

National Pharmacy Inventory Management System at the Ministry of Health Institutions in Saudi Arabia

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Abstract

The National Pharmacy Inventory Management system is a new initiative program at the Ministry of Health hospital in the Kingdom of Saudi Arabia. The system designed by expert pharmacists and clinical pharmacist from different region cross Saudi Arabia. The system drove from national and International regulation and guidelines of pharmaceutical societies around the world. The system was starting from procurement phase through storage, dispensing and storage system at the logistic warehouse of the Ministry of Health. The system guides the end user how to request medications by group tender or direct purchase, medications inventory management, and close follow up procedures. The system had a vision, mission, and goals. The review discussed the full detail policy and procedures of the pharmacy inventory system. The topic addressed the risk management of the program, and key performance indicators to measure the impact of the program. The new initiative system was the first project at Ministry of Health hospital implemented to improve management availability and prevent over or under the stock of medications and subsequently the avoidance of additional economic burden on health care system at Ministry of Health in Kingdom of Saudi Arabia.

Key words: Pharmacy, Inventory, Management, Ministry of Health, Saudi Arabia.

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INTRODUCTION

The pharmacy administration's skeleton consists of several units including but not limited to the inpatient and outpatient pharmacy, intravenous admixture services, clinical pharmacy, medications safety officer and pharmacy store at the Ministry of Health (MOH) healthcare institutions in Saudi Arabia.^[1-2] The primary function of a pharmacist is to prepare and dispense medications before the pharmaceutical concept founded in the 90s and role of pharmacist changed.^[3] Procurement and stocking of medications is an important step in the inventory management

system of a pharmacy. The pharmacist should keep the medications available at all times in the formulary, which is his primary duty as a part of the requirement of national and international standards of the hospital.^[4-5] Understock or overstock of medications reflect the mismanagement of pharmacy inventory. Shortage of medications reflects the negative outcome of disease management and additional unnecessary economic burden on the healthcare system.^[6-9] There are several review studies published regarding the pharmacy management system; they describe the method of inventory stock management and factors affecting pharmacy stock in detail.^[10-12] In addition, there are

several investigations around the world on the pharmacy practice of inventory management.^[7,13-14] whereas studies regarding the status of stock inventory at the pharmacy in Saudi Arabia are scarce.^[15-16] This might be because of the unclear inventory management system at the MOH institutions. The general administration of pharmaceutical care at MOH started initiative steps and established pharmacy inventory system for pharmacy in healthcare institutions including hospital or specialized centers or primary healthcare centers or dental ambulatory care clinics. We were not aware of local full described pharmacy inventory system published in the KSA, the Gulf and Middle Eastern countries. Therefore, in this study, we aimed to explore the pharmacy inventory management system at healthcare institutions in Saudi Arabia based on the international business model of pharmacy practice.

Assessment needs

Alomi *et al.* conducted a national survey of pharmacy with an emphasis on pharmacy inventory control and stocked management and reported a poor inventory control with an average half of the quantity of actual need received by the pharmacy and discovered many discrepancies in the reporting of follow-up the system.^[16] In addition, the author found that the essential medications were missing at the community pharmacy.^[15] The missing medications and lack of follow-up consequently affected patient's management care.

Method of development of an inventory system

The task force committee consisted of expert people from the pharmacies of the MOH hospitals and the non-MOH governmental institutions established to set up a national pharmacy management system for hospital's pharmacies, primary healthcare centers' pharmacies and dental centers' pharmacies. The committee was headed by the first author of this article; he conducted regular periodical meetings. The committee unitized and drove the pharmacy's inventory system from Alquassen and Al-Almadina cities. In addition by used the international business model and pharmacy guidelines of a new project.^[17-19] The draft was sent to several reviewers of the regional pharmacy administration. The draft was corrected and updated accordingly. Then, the second draft was sent to the reviewers again for their final comments and approval. This took around 6 months to complete the task. The general administration of pharmacy at the MOH sent the final document to all the hospitals for implementation. The inventory

system consisted of several parts that's including ; the initial requisition, maintenance of drug inventory, drug tender preparations, short expiry medications follow up, inventory monitory management and reporting of inventory management system. The system written base of the business model from international pharmacy societies.^[17-19]

Market Analysis

We performed a SWOT analysis on the project data. Following were the strong points of the project: it is a unified system for all pharmacies at the MOH institutions; it is a part of the training tool for new staff, which fits the accreditation requirements of the accreditation boards and the healthcare institutions; it controls the hospital's medication availability and prevents overstocking and understocking of the drugs; and it can be applied with or without a computer. This inventory system is a new project that is being followed by the MOH institutions. The opportunities points of the project were the project as part of vision 2030 and MOH strategic plan. The threads points of the project maybe related pharmacy staff neither; implemented the project or follow the project policy and procedures.

The system's descriptions

Vision, mission and goals of pharmacy inventory management system

The vision of this new system is to identify the best quantity of the drugs which should be available 24/7 without any discrepancy. The mission is to identify how to maintain cost-effective drug supply at the pharmacy of the healthcare institutions. The goals are to maintain drug supply over 24/7, to prevent overstock and understock of medications, to prevent expired medications and to maintain cost effectiveness.

Medication securements for hospital pharmacies, specialized centers, primary healthcare center and dental centers:

1. The MOH drug formulary is the only resource for all the hospitals, specialized centers and primary healthcare centers for requesting the medications, all drugs in the guide are awarded by the tender and are called Purchasable Items. Some drugs are not awarded in the tender; the pharmacy has to either provide an adjuvant tender or directly purchase it from the manufacturer for specific medical conditions (nonpurchasable items).
2. Any nondrug formulary requested for any specific

patient should have a completed application form which should be reviewed by the competent consultant and the drug information clinical pharmacist. The form should be approved by both the medical director and the hospital director. The department of medical supply coordinate with the regional medical supply to obtain the requested medication. All pharmacies submit all the monthly reports of nonformulary medications to the regional pharmaceutical care administration (RPCA, who subsequently submit it to the general administration of pharmaceutical care at Ministry of health (GAPC at MOH).

3. The pharmaceutical care managers in hospitals, specialized centers, primary healthcare centers and dental centers should submit monthly reports of unavailable medicines or those that are short in addition to the percentage of medications that are short to RPCA at medical affairs, who subsequently submit it to the GAPC.
 4. If the nonformulary medication has been requested for use in the intensive care, emergency, surgery or for dialysis and if there is no alternative medication is available from the MOH drug formulary, then the nonformulary drug forms written by the consultant should be reviewed by the pharmacist and should be approved by the medical director and the director of the hospital or the director of the primary healthcare center. If the drug is to be used for an emergency case, then the drug should be available within 24 hours of prescription, whereas if it is a regular medicine, then it should be available within 72 hours of prescription. The patient is not allowed to buy on his account for any reason whatsoever and all such cases and reports should be discussed with the PTC's related institutions. The monthly claims report should be submitted to the RAPC and discuss with the regional pharmacy and therapeutic committee. Full descriptions of all cases should be submitted on a bimonthly basis to the GAPC and discuss with the corporate pharmacy and therapeutic committee thoroughly.
 5. If the nonformulary medicine is frequently requested and has one of the following elements, then the application for inclusion of new medication must be filled and signed by the consultant physician:
 - a) If the drug has been requested for at least 50 patients or if the medication has been requested for the intensive care unit or emergency section with at least 5 patients.
 - b) If there is an increase in the cost of medication by more than 5% of the direct purchase value.
 - c) If the medicine has no alternative or has been withdrawn from the market or is unavailable in the KSA.
 - d) If the therapeutic protocols have been changed based on the international medical and scientific sources.
 - e) If the drug is a necessary medication that was not initially included in the hospital formulary.
- The drug information pharmacist should evaluate the request and submit the report to the local PTC for approval, who will subsequently recommend it to the regional and corporate PTC for final approval.
6. All PTCs at each location and institution should review drug formulary annually. If there are any discrepancies with respect to the addition or deletion of medications, then the committee should prepare all related documentation and submit it to the higher authorities at medical affairs, who subsequently submit it to the corporate MOH for final approval.
 7. The GAPC should prepare drug monograph for any addition or deletion of medication and circulate it to all the related departments for further follow-up and application.
 8. Each medical section at any healthcare institution should coordinate with the department of pharmaceutical care to setup up drug therapy management protocol or pathway of the specific disease. The guidelines should be approved by the local PTC and be updated annually. All approved protocols or pathways should be sent to the corporate PTC and GAPC for further follow-ups and implementations.
 9. A complete report on any rejected medication by the local or the regional PTC should be submitted along with the reasons for rejection to the corporate PTC and GAPC.
 10. All medications should be classified at the medical supply warehouses according to their requisition and movement. Class A1 should contain the fast-moving drugs; class A2 should contain medications related to cardiopulmonary resuscitation, emergency, critical care, renal dialysis, vaccines and surgical medicines; class B should contain medications related to chronic diseases; and class C should contain slow-moving

medications. All these medication classes should be determined for their average weekly consumption, safety stock and reorder point for each medication. [12,14]

11. Pharmacy care managers in hospitals, specialized centers, healthcare centers and dental centers should follow-up the medication stock and medical supply department stocks with an emphasis on the following reports included but not limited to:
 - a) The description of expired medicines, quantities, lots numbers and their location at all sections of the hospital, specialized center, healthcare center or dental center.
 - b) The report of medications before 6 months of expiry date including the exact quantities existed at all the sections of the hospital, specialized center, healthcare center or in the dental center.
 - c) Report on unavailable medications.
 - d) Report on nonformulary medications.
 - e) Report on fast-moving drugs (class A1): fast moving only if more than 12.5% of the stock exceeds daily.
 - f) Report on drugs used in emergency, intensive care, dialysis, cardiopulmonary resuscitation, serum and in operation (class A2): any amount requested per day.
 - g) Report on drugs used to treat chronic diseases if more than 6.25% of the stock exceeds daily.
 - h) Report on slow-moving medicines if the exchange rate is less than 3.75% of the stock per day.
 - i) Report on medications of fast-growing growth and subsequently increases
 - j) Report on fast-growing drugs in the gradual decline (fast-growth reduction).
 - k) Report on medications of slow-growing growth.
 - l) Report on medications of slow-growth reduction.
 - m) Report all medicines' monthly consumption rate and the minimum reorder points for the request.

The demand for medicines, moving the nonmoving items, places of exchange and replacement of medications should be updated accordingly to the above reports.
12. The director of pharmacy care in hospitals, specialized centers, healthcare centers or dental centers shall submit the previous reports on a monthly basis and present them to the PTC for discussion and recommendations. The monthly reports should be submitted to the regional and corporate PTC with RPCA and GAPC.
13. The directors of pharmacy care in hospitals, specialized centers, healthcare centers and dental centers are entirely responsible for any shortage or overstocks of medicines; if it occurs, then follow-up, update and report accordingly.
14. The drug quality report should be submitted to the manufactures related to the efficacy problems or manufacturing problem. Also, another copy should send the medications Safety and quality management units at pharmacy department at the hospital pharmacy or specialized center, healthcare center or dental center. All reports should submit to RAPC and GAPC.
15. Adverse drug reactions of any medication should be reported to the department related to the medication safety and drug information at the hospital pharmacy, specialized center, healthcare center or dental center. All medication safety report should be submitted to the RAPC and GAPC.
16. Medication errors must be introduced by the medication safety committee and medication safety office at the hospital, specialized center, healthcare center or dental center. All medication safety report should be submitted to the RAPC and GAPC.
17. The drug stores must be technically subordinate to the hospital pharmacy department, specialized center, healthcare center and dental center.
18. The annual inventory must be maintained by the end of every year at each department of the pharmacy, each section of the hospital, specialized center, healthcare center or dental center, with a complete account on the medicines and their quantities and expiration date.
19. An electronic link must be created between the pharmacy and the drug stores with the medical supplies of the hospital, specialized center, healthcare sector, dental center, medical supply department and the general administration of the medical supply in the MOH to follow-up all medicines, their quantities and lots numbers and their date of expirations.
20. In case of increased consumption of a medicine which is more than its required quantity, the pharmacy should raise a request to increase quantities in the future and should be in coordination with the department of medical supplies in the hospital, specialized center, healthcare center or dental center as well as the warehouses of medical supply

directorate.

21. Submit an annual report about increased consumption of the medicine to the department of pharmaceutical care in the region and the general administration of pharmaceutical care to solve the problems in the pharmaceutical care departments in the hospitals, specialized centers, healthcare centers and dental centers to prevent a shortage in the future.
 22. The drug utilization evaluation department should exist at each hospital pharmacy, specialized center, healthcare center or dental center by allocating a pharmacist or a clinical pharmacist to participate in the implementation of the program.
 23. The pharmaco-economic department should exist at each hospital pharmacy, specialized center, healthcare center or dental center by allocating a pharmacist part or full-time for program implementations.
 24. The drug information center should exist at each hospital pharmacy, specialized center, healthcare center or dental center by providing or allocating a pharmacist or a clinical pharmacist to participate in the implementation of the program.
 25. Medication safety section should exist in each pharmacy, hospital, specialized center, healthcare center or dental center by providing or allocating a pharmacist part or full-time for program implementations.
 26. Asserting the existence of a comprehensive quality department at each hospital pharmacy, specialized center, healthcare center or dental center by providing or allocating a pharmacist part or full-time for program implementations.
4. Discuss with each medical departments of the hospital related to new drugs and compare it with previous medications and calculate the increased quantity of each medication for each disease and the expected increase according to the mechanism of exchange and according to the local therapeutic protocols.
 5. Determine the protocol of dispensing medicines according to the therapeutic guidelines and the proportion of patients for each first treatment or second or third one with considering new or deleted medications.
 6. Determine the quantities required and expected according to the patient statistics from each department and count the quantities for each medicine.
 7. Discuss with the drug stores and with all related departments and prepare the final draft of a number of drugs.
 8. The draft budget should be submitted to the PTC to discuss and approve the final quantities of medications and the method of dispensing medication according to the protocols agreed upon by the committee.
 9. The budget allocated for medications should be followed up by the PTC every month and solutions and suggestions should be put in place to avoid any future problems.
 10. Submit the final quantities after approval by the local PTC to the Directorate of the Department of Medical Supply and then to the General Directorate of Medical Supply at MOH.
 11. The budget for the direct purchase of medicines should be determined annually by the pharmacy and the medical supplies expected to be implemented and approved by the PTC and follow-up the direct purchase budget of the committee monthly.
 12. All the applications for medicines that are not available at the MOH's drug formulary should be followed up and setup frequent follow up of their impact on the movement of regular medications.
 13. Any non-drug formulary should not dispense medication to any other department of the hospital or the center unless approved by the pharmacy and antidotes committee of the establishment.
 14. It is strictly prohibited to disclose any information patients annually.

Preparation of Medication Tender at Healthcare Institutions

The preparation of the pharmacy budget for medications should implement the following steps:

1. Review all the previously mentioned drug inventory reports and discuss them with the drug stores and with the medical supply of the hospital, specialized center, healthcare center or dental center and then start the preparation of the initial draft of the quantities of each item of medicines.
2. Discuss with the drug information center in the pharmacy with the new drugs added for this year.
3. Discuss with each medical sections of the hospital, specialized center, healthcare center or dental center with drugs specialties by increasing the number of

to the representatives of the pharmaceutical companies about the movement of medicines available or their cost or about the supplier.

Short Expiry Medications System

To prevent any expired medication being dispatched to the patient at the pharmacy sections, following steps should be taken care:

1. Provide a computer program to monitor the movement of medicines from the supplier to the medical supply departments then to the pharmacy toward the pharmacy units and hospital departments that contains the following:
 - a) The report included the date of receipt of the medicines, the lots number and the expiry date and quantity indicating the following:
 - Short expiry of medicine after 6 months (180 days).
 - Short expiry of medicine after 3 months (90 days).
 - b) The custodians of the Covenant, the supply managers and the directors of the pharmacy may know their stocks, their expiry dates and the medicines available in supply and at the pharmacy.
2. When providing medicines from medical supplies in the region, the validity dates shall not be less than 75% of the expiry date.
3. When storing medications in the drug store in a pharmacy or medical supply in a hospital, specialized center, healthcare center, dental center or department, the Secretary of the Covenant must put the medicine close to the first coming in and first going out.
4. Shelf life should be checked periodically; there should be a periodic reporting of all classes of medicines, such as classes A1 and A2, class B and class C medicines on a daily, weekly and on monthly basis, respectively.
5. Previous reports must be matched with the inventory control reports in relation to the expiry dates at the department of supply and the department of pharmacy of the respective hospital.
6. The dispensing of medicines in hospitals, specialized centers, healthcare centers and dental centers should be as follows:
 - a) Outpatient pharmacy at hospitals and healthcare centers whose validity dates shall not be less than 6 months.
 - b) The inpatient pharmacy and internal medical departments of the hospital shall not have a validity period of not less than 3 months.
7. All directors of pharmaceutical care departments in health facilities should not receive medicines with a validity period of fewer than 6 months from the warehouses of medical supplies.
8. In case of short expiry drugs or near finish drugs, at least 6 months, need to address the Department of Pharmacy care and with coordination and the Department of Medical Supply Directorate to circulate to hospitals. If the short expiry medications existed second time, the pharmacy needs to reduce the balance of medicines for these items in the next year and allocate a particular place or shelf with a precise date of validity and inform all the workers about it.
9. Compel pharmaceutical companies to write dates of validity in numbers clearly to facilitate their reading.
10. In the absence of any medicines and in the case of medicines with remaining validity of fewer than 3 months, coordinate with the medical supply directorate to determine the required quantity and sections needed to dispense and for a minimal time to replace the new of medicines' validity.
11. The short expiry drugs (earlier than 10 days) needs to be withdrawn; coordinate with medical supply to replace drugs with new expiry dates based on the terms of the awarded and supply Gulf countries for competitions for drugs, vaccines, chemicals, kidney drugs and competitors of the National Unified Procurement Company for Medical Supplies (NUPCO).
12. In order to destroy expired medicines, the executive regulation of the unified system of waste management of the Council of Health Ministers of the Gulf Cooperation Council should be followed.
13. Each medicine should be treated as a unit upon receipt from the drug alone without relations of other medications. The department of medical supply of the Directorate or the controller of the stock should not receive any short expiry medicine.
14. Do not circulate the overstock medicines in pharmacy to all medical specialties. Any overstock circulation should approved by the PTC through updating the drug therapy guidelines in the hospital, the specialized center, the healthcare sector or the dental center. Obtain the official approval of the Committee and then circulate them and set

an exceptional limited period to a limited date and address the Department of Supply Medical Directorate.

15. Periodic review and annual update on the terms of awarded and supply tenders of Gulf competitions for drugs, vaccines, chemicals and kidney drugs and prices offered by the competition by the Department of Medical Supply Directorate.
16. The contracts of the pharmaceutical companies with the MOH should be consulted in connection with the medical supply in the health facility and coordinated with RPCA and GAPC.

Key Performance Indicators and Outcomes Measured

The following reports should be obtained on a weekly basis, if not, at least on a maximum monthly basis. For instance, report on fast-moving items identifies the quantity of the specified drug consumed in a shorter period. Report on slow-moving items identifies the quantity of a specified drug with a longer period. Report on fast growth identifies the percentage quantity of drug that has increased cumulatively with a shorter period. Report on slow growth items identifies the percentage quantity of the drug that has increased cumulatively with a longer period. The report on short expiry items identifies the number of drugs that are before 3–6 months of expiry dates and the report on re-order point the number of medications or minimum quantity of the medication that needs to be requested within a period. Report on nonmoving items identify the drugs that are not required within a period. Report on unavailable medications at the supplier define the drug stock that is not available with the supplier. Report on unavailable medications at the pharmacy identify the medications that are not available in the pharmacy to be dispensed immediately to the patient and finally, report on the number of direct purchase medications identify the number of drugs purchased through the nontender method.

Management Team

To implement the system, several teams should be founded. The Central Pharmacy Inventory Management team should consist of a representative from the general pharmacy administration at the MOH, general administration of medical supply, general administration of information technology and general administration of finance. The committee should have goals to oversee the system implementation and monitor and follow-up the system across the KSA.

Another team should be established at medical affairs consisting of regional pharmacy inventory management committee, which in turn consist of the members of the regional pharmacy administration, regional medical supply, regional information technology and regional financial department. The regional committee should implement the system at their region and follow closely and report quarterly to the central committee. The local committee at the hospital, the primary healthcare center or the specialized center should also be founded. The committee must include expert people from the departments of pharmacy, medical supply and information technology. The committee should implement the system locally at their institution and solve the barriers against that and report their activities to the regional committee. The central committee should financially support the administration with respect to all regional or local committee-related issues.

Gap Analysis and Feasibility Analysis

All the committees should analyze what is existed of the system and what is the optimal level they wish to reach. The difference between these two is called gap analysis. The committee should list all the things needed to achieve their goal of the implementation project. The requirement to fit the gab includes the workforce staff, building, policies and procedures and all related requirements.

Pharmacy Inventory Management System Financial Plan

All the pharmacy inventory management system-related committees should set up the financial plan to implement the project related startup cost including the workforce staff, education and training courses and fixed price including traveling experiences and accommodations for all committee members. The quarterly report of incomes and expenses, balance sheet and cash flow for the projects should be maintained in addition to the statement of revenue and profit of the system with a quarterly budget. The income can be calculated through the net cost of expired medications before and after implementing the system. The net loss of wastage of drugs can be calculated before and after system implementation. The net cost of the direct purchase of medicines can be calculated before and after the system implementation. The net cost of illness can be calculated before and after the system implementation. The workload of hospital staff and converted to money wise before and after the system implementation.

Total incomes and expenses related issues should be calculated to get net benefit results from the project.

Pharmacy Inventory Management System Action Plan and Project Management

All the pharmacy inventory management committee at all administration levels should setup action or business plan and follow-up the project. The plan should be divided into several general steps; the time needed to finish these steps and the person responsible for its completion and the cost should be planned. In addition, it need for more detail of executive plan and depth detailed steps for each general steps and dead line for each step.

Pharmacy Inventory Management System Education and Training

The start implementation steps are to create awareness during education and training sessions for pharmacy staff at each specialty. The central committee of the pharmacy inventory management system conducts two courses annually to all committee members of 20 regional committees, whereas the regional committee conducts educational sessions to all the staff of local committees. Furthermore, the regional committee should make special education session to all stakeholder supervisors of each institution.

The local committee should make education and training session to all pharmacy staff about the implementation of the pharmacy inventory management system.

Risk management of pharmacy inventory management system

Risk management can be divided into six parts: scope risks, human resources risks, technical risks, budget risks, quality risks and schedule risks. Scope risks include all the common departments' agreement risk. This is a high-impact and a high-priority risk. This means scope risk can be avoided by a full discussion of the project and all members should agree with the vision, mission and goals of the project. The human resources risks include the required workforce to implement the project. This is a high- impact and high-priority risk and the team should send more members of the pharmacy staff to analyze the demand of workforce. All concerned committees should send their personnel to the related and the human resources' departments

to request additional members to pharmacy staff. All personnel-related project needs education and training; this is a high-impact and medium-priority risk. All management teams should coordinate with the human resources team to set up an educational plan with cost coverage.

The technical risks include designing the electronic reports of the pharmacy inventory management system. This is a high-impact and high-priority risk. The members of information technology and all the concerned committee members should set up an action plan for all computer-related work and should set up the necessary budget and obtain the approval from all the related departments. In addition, education and training on the new computer system is another high-impact and high-priority risk. The concerned committee should coordinate with the departments of information technology and human resources to avoid this risk. The budget risks include the education courses of the project. This is a high-impact and high-priority risk. The team should conduct all courses that are needed to avoid this risk. The second budget risk is related to the travel and accommodation which is a high-impact and high-priority risk. The team management should contact the higher administration to obtain the permission from the committee to avoid this risk. Both risks are acceptable.

The quality risks include the key performance indicators (KPIs) that do not reach the optimal level of satisfaction. This is a very high-impact and high-priority risk. All committees and management teams should review the progress of the project implementation, discuss with all staff members about the KPIs results and set up a solution. The schedule risks are those that delay the implementation of an action plan from the management teams or pharmacy staff. This is a high-impact and high-priority risk. The central committee of the project should closely monitor all project-related activities and visit all regions periodically to take care of the implementation.

CONCLUSION

The national pharmacy inventory management system is a new initiative program at Ministry of Health hospitals in the Kingdom of Saudi Arabia. The program is highly recommended to contour implementation to keep all medications for patient care institutions and avoid un-necessary economic sequences on health care system at Ministry of Health hospitals in Saudi Arabia.

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CONFLICT OF INTEREST

None.

ABBREVIATIONS

KSA: Kingdom of Saudi Arabia; **MOH:** Ministry of Health; **PTC:** Pharmacy and Therapeutic Committee; **RPCA:** Regional Pharmaceutical Care Administration; **GAPA:** General Pharmaceutical Care Administration; **SWOT:** Strengths, Weaknesses, Opportunities and Threats; **NUPCO:** National Unified Procurement Company for Medical Supplies.

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