

Medication Reconciliation in Surgical Patient admitted at Tertiary Care Hospital of Northern India

Comment [D1]: Is this the same referred Heart and Multispecialty Hospital in the Methodology section? **No**

ABSTRACT:

Objective: Medication reconciliation is a formal procedure that includes compiling the most correct and comprehensive list of a patient's current medications and comparing it to those listed in the patient's medical record. This study aims to evaluate the pattern of Medication Reconciliation programme in our hospital. A retrospective observational study was carried out over a period of 6 months (Jan-2021 to Jun-2021) in department of surgery of SSB Heart and Multispecialty Hospital.

Comment [D2]: Aimed? Yes

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A total of 1700 patients were eligible among which 64.17% cases were found to be compliant and remaining 35.82% were non-compliant, which may be due to incomplete information from the patients and frequent change in staff. A continued education of the staff and proper communication with the patient is strongly recommended.

Comment [D4]: This is a report. State why were records/patients declared non-compliant?

Categories: Patient safety, Medication safety, Miscellaneous

Comment [D5]: Follow journal-specific guidelines on manuscript setting.

Keywords: Medical reconciliation, medication discrepancies, best possible medication history, compliance, non-compliance.

INTRODUCTION

Medication reconciliation is a systematic procedure that entails compiling the complete and accurate listing of a patient's medication regimen and compared it to those listed in the patient's medical record or medication lists.^{1,2} This is a process of gathering the exact list of all Medications a patient takes, including drug name, dosage, frequency, and route, and comparing it to admission, transfer, and/or discharge orders, emphasizing any differences and recording any modifications. It is a method of reducing medication inconsistencies, resolve discrepancies and minimize risk of adverse events during transition.^{2,3}

The High 5s initiatives created by the World Health Organization (WHO) in 2006 with the purpose of eliminating medication discrepancies and enhancing patient safety by developing standard operating procedure including medication reconciliation.^{3,4} Every standard operating procedure, according to the High 5s initiatives, identifies a specific patient safety problem, provides a standardized care process to solve it, and prescribes an execution plan that includes applicable measurements and analytic techniques.

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Five interventions are included in the High 5s initiative are:

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- Prevention of patient care handover errors.
- Surgical mishaps due to the inappropriate site or method can be avoided.
- Prevention of high-concentration drug errors.
- Prevention of continuity-of-care medication errors via medication reconciliation.
- Promotion of effective hand hygiene procedures.

One of the High 5s initiative's activities is to employ medication reconciliation at various transitions in the healthcare system to improve medication accuracy at transitions of care⁵⁻⁶.

Steps in the medication reconciliation process ~~are subdivided into precise details.~~

Comment [D8]: Meaning what?

Step 1: Best Possible Medication History (BPMH)

Step 1: Get the Best Medication History You Can (BPMH)- The BPMH is a medication record that includes the following information: name of medication (generic and brand), dose, frequency, and route of administration of medications taken by a patient. It is a “snapshot” of the patient’s actual medication use, even if it differs from what was prescribed.

The BPMH should include all prescribed (based on prescriber's recommendation) and non-prescribed (not based on prescriber's advice) medicines, such as:

- Prescription drugs (medications the patient is instructed to take by the prescriber)
- Non-prescription drugs (~~the prescriber did not advise the patient to take the medication~~)
- Complementary or herbal medication
- Recreational drugs
- ‘prn’ (i.e., “as needed”) medication

Comment [D9]: You mean medications that was supposed to be prescribed but not prescribed?

The compilation of the BPMH necessitates the implementation of a systematic procedure for acquiring a medication history, which includes the following steps:

1. Interviewing patients and/or family members if possible.
2. Confirming and recording the past history.

Step 2: Medication reconciliation at admission

The proactive procedure, the retroactive method, or a mix of the two, are the two most common models for admission medication reconciliation. Admission orders are written before the BPMH is established in the retroactive model. In both models, the BPMH and the admission orders are reconciled, and discrepancies are detected and rectified.

Within 24 hours of admitting the patient, the medication should be reconciled.

Step 3: Supply accurate information

The Best Possible Medication Discharge Plan (BPMDP) should be presented to the patient and health care team/service that will be providing care to the patient next at the end of the episode of treatment.

The various ~~Doctor recipients~~ should ensure that their records are updated to appropriately reflect the patient's current prescriptions after getting a BPMDP.

One of the four critical success elements for medication reconciliation is a ~~robust staff education programme.~~

Comment [D10]: Who should update the records and who should check that this is effectively done?

Comment [D11]: Which is?

In their areas of responsibility, ~~all nursing staff workers~~ involved in the medication reconciliation process should be trained. This necessitates the organization's continual commitment to:

Comment [D12]: Who are these ‘workers’/their cadres?

- Training all new staff
- Providing ongoing training.

All Nursing staff ~~employees~~ with responsibility for taking medication histories should receive training in taking and recording the BPMH as part of their orientation sessions. Ideally, the training should be covering all objectives ~~multidisciplinary~~ since it encourages a ~~team approach~~, ensures that each

Comment [D13]: Who are they and trained by whom?

Comment [D14]: Meaning what?

Comment [D15]: Team comprising of whom?

reconciliation part ~~discipline's role is~~ understood, and ensures that the training is consistent among nursing staff.:

Two concepts should be emphasised during training:

- How to conduct patient interviews in order to obtain the most accurate and complete medication histories possible.
- When doing the real medication reconciliation, critical thinking is required.

Medication reconciliation is a complex process that encompasses many different Departments professional specialties and takes place in many types of healthcare settings. Whereas the basic principle of medication communication and its importance to patient safety is widely acknowledged, the process itself is often perceived as burdensome and might even be opposed if it is not put in place in a structured way with adequate oversight, resources, and early engagement of the process participants.

When implementing the Medication reconciliation SOP, it is suggested that a quality improvement approach be used.^{7,8}

METHODOLOGY

A retrospective observational study was conducted over a period of 6 months (January to 2021, Feb-2021, Mar 2021, Apr 2021, May 2021 and Jun-2021) at surgery ward. After the approval of the Medical Director SSB Heart and & Multispeciality Multispecialty Hospital, the data was collected according to the inclusion criteria i.e., patients over 18 years of age of both genders admitted. A total of 1700 patients were included in this study. The WHO SOP were applied at SSB Heart and Multispecialty Hospital and a pharmacist reviewed the medical records retrospectively to identify adverse drug events which were then confirmed by the author as well.

Table 1-: Initial Assessment By Doctor

Initial Assessment by Doctor
Time requirement for first assessment
ASSESSMENT (WRITE IN MINS: SECONDS FORMAT)
Patient Details
Initial Assessment done within 60 min of patient admission
History of present illness
Medication Reconciliation
Physical examination documented
Provisional diagnosis
Plan of care & management

Comment [D16]: Which disciplines are referred here?

Comment [D17]: Among what?

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Comment [D18]: Which are?

Comment [D19]: Such as?

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Comment [D20]: What does it state/require/mandate?

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Comment [D21]: Which means what?

Comment [D22]: What do these mean and who should ensure they are appropriately available?

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Comment [D23]: In full when used the first time. What are they?

Comment [D24]: Rework on this section.

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Comment [D25]: January to June, 2021?

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Comment [D27]: The Table presents more information than time taken for assessment. Provide an appropriate title.

Diet advised
Expected outcome mentioned
Name, Sign with Date & time of RMO
Consultant Name & Sign (Counter Signature) within 24 Hrs
Date & Time mentioned
Type of referral is documented
Reason for reference mentioned

The study was conducted in a single department to exclude bias due to different cohorts of patient management.

Initial assessment by the doctor (Table 1) was used to collect patient data and the BPMH was presented to the senior consultant ~~consultant in charge~~. Effective medical reconciliation requires validation of intended and taken medications from at least two sources. A medication reconciliation form was used to compare medication list and order sheet to identify any errors such as omissions, errors or duplications.⁹ Verifications was carried out to identify numerous brands, prescriptions and dosages. Attention was paid to the points of transmission including admission, preoperative, postoperative drug changes and at discharges. The number of cases in which medication reconciliation was done i.e. complaint group was then reviewed. The number of discrepancies picked up during the period of study and number of missed medication errors were recorded. An adverse drug event was considered the result of an error when prescribing change was classified as a possible or certain error.

RESULT:

Overall, 1700 cases were eligible of which 1091 had Medication Reconciliation. Out of these, 72% were ~~of m~~Males and 28% were ~~of~~ females. There was a steady increase in the number of patients ~~wh~~oich underwent medical reconciliation, from 58% in January to 70.5% in June (Ffigure 1). P(34%) patients 367(34%) had prolonged hospital stays; 21(2%) required intensive care; and 45 (4%) caused hospital readmission ~~after discharge~~. In addition, 321(29.4%) were classified as due to errors, for an overall frequency of 3.2% ~~ADEs~~ caused by admission prescribing changes that were errors per admission. According to Medication reconciliation, 64.17% were compliant and 35.82% were non-compliant.

Although our findings provide overall support for medication reconciliation, they suggest that the optimal form of medication reconciliation should include tools to track prescribing changes that occurred on admission so that patients are not harmed by their unmonitored propagation during the hospitalization. Additional research on the effect of medication reconciliation on ADEs is important

Comment [D28]: For what reason/why?

Comment [D29]: Results?

Comment [D30]: Start sentences with words not numbers.

Comment [D31]: Start sentences with words not numbers.

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Comment [D33]: Meaning what?

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given our finding of its association with no change in or even an increase in non-error-associated ADEs and the resource-intensive nature of the process and organizational challenges with its implementation

Comment [D35]: Sounds more of a discussion than results/findings!

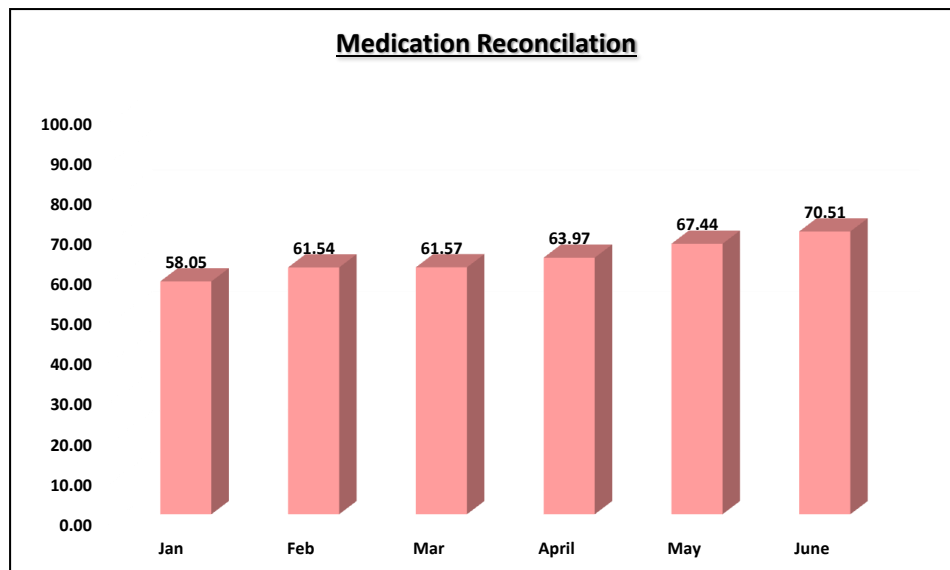


Figure 1: Shows Medical Reconciliation of surgical patients

Discussion:

The goal of this study was to evaluate the medical reconciliation programme in our hospital and to see if there is a decrease in incomplete drug information and prescribing or dispensing errors. In preparing a BMPH we require the name of medication (generic and brand name), dose, frequency and route of administration. Difficulty in obtaining accurate information about the ~~community-based~~ community-based drug lists resulted in wasting a good deal of the admitting medical officers' time. Unfortunately, information from community pharmacist, community physician and home care providers is not available. We are dependent on patient medication list, previous health records and inspection of medicine containers.

Review of BMPH by anesthetist at pre-anesthetic checkup was done which may have resulted in delay in surgery and prolonged hospital stay in some patients. Proactive development of BMPH at admission i.e. prior to admission medication prescription would help in reducing these incidences.

Comment [D36]: Which is?

Comment [D37]: Was this tested? Not in results!!

Comment [D38]: Was?

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Comment [D41]: Was this tested? Not in results!

The analysis of the low compliance was frequent change in the admitting medical officers, who were primarily responsible for preparing the BMPH in our hospital. This emphasizes that all employees with responsibility for taking medication history should receive training in taking and recording the BMPH as part of their orientation sessions and consultant in charge should undertake random checks. WHO recommends that the work load may be reduced by a staggered implementation, starting with high impact areas like high risk groups, like patients aged 65years and above.

Comment [D42]: Not in your findings!

Comment [D43]: Of what and how frequent?

Comment [D44]: Which is?

CONCLUSION:

This retrospective study shows that medical reconciliation can be implemented by a multi-disciplinary approach. A progressive increase in compliance and decrease in medication errors was shown but there is scope for further improvement. The efficacy of medical reconciliation procedure is heavily influenced by organization's culture of interdisciplinary collaboration and team work. It calls for continued education of the staff in developing BMPH and reconciliation of medications. It is recommended that we adopt a proactive approach rather than retroactive or mixed approach but proactive model was not selected here as the historical data of the patients were not properly maintained by them hence that was not optimized but in Retroactive model discrepancies was identified and resolved with the prescribers, when clinically appropriate. The medication was reconciled within 24 hours of the decision to admit the patient or not.

Comment [D45]: Not in findings!

Comment [D46]: How and by whom?

Comment [D47]: Not in findings/discussion!!

Comment [D48]: Not findings-based!

Comment [D49]: This sentence is overloaded and not findings-based!

Comment [D50]: Not in findings!!

However, medication reconciliation process has the potential to bridge the communication gap between the healthcare team and the patient.

Comment [D51]: Again, not findings-based.

REFERENCES:

1. Kackman AL. Medication reconciliation for older adults transitioning from long-term care to home (Doctoral dissertation, Washington State University). (Doi: <https://hdl.handle.net/2376/3429>)
2. American Pharmacists Association, American Society of Health-System Pharmacists. Improving care transitions: optimizing medication reconciliation. Journal of the American Pharmacists Association. 2012 Jul 1;52(4):e43-52. (Doi: <https://doi.org/10.1331/JAPhA.2012.12527>)
3. Leotsakos A, Zheng H, Croteau R, Loeb JM, Sherman H, Hoffman C, Morganstein L, O'leary D, Bruneau C, Lee P, Duguid M. Standardization in patient safety: the WHO High 5s project.

- International journal for quality in health care. 2014 Apr 1;26(2):109-16. (Doi: <https://doi.org/10.1093/intqhc/mzu010>)
4. Stark HE, Graudins LV, McGuire TM, Lee CY, Duguid MJ. Implementing a sustainable medication reconciliation process in Australian hospitals: The World Health Organization High 5s project. *Research in Social and Administrative Pharmacy*. 2020 Mar 1;16(3):290-8. (Doi: <https://doi.org/10.1016/j.sapharm.2019.05.011>)
 5. Tisdale JE. Medication Reconciliation: Who and How?. *The Canadian Journal of Hospital Pharmacy*. 2008;61(4). (Doi: <https://doi.org/10.4212/cjhp.v61i4.136>)
 6. Subrayen D, Schellack N. Medication reconciliation is an essential role for the pharmacist. *SA Pharmaceutical Journal*. 2016 Jan 1;83(1):17-21. (Doi: <https://hdl.handle.net/10520/EJC186245>)
 7. Zuccheri P, Manfredi F, Serra A, Borsari M, Nardi R, Pasquale A, Sassone B. Medication reconciliation as a tool for reducing polypharmacy at hospital discharge in Internal Medicine Wards. *Italian Journal of Medicine*. 2014 Jan 17;8(4):232-7. (Doi: <https://doi.org/10.4081/ijm.2014.432>)
 8. Klopotoska JE, Wierenga PC, Smorenburg SM, Stuijt C, Arisz L, Kuks PF, Dijkgraaf MG, de Rooij SE. Recognition of adverse drug events in older hospitalized medical patients. *European journal of clinical pharmacology*. 2013 Jan;69(1):75-85. (Doi: <https://doi.org/10.1007/s00228-012-1316-4>)
 9. Poole DL, Chainakul JN, Pearson M, Graham L. Medication reconciliation: a necessity in promoting a safe hospital discharge. *Journal for Healthcare Quality*. 2006 May 6;28(3):12-9. (<https://doi.org/10.1111/j.1945-1474.2006.tb00607.x>)