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### A PROSPECTIVE OBSERVATIONAL STUDY ON ANALYZING MEDICATION RECONCILIATION FOR ALL INPATIENTS IN A QUATERNARY CARE HOSPITAL

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**Abstract:** **INTRODUCTION:** Medication reconciliation is defined as the practice of “crafting the most precise list of all medications a patient is taking including drug name, frequency, route and dosage, and equating those lists with the physician’s admission, transfer and/or discharge orders, with the aim of providing exact medication to the patient at all transitions points within the hospital”. The significance of medication reconciliation is existent in the fact that preventable adverse drug events (ADE) at transition points of care account for 46-56% of all medication errors. **METHOD:** A prospective observational on Medication reconciliation was done in Fortis Memorial research institute, Gurgaon, Haryana during the period of March 2017- May 2017. 250 patients were enrolled who met the inclusion criteria. The study was carried out in phases ie before and after the implementation of Medication reconciliation form and the results were compared. **RESULT:** There is a significant increase in documentation of medication history from admission till discharge of the patient after the implementation of medication reconciliation form (MRF). **CONCLUSION:** After the completion of the study we could see that implementation of medication reconciliation form and close monitoring by clinical pharmacist significantly reduced medication errors like omission, duplication and drug interactions.

**Keywords:** Medication reconciliation, adverse drug events, Medication Reconciliation Form, home medication



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## INTRODUCTION

Medication reconciliation is defined as the practice of “crafting the most precise list of all medications a patient is taking including drug name, frequency, route and dosage, and equating those lists with the physician’s admission, transfer and/or discharge orders, with the aim of providing exact medication to the patient at all transitions points within the hospital”<sup>[1]</sup>.

Medication reconciliation comprises of the following steps which add on to ensure patient safety across the healthcare system:

- Verification
- Clarification
- Reconciliation
- Transmission<sup>[2]</sup>

Verification include obtaining the current medication list followed by clarification of the medications and their dosages ie clarification. In the reconciliation part the newly prescribed drugs are equated with the home medications and documented. Finally the medication list is updated and communicated with the health care provider which is called transmission.

Two types of discrepancies may occur during the prescribing, one is intentional and other is unintentional. Unintentional discrepancies ensue without conscious decision to alter the therapy whereas intentional discrepancy occurs by conscious decision to alter therapy which may be due to the underlying co-morbidity or change in drug metabolism. These changes must be documented in a standard manner in the patients file. A medication reconciliation form can be implemented in order to avoid these types of medication errors so that the treatment given can be compared from admission till discharge. This form must contain details of home medication, medication prescribed during admission, medication in wards, post- operative ward (optional) and at the time of discharge so that no drugs will be missed.<sup>[3]</sup>

Implementation of medication reconciliation form include the following steps

## IMPLEMENTING MEDICATION RECONCILIATION FORM

- Acquire and document the best possible medication history
- Confirmation of the medication history obtained.
- Reconcile obtained history with prescribed drugs and rule out discrepancies

- Documentation of findings
- Communication of the findings with the other healthcare providers.
- Cross checking of drugs during discharge

Best possible medication history (BPMH) must include all prescribed and non-prescribed drugs. Non-prescribed must include recreational drugs, herbal products, over the counter drugs and stat medications. The history must be taken by patient/ family interview and verifying the past medical documents.<sup>[4-5]</sup>

#### **AIM**

- To evaluate the medication Reconciliation for all inpatients including post-op and transfer out patients.

#### **OBJECTIVES**

- To compare drugs prescribed on hospital admission with the list of drugs taken prior to admission and to identify the role of a pharmacist in identifying and resolving medication discrepancies.
- To identify medication errors (duplication, omission, drug interactions etc.)
- To minimise the drug related problems by 25% in 3 months.

#### **METHODOLOGY**

The study was conducted in two phases ie before and after the implementation of medication reconciliation form. All inpatients including post-op and transfer out patients were included in the study. The data was collected using a well-structured data collection proforma which included patient demographics, past medical and medication history, comorbidities, current medications, medications during admission till discharge. The study was carried out in phases ie before and after the implementation of medication reconciliation form. 125 cases were collected from different departments in each phase ie 15 cases from each department.

RESULT AND DISCUSSION:

FIG 1: PRE- INTERVENTION PHASE

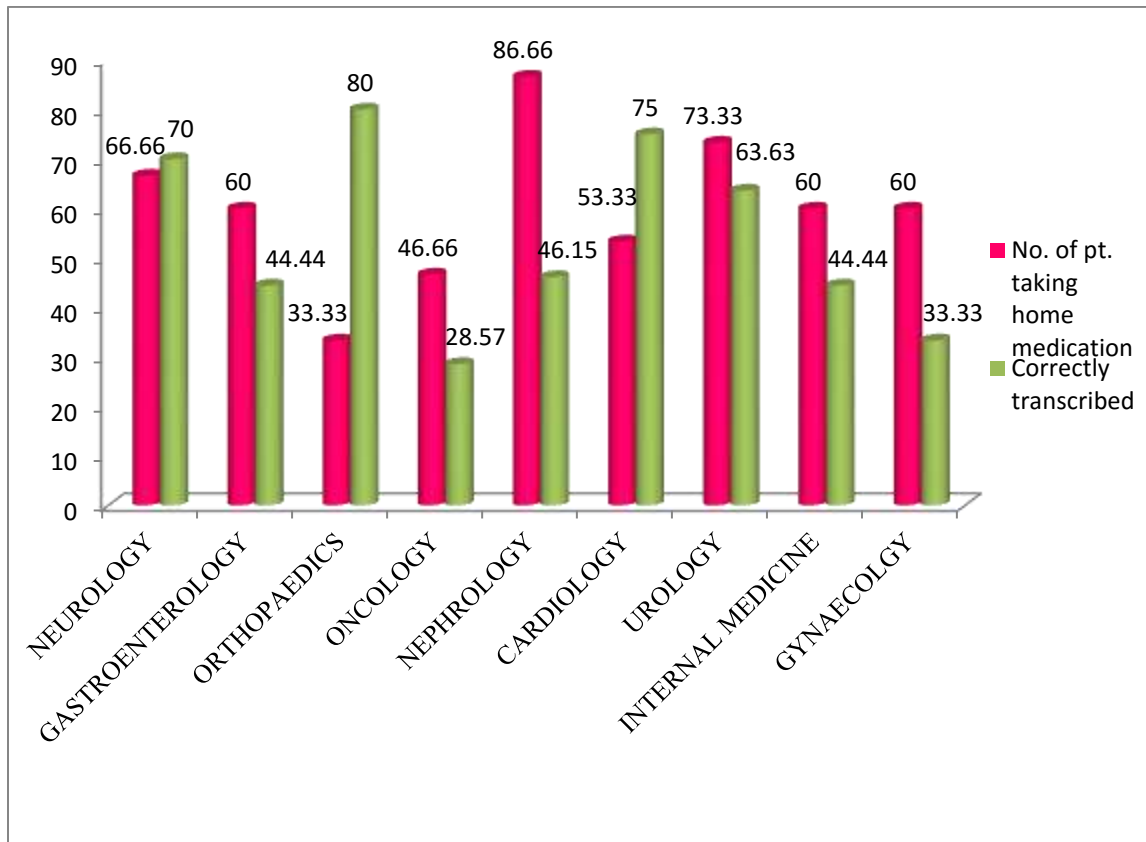
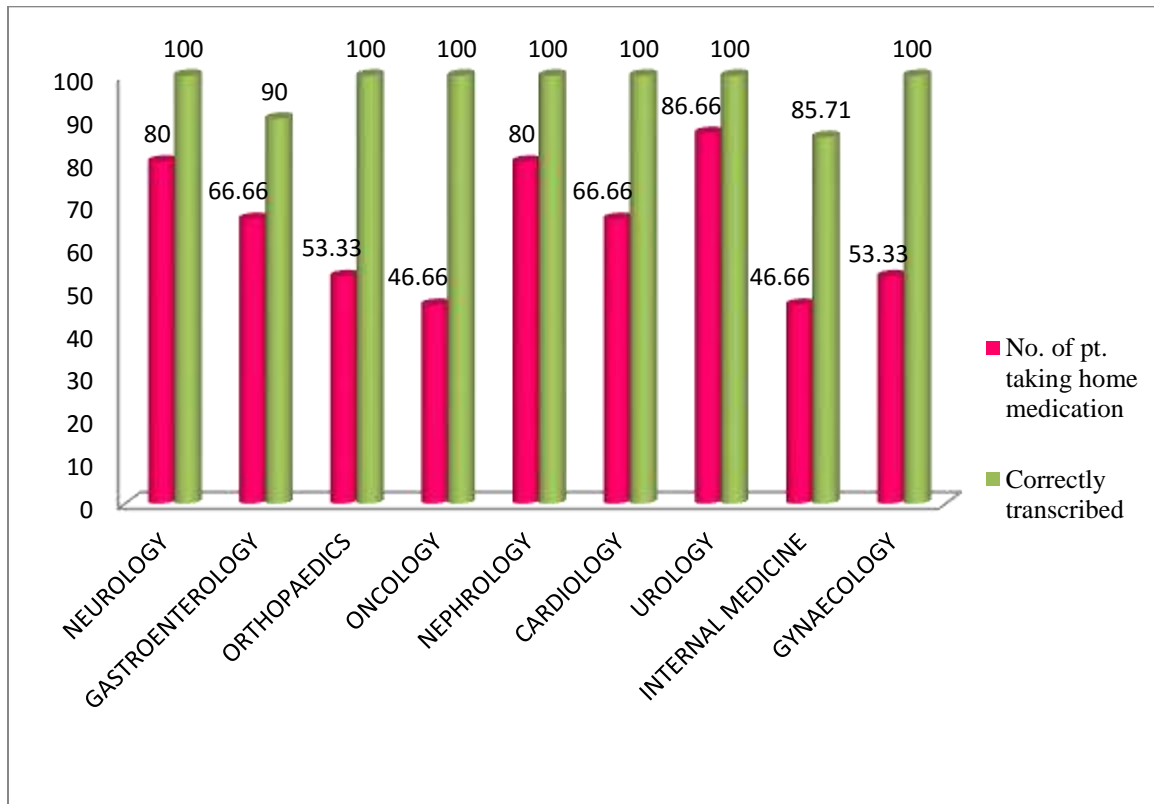


FIG 2: POST INTERVENTION PHASE



The study was carried out in 2 phases, the patient's taking home medication was more in nephrology department and more no. of transcribing error was found in oncology(71.43%) followed by gynaecology (66.67%) and least no. of error was found in orthopaedics (ie 20%). After the implementation of medication reconciliation card the home medications were correctly transcribed in all departments except gastroenterology and internal medicine.

**TABLE 1:**

		Neurology	Gastro Enterology	Orthop- aedics	Oncology	Nephrology	Cardiology	Urology	Internal medicine	Gynaecology
Patients taking home medication but no mentioned in file	PRE	6	0	53	53	26	6	0	20	0
	POST	0	0	33	46	0	0	0	6	0
NO. OF PATIENTS TAKING HOME MED(out of 100%)	PRE	60	66	33	46	60	46	73	40	60
	POST	80	66	53	53	53	53	86	40	53
DOCTORS ADVICE TO CONTINUE	PRE	60	60	93	60	60	46	73	40	60
	POST	80	66	100	100	53	53	86	40	53

Because of the error in taking medication history, the home medications were missed in the case file and also the patient didn't receive the same. Such cases were found more in oncology and orthopaedics. In the post intervention phase the percentage of error was reduced in both departments ie 20% in orthopaedics and 7% in oncology .

TABLE:2

AT THE TIME OF TRANSFER TO WARD	PRE	86	60	93	60	60	77	73	80	60
(out of 100%)	POST	100	93	100	100	100	100	86	100	100
AT THE TIME OF TRANSFER TO POST OP/ICU	PRE	73	60	93	60	60	77	73	80	60
(out of 100%)	POST	100	93	100	100	100	100	86	100	100
AT THE TIME OF RETURN TO WARD	PRE	73	60	93	60	60	77	73	80	60
(out of 100%)	POST	100	93	100	100	100	100	86	100	100
AT THE TIME OF DISCHARGE	PRE	73	60	93	60	60	77	66	73	60
(out of 100%)	POST	80	80	100	100	100	100	86	100	80

Home medications missed at the time of transfer to ward were analysed and was seen that maximum no. of miss was in Gastroenterology, oncology, nephrology and gynaecology departments ie 40% and the minimum was in orthopaedics (7%). In the post intervention phase except in gastroenterology and urology all departments attained 100% of proper transcribing.

At the time of transfer to Post –OP /ICU additional error occurred only in neurology ie 13%.In the post intervention phase error continued to be same from transfer to ward to Post –OP.

At the time of return to ward, the percentage of error was same as both transfer to ward and transfer to post –OP.

At the time of discharge 7% of additional error was found in urology and internal medicine. In the rest of the departments the error continued to be same from transfer to ward till discharge.

**Table 3: Examples of Drug Related Problems Identified**

DEPARTMENT	CLASS OF DRUGS MISSED ON RECONCILIATION
<b>NEUROLOGY</b>	<ol style="list-style-type: none"> <li>1) Antihypertensives</li> <li>2) Antispasmodics</li> <li>3) Antidiabetics</li> <li>4) Anti-Epileptics</li> </ol>
<b>Gastroenterology</b>	<ol style="list-style-type: none"> <li>1) Tricyclic Antidepressants</li> <li>2) Statins</li> <li>3) Antithyroid Drugs</li> <li>4) Antihypertensives</li> <li>5) Antidiabetics</li> <li>6) Antiplatelet</li> </ol>
<b>ORTHOPAEDIACS</b>	<ol style="list-style-type: none"> <li>1) Alpha 1 Receptor Antagonist</li> </ol>
<b>ONCOLOGY</b>	<ol style="list-style-type: none"> <li>1) Antidiabetics</li> <li>2) Anti-Epileptics</li> <li>3) Antithyroid Drugs</li> <li>4) Antihypertensives</li> <li>5) Corticosteroids</li> </ol>
<b>NEPHROLOGY</b>	<ol style="list-style-type: none"> <li>1) Statins</li> <li>2) Antihypertensives</li> <li>3) Antidiabetics</li> <li>4) Proton Pump Inhibitor</li> </ol>
<b>CARDIOLOGY</b>	<ol style="list-style-type: none"> <li>1) Antithyroid Drugs</li> </ol>



	2) Antihypertensives
<b>UROLOGY</b>	1) Antihypertensives 2) Antidiabetics 3) Antithyroid Drugs
<b>INTERNAL MEDICINE</b>	1) Cardiac Drugs 2) Antihypertensives 3) Antidiabetics 4) Antithyroid Drugs
<b>GYNAECOLOGY</b>	1) Antiplatelets 2) Antihypertensives 3) Antithyroid Drugs 4) Hormonal Drugs

On categorizing the omission of drugs according to the pharmacological classes, anti-hypertensives were more missed followed by anti-thyroid drugs.

**Table 4: MEDICATION RELATED PROBLEMS:**

INTERVENTION TYPE	NO. OF OCCURRENCE		P value
	PRE INTERVENTION PHASE	POST INTERVENTION PHASE	
<b>OMISSIONS</b>	55	10	<b>0.0428*</b>
<b>DUPLICATIONS</b>	9	4	
<b>DRUG INTERACTIONS (Major)</b>	31	11	

In the post intervention phase, the medication related problems like omissions, duplications and drug interactions were significantly reduced. A comparable study carried out by Jennifer R. Pippins et al.,(2008)<sup>[6]</sup> and Selma Rodrigues de Castilho et al.,(2016)<sup>[7]</sup> states that omission were the major drug related problem identified. The result was analysed using paired t test using graph pad version 5.03. A p-value of 0.0428 indicates that there is significant reduction of medication error in the post intervention phase

#### **CONCLUSION:**

Medication reconciliation represents a major challenge in healthcare sectors. Inaccurate documentation of medication history can contribute to medication errors and increased cost of care. Medication reconciliation is a key component of patient safety. The results suggest that implementation of medication reconciliation form and close monitoring by clinical pharmacist can significantly reduce medication errors like omission, duplication and drug interactions.

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