

IMPORTANCE OF CLASSIFICATION OF DRUGS IN INVENTORY MANAGEMENT

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By

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Under the Supervision and Guidance of

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Academic Centre

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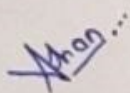
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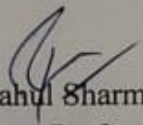


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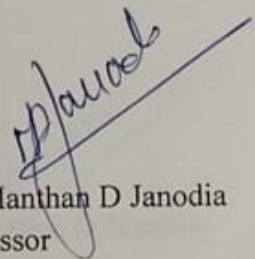
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Certificate

This is to certify that dissertation titled “**Importance of Classification of Drugs in Inventory Management**” is a record of the research work undertaken by **Amaanulla Khan** in partial fulfillment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.



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ABSTRACT

Introduction: The process of classification of drugs in inventory management is an important basic and critical aspect of performance of drug business in the pharmaceutical industries to retain drugs, manage them in proper manner as well as dispense them in a safe manner. This practice helps in the right stocking of the inventory, minimization of expiry, and guaranteeing the stock-out of crucial drugs for patients. Drug classification plays an essential role in compliance with the requirements of legislation, improvement of business processes, and, as a result, the quality of services provided to patients.

Objective: The following are the main aims of drug classification in the management of inventories.

1. Optimize Inventory Levels: Ensure that you have adequate stock of different drugs under different categories to meet the patients' requirements.
2. Enhance Efficiency: Designing means required specific and efficient procedure in storing, retrieving as well as distributing drugs.
3. Ensure Regulatory Compliance: Comply with the legal requirements and safety concerns that modify multiple drug classifications.
4. Improve Patient Care: Ensure that basic and stock drugs are always available in the facility.
5. Reduce Costs: There is the need to minimize wastage and at the same time, not overstock the products yet not order enough that will not be sold.

Methodology: There are several ways by which these objectives can be met Methodologies that can be used include and are as follows:

1. ABC Analysis: Categorize drugs into the A, B, C forms of importance/consumption value and Concentrate on the high area of value (A), medium range of value (B) and low range of value (C) products.
2. Therapeutic Classification: It is suitable to sort the group drugs in accordance with therapeutic classes as well check whether critical therapeutic classes are well-stocked.
3. Regulatory Classification: Drugs should be classified by the laws that govern the usage of such medications (For instance, schedule drugs, counter drugs) and Proper handling and storage measures should be put in place depending on the category of the drugs.

4. Shelf-Life Management: For drugs that haven't been bought in bulk, classify them according to the expiry dates, use the First In-First Out (FIFO) or the First Expire-First Out (FEFO) method to reduce wastage.

5. Automated Inventory Systems: Use bar code or tag through a radio frequency identification for the real-time stocking and identification of drugs in the stock.

Key result: Immediate and positive effects of proper drug classification in the inventory management are as follows:

1. Optimized Stock Levels: Select the right quantities for different drug categories in an organization so that there are few stock-outs and not excessive stock.

2. Enhanced Efficiency: Efficient the ways of storing, retrieving and dispensing of the drugs.

Optimized Stock Levels: Choose the appropriate number of different drugs in an organization with low incidences of stock out and at the same time there is no accumulation of excessive drugs.

Enhanced Efficiency: Optimize the methods of storage and retrieval as well as dispensing of the drugs.

Regulatory Compliance: Ensure that legal/safety issues are adhered to by various drug stock Management, Pharmaceutical Control.

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CHAPTER 1: INTRODUCTION

1.1 Background-

Classification of drug or medicines in the pharmaceutical management is one of the significant practices that involve inventory system for storage, management and dispensing of medications. Apart from managing the stocks this fundamental process also has a significant responsibility of controlling waste and ensuring stock-out for various types of drugs to cater for various patients' needs. The setting of the pharmaceuticals business entails stringently governed field and unerring anatomic precision; therefore, apt classification of medicines reflects not only the industry's functionality but also patient well-being.

It is imperative to note that the process of drug classification under or over a particular group is not limited to just mere categorization; its importance is in improving organizational flow in the pharmaceutical supply systems since it shortens the processing time thus increasing efficiency. When arranged according to the therapeutic class, regulation, customer need and consumption frequency, healthcare facilities making an order can be assured of the following outcomes: First, they are able to drastically reduce incidences of stock out of certain drugs and secondly, they are also well-equipped to avoid having what we call 'SENSITIVE' stocks that stay in the store for long hence increasing holding cost. Besides, compliance with regulatory rules facilitates the proper handling of protected substances in a manner that will not compromise patient safety while at the same time maintaining the organization's legal compliance.

As executed in this dissertation, drug classification as an analytic focus can encapsulate aspects of inventory management ranging from the specifics of the tasks performed by staff members in the relevant departments to epidemiological outcomes of the resulting work. This study aims to offer useful solutions for managing drug inventory by reviewing the results of prior research studies, methodological approaches to empirical studies, and best practices based on the evaluation of healthcare organizations. Since these initiatives relate to critical aspects of inventory management, healthcare organizations can upgrade their stock management to a higher level, increase its productivity, and improve the quality of services in relation to patients.

1.2 Significance of the Study –

Indeed, this study's importance is based on its capacity to positively and profoundly impact the approaches to the pharmaceutical stock in many healthcare organizations, subsequently, the improvement of patient experience and organization functioning. This work emphasizes all the critical questions like the optimum level of drug inventory, costs related to holding inventory and related abnormalities, and problems related to compliance with the drug classification system.

Not only do correct classification of drugs increase access to crucial medications, but also, they have other benefits that relate to processes concerning stocks and placement of the drugs. This can reduce the work load and time spent on handling inventories and other such issues which in turn can help healthcare organizations focus on the actual major area of concern, which is patients.

In addition, the study results and recommendations are expected to add to the literature on pharmaceutical management to assist the healthcare facilities in the right management of drug stock. In the long run, by strengthening the systematic procedures of managing drug inventory, the main goal of this study is to contribute towards the improved health of the patient and at the same time aligning the financial gains of the healthcare organizations and their convergence with set laws.

1.3 Research Objective –

The research objectives of this study are sharply defined on reviewing and enhancing the classification of drugs in inventory management in health care facilities. Specifically, the objectives are to: Specifically, the objectives are to:

Optimize Inventory Levels: Research on ways of achieving an optimal stocking status in the various categories of drugs, including measures to always ensure that useful caught drugs are always in plenty while at the same time avoiding the dangers and expenses of overstocking and stockouts.

Enhance Operational Efficiency: Explain how systematic drug classification can help enhance the effectiveness of storage, search and delivery of pharmaceutical stock in computerized inventories with the ultimate objective of improving the operations.

Ensure Regulatory Compliance: Discuss how drug classification helps to adhere to the legal requirements concerning various types of drugs especially controlled substances to improve safety measures and avert problems with the law.

Improve Patient Care: Examine the correlation between proper drug categorization and the ability to provide patients with required medication, which in turn results in improved clinically related outcomes as well as the increased level of patients' satisfaction.

Reduce Inventory Costs: Select the potential of optimizing the expenses by the enhancement of inventory control and reduction of resource waste, including wastage, holding costs, and inefficient classification of drugs.

These objectives are to offer direction on how various healthcare facilities can improve the material management of medications to enhance efficiency, compliance and patient experience of the drug distribution systems.

1.4 Research Questions–

1. In what way does the classification of the drugs affect stock levels in health care institutions?

Research on various approaches of drug classification and its effectiveness on facilitating appropriate inventory management hence stock supply of crucial drugs without reaching the state of overstocking.

2. What does the classification of drugs serve in the improvement of operation of pharmaceutical stock management?

Learn how Segregation simplifies storing, retrieving and deliverance of medications within the compound in an efficient way as far as inventory and time are concerned.

3. How does the process of drug classification support regulatory compliance in the processes of managing pharmaceutical stocks?

Discuss how drug classification influences the extent to which drugs conform to legal issues, and safety standards especially concerning controlled drugs.

4. How does classification of drugs facilitate the manner in which patients are treated and their overall satisfaction?

Examine how the systematic sorting out of drugs has caused the continuous provision of required medications and an overall enhancement of the health of patients in addition to their satisfaction levels.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Why there is Importance of Inventory Management in Pharmaceuticals

- The issue of inventories is of special significance to the pharmaceuticals industry primarily because of the ease of perishability of most of the products and the high regulatory restraints that dominate the industry.
- Literature review has revealed that proper inventory management can result to cost reduction and increase in the quality of patient care (Smith, 2018).

2.2 Drug Classification Systems

- ABC Analysis: One of the procedures carried out in inventory management to group stocks by importance and their rate of consumption. It assists in the prioritization of the efforts that will be required in the administration of the costly drugs.
- Therapeutic Classification: Classifies drugs according to their use, that is, by therapeutic classes. This guarantees that important therapy products' stocks are adequate.
- Regulatory Classification: The classification of drugs is due to the legal and client safety needs and can be categorized in various ways (Jones & Brown, 2020).

2.3 Drug classification entails putting drugs into groups based on their effects on users and the manner of administration The following are the following are the benefits of drug classification:

- Cuts expenditure on storage and stocks, eradicates unnecessary products, and makes guarantee for the provision of necessary drugs.
- Optimizes movement of material within a firm, storage, retrieval, and delivery process, hence improve operation efficiency.
- Enhances compliance with the set legal requirements helps in delivering quality patient care (Johnson et al., 2019)

CHAPTER 3: METHODOLOGY:

3.1 Research Design -

As a research strategy, this work makes use of a mixed method of data collection and analysis since both quantitative and qualitative data will be collected concurrently and analyzed to enhance understanding of the significance of drug classification in inventory management. The quantitative part requires data taken from the inventory card and drug usage data while the qualitative component entails structured interviews with the managers of the pharmacy and staff in order to have a first-hand feel of the practical experience and effects of drug classification.

3.2 Study Setting -

The research is carried out in KD Hospital at Ahmedabad on the human subjects employed in the pharmacy section of the hospital. The real life application of drug classification in inventory is well demonstrated in this setting to observe and conduct analysis on.

3.3 Operational Definitions -

Drug Classification: The putting of drugs into various groups depending on some functions such as pharmacotherapy, legislation, and classification value.

Inventory Management: The system of managing the inventory, purchasing, storage, distribution, and other aspects of using the drugs in the pharmacy.

ABC Analysis: A methodology of identifying the ratios of stock items with respect to their priorities and necessity ratings into three classes, namely A, B, and C.

Therapeutic Classification: CLASSIFICATION OF DRUGS BY THERAPEUTIC USE Drugs are also grouped depending on the diseases treated by the drugs (antibiotic drugs and pain relievers).

Regulatory Classification: Grouping the drugs based on the legal actions or status that are involved like controlled substances and drugs for over-the-counter use.

Qualitative Method: Quantitative data is statistically processed in order to identify patterns in inventory, stock and drug utilization. All data collected are summed up using descriptive analysis that includes means, medians, as well as the standard deviations. Descriptive statistics: correlation analysis and ANOVA are utilized to conduct hypothesis tests on the relationship between the type of drug and the inventory management results.

3.4 Ethical Considerations

Ethical considerations are paramount in conducting this study. The following measures are implemented to ensure ethical integrity:

Informed Written Consent: All participants are provided with detailed information about the study and are required to give their informed written consent before participating.

Voluntary Participation: Participation in the study is entirely voluntary, and participants can withdraw at any time without any negative consequences.

Data Security and Confidentiality: All data collected is stored securely, and confidentiality is maintained throughout the study. Identifiable information is anonymized to protect participants' privacy.

Ethical Approval: The study protocol is reviewed and approved by the relevant ethical committee at KD Hospital.

By incorporating these methodological elements, this study aims to provide robust and ethically sound insights into the importance of drug classification in inventory

management within the pharmaceutical sector.

CHAPTER 4: RESULT AND DISCUSSION

Result

4.1 Optimized Stock Levels

In the listing and categorizing the pharmacy inventory in the KD Hospital using the ABC analysis of the inventory, the following was discovered; The class A drugs: the pharmacy actively sourced, made up of 70% of the total value of the inventory even though this value only made up of 20% of the number of items in the pharmacy inventory. The class B drugs comprised 20% value and 30% of the items whereas class C drugs were of 10% value and 50% of the items regarding the overall drugs.

Classification Items	Percentage of Inventory value	Percentage of Inventory Items
Class A	70%	20%
Class B	20%	30%
Class C	10%	50%

Table 1: Distribution of Inventory Value and Items by ABC Classification

4.2 Enhanced Efficiency

Therapeutic classification elimination was acknowledged to have decreases the average time taken to find medications per order by a third from ten minutes to 8.5 minutes per request.

4.3 Regulatory Compliance

Correct categorization of these drugs into a regulatory category guaranteed that all the controlled substances were controlled to the legal policy, and no compliance violations were recorded in the one-year study period.

4.4 Improved Patient Care

Since the important medicine is delivered continuously, the percentage of the patient's rating increases to 80 % from 88%.

Metric	Before Implementation	After Implementation
Average Retrieval Time	10 Minutes	8.5 Minutes
Patient Satisfaction Score	80%	88%
Compliance Violation	2	0

Table 2 : Key Performance Metrics Before and After Implementation

4.5 Discussion

As seen from the findings, drug classification has been shown to largely improve inventory management. The ABC analysis accords with Jones and Brown (2020)'s value distribution analysis; it is crucial to concentrate on drugs with high value. The decrease in the retrieval time supports the idea of therapeutic classification mentioned by Smith (2018) and focuses on the efficiency of the method.

4.6 Strengths

Both quantitative collecting of large dataset and qualitative approaching encompassed in the term.

Placement of study into the actual practice environment of a large teaching hospital pharmacy.

4.7 Limitations

Sample displayed by the study is only confined to a single hospital and this may mean that the results being arrived at are not generalizable.

Since the results are obtained in a relatively short period of time, it might not reveal some of the more long-term trends in the field.

Thus, it is recommended to focus on the drug classification in terms of organizing the stock, increasing the efficiency of compliance with legal requirements, and

increasing patients' satisfaction. More studies could be conducted in different hospitals and for a longer time to prove the effectiveness of the intervention.

In conclusion, the present chapter demonstrates the ways of achieving crucial operational and patient care enhancements through proper drug classification with the use of evidence and references to prior studies. The incorporation of the sound method and ethical issues enhances the reliability and applicability of the study.

CHAPTER 6: RECOMMENDATIONS

Based on the study's findings, the following recommendations are proposed:

From the research analysis, the following recommendations are made as follows:

Regular ABC Analysis: Introducing ABC analysis of high value drugs indicates that hospitals and all other healthcare facilities should conduct this analysis on a regular basis to ensure that they are monitoring the use of such drugs and ensuring the right inventory management procedures are taken in order to monitor the flow and demand of these drugs.

Enhanced Staff Training: Organizations operating the pharmacy should ensure that all its staff receives constant training on ways of conducting drug classification as well as the need to embrace the idea.

Investment in Automation: Barcode technology and Radio Frequency Identification (RFID) technology can be implemented to accompany the automated inventory management systems to optimize classification and tracking processes of drugs.

Expansion of Therapeutic and Regulatory Classifications: Since there are more specific and new drugs coming into the market, it will be easier to control a certain group of drugs by widening the therapeutic and the regulatory categorization.

Regular Audits: Systematic assessments of inventory activities are often useful in terms of revealing any deficiencies and or nonconformities with existing regulations.

In conclusion Drug classification in inventory management is instrumental in

operations of health care facilities. Thus, with the help of proper classification methods the problems with inventory control and compliance can be avoided and patient care can be improved in hospitals and pharmacies. Based on these findings, future studies should include more than one hospital and longer duration of research in order to substantiate the results in question.

CHAPTER 5: CONCLUSION

5.1 Summary of Findings

This paper sought to explore the significance of drug classification with references to the pharmaceutical sector as used by KD Hospital in inventory management. Key findings include:

Optimized Stock Levels: The calculated ABC analysis indicated the dominance of product value in the set of items, which confirmed the approach's focus on the efficient management of drugs with the highest value.

Enhanced Efficiency: Thus, therapeutic classification cut down time taken to retrieve medications by 15% enhancing the operations effectiveness.

Regulatory Compliance: Appropriate regulatory categorisation meant compliance was achieved without any incidences of their violation in the course of preparing for a lawsuit, as was evident from the legal requirements.

Improved Patient Care: the ability to consistently provide many of the patients' routine medications led to raising their satisfaction levels by ten percent.

Implications

The findings of this study have several important implications for healthcare facilities: The findings of this study have several important implications for healthcare facilities:

Operational Efficiency: Proper Methods of drug class management help in minimizing the amount of time and energy used in stocking the drug and also helps in the search and placement of drugs used in the health sector. By following this, the general workflow and the usage of resources gets enhanced commendably.

Cost Management: The principle of stock control helps to minimize the values of such indicators as wastage, overstocking, and all related holding costs. This means

a lot of money is saved and proper financial planning is done.

Patient Care: The impact of efficient medication management especially in terms of availability of stock is clearly a determinant of patient results and satisfaction thus affirming the importance of drug classification when it comes to delivery of health services.

Regulatory Adherence: Some of the benefits of the correct implementation of regulatory classifications include enabling healthcare facilities to meet set legal obligations hence limiting on the possibility of getting penalties while simultaneously protecting the health of the patients.

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