

Outpatient pharmacies serve patients who visit the hospital for consultations, procedures or emergencies but are not admitted. They cater to hospital staff or home care patients.

Prescription dispensing: Dispensing medications for patients to take home, often requiring patient counseling on proper medication use, side effects and adherence.

Patient counselling: pharmacists play a crucial role in counseling outpatients for purchase of medications within premises particularly for medication reconciliation and improving adherence.

Emergency dispensing: Providing medications for emergency department patients.

Retail out letting: Many outpatient pharmacies offer retail services for over-the-counter medications and other health-related products.

Integration with clinical workflows: Outpatient pharmacies, especially those within hospital premises like E-Medix, are fully integrated with hospital workflows to deliver reliable and accessible services.

Technology integration: The use of pharmacy management software is increasingly important to manage billing, inventory and compliance and to meet patient expectations for automated services.

Legal aspects: The legal operation of these pharmacies requires a drug license, which regulates the quality and safety of drugs.

Introduction to Organization: A peer guided hospital tour can be elaborated as:

There are service excellence departments in west wing these are as follows

1st floor: Neuro surgical ICU, Neuro intervention Unit, OT

2nd floor: Department of Neurology

3rd. floor: Department of gynecology

4th floor: Department of Pediatrics

5th floor: Department of Orthopedics

6th floor: Department of Internal Medicine

Brief overview of the organization:

East wing

The ground floor houses services like emergency services, diagnostic (including non-invasive cardiology), OPD, radiology & nuclear medicine and Apex coronary care



- CTVS ICU/HDU, cardiac Cath labs, Cath recovery and operations theatres are housed on the first floor
- Dialysis unit, inpatient area and high dependency unit are located on the second floor of the hospital
- Third floor is completely covered with inpatient area
- The fourth floor continues with the inpatient area
- Fifth floor houses the blood bank along with the inpatient area
- Inpatient pharmacy in basement
- Outpatient pharmacy in ground floor near reception.

West Wing

An array of medical facilities available in this super specialty hospital helps the doctors to deal with any medical hazards with great efficiency. This, in turn, also ensures a high success ration. The following are some of the facilities that this hospital has -

Diagnostics - Radiology Services

Diagnostics – Pathology

Diagnostics - Neurophysiology Lab

Ground floor: OPD pharmacy, Basement: Inpatient Pharmacy

Research Aims

To analyse existing practices, common challenges across healthcare settings. Impact of pharmacist led interventions on medication safety, patient adherence and reduction of adverse events. (reconciliation, counselling, post discharge follows up). To explore the role of EMR in enhancing pharmacists' workflow efficiency for scalable and sustainable improvements while integrating it with HMIS.

Research Objectives

Interprofessional collaboration in discharge medication management

To know the attitude of patients while purchasing the medications from inpatient or outpatient pharmacy

Digital tools for post discharge medication education for improving adherence and follow up

To gauge the communication gaps between physician, patients and pharmacists at discharge

Continuity of care between hospital pharmacists and community pharmacists.

Secondary Research Objectives

Language, literacy and cultural barriers in discharge medication counselling

Standardized discharge medication protocols and impact on outcomes

Transition of care and challenges faced by pharmacist

Personalization of healthcare medication kit

NEED FOR THE PROJECT: To conduct a pilot study

To Know the health seeking behaviour regarding purchase of drugs from inpatient pharmacy and outpatient pharmacy

To assess interprofessional collaboration in discharge medication management

Shortage of technical staffs due to non-technical data overload

To gauge the communication gaps between physician, patients and pharmacists at discharge

Continuity of care between hospital pharmacists and community pharmacists

Procedure For The Project:

For Cash Patient:

First of all, information regarding all discharge patients given to CDM (Clinical data management staff) by nursing staff

- 1) Then CDM will meet patient/attendant and ask about his willingness regarding purchase of medicine from inpatient pharmacy if yes CDM will take the consent on discharge summary
- 2) CDM will inform the nurse to place the indent in HIS for all cash patient
- 3) Then nurse inform pharmacy by call that medication indent of particular patient has been placed in the HIS
- 4) Then the GDA (Ground duty authority) will deliver the medicine to the nurse, and the nurse will deliver the medicine to the patient informing the team leader nurse (via nurse's summary notes)

For Tpa Patient:

- 1) First of all, information regarding all discharge patient from both the wing given to CDM by nursing staff
- 2) Then CDM will meet patient/ attendant and ask about his willingness regarding purchase of medicine from outpatient pharmacy if yes CDM will take the consent on discharge summary
- 3) CDM will take the discharge summary to the OPD pharmacy
- 4) OPD pharmacy will call the patient and inform the cost and payment modalities
- 5) OPD pharmacy will deliver the medicine in a store and collect the payment

METHODOLOGY

The study uses mixed method data collection approach both quantitative and qualitative data gathering techniques to gain in depth understanding of how executives make decisions in automating AI based software decision making. Also, the conversations will address executive-level decision making procedures, risk perceptions, reimbursement considerations, 3rd party health insurances and assessment of commercial marketing plans.

The quantitative research will use structured survey as manifested by the SOP guidelines. The majority of survey shall be biased as rated on Likert scale (closed hospital setting), while a few open-ended questions will appear to elicit additional information.

Also, FRIN technique and secondary research work is supported.

MAX Super Speciality Hospital Saket East and West Block



- Study period: 2months
- Study design/type: Descriptive study (Observational)
- Study population: All the Discharge Patient from Max hospital East and West Wing
- Study Sample: 244 Discharge patient

A dept.: 139 Discharge Patient

B dept.: 105 Discharge patient

Study Tools

- 1) Questionnaire to take feedback of patients in process of discharge
- 2) Observation and In-depth interview of all stakeholders involved to study the attitude of the patient whether they are interested in taking medicine or not

Limitation Of Project:

- 1) Lack of Manpower: The project was done with only one CDM covering both A and B
- 2) Lack of cooperation with the staff: Sometime nurse did not inform CDM what are the exact number of patients getting discharge.
- 3) The study cannot be generalized as it is carried out in a closed setting (in contrary to remote workplaces)
- 4) Data entry validation checks, discrepancy management
- 5) Implementation of restructured database design and barrier to entry

OBSERVATION AND RESULT

Total Number of patient discharge from A+B =244

A: 139

B: 105

Total Cash patient discharge in A: 92

Total TPA patient discharge in A: 47

Total Cash patient discharge in B: 68

Total TPA Patient discharge in B: 37

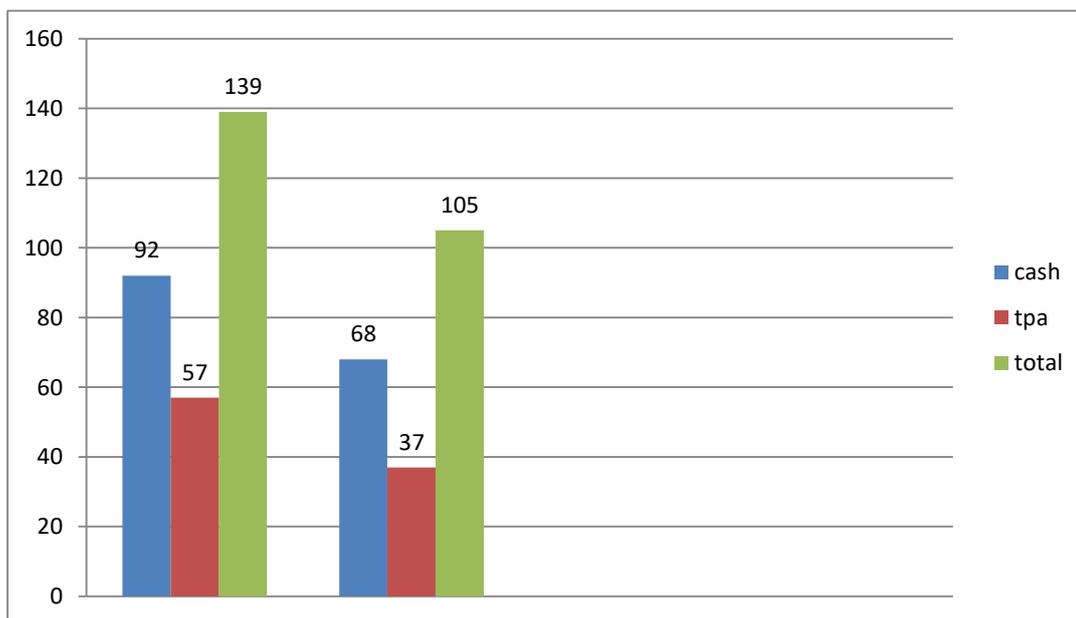
Average cash patient discharge per day in A: 4

Average TPA patient discharge per day in A: 2

Average cash Patient discharge per day in B: 2

Average TPA patient Discharge per day in B: 2

- Total Number of patient discharge from A+B=244
- A total: 139
- B total: 105
- Total Cash patient discharge in A: 92
- Total TPA patient discharge in A: 47
- Total Cash patient discharge in B: 68
- Total TPA Patient discharge in B: 37



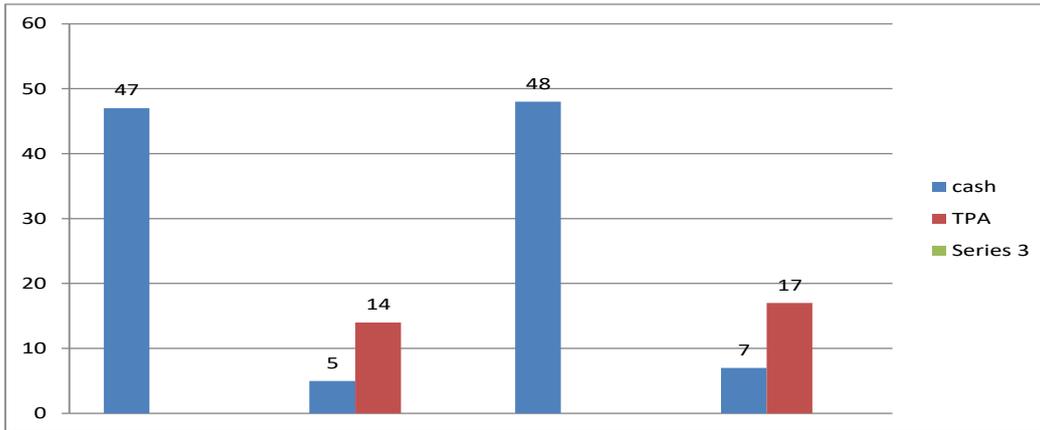
Interpretation:

Total number of cash patient discharged from A is 92 and TPA patient discharge is 57

Total number of cash pt discharge from B is 68 and TPA patient discharge is 37

- 1) Total Number of cash patient taken medicine from inpatient pharmacy (A) = 47
- 2) Total Number of cash patient taken medicine from outpatient pharmacy (A) = 5
- 3) Total Number of TPA patient taken medicine from outpatient pharmacy (A) = 14
- 4) Total Number of Cash patient Taken medicine from inpatient pharmacy (B) = 48
- 5) Total Number of cash patient taken medicine from outpatient pharmacy (B) = 7
- 6) Total Number of TPA patient taken medicine from OPD pharmacy(B) = 17

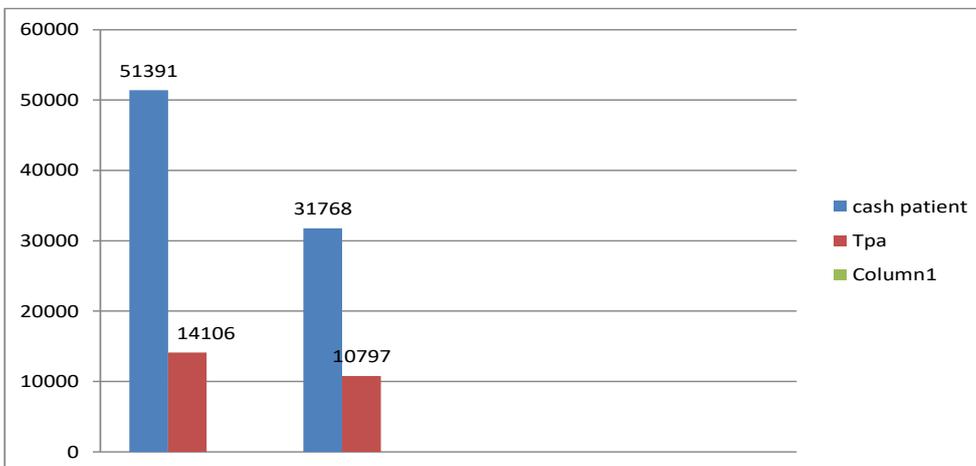
Graph:



Revenue Earned By Pharmacy:

- Total Revenue earned from cash Patient (A): 51391 RS
- Total Revenue earned from TPA patient (A): 14106 RS
- Total Revenue earned from cash patient (B): 31768 Rs
- Total Revenue earned from TPA Patient (B): 10797 Rs

Interpretation: Revenue earned from(A) pharmacy is higher than (B) pharmacy



RECOMMENDATIONS:

The Pilot project Discharge Medication was started with an aim to analyse the response of patients towards purchasing the medicine from the pharmacy and to identify the problem faced by the patient in buying the medicine from the pharmacy and evaluate the patient satisfaction. From this study we came to know that patients who are getting discharge are not interested in taking medicine from pharmacy and they prefer to take medicine from outside. The project had been conducted for 1 month study population was all the discharge patient from OPD/ward

Finally, a few recommendations are provided:

Problem faced during project survey:

- Indent was not put in time by the nurse

Recommendation:

One person should be identified in the nursing station to put the indent one time.

- Pharmacy did not acknowledge the indent in time so many times discharge patient got irritated leaving negative word of mouth communication.
- The nurses couldn't read Doctor's handwritten notes creating loopholes.

Recommendation:

Pharmacy should acknowledge the indent quickly so that discharge medication process does not hamper discharge process.

- Nurse put the intimation without informing the CDM which leads to failure to communicate with the patient especially cash patient (human in the loop model)

Recommendation:

Nurse should be trained to cooperate with CDM

- Less GDA in OPD pharmacy patient attendant has to go down in ground floor to bring the medicine

Recommendation:

GDA should be increased in OPD pharmacy as per the protocol of the project for TPA patient OPD pharmacy people or GDA should deliver the medicine in the room, but it was not their patient attendant has to go with CDM to the pharmacy to bring the medicine

- For International Patient nurse supervisor did not have the Interpreter number which make difficult for CDM to communicate with the international patient which hampers the discharge medication process.
- The International patient should be accompanied by Relationship executive and linguist

Recommendation

Nurse Supervisor should be given a responsibility of keeping contact number of the interpreter of international patient.

- Nurses except Team leader and Nurse Supervisor are not trained to put the indent quickly many nurses wait for the ward secretary and team leader to put the indent which delays the discharge medication process.

Recommendation:

Every nurse should be trained to put the indent on time. It has been observed while putting the indent nurse wait for the ward secretary.

- Senior Citizen Patient are not at all willing to take the medicine from max pharmacy.

Recommendation:

There is no discount for senior citizen from inpatient pharmacy. Some discount must be given to the senior citizen

- Discharge Summary is prepared late so there is delay in discharge medication process

Recommendation:

Discharge summary should be prepared as early as possible and at the end should be undersigned by Team leader Nurse (CDM)

SUMMARY AND CONCLUSION

Businesses today have seen a complete transition than they used to be a decade ago. Thus, it is imperative for business leaders today to expand their expertise across the domains and proactively make decisions to be an effective leader. At this juncture, it is also pertinent to share that both future and past are integral to the path adopted on this journey of excellence. Key functions include medication reconciliation- verifying and aligning the patient's pre-admission regimen with discharge orders to eliminate discrepancies such as omissions, duplications or dosing inaccuracies. Further the follow-up patients can be surveyed for medication errors, adverse drug events, and readmissions. Pharmacists should conduct thorough reviews, collaborate with prescribers to resolve issues, and provide patient counselling for medication adherence. Challenges persist demanding optimization of best practices in a pharmaceutical setting. The backbone of med express does not need smirks but rather a disciplined rigor to fix the system. Doctors aren't there for replacing AI with human judgement, but there should be a connect with pharmacists and nurses in a closed loop.

Shaping The Future Of Pharmaceutical Industry

Mc Kinsey report 2025 suggests India's pharmaceutical sector is shifting from cost-based generics to innovation and quality leadership, driven by S-curve of growth. This enables firms to embrace digital adoption, generative AI and end to end cost optimization. Key trends include adopting AI/digital twin adoption, increased supply chain resilience, transitioning from cost focused to value driven, agile models. Post covid-19, companies are prioritizing network flexibility to manage disruptions caused due to data overload and shortened lead times. Companies are focussing on optimizing the entire value chain-from R&D to commercialization-using lean 5.0 manufacturing principles and robust standard operating procedures to reduce waste and improve quality. Rewiring operational strategies for a fragile or next to normal transformative process for creating value and competitive advantage. Meanwhile targeting to improve efficiency, agility, flexibility and transparency as well as to enhance customer experience and satisfaction. Pharma companies need to expand their adoption of end-to-end partner ecosystems, consortium based or hybrid permission-based models, by leveraging capabilities and expertise of external providers such as contract development and manufacturing organizations (CDMO's), contract research organizations (CRO's) and satellite organization centres. Organizations need to integrate sustainability into their operational strategies, reducing carbon footprint, reduce waste and water consumption, improve packaging and transportation, ensure ethics and responsibility complying with regulations and creating long term value.

The scrappy shift is obvious- Pharmacies, labs, prescriptions all exist but rarely talk to each other. The next wave of pharmaceutical era might boom where strategy meets compassion, and it would be less about speed and disruption.

ACKNOWLEDGEMENT

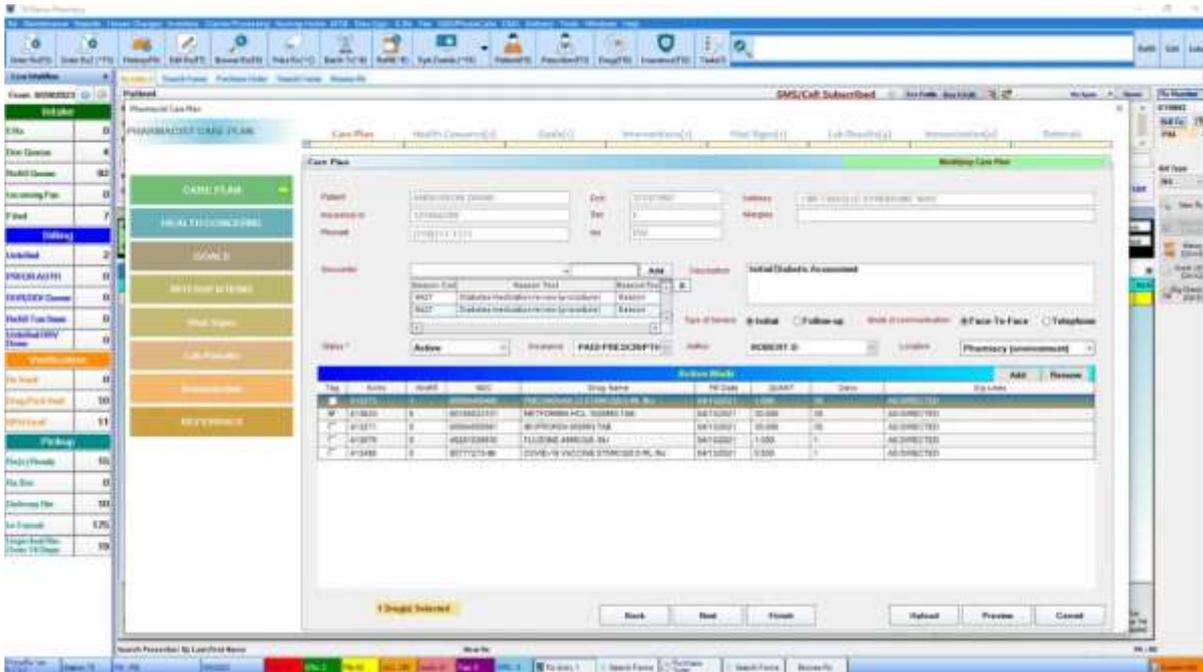
“The journey is more important than the destination. Excellence is a journey not a destination”

To traverse on the virtuous path of excellence, it required a great passion to pursue the performances of my desire, and the path was illuminated by many a person of importance to whom I owe whatever I have been able to accomplish with.

I would also like to pay my sincere thanks to Nursing Officer, Triage @ Max Super specialty Hospital, Saket who helped with her inspiring guidance and overwhelming support during all phases of the project.

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Finally, I'd like to acknowledge my parents and family, who had been there always for me with all the support I required.



Pharmacy inventory management system structure

The following table shows the system structure as follows to integrate with major pharmaceutical distributors product ordering portals. It presents information related to enter period, catalogue, quantity purchased, etc.

Pharmacy	UGOR	Order Period	Monthly	Facility DEA#	
Addressee	Neonatal Intensive Care Unit 2nd Floor	Form Type	Pharmacy Order Form	Serial #	230
Attention	Head Nurse	Direction	Replenish		
Street	1711 Second St.	Quarantined	<input type="checkbox"/>		
City	Rabon	Order Urgent	<input type="checkbox"/>		
State	Sales	Release	<input type="checkbox"/>		
Zip Code	173212	Post	<input type="checkbox"/>		
		Aides	<input type="checkbox"/>		

Order Items									Total Cost \$35,205.48
Catalogue Description	Item	Description	Qty / Purchased	Unit	Qty	Unit	Released / Due	Par Max	Present Stock
Amidopine 100/box	524612	Amidopine 100mg tab	25000	100	250000	TA	1 / 2		30/30
Amidopine 100/box	525456	Amidopine 10 mg tab	11600	100	100000	TA	0 / 1		275/274
Amoxicillin 500	3745523	Amoxicillin 500 mg capsule	20600	100	230000	CA	0 / 3		187/190
Aspirin 750/box	3631255	Aspirin 81 mg tablet	30000	200	760000	TE	1 / 3		105/110