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ASSESSING MEDICATION SUPPLY FLUCTUATIONS IN MILITARY HEALTHCARE: A CASE STUDY FROM PRINCE RASHID MILITARY HOSPITAL

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ABSTRACT

1. Introduction:
Efficient medication management is crucial for guaranteeing effective patient care in any healthcare system. At the Jordanian Royal Medical Services (JRMS), comprehending trends in medical treatments supply can shed light on the effectiveness of inventory management and its influence on patient treatment outcomes. This study seeks to examine medical treatments supply fluctuations at Prince Rashid Bin Al Hasan Military Hospital from 2023 to 2024, analyzing how variations in monthly medications distribution correspond to clinical requirements.

2. Objective:
The aim of this research is to examine the monthly share of pharmaceuticals at Prince Rashid Hospital throughout the study period. The study will classify the pharmaceuticals according to their formulary current state: Removed, Increased or Decreased monthly quantities, Stable, or Newly introduced. This classification aims to shed light on the alignment of drug management strategies with patient requirements and healthcare efficacy.

3. Methodology:
This retrospective study will utilize a quantitative methodology, analyzing inventory data from the hospital's pharmacy and supply department records for the 2023-2024 timeframe. Medications will be categorized into five groups: Items Removed, Decreased Monthly Quantity, Same Monthly Quantity, Increased Monthly Quantity, and New Items. Using Microsoft Excel Spreadsheets descriptive statistical analysis will be conducted to assess the distribution of pharmaceuticals within these categories and to find significant trends. The results of this investigation are anticipated to provide critical insights for refining medication management procedures, maximizing the allocation of resources, and elevating the quality of patient care.

KEYWORDS: Medication supply chain, inventory management, Prince Rashid Military Hospital, JRMS, logistics, medication trends.

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1. INTRODUCTION:

Efficient management of medicines is fundamental to high-quality healthcare provision, significantly influencing patient outcomes, safety, and the overall efficacy of healthcare systems [1]. The Jordanian Royal Medical Services (JRMS) is the primary organization delivering comprehensive healthcare to military troops and their families in Jordan, guaranteeing access to vital drugs and therapeutic treatments. The Prince Rashid Bin Al Hasan Military Hospital is a crucial facility responsible for treating patients and handling a wide array of pharmaceuticals for varied therapeutic requirements [2].

The healthcare landscape is ever changing, shaped by various factors that impact medicine availability and usage. A notable trend is the rising incidence of chronic disorders, which intensifies the demand on healthcare practitioners to deliver suitable medications [3]. Chronic conditions, including diabetes, cardiovascular diseases, and respiratory disorders, necessitate ongoing and efficacious pharmaceutical treatments. As the Jordanian population ages and lifestyle-related health concerns increase, the demand for a flexible and responsive drug delivery system becomes essential.

Alongside demographic shifts, progress in medical research and technology has yielded novel pharmaceuticals and therapeutic approaches that can significantly enhance patient care. Innovative therapeutics, including biologics and targeted drugs, have become essential elements of contemporary therapy protocols. The introduction of these novel drugs requires a thorough reassessment of current medication stocks and procurement practices [1,4]. Healthcare facilities must proficiently integrate these innovations while assuring the availability of vital established drugs for patient treatment.

Furthermore, the basic principles of evidence-based medicine have profoundly altered pharmaceutical management practices. Clinicians are increasingly influenced by comprehensive clinical guidelines and research findings that determine the selection of drugs for patients. The transition to evidence-based methodologies has created a dynamic environment necessitating the continual adaptation of available pharmaceuticals in hospitals to conform to best practices [1]. Thus, monitoring and evaluating medication consumption patterns is essential for ensuring that healthcare practitioners administer effective and safe treatments.

The management of pharmaceuticals is further complicated by external factors including regulatory changes, economic situations, and supply chain dynamics [5]. Regulatory frameworks can influence the accessibility and authorization of specific pharmaceuticals [6], requiring hospitals to maintain vigilance in their inventory management. Economic variables, such as price volatility and budget limitations, can influence procurement choices and inventory management approaches [7]. Moreover, global supply chain interruptions may result in shortages of essential pharmaceuticals, requiring prompt actions from healthcare professionals to ensure uninterrupted patient care [8,9].

This study examines the trends of drug distribution at the Prince Rashid Bin Al Hasan Military Hospital throughout the 2023-2024 year. The research seeks to clarify patterns in drug consumption by classifying medications into five unique categories: **Items Removed**, **Decreased Monthly Quantity**, **Same Monthly Quantity**, **Increased Monthly Quantity**, and **New Items**. This classification will facilitate a thorough analysis of the evolution of drug management strategies in response to internal and external forces.

Comprehending these trends is vital for formulating effective policies that guarantee the accessibility of key pharmaceuticals, optimize resource distribution, and improve overall patient care [10]. The results of this study will provide significant insights into the difficulties and opportunities of medication management in the JRMS by systematically assessing changes in medication patterns, hence enhancing healthcare delivery in Jordan.

2. METHOD:

This retrospective study used a quantitative methodology to examine drug distribution at the Prince Rashid Bin Al Hasan Military Hospital. Data were obtained from the hospital's pharmacy and supply department records for the period of 2023-2024, concentrating solely on the pharmaceutical shares throughout this interval. The research seeks to determine trends in drug utilization, classifying products according to their monthly supply variations.

The data analysis involved the following steps:

1. **Data Extraction**: Monthly records of medications were extracted from the pharmacy and supply departmentsystem.
2. **Classification of Medications**: Each medication was categorized into one of the following groups:
    - **Items Removed**: Medications that were no longer part of the monthly supply.

- **Decreased Monthly Quantity**: Medications with a reduction in monthly supply compared to previous periods.
- **Same Monthly Quantity**: Medications that maintained a consistent monthly supply.
- **Increased Monthly Quantity**: Medications with an increase in monthly supply.
- **New Items**: Medications newly introduced into the monthly supply.

3. **Statistical Analysis**: Using Microsoft Excel Spreadsheets descriptive statistics were employed to assess the distribution of pharmaceuticals within these categories and to find significant trends..

3. RESULTS:

The data collected from the Prince Rashid Bin Al Hasan Military Hospital was classified into five distinct categories based on changes in monthly shares of medications:**Items Removed**: A total of 22 medications were removed from the monthly supply. This indicates an active management approach by the hospital, ensuring that outdated or ineffective medications are eliminated from the inventory.**Decreased Monthly Quantity**: 90 medications experienced a decrease in their monthly quantities. This reduction may reflect changing clinical guidelines, decreased prevalence of specific health conditions, or the introduction of more effective alternative therapies.**Same Monthly Quantity**: 733 medications maintained the same monthly quantity, indicating their continued importance in patient care. These medications likely represent established treatments that consistently meet the needs of the hospital's patient population.**Increased Monthly Quantity**: 262 medications showed an increase in their monthly supply. This rise suggests an increasing clinical demand, possibly due to the growing prevalence of certain conditions or updated treatment protocols that necessitate a higher supply of specific medications and **New Items**: 73 new medications were introduced during this period, reflecting the hospital's commitment to incorporating the latest pharmaceutical advancements and addressing emerging health issues.

This analysis reveals critical trends in medication supply and utilization at the Prince Rashid Bin Al Hasan Military Hospital, providing a foundation for further research and strategic planning (table 1, figure 1).

Table 1: Five distinct categories based on changes in monthly shares of medications

Category	Number of Medications
Items Removed	22
Decreased Monthly Quantity	90
Same Monthly Quantity	733
Increased Monthly Quantity	262
New Items	73

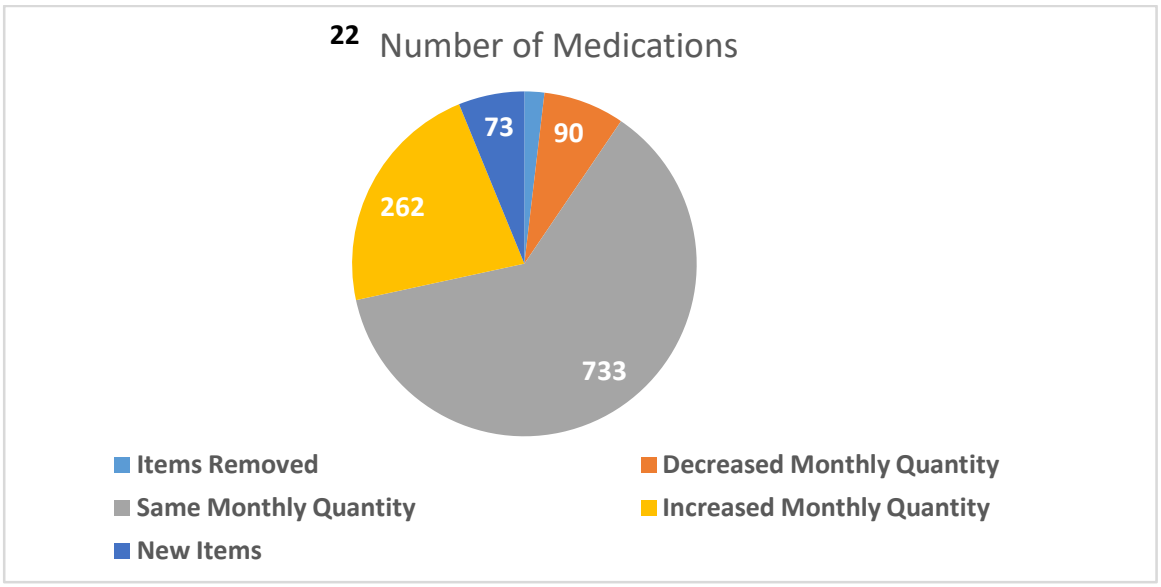

Figure 1: Five distinct categories based on changes in monthly shares of medications

4. DISCUSSION:

The examination of pharmaceutical supply trends at the Prince Rashid Bin Al Hasan Military Hospital for the years 2023-2024 offers essential insights into the complicated nature of medication management within the Jordanian Royal Medical Services (JRMS). The classification of pharmaceuticals into Items Removed, Decreased Monthly Quantity, Same Monthly Quantity, Increased Monthly Quantity, and New Items clarifies the hospital's adaptive procedures and emphasizes the elements driving these modifications.

Items Removed: The withdrawal of 22 items from the medicine inventory highlights a critical element of inventory management. Items may be eliminated for several reasons, including obsolete formulations, insufficient clinical efficacy, or the presence of superior substitutes. This tendency is essential for ensuring that healthcare providers prioritize drugs that yield optimal therapeutic results for patients. Nonetheless, it also prompts inquiries regarding the possible effects on patient care for those who may have depended on these treatments [11]. For example, if a medicine has been withdrawn due to low usage, it is crucial to evaluate if this indicates a genuine decrease in demand or a chance for clinician education regarding alternative therapies. Furthermore, systematic evaluations of the drug formulary must be performed to guarantee that deletions do not unintentionally restrict patient access to vital treatments.

Decreased Monthly Quantity: The reduction in the monthly quantity of 90 drugs signifies variations in demand, maybe indicative of shifting patient demographics or alterations in treatment protocols. Seasonal variations, shifts in disease incidence, and the implementation of new treatment procedures may affect these patterns. The observed drop may indicate a reduction in particular chronic illness manifestations or the effectiveness of a public health campaign that has diminished the prevalence of certain disorders. Conversely, it may also signify difficulties in managing chronic conditions, when patients are not obtaining essential prescriptions due to adherence problems or access restrictions. This requires additional examination of patient education and support mechanisms to guarantee effective medication adherence and management.

Same Monthly Quantity: The existence of 733 drugs with a consistent monthly quantity indicates a foundation of established therapeutic methods. This stability is crucial for guaranteeing that healthcare professionals can consistently obtain key pharmaceuticals required for normal care. This consistency indicates a well-administered formulary that conforms to contemporary clinical recommendations and patient requirements. While stability is typically advantageous, it is essential to consistently assess whether the unchanging nature of these drugs corresponds with advancing clinical practices and new therapies. Periodic evaluations of the formulary are essential to pinpoint enhancement opportunities, guaranteeing that clinicians have access to the most efficacious treatment alternatives available.

Increased Monthly Quantity: The rise in monthly dosages for 262 medications underlines a proactive strategy in medication management. This increase may signify escalating patient demands, advancements in clinical methodologies, or the emergence of novel therapeutic alternatives that have been embraced by healthcare professionals. This tendency prompts significant inquiries about the elements influencing heightened consumption. Do these increases correspond with enhanced health outcomes, or do they indicate the overutilization of specific medications? It is essential to assess the therapeutic suitability of these medications, ensuring the increases have been verified by evidence and represent authentic clinical requirement rather than being influenced by pharmaceutical marketing or other external factors.

New Items: The addition of 73 new drugs to the inventory signifies a flexible and responsive healthcare system. This can be ascribed to the continuous advancement of medical science, with novel medicines emerging that may offer enhanced efficacy and safety for patients. The integration of novel items requires comprehensive assessment and oversight to guarantee their successful integration into clinical practice. Healthcare professionals must participate in ongoing education concerning new medications, ensuring that clinicians are knowledgeable about their indications, contraindications, and possible side effects. Additionally, data regarding the efficacy and safety of these novel products should be gathered to enable continuous evaluations and ascertain their influence on patient outcomes.

Implications for Future Medication Management: This study's findings have substantial implications for the future of medication management in the JRMS. A comprehensive approach to pharmaceutical

inventory management is essential for improving care quality. Systematic audits and assessments of medication usage trends can enhance decision-making, directing formulary modifications and inventory alterations grounded in evidence and clinical significance. Moreover, continuous training and education for healthcare providers on pharmacotherapy, drug management, and novel treatment regimens are necessary. By cultivating a culture of perpetual learning, physicians can stay abreast of the newest breakthroughs and optimal practices, hence enhancing patient care.

The examination of pharmaceutical supply trends at the Prince Rashid Bin Al Hasan Military Hospital uncovers essential insights into the intricacies of medication management inside the JRMS. By comprehending the ramifications of these patterns and executing purposeful interventions, the JRMS can maintain the provision of high-quality healthcare and adapt proficiently to the changing medical scene.

5. CONCLUSIONS:

This study examined drug supply trends at Prince Rashid Bin Al Hasan Military Hospital within the Jordanian Royal Medical Services (JRMS) for the years 2023-2024. The classification of pharmaceuticals into Items Removed (22), Decreased Monthly Quantity (90), Same Monthly Quantity (733), Increased Monthly Quantity (262), and New Items (73) highlights significant changes affecting healthcare delivery.

The removal of items reflects a dedication to sustaining an efficient formulary, although the reduction in monthly quantities indicates potential areas for further examination about prescribing procedures. The stability of 733 drugs guarantees continuity of therapy, while the rise of 262 indicates increasing treatment demands. The recent introduction of 73 new medications signifies adaptability to changing therapeutic requirements. These findings highlight the imperative for the JRMS to consistently adjust its pharmaceutical inventory to enhance therapeutic results. Establishing efficient pharmacovigilance programs is essential to guarantee the safety and efficacy of recently introduced treatments. Future study ought to concentrate on longitudinal assessments of medication utilization and qualitative investigations to examine healthcare practitioners' viewpoints on medication management. Integrating patient feedback enables the JRMS to more effectively align its formulary with patient requirements.

LIMITATIONS OF THE STUDY: Numerous constraints must be acknowledged when analyzing the results of this study. The analysis is confined to one hospital, potentially impacting the generalizability of the results. Moreover, external factors affecting pharmaceutical demand, including seasonal diseases or public health campaigns, were not included in this study. Future studies may encompass several hospitals to improve the comprehension of pharmaceutical supply trends throughout the JRMS.

REFERENCES:

1. Sutters C. A. (1990). The management of a hospital formulary. *Journal of clinical pharmacy and therapeutics*, *15*(1), 59–76. https://doi.org/10.1111/j.1365-2710.1990.tb00357.x
2. JMRS | Home Page. (n.d.). https://jrms.jaf.mil.jo/index.html.
3. Carey, C. (2017). Technological change and risk adjustment: Benefit design incentives in Medicare Part D. *American Economic Journal: Economic Policy*, *9*(1), 38-73.
4. Ericson, K. M. M., &Starc, A. (2016). How product standardization affects choice: Evidence from the Massachusetts Health Insurance Exchange. *Journal of Health Economics*, *50*, 71-85.
5. Karel, L. I., Delisle, D. R., Anagnostis, E. A., &Wordell, C. J. (2017). Implementation of a formulary management process. *American journal of health-system pharmacy : AJHP : official journal of the American Society of Health-System Pharmacists*, *74*(16), 1245–1252. https://doi.org/10.2146/ajhp160193
6. Delate, T., Mager, D. E., Sheth, J., &Motheral, B. R. (2005). Clinical and financial outcomes associated with a proton pump inhibitor prior-authorization program in a Medicaid population. *Am J Manag Care*, *11*(1), 29-36.
7. Curtiss F. R. (2003). Formulary management methods and pharmacoeconomics. *Journal of managed care pharmacy : JMCP*, *9*(5), 452–456. https://doi.org/10.18553/jmcp.2003.9.5.452
8. WHO, practical guidelines on pharmaceutical procurement for countries with small procurement agencies.
9. Directive 2014/24/EU of the European Parliament and of the Council of 26

February 2014 on public procurement and repealing Directive 2004/18/EC, OJ L 94, 28.3.2014, p. 65.

10. Huskamp, H. A., Deverka, P. A., Landrum, M. B., Epstein, R. S., &McGuigan, K. A. (2007). The effect of three-tier formulary adoption on medication continuation and spending among elderly retirees. *Health services research*, *42*(5), 1926-1942.
11. Zhang, Y., Adams, A. S., Ross-Degnan, D., Zhang, F., &Soumerai, S. B. (2009). Effects of prior authorization on medication discontinuation among Medicaid beneficiaries with bipolar disorder. *Psychiatric Services*, *60*(4), 520-527.
12. Dunn, J. D., Cannon, E., Mitchell, M. P., & Curtiss, F. R. (2006). Utilization and drug cost outcomes of a step-therapy edit for generic antidepressants in an HMO in an integrated health system. *Journal of Managed Care Pharmacy*, *12*(4), 294-302.
13. Chatfield-Ball, C., Boyle, P., Autier, P., van Wees, S. H., & Sullivan, R. (2015). Lessons learned from the casualties of war: battlefield medicine and its implication for global trauma care. Journal of the Royal Society of Medicine, 108(3), 93–100. https://doi.org/10.1177/0141076815570923

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