DOI: 10.7860/JCDR/2026/89890.24017

Original Article

Public Health Section

Pattern of Medical Inventory and Methods of Procurement: A Retrospective Study at a Tertiary Care Hospital of Kolkata, West Bengal, India

MANIKA PAL[1], M SHASHI KUMAR[2]

ABSTRACT

Introduction: Procurement of medical inventory is a crucial function with its implications on operational efficiency of a healthcare facility. Different modes of procurement are employed for drugs and disposables having diverse demand characteristics in a large hospital to ensure uninterrupted supply to the end-user departments for continuum of care.

Aim: To explore the different categories of medical inventories and their modes of procurement at the central medical store in a Government Hospital and Medical College.

Materials and Methods: The present retrospective study was conducted on medical inventory in a Medical College located in Kolkata, West Bengal, India. Data abstraction form was formulated and variety of data sources were utilised including those retrieved from the records available on the Hospital Information System for a period of one financial year (April 2025 to March 2026). Data were analysed employing Statistical Package for Social Sciences (SPSS) Version 22 and summarised with descriptive statistics.

Results: The study revealed that there were six categories of medical supplies at the central medical store. It was also evident that majority (85.76% of annual pharmaceutical expenditure) of the drugs were procured through Central Rate Contract (CRC). Government e-marketplace was the main mode of procurement for surgical disposables and laboratory consumables. Total procurement on Government e-marketplace was 13.36% of annual pharmaceutical expenditure. A small portion was procured through local purchase from the empaneled vendors in exigency.

Conclusion: The stock of drugs and disposables were categorised depending on the inventory regulation technique in central medical store for a meaningful control over the material supplies. While there were four modes of procurement, CRC was the main mode of procurement for the drugs and Government e-marketplace served the principal mode of procurement for surgical disposables and laboratory consumables. This evaluation offers an in-depth perspective on current procurement practices of medical inventory that can design efficiency-enhancing strategies.

Keywords: Health expenditure, Healthcare delivery, Hospital information system, Public procurement

INTRODUCTION

Inventory management is an essential process in a healthcare system in order to ensure procurement and provisioning of vital medical supplies at reasonable cost, consistency in quality and low storage cost [1-4]. Medical inventory accounts for a large proportion of the expenditure of a healthcare organisation.

Inventory procurement is influenced by factors such as consumption pattern, demand characteristics and budget allocation. Key challenges such as supply chain complexity, regulatory compliance, cost management and risk mitigation can affect health care delivery system. The inventory management policy in a hospital takes into account of both prices of drugs and clinical importance factors [1,2,5]. Moreover, public procurement should follow the fundamental principles of General Financial Rule 2017, Ministry of Finance, Government of India [6]. It gives emphasis on accountability to bring efficiency, economy, transparency, equitable treatment of suppliers and promotion of competition in public procurement.

Current landscape of healthcare procurement in India shows that different modes of procurement exist for a variety of healthcare commodities [1,6,7]. For example, Rate Contract Method, Government e marketplace, "Pradhan Mantri Bhartiya Janaushadhi Pariyojana" Local Purchase Mode etc. A CRC is an agreement between a central purchasing authority of an organisation and the suppliers to provide medicines at fixed prices over a set period. These contracts streamline procurement for multiple decentralised units, ensuring consistent pricing and quality [1,4]. "Pradhan Mantri Bhartiya Janaushadhi Pariyojana" (PMBJP) was launched by the Department of Pharmaceuticals, Ministry of Chemicals and Fertilisers, Government of India in 2008. The objective was to make quality generic medicines available at affordable prices to all [1,8]. The Government e-Marketplace (GeM) is another platform that revolutionised public procurement by promoting a transparent, efficient and inclusive marketplace. GeM was launched in 2016 as a solution for procurement of goods and services for all central government and state government ministries, departments and public sector units [6,9,10].

Despite various platforms being available for procurement of drugs and consumables, optimal utilisation of available resources cannot be guaranteed in all health systems without facing stockout-overstocking situation of health supplies. In a populous and diversified country like India where a large number of people seek health care from public hospitals, the need of the hour is to examine efficiency of procurement methods of health supplies. The complexity of procurement of medical supplies and inventory management has been addressed in researches in developed countries. However, relatively few studies on this are available in our country [10-12]. A record-based study on inventory management in a tertiary care hospital can be used to find answer to specific questions in a relatively easy and less resource-intensive manner. The current study was aimed at exploring the pattern of medical inventory as well as methods of their procurement.

Hence the aim of the present study was

1. To describe the categories of medical supplies in accordance with the inventory management techniques at central medical store.
2. To delineate the different modes of procurement of drugs and disposables of the hospital in the past one financial year.
3. And to estimate the proportion of Govt-e-marketplace procurement among the purchased items in Medical Store Department in the past one financial year.

MATERIALS AND METHODS

The present retrospective study was conducted over a period of two months (From 15.02.2026 to 14.04.2026) at the central medical store of a 605 bedded teaching hospital in Kolkata, West Bengal, India. While the study was planned and executed for a period of two months, the data of one financial year (from April 2025 to March 2026) was considered. Approval was obtained from the Ethics Committee {ESIC/220/IEC (JOKA) 2025 dated 29.04.25} of the teaching hospital where the study was conducted. Administrative approval was also obtained from the competent authority. Informed consent was not required as the study involved retrospective review of hospital procurement records, not human subjects.

Inclusion criteria: Health commodities (i.e., medicines; laboratory reagents, chemicals, supplies; and consumable medical supplies) purchased by the hospital in the financial year 2025-26.

Exclusion criteria: Medical gases (oxygen, nitrous oxide and carbon-dioxide), although a vital health commodity, were excluded.

Census method (complete enumeration) was followed to include all types of inventories from records, both digital and offline, of the medical store department. More than two thousand items of medicines, surgical disposables, radiology proprietary items, laboratory reagents and chemicals were considered for statistical data analysis.

Study Procedure

Data abstraction form was formulated provisionally. Necessary corrections were made after a short survey at the site. A variety of data sources were utilised to collect information for review of records. These sources were in the form of hard copies of files, manually entered registers, and computerised database.

Study variables (outcome variables):

a. Categories of medical inventory required for patient care in the hospital;

b. Different method of procurement of medical inventory;

c. Proportion of government e-market procurement out of total annual pharmaceutical expenditure for medical inventory in financial year 2025-26.

The purpose of the study was explained to the medical store in-charge and review of records was conducted at the central medical store.

Procedure was as follows:

1. Identifying an appropriate data source;
2. Devising a data abstraction form/instrument;
3. **Extraction of the data:** Data extraction was carried out in accordance with the instrument devised and the definitions agreed upon beforehand;
4. **Statistical analysis:** Analysis of the data was conducted using appropriate statistical methods.

Important concept in public procurement in india

I. **Annual recommendation by medicine scrutiny committee:** Health commodities are recommended for one financial year following the ABC/VEN analysis by Medicine Scrutiny Committee. ABC refers to the consumption value and VEN relates to their clinical importance [1,3,13].

II. **E-procurement systems:** The integration of technology in procurement process has significantly improved efficiency and transparency. E-procurement system has streamlined the procurement process by enabling electronic transactions [1,7]. This allows healthcare providers to automate procurement tasks, namely supplier selection, order placement and invoice processing.

III. **General financial rule:** Every authority delegated with the financial powers of procuring goods in public interest shall have the responsibility and accountability to bring efficiency, economy, and transparency in matters relating to public procurement [6].

IV. **Government e-marketplace (GeM):** GeM makes public procurement process transparent, efficient and inclusive [6,9]. GeM permits the following:

   1. Direct purchase for amounts up to INR 50000;
   2. L1 purchase for amounts greater than INR 50000 and less than INR 10 lakhs;
   3. Two-packet bid;
   4. Push button procurement, reverse auction.

V. **Central Rate Contract (CRC):** The CRC involves needs assessment (identify the required supplies based on patient needs and clinical requirements) and supplier selection (supplier selection involves evaluating potential suppliers based on price, quality, reliability, and compliance with regulatory standards) [1,7,11].

VI. "Pradhan Mantri Bhartiya Janaushadhi Pariyojana" The objective of *Janaushadhi* is to make quality generic medicines available to all. Product basket comprises 1800 drugs and 285 surgical items [1].

VII. **Medicine procurement processes for crises situation:** Local purchase mode is employed to mitigate risks associated with the supply chain disruption and stockout situation. Procurement of drugs and disposables is undertaken in exigency from nearby empanelled vendors [1,5].

STATISTICAL ANALYSIS

Collected Data were entered in Excel. SPSS Version 22 was employed. Descriptive statistics were used to summarise the data. Measures of proportion were used to summarise categorical variables.

RESULTS

The infrastructure and statistics of the hospital where the study was conducted is given in [Table/Fig-1]. The facility had 605 beds and 16 clinical specialties. Average Outpatient Department (OPD) attendance was 1648 patients per day and bed occupancy rate was more than 60% throughout the year.

Characteristics	Statistics
Number of patients' bed (commissioned)	605
Number of clinical specialties	16 (excluding Laboratory Medicine Departments) *
Bed occupancy (percentage)	Ranges from 61.5% to 74.6 in FY 2025-26
OPD attendance per day mean±SD	1648±91.3 patients per day (Ranges from 36,592 per month to 45,357 per month in FY 2025-26)
Casualty attendance (Absolute Number Per month)	Ranges from 3396 per month to 4477 per month in FY 2025-26

[Table/Fig-1]: Description of hospital infrastructure and statistics.
*Medicine, Surgery, Orthopaedics, Obstetrics and Gynaecology, Dentistry, Paediatrics, Dermatology, Ophthalmology, ENT, Anesthesiology, Psychiatry, Casualty, Intensive Care Unit (ICU), Radiology, Laboratory Medicine (Pathology, Microbiology, Biochemistry) Oncology, Haematology

The stock of health commodities was grouped into six categories as shown in [Table/Fig-2]. This classification was based on

Categories	Types of items	No. of items in CRC *	No. of items on GeM †	Annual recommendation‡
Allopathic store Set A	Capsule, Tablet	940 (April 25) 1160 (May -June 25) 820 (July- November 25) 1174 (December 25 to March 26)	103 (April -May 2025) 167 (June – December 2025) 101 (January-March 26)	763 items (639 CRC Medicines & 124 GeM Medicines)
Allopathic store Set B	Injections, i.v. Fluids			
Allopathic store Set C	Syrup, Suspension, Cream, Ointment Dressings			
Allopathic store Set D	Surgical disposables	Nil	Over 200 medical categories that includes all surgical disposables	387 items
	Surgical sutures	Nil		119 items
	IOL	Nil		03 items
	Orthopaedic implant	Nil		On demand
Allopathic store radiology	X-ray films and chemicals	Nil	All, including proprietary articles	6 items
Allopathic store laboratory	Laboratory reagents and Laboratory Chemicals	Nil	All, including proprietary articles	781 items

[Table/Fig-2]: Distribution of medical inventory at the central medical store according to their categories, annual recommendation and availability in two major platforms*.
*CRC drugs list was subject to change (Deletion and Addition)
† GeM drug list was subject to change (Deletion and Addition)
‡Medicine Scrutiny Committee (MSC) formulated the Annual Recommendation (Items and Quantity)

inventory management technique that could be effectively handled by the pharmacists. The medicines had been grouped into three categories, allopathic store Set A, Set B and Set C. While allopathic store Set A and Set B consisted of drugs only, Set C also included dressings in addition to drugs. Set D consisted of surgical disposables including surgical sutures, Intra Ocular Lenses (IOL) and orthopaedic implants. There were separate sets for radiology items and laboratory items, majority of which were proprietary in nature. Medicine Scrutiny Committee of the Institute had given the annual recommendation for the financial year 2025-26. An average of 639 CRC medicines, 124 numbers of GeM medicines, 509 number of surgical disposables, six radiology items and 781 laboratory commodities were recommended for one financial year (FY 2025-26).

As shown in [Table/Fig-3], the medicines were arranged into groups according to their actions on different systems of human body. This categorisation was done for administrative purpose of CRC. There were several vendors available for each group of medicines on CRC.

The Annual Recommendation for CRC drugs for the Financial Year 2025-26 was a total of 639 CRC medicines [Table/Fig-4]. As far as availability of CRC medicine was concerned, it was more than 60% for eight months and more than 50% for four months at central medical store in FY 2025-26.

Categories of CRC Medicines	CRC*	No. of Items †	Approved RC Holders‡
Drugs for gastro-intestinal system, drugs for musculo-skeletal disorders & tissue inflammation, drugs for eye & Ear,Nose and Throat (ENT)	Previous CRC (21st October, 2022 to 31st October, 2024) on Extension	66	44
	Current CRC (10th June, 2024 to 9th June, 2026),	14	7
Drugs for respiratory system, drugs for cardio-vascular system, drugs acting on central nervous system	Previous CRC (21st October, 2022 to 31st October, 2024) on Extension	102	42
	Current (10th June, 2024 to 9th June, 2026),	22	10
Anti-cancer and immunosuppressant drugs, vaccines	Previous CRC (21st October, 2022 to 31st October, 2024) on extension	58	19
	Current CRC (10th June, 2024 to 9th June, 2026)	25	10
Hormones, drugs used in infections and infestations, anesthetic and agents for premedication, fluids and electrolytes	Previous CRC (21st October, 2022 to 31st October, 2024) on Extension	50	29
	Current CRC (10th June, 2024 to 9th June, 2026)	20	14
Drugs acting on genito urinary system, drugs used for allergic disorders, drugs used in skin disorders, antiseptics/ dressing material, vitamins and minerals	Previous CRC (21st October, 2022 to 31st October, 2024), on Extension	56	27
	Current CRC (10th June, 2024 to 9th June, 2026)	12	08

[Table/Fig-3]: Distribution of Drugs on Central Rate Contract (CRC) according to the action on different systems and available vendors in financial year 2025-26.
* Previous CRCs: Extension given;
† Number of Molecules/Formulations available varied greatly;
‡ Pharmaceutical Firms/Vendors.

Month in FY 2026-26	Recommended CRC medicines	Medicines available in CRC list	Availability of CRC drugs in the hospital	Availability of recommended CRC drugs in hospital*
April	639	940	447	69.95%
May	639	1160	478	74.8%
June	639	1160	461	72.14%
July	639	820	419	65.57%
August	639	820	463	72.46%
September	639	820	469	73.40
October	639	820	459	71.83%
November	639	820	400	62.6%
December	639	1174	353	55.24
January	639	1174	366	57.28%
February	639	1174	338	52.9%
March	639	1174	333	52.11%

[Table/Fig-4]: Distribution of CRC medicines according to their availability in the hospital in every month (FY 2025-26).
*Availability of recommended CRC drugs in hospital calculated by number of drugs available in the particular month divided by Total number of recommended drugs, expressed in percentage

The current study revealed that there were four methods of procurement and all of them were through online transaction ensuring transparency in public procurement [Table/Fig-5]. As far as procurement of medicine was concerned, major proportion (85.76% of annual pharmaceutical expenditure) of medicine was procured through CRC. While GeM was placed in second position for medicines, it was clear that only a small portion of medicines were procured through *PM Bhartiya Janaushadhi Pariyojna*. The Study demonstrated that almost all of surgical disposables and laboratory reagents and chemicals were procured through Government e-marketplace.

The study demonstrated that 13.36% of annual pharmaceutical expenditure was utilised in GeM procurement that included both drugs and disposables [Table/Fig-6]. While there was no CRC existed for surgical disposables and laboratory consumables, only a very little percentage were procured through local purchase. It

was also evident that almost all surgical disposables and laboratory consumables were procured through GeM portal [Table/Fig-6].

Methods of procurement	Items	Procurement processes	Percentage of APE*
Central Rate Contract (CRC)	CRC drugs	Electronic transactions	85.76%
Government e-marketplace	GeM drugs	Electronic transactions	4.66%
	All surgical disposables, lab reagents, chemicals, X-Ray films	Electronic transactions	8.70%
Pradhan Mantri Bhartiya Janaushadhi Pariyojana	Two drugs procured in April 25 Eight drugs procured in May '25 Five drugs procured in Sept '25	Electronic transactions	0.03%
Local purchase in stockout situation	Both Drugs and Disposables- On an urgent basis	Electronic transactions	0.85%
*APE: Annual Pharmaceutical Expenditures 100%			

[Table/Fig-5]: Different Modes of procurement of drugs, disposables in central medical store in FY 2025-26.
* APE: Annual Pharmaceutical Expenditures 100%

Items	CRC	GeM	PMBJP	Local purchase
Medicines	85.76%	4.66%	0.03%	0.84%
Surgical disposables X-ray films (proprietary article), chemicals, lab reagents (proprietary article), chemicals	00	8.70%	00	0.01%
Total purchase (% of APE)	85.76%	13.36%	0.03%	0.85%

[Table/Fig-6]: Proportion of Govt-e-marketplace procurement (% of APE*) among the procured items in medical store department in the past 1 financial year.
*APE: Annual Pharmaceutical Expenditures 100%

The study revealed that expenditure in four Fiscal Quarters of FY 2025-26 varied from 17 to 34% of annual pharmaceutical expenditure [Table/Fig-7].

according to the inventory demands in order to create more efficient and effective inventory management system for hospitals. Such classification supports better purchasing decisions, optimises stock levels, and enhances the efficiency of inventory managers [12]. Dubey M et al., in their review article on Pharmaceutical Inventory Models concluded that effective and scientific drug inventory management techniques were necessary for efficient health care delivery [11].

The study also found that the medicines were classified into five groups for systematic management of CRC for improving procurement efficiency. It was evident from the current study that there were several suppliers for each category of medicines under CRC. This finding was consistent with the conclusion of Balkhi B et al., as their study showed that Health Care Facilities must identify several suppliers and ensure a sustainable stockpile [14].

The Medicine Scrutiny Committee of the institute provided Annual Recommendation of medicines for one financial year (FY 2025-26). Notably, more than 50% of "Recommended CRC Medicine" were consistently available at any point of time at central medical store throughout the year. As majority of the recommended medicines were from CRC list, availability (percentage) of CRC medicines was considered as good performance indicator of medical store department. In contrast, Bekele A et al., in their study reported that the health facility often faced stockout situation of essential medicine that was unwarranted [15].

The current study highlighted that there were multiple methods of procurement of drugs and disposables in the study setting. The integration of technology in procurement processes ensured efficiency and transparency. E-procurement systems streamlined the procurement process by enabling electronic transactions. However, Bekele A et al., in their study in Ethiopia identified the challenges related to digital technology integration in medical inventory management [15]. Intriguingly, the current study revealed that there were four modes of procurement for drugs, disposables and consumables in central medical store. While majority of the medicines/drugs were procured through CRC, almost all the surgical

Fiscal quarters	Month	RC drugs	GEM drugs	GEM consumables	LP	PMBJP	Expenditure in each quarter
Q1 FY 2025-26	April, May, June 2025	13.38%	0.83%	2.61%	0.34%	0.03%	17.19%
Q2 FY 2025-26	July, August, September 2025	21.86%	1.58%	3.32%	0.29%	0.004%	27.05%
Q3 FY 2025-26	October, November, December 2025	31.45%	1.20%	1.53%	0.13%	00	34.31%
Q4 FY 2025-26	January, February, Mar 2026	19.07%	1.05%	1.24%	0.09%	00	21.45 %
Total	12 months	85.76%	4.66%	8.70%	0.85%	0.03%	

[Table/Fig-7]: Distribution of drugs and disposables according to the consumption of annual pharmaceutical expenditure in four fiscal quarters of FY 2025-26.
APE: Annual Pharmaceutical Expenditure (100%)

DISCUSSION

In this record-based study, the researchers explored the patterns of medical inventory and procurement methods in a teaching hospital with 605 beds. The current study revealed that the hospital managed a stock of large number of drugs, surgical disposable-consumables, laboratory reagents and chemicals, with more than 2,000 items included in the analysis. A similar observation was reported by Legese N et al., who found that a tertiary teaching hospital managed over 500 health commodities, emphasising the need for efficient inventory management systems [5].

The current study further demonstrated that the stock of health commodities was categorised based on their formulation and management by the pharmacists. While the medicines had been grouped into three categories (allopathic stores Set A, Set B and Set C), Set D consisted of surgical disposables including sutures, IOL and orthopaedic implants. There were separate sets for radiology items and laboratory items majority of which were proprietary in nature. Similarly, de Assis AG et al., in their study highlighted that the classification of medicines and materials were necessary

disposables and laboratory consumables were primarily sourced via Government e-marketplace. An extremely small proportion was procured through Local Purchase mode in case of surgical disposable and laboratory consumables in spite of supply chain complexity on GeM. This could be considered as a good performance indicator of central medical store. In contrast, Vashisht A et al., in their study identified the bottlenecks in GeM procurement [10]. Kritchanchai D et al., in their study found that a single inventory management system could not be effectively applied for all medicines [16].

The analysis of expenditure revealed that nearly 90% of the annual pharmaceutical expenditure was utilised for drug procurement through CRC and GeM combined. This was consistent with the finding of Legese N et al where high cost incurred for medicine procurement [5] and Class A medicines consumed 80% of the total annual pharmaceutical expenditures [5].

It was evident that quarterly expenditure (in four Fiscal Quarters of FY 2025-26) ranged from 17 to 34% of annual pharmaceutical expenditure. Analysing purchased health commodities based on their budgetary consumption and importance is crucial for efficient

utilisation of a hospital's budget [5]. Financial control remains a critical component of healthcare management [1,2].

To the best of our knowledge, this was the first study to report on the methods of procurement of medical inventories in a large government medical hospital dedicated to the workforce of Bengal, India. Uniqueness of the current study was that the researchers endeavored to bring out the complexities of procurement process of drugs and consumables. The findings of the study may be utilised in designing appropriate strategies to address issues faced by the central medical store in tertiary care hospitals. Essentially, the study might be of help in designing appropriate policies for the procurement of medical inventory in large government hospitals.

Limitation(s)

Oversimplification of a relatively complex topic of procurement process of medical inventories was done to gain in-depth knowledge of medical inventory management in the current study. Moreover, budget consumption by different categories of medical inventories was expressed in percentage of Annual Pharmaceutical Consumption instead of the actual monetary value. Details of procurement modes in GeM (Direct purchase, L1 purchase, Two-packet Bid, Reverse Auction, Push-button procurement etc.,) were beyond the scope of the study and could not be determined from the result. Moreover, the reason behind less use of "Pradhan Mantri Bhartiya Janaushadhi Pariyojana" as a mode of procurement was not clearly mentioned in the study.

CONCLUSION(S)

The hospital managed a substantial volume of health commodities through efficient inventory control and timely procurement practices. Medical supplies in the central medical store were systematically categorised according to inventory management techniques to ensure effective material control. The study identified four modes of procurement. CRC was found to be the primary procurement method for drugs, whereas Government e-marketplace was predominantly utilised for procuring surgical disposables and laboratory consumables. Local purchase mode, although an insignificant proportion, was employed in crisis to mitigate the stockout situation. The study finding offers a comprehensive insight into inventory management as well as existing procurement practices, highlights areas for potential optimisation, and identifies strategies to enhance operational efficiency.

Acknowledgement

The authors would like to thank the Dean of the Institute for giving permission for the study to be conducted in the Institute.

REFERENCES

[1] Bhalwar R. Textbook of Community Medicine. 6th Ed. New Delhi, India: Wolters Kluwer (India) Pvt. Ltd; 2025. p. 903-905.
[2] Singh A, Rasania SK, Barua K. Inventory control: Its principles and application. Indian Journal of Community Health [Internet]. 2022 Mar. 31 [cited 2026 Apr. 15];34(1):14-19. Available from: https://www.iapsmupuk.org/journal/index.php/IJCH/article/view/2264.
[3] Dzarma E, Delga G, Nyor N, Dagba T, Samuel M. Inventory management system for medical stores in a primary health care centre in Jada, Adamawa State, Nigeria. J Appl Sci Environ Manage. 2024;28(11):3665-69. Doi: 10.4314/jasem.v28i11.21
[4] (4) Paul P, Ogugua J, Eyo-Udo N. Procurement in healthcare: Ensuring efficiency and compliance in medical supplies and equipment management. Int J Sci Technol Res Arch. 2025;8(1):001-10.
[5] Legese N, Teshome D, Gedif T. Inventory management of health commodities in a tertiary teaching hospital in Ethiopia. Front Pharmacol. 2022;13:763909. Doi: 10.3389/fphar.2022.763909.
[6] Ministry of Finance Department of Expenditure. General Financial Rules 2017. New Delhi: Government of India; 2017. p. 41-49.
[7] Singh PV, Tatambhotla A, Kalvakuntla R, Chokshi M. Understanding public drug procurement in India: A comparative qualitative study of five Indian states. BMJ Open. 2013;3(2):e001987. Doi: 10.1136/bmjopen-2012-001987.
[8] Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP). Objectives [Internet]. New Delhi: PMBJP; [cited 2026 Mar 30]. Available from: https://janaushadhi.gov.in/about-pmbjb.
[9] Government e-Marketplace. Procurement reimagined [Internet]. New Delhi: GeM; [cited 2026 Mar 30]. Available from: https://gem.gov.in/.
[10] Vashisht A, Vishwanathan J, Vashisht S, Sood C, Sarin P, Ray KR. Challenges in medicine procurement through GeM in a tertiary care hospital in northeast India. Indian J Med Res. 2025;161(1):32-37. Doi: 10.25259/IJMR_944_2024.
[11] Dubey M, Vishwakarma H, Nisha P. Review article on pharmaceutical inventory models. J. Drug Delivery Ther. [Internet]. 2022 Oct. 18 [cited 2026 Apr. 15];12(5-S):230-35. Available from: https://jddtonline.info/index.php/jddt/article/view/5659.
[12] de Assis AG, Dos Santos AFA, Dos Santos LA, da Costa JF, Cabral MAL, de Souza RP. Classification of medicines and materials in hospital inventory management: A multi-criteria analysis. BMC Med Inform Decis Mak. 2022;22(1):325. Doi: 10.1186/s12911-022-02069-0.
[13] Sinha S, Singh B. Evaluation and optimization of pharmaceutical inventory management in a tertiary care teaching hospital in Jharkhand, India, Using ABC-VED analysis. Cureus. 2025;17(12):e99406. Doi: 10.7759/cureus.99406. PMID: 41552074; PMCID: PMC12807746.
[14] Balkhi B, Alshahrani A, Khan A. Just-in-time approach in healthcare inventory management: Does it really work? Saudi Pharm J. 2022;30(12):1830-35. Doi: 10.1016/j.jsps.2022.10.013.
[15] Bekele A, Boche B, Anagaw YK, Ayenew W, Worku MC, Geremew DT, et al. Inventory management performance of essential medicines in public health facilities of Jimma Zone, Southwest Ethiopia. PLOS Glob Public Health. 2025;5(4):e0004379. Doi: 10.1371/journal.pgph.0004379.
[16] Kritchanchai D, Meesamut W. Developing inventory management in hospital. Int J Supply Chain Manag. 2015;4(2):11-19.

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Community Medicine, ESI-PGIMSR and ESIC Medical College, Joka, Kolkata, West Bengal, India.
2. Professor, Department of Community Medicine, ESI-PGIMSR and ESIC Medical College, Joka, Kolkata, West Bengal, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Manika Pal,
Flat 2B, Surya Tower, 31 Chandi Charan Ghosh Road,
Kolkata-700008, West Bengal, India.
E-mail: drmanikapal@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Apr 23, 2026
- Manual Googling: Jun 08, 2026
- iThenticate Software: Jun 10, 2026 (9%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? NA
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Apr 20, 2026**
Date of Peer Review: **May 18, 2026**
Date of Acceptance: **Jun 12, 2026**
Date of Publishing: **Aug 01, 2026**