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ORIGINAL RESEARCH

Key Aspects of Management of Medication (MOM) in Hospitals : Insights from NABH 5th Edition Hospital standards

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Abstract

The Management of medication (MOM) is an important patient safety initiative at a hospital. All NABH (National accreditation board for Hospital and Healthcare Providers) accredited hospitals in India require appropriate implementation of the MOM standards and objective elements in the best possible manner to ensure safe usage of medications and devices. Recently, the NABH has introduced the new edition (5th edition) of standards which all accredited hospitals are expected to comply with at the earliest. The current review discusses the intent and implementation strategies of the MOM chapter standards in details and it is expected to help the already accredited and the newly aspiring hospitals to implement safe usage of medications and devices according to the new edition. The authors have highlighted key issues of appropriate medication usage and medication safety which healthcare professionals must comply with to ensure NABH accreditation in the long run.

Keywords: NABH, Management of Medication, Medication usage, Medication safety, standards

1 | INTRODUCTION

In this era where world class healthcare services are the most important factor to estimate

the growth of any nation, medication safety is evolving as the key to patient safety and quality healthcare while rendering world class services. The third global patient safety challenge of WHO for the year 2020 also focuses on Medication without Harm. As per WHO out of all medication errors 80% are preventable. Across the globe many research articles on medication error and medication safety have been published and cited till now as errors are still on rise and the ones reported are just tip of an iceberg.

These errors are mostly due to increasing complexity in healthcare system and to expect impeccable service by human beings in such complex working environment at times becomes not only difficult but stress full and unrealistic. A specialist like clinical pharmacologist in such healthcare system can not only report but identify and bring down such errors, systematically address the issues and help in fostering quality patient care. Such errors if are inaccurate, inadequate and are unreported then it becomes difficult to reduce or eliminate these errors. Also, it is very challenging to detect the effectiveness of the strategies used to prevent the errors. (3)

2 | MATERIALS AND METHODS

Medication Safety and NABH

Provision of safe primary care is priority now.(1) According to Dr Bates it is stated that for every medication error which causes harm to patient, there are many more approximately around 100 that do not cause any harm and which could have been easily prevented. Also these errors are sometimes undetected by the clinician. (2) Although certain accreditation systems make it mandatory to report such errors to improve the patient safety.

Medication when used safely and appropriately can contribute to overall improvement in health and well-being of the patient. (4) A robust system involving all stakeholders can be helpful in streamlining the process. Keeping in view such factors and the utmost need of a system NABH- National Board of Accreditation for Hospitals and Healthcare Providers in their 5^{th} edition of Standards for hospitals have come up with the inclusion of certain standards that will help in establishing a complete culture of Medication safety.

The NABH provides accreditation to hospitals in a non-discriminatory manner regardless of their ownership and degree of independence. (5) The current NABH hospital standards (5th edition standards released in January 2020) have been accredited by the ISQua. The International Society for Quality in Healthcare (ISQua) is an international body which approves accreditation bodies in the area of health care as a mark of equivalence of accreditation program of member countries.(5) (6)

NABH standards for hospitals comprises of 10 chapters out of which 3rd chapter MOM- Management of Medication gives an insight to how medications should be handled in any hospital or healthcare organization. In this article we will review the Management of Medication chapter from the 5^{th} edition Standards for Hospitals, for everybody's reference and understanding.

NABH has elaborated the chapter in a very systematic manner with an objective element for each standard. An objective element is the measurable component of a standard. Acceptable compliance with the objective element determines the overall compliance with standards.(10)

The intent of each chapter has been briefly explained at the beginning of each chapter. The intent of Management of Medication briefly explains that the healthcare organization should have a safe and organized medication and that the availability, safe storage, prescription, dispensing and administration of medications should be governed by written guidance.

As we know that pharmacy of any hospital or healthcare organization plays an important role in governing or managing the medications. A well-equipped and well managed pharmacy not only helps in smooth process of medication management and patient care but also helps in generating revenue

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to the organization. NABH elaborates the importance by giving certain guidelines, like there should be an oversight of all medications stocked out of pharmacy, correct storage in regards to expiry dates and temperature monitoring. Needless to say all this should be well documented.

Further the intent of the chapter stresses upon the importance of emergency medications and the need of a system to ensure that emergency stock of medication should be readily available, stored properly and promptly replenished.

Apart from the above mentioned processes, the intent also mentions about safe processes for High risk medications, narcotics, chemo-therapeutics agents and radioactive agents. There are standards for streamlining the reporting system where monitoring, reporting and analysis of certain processes like prescribing, dispensing, administering and reporting of near misses and errors are mentioned.

Through this article we are trying to bring out the importance of medication safety from the 3^{rd} chapter of NABH i.e Management of Medication perspective. There are 11 Standards and 68 objective elements. The following standards of MOM talk about overall safe medication practice in any healthcare organization

1. The first standard talks about pharmacy services and usage of medication. The objective element gives an overview on the requirements;

- In order to have a smooth functioning processes the implementation of pharmacy services and medication usage should be as per a written guideline.
- The formulation and implementation of pharmacy services and medication usage should be guided by a multidisciplinary committee. Here the roles and responsibility of the committee have been explained. It is stated that multidisciplinary shall have representatives from major clinical departments, thus emphasizing on the roles and participation of all stakeholders. The Inclusion of clinical pharmacologist (medical doctor specialized in Pharmacology or clinical pharmacist
- Multidisciplinary committee shall operate in accordance with the best practice information on medication management and the same shall be updated and implemented.
- Pharmacy shall also have some system in place to obtain medication when it is closed.
- Any changes in the system or information regarding medication e.g. stock out, recall or any event of adverse reaction should be communicated to relevant stakeholders and the same shall be documented.

With this objective element NABH ensures participation of each stakeholder (clinicians/nurses) in establishing a system of safe, uninterrupted medication practice.

2. Second standard is about implementation of hospital formulary. As per Grissinger a carefully selected formulary not only guides clinician in choosing the safest drug but also helps them in selecting the most effective drug for specific conditions. (11).

The Objective Elements explain the following

- A list of medications appropriate for the patients and as per the scope of the organization clinical needs should be developed by multidisciplinary committee. This committee also at times is called DTC (Drug and Therapeutic Committee) shall formulate the formulary as per national and international guidelines keeping in mind 'National list of Essential Medicines' and 'WHO model of essential medicines' and taking into consideration interactions, efficacy and any possible adverse reactions.
- This should be reviewed and updated periodically.
- All the clinicians should be made aware of the formulary and refer the same. Adherence to the formulary should also be looked into.
- Further, there should also be a system to procure medicines not listed in the formulary.

Through this standard a robust system of medication procurement and inventory system can be established. As by definition formulary is the list of medicines approved for use in the health care system by authorized person. (12) The drugs are selected as per the efficacy, safety and cost effectiveness in the formulary thus ensuring a safe prescription process. An established formulary system benefits the organization in many ways for e.g. Organization has an approved list of medications, low cost therapies and uninterrupted supply of medicines. Thus driving the healthcare towards improved patient safety at a low cost.(12)

3. The third standard mentions about appropriate storage and timely availability of Medications. Out of myriad of instructions on any drug, storage temperature are always written in bold, It is very important to have a system for storage of medications as the efficacy of any drug depends a lot on appropriate storage.Careful arrangement of medication storage in the pharmacy and also throughout the hospital can help in reducing the risk of medication errors. (13)

The objective element of this standard mentions about the following

- Storage of medication in clean, safe and secure environment as per the manufacturer's recommendation. It also focuses on securing the medication from loss or theft by conducting regular audits. Storing of beyond expiry drugs away from other medications is one of the key factors in establishing safe medication practice.
- Sound inventory practices guiding storage of medication throughout the organization Here it recommends the organization to follow inventory control practices like ABC, FEFO,VED etc. As per Cohen and Sanborn product arrangement minimizes unintended selection of the wrong drug or dosage form.(14),(15)
- Defining list of high risk medication, storage of high risk medication, and storing Look alike and sound alike drug physically apart from each other.
- Defining list of emergency medication, its storage and availability.

The development of updated local high-risk (high-alert) medication lists help health care professionals focus on particular risks in their own workplace. However it is also prudent to regularly update the list and develop an associated risk reduction strategy as having a list alone is not sufficient to bring down the adverse events associated with high risk medications. (16)

4. The fourth standard is about rational and safe prescription of Medication. As per a study where review of internal and external prescription was a source of information, p

- Medication prescription is in consonance with guidelines of good practice and guidelines for rational prescription of medication.
- Organization adheres to minimum requirement of prescription. Minimum requirement includes mentioning of patient name, details, unique identification number, details of medications like strength, dosage frequency and all should be written in capital letters. This shall be followed for both IP and OP prescription. Objective element also mentions in case of error or illegible prescription, a single strike through and rewriting the prescription should be followed. Further, in case of any incident of prescription error it is advisable to do root cause analysis to further limit such errors. Training of all stakeholders on prescription writing should be done on a regular basis. Reporting of such errors through regular prescription audit will not only aid in reducing the errors but will also ensure safe prescription writing practice.

Any National or International guidelines can be used as a reference e.g. ISMP guideline for Standard Order Sets. (20)

- Drug allergies and previous drug reactions are ascertained before prescribing to avoid any adverse event.

A study by Fitzgerald explains in detail how history taking is vital in preventing errors.(19) An accurate

history not only helps in building up a safe medication practice but also helps in better patient care even after discharge and in each follow up.

Developing mechanism to help clinician in prescribing appropriate mechanism. This means mechanism which helps in better understanding of drug-drug interaction, food-drug interaction, therapeutic duplication,dose calculation etc. (23)

. Implementation of verbal orders policies and ensuring safe medication practice. Here, NABH guides the organization regarding verbal orders as verbal orders are slowly attributing to errors. The organization is advised to follow a list of medication approved by stakeholders which can be ordered verbally only in case of emergency. As each stakeholder is equally responsible in establishing a safe practice, it is important that the clinician counter signs the verbal order within 24 hrs of ordering, if at all executed in emergency. However, it is important to note that verbal orders contribute to large number of errors and in turn poor patient care.

.Audit of medication orders/prescribing orders shall be carried out to check for safe and rational prescription of medication.Audit should be preferably done by clinical pharmacologist/pharmacist. However, it should be noted that audit can also be done by a multidisciplinary committee in case organization does not have clinical pharmacologist/pharmacist. Scope of the audit includes asserting minimum requirements of prescription, therapeutic duplication, and drug-drug, food drug interaction. An audit shall be followed by corrective actions and preventive measures to prevent it from re-occurring again.

.Reconciliation of medication at transition point of care and the same shall be documented. The purpose is to ensure a patient receives medication which is complete up-to-date with past clinical conditions and present care plan. Transition points mentioned areat the time of admission, during discharge, transfer from ward setting to another department/setting, cross consultation.

Mostly errors are observed during transition of care and therefore this is emerging as a very important step towards preventing errors. It is also one of the key action areas in the strategic framework of WHO-Third Global patient safety challenge: Medication without Harm. (22)

5. Standard 5 is medication writing in uniform manner. The measures/objective element for the same is as follows

- Only authorized person writes order.
- Medication orders are written in uniform location in the medical records containing patients name and unique identification number. Here NABH ensures safe medication practice by suggesting preferably same sheet for prescribing and administering and avoiding phrases like CST/Continue same treatment/repeat all/ repeat 145 etc.
- Medication orders are legible, dated and timed and signed. The identity of the person prescribing the medicine with name and employee code is stressed upon.
- Mediation orders contain name of the medicine, strength, route of administration, and frequency. It is advised to record the orders separately if the strength differs for each time of administration.
- 6. 6^{th} Dispensing of medication is done safely. As per guidelines dispensing should be done only against valid prescription or medication order. Dispensing shall be preceded by checking the expiry date, strength, generic component of the drug. It has been advised to not sell physician sample.
- Handling the medication recall, near expiry drugs effectively.
- Labeling of the dispensed drug.
- Verifying the high risk medication before dispensing.
- Return of medication to pharmacy is addressed. A list of medications should be developed which can be returned to the pharmacy.

Selection of the wrong strength or product mostly attributes to dispensing error, and occurs primarily

with drugs that have a similar name or appearance. Along with above mentioned measures, keeping minimum interruptions in the dispensing procedure and maintaining the workload of the pharmacist at a safe and manageable level is also equally important for safe practice. (9)

7. 7^{th}standard talks about safe administration process. As per a report on Medication Administration Safety by Hughes and Blegen, error rate in medication administration (MAEs) can go upto 60% and is mostly due to drug overdose, wrong route and wrong drug to the patient. Keeping in view the impact of administering errors on patient care the following measures have been discussed

- Medicines are administered by those who are permitted to do by law. This means only authorized person shall be allowed to administer the medicine.
- Prepared medication is labelled before preparing second.
- Identification of patient before administration.
- Medication is verified from the records and physically inspected before administering. Here, it is prudent to have the high risk medications checked by two staff before administering. The nurses shall be empowered to identify prescription errors involving high risk medication as they are knowledgeable regarding high risk medication.
- Strength, route time, frequency should be verified before administering so as to prevent any adverse event.
- Measures to avoid catheter, tubing misconnections during administration.
- Administration is documented. Just like prescribing the documentation for administration should also include documenting name of the medicine, strength, route dosage.In case of infusion it should include start time, rate and end time.
- Mechanism to measure patients self administration of medication.
- Measures to govern medications brought from outside to the organization-the purpose here is to ensure safety of the patient. Ensuring safety by defining pre-requisites for bringing medications from outside

As per another study by Williams, error of omission can occur during drug administration where the drug is not administered for a many reasons. Other types of drug administration errors include an incorrect administration technique or administration of incorrect or expired medications.(9)

8. 8th standard ensures safe medication practice by talking about monitoring of the patient post administration. Measures include

- Monitoring the patient collaboratively.
- Medications are changed wherever required to change based on monitoring.
- Capturing of near misses, medication error and adverse drug event and reporting the same within specified time frame.
- All the near misses, errors and adverse drug events should be collected and analysed and corrective and preventive measures should be implemented based on the analysis.

All these measures if implemented and maintained will bring about a sea of change in the organisation's patient care and will help in changing the outlook towards quality and safe medication practice.

1. 9^{th} standard of MOM chapter is a very vital standard on safe use of Narcotic, psychotropic, chemotherapeutic agents and radioactive agents. Measures for safe use includes

- They are prescribed by authorised caregivers so as to prevent misuse of the agents.
- They are stored separately and administered by qualifies personnel.

- A proper record is maintained for the usage, administration and disposal of these agents.

These are high risk agents and ensuring their safe use can help in bringing down the graph of medication errors.(21)

3 | DISCUSSION

Medication safety risks are the most important preventable factors jeopardizing patient safety.(7)

As per WHO, Medication errors may occur due to weak medication systems within the healthcare organization with contributing factors such as human factors, fatigue, poor environmental conditions or staff shortages which in turn may affect practices like prescribing, transcribing, dispensing, administration and monitoring.Such weak system can eventually result in severe harm, disability or even death. Therefore, a wide mobilization of stakeholders supporting overall medication system is required. (8)

Many interventions addressing medication safety issue have been researched and published however, the implementation of those interventions and their success rate are varied.

Throughout the world, healthcare services strive to cater, serve and assist those who are unwell. These healthcare organizations or services work hard to provide safe and secure environment with high quality care but sometimes error becomes inevitable. Unsafe health care has become a global challenge now and a lot of work has been done to understand the causes, consequences and potential solutions to this problem. (1) For any error occurred, it is very important to understand the nature and cause. It should be dealt as a challenge. A safe medication system can in return bring benefit to the organizations, by reducing unnecessary procurement, prescribing and administering thus further avoiding any inadvertent event and overall a declining graph of Average Length of Stay. Thus, Implementing system changes and practices are crucial to improve safety at all levels of health care.

Medication safety starts from 'THE' beginning of care, as primary care itself provide an entry into the health system, it not only provides an on-going care coordination but also a person focused approach for people and their families.(1)

In India, NABH provides comprehensive guidelines for establishing a safe medication practice and its implementation. It emphasizes on creating a culture of safe practice.

Through its corroborative standards and self explanatory objective elements, NABH has brought a paradigm shift in the hospitals approach towards rendering quality services and also has helped in sensitizing the healthcare services in developing a robust integral system.

NABH through its 5^{th} edition hospital standards also has instilled the importance of having a specialist like clinical pharmacologists in monitoring the medication safety practice. The vital role of clinical pharmacologist in establishing this safe practice has been time and again proved through various research articles as Clinical pharmacologist is a trained personnel and the one who has a unique insight into wide ranges of integral systems required for establishing and for managing the medications in any healthcare organization. Through this article the authors hope that their role would become mandatory in future in all NABH accredited hospitals just like the Infection control officer and Infection control nurse.

4 | CONCLUSION AND WAY FORWARD

"Medication without harm" is the current Patient safety challenge by World Health Organization (WHO) where reduction of medication errors across the globe is the main objective. Medication error can occur in any stage from procurement, storage system till administering a drug. A multidisciplinary approach is required to solve the problem of medication errors and establishing a safe medication practice. This approach should be of 'no blame' attitude as reported errors have often been used as source of punishment. This fear may be lessened by creating an open and safe environment for detecting and reporting medication errors .However an overall change in the way of thinking and approach in the medication cycle is required along with creating a culture of

safety and eradicating the culture of blame.

The current approaches to preventing medication errors and ensuring medication safety are at times inadequate and requires a shift in emphasis to a more of reasonable and scientific approach. Medication safety can be achieved by hospitals by implementing the MOM chapter's standard and objective element in the truest and appropriate manner.

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REFERENCES

1. WHO 2016; Medication Errors: Technical Series on Safer Primary Care; Safe primary care; 4 of 32; ISBN 978-92-4-151164-3
2. Bates DW. Medication errors—how common are they and what can be done to prevent them? Drug Safety 1996; 15; 303-10.
3. Bates DW, Boyle DL, Vander Vliet MB, et al. Relationship between medication errors and adverse drug events. J Gen Intern Med 1995; 10; 199-205.
4. ISMP 2007 Medication safety
5. Bhowmick and Shenoy: Clinical pharmacologists in Indian accredited hospitals; Journal of Pharmacology and Pharmacotherapeutics; Volume 9; Issue 3; July-September 2018
6. Quality Council of India, National Accreditation Board for Hospitals and Healthcare providers. Available from: http:// www.nabh.co/. [Last accessed on 2018 Aug 22].
7.Schepel, Aronpuro et al; Strategies for improving medication safety in hospitals; Research in Social and Administrative Pharmacy; Volume 15;Issue 7;July 2019;Pages 873-882 .
8. The third WHO Global Patient Safety Challenge: Medication Without Harm; https:// www.who.int/patientsafety/medication-safety/ en/
9. DJP Williams; Medication Errors; J R Coll Physicians Edinb 2007; 37:343–346;© 2007 Royal College of Physicians of Edinburgh
10. National Accreditation Board for Hospitals and Healthcare Organisations; Guidebook to NABH Accreditation Standards for Hospitals; 5th Edition January 2020.
11. The Truth about Hospital Formularies, Part 1-Matthew Grissinger; Pharmacy &Therapeutics;pg 441; Vol 33; no.8;August 2008.
12. WHO: Drug and Therapeutics Committee Training Course:Developing and Maintaining a Formulary, Participants Guide; pg 25,26.
13. ASHP Guidelines on Preventing Medication Errors in Hospitals: Medication Safety–Guidelines: Storage of Medication; pg 271,272
14. Cohen MR, Smetzer JL. Preventing dispensing errors. In: Cohen MR, ed. Medication errors, 2nd ed. Washington, DC: American Pharmacists Association; 2007:209-10.
15. Sanborn MD. What to focus on first—prioritizing safety-improvement initiatives. In: Manasse HR, Thompson KK, eds. Medication safety: a guide for health care facilities. Bethesda, MD: American Society of Health-System Pharmacists; 2005:62-5
16. Medication Safety in High-risk Situations. Geneva: World Health Organization;2019 (WHO/UHC/SDS/2019.10). Licence: CC BY-NC-SA 3.0 IGO.
17. Medication errors: prescribing faults and prescription errors; Br J ClinPharmacol. 2009 Jun; 67(6): 624–628
18. Chapter 37. Medication Administration Safety Ronda G. Hughes, Mary A. Blegen; pages 1-62.
19. Raju TN, Kecskes S, Thorton JP, et al. Medication errors in neonatal and paediatric intensive care units. Lancet 1989;2:374-6.
20. Richard J Fitzgerald; Medication errors: the importance of an accurate drug history; BJCP British Journal of Clinical Pharmacology; DOI:10.1111/j.1365-2125.2009.03424.x

20 . ISMP Institute for Safe Medication Practices ; Resource Library: Guidelines for Standard Order Sets https://www.ismp.org/guidelines/standard-order-sets
21. Paul P, Gopika Surendran D, Ajayakumar K, Jose AM, Mathew LA, Kunjumon S, Kishorilal O, Akshay KM. Medication Error: Are We Taking Seriously?; DOI: 10.47583/ijpsrr.2021.v66i02.019
22. Roy A D, Banerjee A, Bhowmick S, Paul S, Agarwal P, Paul P, Dey R. An Observational Study on The Causes of Medication Reconciliation Errors in a Tertiary Care Teaching Hospital of Kolkata. Journal Of Hospital Pharmacy 17(1).
23. Paul P, Das L, Tanushree BM, Kurian BP, Ghosh S, Darshan JC, Roy AD, Dey S. Interactions-Readdressing the issue. Journal of Current Medical Research and Opinion. 2021 Apr 18;4(04).

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