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Analysis of Drug Supply Activities at Song Hinh District Medical Center in 2024

Phân tích hoạt động cung ứng thuốc tại Trung tâm Y tế Huyện Sông Hinh năm 2024

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Abstract

Objectives: To analyze the current drug supply situation at Song Hinh district health center in 2024.

Subjects and methods: The study was conducted using a retrospective descriptive design, focusing on the activities implemented and data related to drug supply at the Pharmacy department, Finance – Accounting department, Planning - Professional Affairs department, and Administration - Organization department of Song Hinh district health center.

Results: In 2024, Song Hinh district medical center (SHDMC) developed a drug list consisting of 189 items, divided into 23 pharmacological groups, corresponding to the local disease patterns. Among these, antiparasitic and anti-infective drugs accounted for the highest proportion of items in the list, reaching 18.52%, accurately reflecting the common treatment needs. Domestically produced drugs dominated, representing 95.62% of the total value of procured drugs, demonstrating compliance with the policy of prioritizing the use of domestic pharmaceuticals. The selection and supply of essential medicines (V and E), classified according to the ABC-VEN system, were emphasized, with budget allocations focused on high-priority groups (A, B, C), contributing to the efficient use of financial resources for pharmaceuticals. Storage, preservation, and dispensing of drugs at the Pharmacy department were strictly carried out in full compliance with Circular no. 36/2018/TT-BYT of the Ministry of Health on "Good Storage Practices for drugs and drug substances."

Conclusion: Song Hinh district health center has developed a rational drug list that meets actual local treatment needs, with a high proportion of domestic drug usage. Additionally, drug management, storage, and dispensing have been effectively implemented in full compliance with current professional standards.

Keywords: ABC-VEN, drug supply, drug list, Song Hinh district health center

Tóm tắt

Mục tiêu: Phân tích thực trạng công tác cung ứng thuốc tại Trung tâm Y tế huyện Sông Hinh trong năm 2024.

Đối tượng và phương pháp: Nghiên cứu được tiến hành theo thiết kế mô tả hồi cứu, đối tượng là các hoạt động đã triển khai và số liệu liên quan đến công tác cung ứng thuốc tại Khoa Dược, Phòng Tài chính - Kế toán, Phòng Kế hoạch nghiệp vụ và Phòng Tổ chức hành chính thuộc Trung tâm Y tế huyện Sông Hinh.

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Kết quả: Trong năm 2024, Trung tâm Y tế huyện Sông Hinh đã xây dựng danh mục thuốc gồm 189 mặt hàng, phân chia theo 23 nhóm tác dụng dược lý, phù hợp với đặc điểm mô hình bệnh tật tại địa phương. Trong đó, nhóm thuốc điều trị ký sinh trùng và chống nhiễm khuẩn chiếm tỷ trọng mặt hàng trong danh mục cao nhất, đạt 18,52%, phản ánh sát thực nhu cầu điều trị phổ biến. Tỷ lệ thuốc sản xuất trong nước chiếm ưu thế với 95,62% tổng giá trị thuốc được mua sắm, thể hiện sự tuân thủ định hướng ưu tiên sử dụng thuốc nội địa. Hoạt động lựa chọn và cung ứng thuốc thiết yếu (V và E) theo phân loại ABC-VEN được chú trọng, với ngân sách phân bổ tập trung vào các nhóm thuốc có mức độ ưu tiên cao (A, B, C), góp phần đảm bảo hiệu quả sử dụng nguồn lực tài chính dành cho thuốc. Công tác tồn trữ, bảo quản và cấp phát thuốc tại Khoa Dược được thực hiện nghiêm ngặt, tuân thủ đầy đủ các quy định tại Thông tư 36/2018/TT-BYT của Bộ Y tế về "Thực hành tốt bảo quản thuốc và nguyên liệu làm thuốc".

Kết luận: Trung tâm Y tế huyện Sông Hinh đã xây dựng danh mục thuốc hợp lý, phù hợp với nhu cầu điều trị thực tế tại địa phương, với tỷ lệ sử dụng thuốc nội địa cao. Đồng thời, công tác quản lý, bảo quản và cấp phát thuốc được triển khai hiệu quả, bảo đảm tuân thủ đầy đủ các quy định chuyên môn hiện hành.

Từ khóa: ABC-VEN, cung ứng thuốc, danh mục thuốc, Trung tâm Y tế huyện Sông Hinh

1. Introduction

Medicines are an indispensable factor in medical examination and treatment, determining the quality of medical services, the effectiveness of treatment, the ability to restore the patients' health, and the people's trust in the medical system. At SHDMC a grade 3 hospital, the local frontline unit, the supply of medicines always plays a key role, ensuring that the treatment needs are met and that the prevention of common diseases is fully met. However, the current drug supply activities face numerous challenges due to changes in healthcare financial mechanisms, increasingly stringent bidding regulations, fluctuating drug prices, and the supply capacity of contractors, manufacturers, and importers. This reality requires the pharmacy department to be proactive, flexible, and timely in adjusting its plans to suit the situation. In this context, analyzing and evaluating drug supply activities at SHDMC is essential to clarify how well the center meets the needs for medical examination and treatment, and to identify the advantages and difficulties during implementation. The research results will not only contribute to improving the efficiency of drug management and use at the facility but also serve as a basis for proposing appropriate solutions aimed at providing a drug supply that is sufficient, timely, safe, and economical, thereby enhancing the overall effectiveness of the center's drug supply work.

2. Subjects and methods

2.1. Study subjects

The activities and data reflect drug supply management at the Pharmacy Department, Finance–Accounting department, and Planning–Professional department.

2.2. Research methods

The study employed a retrospective descriptive method, analyzing records, reports, and HIS-filtered data from the Pharmacy department, as well as data and reports from the Finance and Accounting department and the Planning and Professional Affairs department. This method has been similarly applied in studies on drug supply management at district-level health facilities [3], showing its relevance and practical applicability.

2.3. Research content

The research involved analyzing the structure of the drug list based on pharmacological action groups, origin (domestic vs. imported drugs), and its suitability for the disease patterns at the center in 2024. Additionally, a retrospective review was conducted on records, ledgers, reports, and regulations from the SHDMC related to drug storage, preservation, dispensing, and utilization monitoring in 2024.

2.4. Data collection and processing

All data and documents related to SHDMC drug supply activities were collected,

systematized, and arranged in chronological order. The collected data were then aggregated, presented as tables and illustrative diagrams, and processed using Microsoft Excel software for analysis and evaluation.

3. Research results

3.1. Analysis of drug selection and procurement at Song Hinh District Medical Center

3.1.1. Analysis of the drug list

In 2024, SHDMC developed and issued a list of 189 chemical drugs, based on the regulations stipulated in Circular no. 20/2022/TT-BYT of the Ministry of Health [11]. This Circular provides detailed guidance on the list, reimbursement rates, and conditions of use for chemical drugs, biologicals, radiopharmaceuticals, and markers within the scope of health insurance coverage.

The drugs in the list were classified according to pharmacological criteria and were consistent with mechanisms of action and therapeutic purposes, facilitating management, use, and monitoring of treatment effectiveness. A total of 189 drugs were divided into 23 distinct pharmacological groups. The structure and number of drugs in each group are presented in Table 1.

Table 1. Structure of drug list according to pharmacological action group

No.	Drug group	Quantity (medicine)	Proportion (%)
1	Anti-infective and antiparasitic drugs	35	18.52
2	Cardiovascular drugs	18	9.52
3	Drugs acting on the gastrointestinal system	17	8.99
4	Hormones and drugs regulating endocrine function	10	5.29
5	Minerals and vitamins	6	3.17
6	Analgesics, Antipyretics, nonsteroidal anti-inflammatory drugs (NSAIDs), drugs for gout and musculoskeletal disorders	9	4.76
7	Other infusion solutions	4	2.12
8	Drugs for ophthalmology andotorhinolaryngology conditions	5	2.65
9	Drugs acting on the respiratory system	18	9.52
10	Anesthetics and local anesthetics	4	2.12
11	Antiallergic drugs and medicines for hypersensitivity reactions	4	2.12
12	Drugs affecting the hematopoietic system and coagulation	3	1.59
13	Drugs for mental and neurological disorders	1	0.53
14	Muscle relaxants and cholinesterase inhibitors	2	1.06
15	Dermatological drugs	5	2.65
16	Antidotes and drugs for poisoning treatment	5	2.65
17	Anticonvulsants and antiepileptic drugs	3	1.59

No.	Drug group	Quantity (medicine)	Proportion (%)
18	Drugs for reproductive health: oxytocics. postpartum hemostatics, and preterm labor prevention	3	1.59
19	Diuretics	4	2.12
20	Drugs for migraine and vertigo	6	3.17
21	Antiseptics and disinfectants	4	2.12
22	Sera and vaccines	6	3.17
23	Other drug groups	17	8.99
	Total	**189**	**100**

Comment: The findings in Table 1 show that the drug list at the SHDMC included 189 medicines, classified into 23 pharmacological groups. Among these, anti-infective and antiparasitic drugs represented the most significant proportion (18.52%), followed by cardiovascular drugs and respiratory system drugs (9.52% each), and gastrointestinal drugs (8.99%).

Regarding drug origin, the selection between domestically manufactured and imported medicines demonstrates the center's policy of prioritizing local pharmaceuticals. The distribution of the drug list by origin is detailed in Table 2, further illustrating this strategic orientation.

Table 2. Structure of domestic versus imported drugs

No.	Type of drugs	Number of items	Proportion (%)	Value (million VND)	Proportion (%)
1	Domestic medicines	177	93.65	6,140.25	95.62
2	Imported medicines	12	6.35	281.03	4.38
	Total	**189**	**100**	**6,421.28**	**100**

Comment: The data in Table 2 indicate that domestically manufactured medicines accounted for 93.65% of the total items and 95.62% of the total drug expenditure, representing nearly the entire value of pharmaceutical procurement at the Center.

3.1.2. Analysis of disease structure

The disease structure at the health center, classified according to ICD-10, is presented in Table 3.

Table 3. Disease structure at Song Hinh district health center

No.	ICD Code	Disease Chapter	Number of Cases (Case)	Proportion%
1	J00-J96.0	Diseases of the respiratory system	15,112	33.71
2	M00-M90	Diseases of the musculoskeletal system and connective tissue	5,873	13.1
3	I05.2-I88.9	Diseases of the circulatory system	4,438	9.9

No.	ICD Code	Disease Chapter	Number of Cases (Case)	Proportion%
4	E01-E89.6	Endocrine. nutritional. and metabolic diseases	3,995	8.91
5	K00-K93	Diseases of the digestive system	3,525	7.86
6	A00-B83	Infectious and parasitic diseases	2,905	6.48
7	S00-T98	Injury. poisoning. and certain other consequences of external causes	2,748	6.13
8	Z00-Z98	Factors influencing health status and contact with health services	1,383	3.09
9	R00-R99	Symptoms. signs. and abnormal clinical and laboratory findings	1,281	2.86
10	N00-N96	Diseases of the genitourinary system	1,080	2.41
11	H00-H59	Diseases of the eye and adnexa	514	1.15
12	H60-H95	Diseases of the ear and mastoid process	469	1.05
13	L00-L93	Diseases of the skin and subcutaneous tissue	425	0.95
14	C00-D48	Neoplasms	382	0.85
15	G00-G81	Diseases of the nervous system	237	0.53
16	O00-O99	Pregnancy. childbirth, and the puerperium	222	0.5
17	D50-D89	Diseases of the blood, blood-forming organs, and immune mechanism	138	0.31
18	Q20-Q76	Congenital malformations, deformations, and chromosomal abnormalities	51	0.11
19	U51-U67	Traditional medicine-related diseases	32	0.07
20	F06.4-F89	Mental and behavioral disorders	14	0.03
		Total	**44,824**	**100**

Comment: The analysis results (Table 3) reveal that disease cases were concentrated in several major groups. Respiratory diseases were the most prevalent, accounting for 33.71% of total cases, followed by musculoskeletal and connective tissue diseases (13.10%) and circulatory system diseases (9.90%).

3.2 Evaluation of warehouse management, drug supply, and drug use monitoring at Song Hinh district medical center

3.2.1. Warehouse management activities

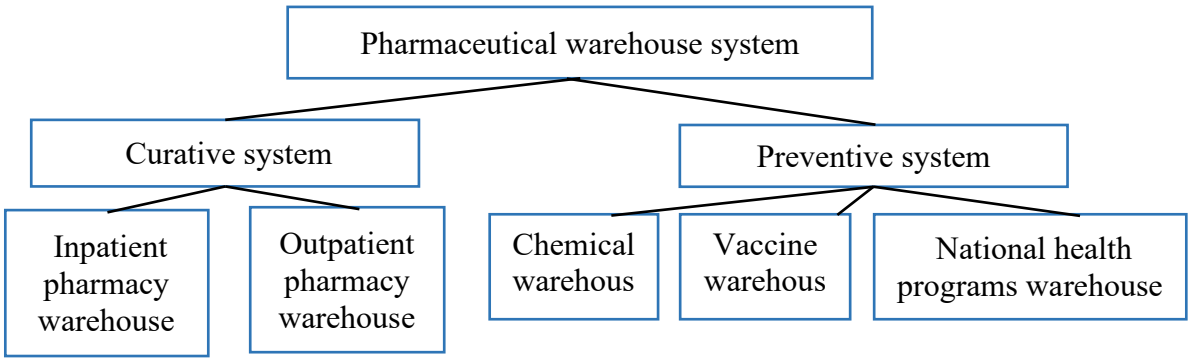

Figure 1. Pharmaceutical warehouse system

Comment: The drug warehouse is located on the ground floor for convenient drug receipt and dispensing, adhering to Good Distribution Practices (GDP). Storage conditions like lighting, temperature, humidity, and ventilation are strictly controlled according to Good Storage Practices (GSP) standards. The warehouse has shelves, pallets, and climate control devices to maintain a stable environment suitable for all drug types. It is clearly organized and has specific responsibilities to ensure efficient dispensing for both inpatients and outpatients.

Drug receipt activities: The process of receiving drugs, consumables, and chemicals is strictly carried out by the Drug Receipt Committee. The committee is responsible for carefully verifying and ensuring the accuracy of information such as batch numbers, expiration dates, product types, packaging specifications, quantity, and quality, thereby guaranteeing that all drugs admitted into the warehouse meet regulatory requirements.

Drug statistics and inventory control: After drug dispensing, the relevant documents are transferred to the statistics unit for data entry into the Hospital Information System (HIS). Inventory reports are prepared in duplicate; one copy is stored at the pharmacy department, and the pharmacy accountant manages the other. The Receipt Committee includes the head of pharmacy, the warehouse manager, a Finance–Accounting department representative, and the pharmacy accountant.

3.2.2. Drug dispensing activities

At the warehouses of the Pharmacy–Medical Equipment Department of SHDMC, specific dispensing procedures are implemented to ensure compliance with regulations. The outpatient dispensing process is illustrated in Figure 2.

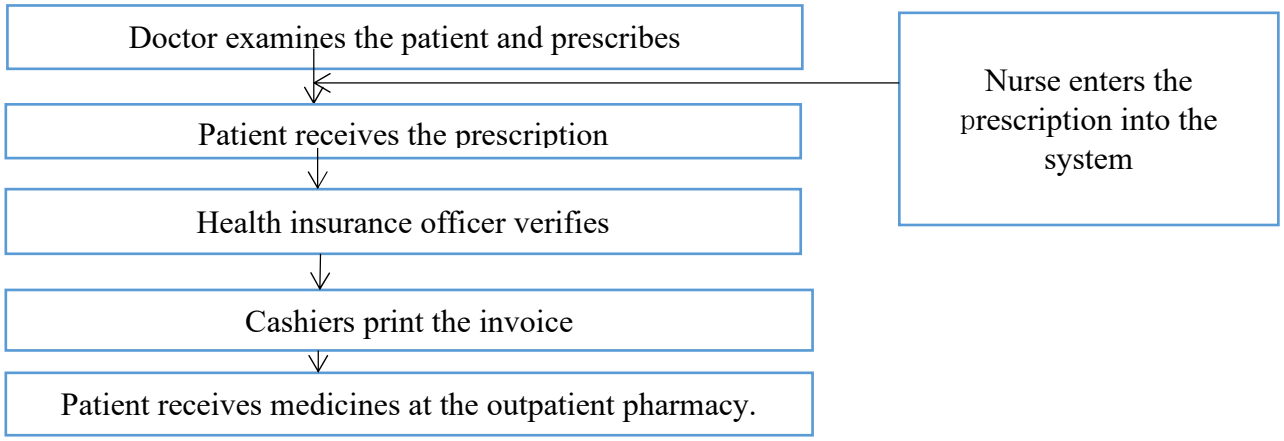

Figure 2. Outpatient drug dispensing process

Comment: The outpatient drug dispensing process at SHDMC is organized through a closely linked sequence involving multiple departments: physicians conduct examinations and prescribe, nurses enter data into the system, health insurance officers verify, cashiers print the invoice, and medicines are dispensed at the outpatient pharmacy. This model enhances drug supply efficiency, ensuring that prescriptions are dispensed promptly, with the right type, to the right patient.

The inpatient drug dispensing process is presented in Figure 3.

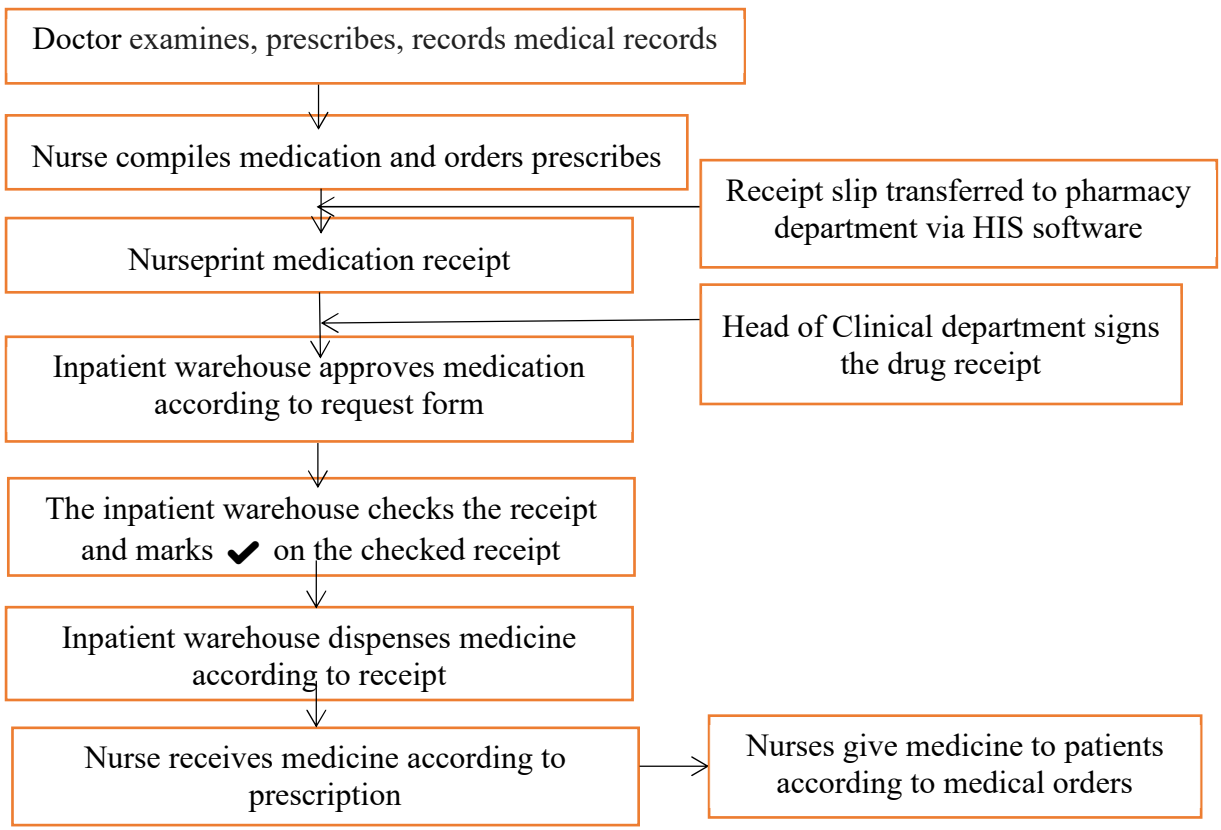

Figure 3. Inpatient drug dispensing process

Comment: The inpatient drug dispensing process at SHDMC is implemented in a synchronized manner, with close coordination among physicians, nurses, clinical departments, and the pharmacy. All steps from prescribing, preparing requisition forms, approval, verification, to dispensing are carried out through the Hospital Information System (HIS), ensuring clarity and accuracy while reducing patient waiting time.

3.2.3. Drug utilization activities at Song Hinh district medical center

The analysis of drug utilization using the ABC method, applied to classify all medicines used at SHDMC, is presented in Table 4.

Table 4. Drug utilization analysis by ABC method

Group	Number of drugs	Proportion of total items (%)	Total drug cost (million VND)	Proportion of total cost (%)
Group A	34	17.98	5,180.54	80.68
Group B	40	21.16	914.39	14.24
Group C	115	60.86	326.35	5.08
Total	**189**	**100**	**6,421.28**	**100**

Comment: Group A accounted for only 17.98% of the total number of items but represented a dominant share of the total drug expenditure, reaching 80.68%. Group B accounted for 21.16% of the items and 14.24% of the expenditure. Group C constituted the largest proportion in quantity (60.86%) but contributed very little to the total expenditure, at only 5.08%.

Drug use monitoring based on the ABC/VEN matrix analysis at SHDMC is presented in Table 5.

Table 5. Drug use by VEN analysis method

Group	Quantity	% of quantity (%)	Total drug cost (million VND)	% of Total drug cost (%)
V	23	12.16	34.24	0.53
E	117	61.90	5,215.59	81.22
N	49	25.94	1,171.45	18.24
	189	**100**	**6,421.28**	**100**

Comment: Group A accounted for only 17.98% of the total number of items but represented a dominant share of the total drug expenditure, reaching 80.68%. Group B accounted for 21.16% of the items and 14.24% of the spending. Group C constituted the most significant proportion in quantity (60.86%) but contributed very little to the total expenditure, at only 5.08%.

Table 6. Drug utilization analysis by ABC/VEN matrix

ABC/VEN matrix	V		E		N	
	Combination	Number of drugs	Combination	Number of drugs	Combination	Number of drugs
A	AV	0	AE	27	AN	6
B	BV	1	BE	27	BN	12
C	CV	22	CE	64	CN	30

Comment: The results in Table 6 show that the AE group accounted for the highest proportion with 37 medicines, reflecting a budget allocation focus on high-value and essential drugs for treatment. The CE group also represented a considerable number (64 medicines).

Some groups, such as AV, were absent (0 medicine), indicating no vital and high-cost drugs - an aspect that helps reduce the financial burden.

Non-essential medicines (CN, BN) still existed with 42 items; however, they represented a relatively small proportion, demonstrating a rational orientation in drug selection.

3.3. Application of HIS software in drug supply at Song Hinh district medical center

In 2024, the SHDMC implemented the Hospital Information System (HIS) software to manage and analyze its drug list, enabling fast, accurate, and comprehensive data extraction. This has shortened the process of statistics and reporting, minimized errors, and effectively supported inventory monitoring and procurement planning. The HIS implementation has contributed to a more scientific, proactive, and efficient approach to drug management and supply at the facility. Figure 4 shows the process of approving inpatient drug requisitions.

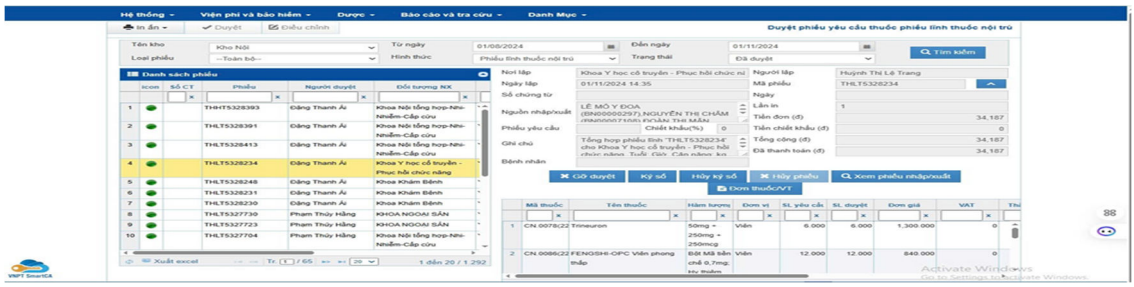

Figure 4. Inpatient drug requisition approval interface

The HIS software system implemented at SHDMC allows precise and convenient tracking, approval, and management of drug requisition forms. It provides complete information on requisition lists, patient data, prescription details, and processing status. Requisitions are organized chronologically, enabling easy searching, filtering, and handling. Integrating Excel export functionality and close linkage with modules such as clinical departments, wards, and pharmacy helps optimize the drug dispensing process.

The outpatient drug requisition approval interface is presented in Figure 5.

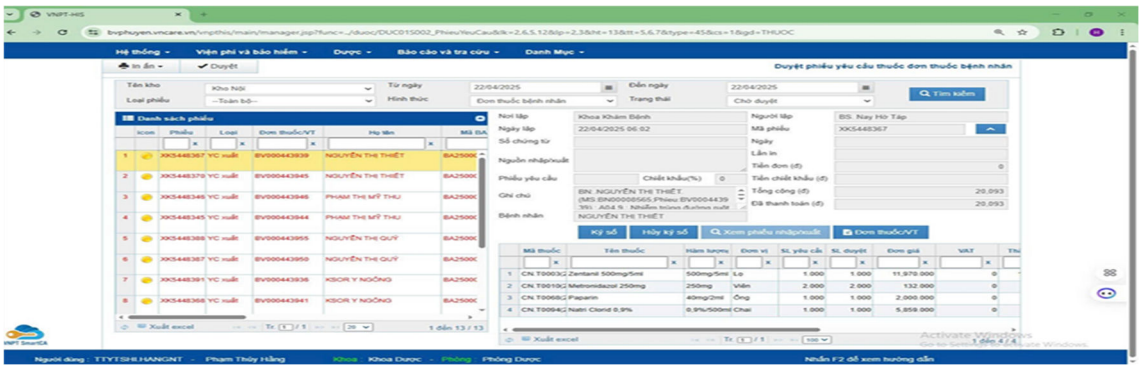

Figure 5. Outpatient prescription approval interface

The HIS software system implemented at SHDMC enhances the management and approval of outpatient prescriptions. The interface is designed to be user-friendly, providing complete information on patients, prescribing physicians, prescription details, and processing status. Functions such as search, filter, sort, and Excel export, combined with seamless integration across clinical, departmental, and pharmacy modules, help optimize dispensing and minimize errors.

4. Discussion

4.1. Analysis of drug selection and supply at Song Hinh District medical center

In 2024, respiratory diseases accounted for the largest share (33.71%) of total cases at SHDMC, followed by musculoskeletal disorders (13.10%) and cardiovascular diseases (9.90%). The high prevalence of respiratory diseases may be associated with climatic and weather fluctuations, while musculoskeletal conditions are common in mountainous areas due to the predominance of manual labor.

The drug formulary included 189 medicines, categorized into 23 pharmacological groups. Hoang Thi Thanh Tu's (2023) Song Lo district health center survey reported a broader list of 244 medicines across 20 therapeutic groups [2]. This indicates that, although Song Lo district health center had more medicines, SHDMC had a wider variety of pharmacological classifications.

Among the therapeutic groups, anti-infectives accounted for the largest share with 35 items (18.52%), followed by cardiovascular and respiratory system drugs, each representing 9.52% (18 items). Similarly, a study by Tran Nguyen Hong Ngoc at Yen Son district health center showed that anti-infectives accounted for the highest proportion with 90 items (26.47%), followed by cardiovascular medicines (56 items, 16.47%) [6]. At Cu Kuin district health center in 2022, anti-infectives and antiparasitic drugs accounted for 32 items (16.33%), followed by cardiovascular medicines (21 items, 10.71%) [3]. These findings demonstrate consistency across studies, confirming that anti-infectives remain the dominant drug group.

Regarding origin, the formulary included 189 medicines, of which domestically manufactured drugs accounted for 177 items (93.65%), while imported medicines accounted for only 12 items (6.35%). Total expenditure reached 6,421.28 million VND, with domestic drugs valued at 6,140.25 million VND (95.62%) compared to 281.03 million VND (4.38%) for imported drugs. At Yen Son district health center (Tuyen Quang province) in 2022, 249 domestic medicines accounted for 73.24% of items and 76.48% of expenditure, while imported drugs (91 items) accounted for 26.76% of items and 23.52% of expenditure [6]. The structure of domestic versus imported medicines at SHDMC is consistent with these findings [10].

4.2. Drug storage, distribution, and utilization

The Pharmacy department established a GSP-compliant storage system, ensuring effective drug receipt, storage, and distribution. Clinical departments maintained well-labeled cabinets under strict hygiene, with FIFO/FEFO principles applied to minimize expired stock. Narcotics and psychotropic drugs were managed in full compliance with regulations [8], [9]. Automatic thermo-hygrometers allowed continuous monitoring to safeguard quality. ABC and VEN analyses were applied to optimize resources and maintain a constant supply, prioritizing essential drugs and rationalizing inventory. ABC analysis showed alignment with MOH Circular 21/2013/TT-BYT [7]: The structure of drug costs and quantities (Group A accounting for 17.98% of items but 80.68% of costs; Group C accounting for 60.86% of items but only 5.08% of costs) demonstrates a rational allocation of resources, prioritizing essential, high-cost drugs while minimizing financial pressure from less critical medicines. Overall, these results reflect a balance between actual treatment needs and financial management, ensuring the safe, effective, and economical provision of drugs. These results are consistent with those of the Cu Kuin district health center, where drugs in groups A, B, and C accounted for 19.91%, 22.57%, and 57.52%, respectively [3]. In 2022, at Song Lo district health center, there were 65 essential medicines classified in the V group, accounting for 26.64% of the total items and 46,25% of the total value. The E group had the highest proportion with 169 items (69,26%) and 51.80% of the total value. Finally, the N group accounted for 4.10% of the items and 1.95% of the total value [2].

At SHDMC, the ABC–VEN structure shows the AV group accounted for 9.84% of items and 42.43% of value; AE, 15.16% of items and 36.78% of value; BV, 5.74% of items and 2.74% of value; CV, 11.07% of items and 1.08% of value. Table 6 shows AE had the highest proportion with 37 medicines, reflecting a budget focus on essential, high-value drugs, while CE had 64 medicines to cover diverse treatment needs. Some groups, like AV, had zero medicines, indicating no vital, high-cost drugs, which reduced their financial burden. Non-essential medicines (CN, BN) comprised 42 items, representing a small proportion, demonstrating rational drug selection. According to the study by Hoàng Thị Thanh Tú at Song Lo District Health Center in 2022, the AV group accounted for 9.84% of items and 42.43% of the total value; the AE group accounted for 15.16% of items and 36.78% of the total value; the BV group accounted for 5.74% of items and 2.74% of the total value; and the CV group accounted for 11.07% of items and 1.08% of the total value [2].

4.3. Application of HIS software

The adoption of HIS significantly improved formulary management. The system enabled rapid, accurate retrieval of drug data by pharmacological group, origin, and cost, reducing errors and expediting reporting. HIS also supported inventory monitoring and procurement planning.

The upgrade to HIS L2 enhanced efficiency, enabling accurate, timely dispensing for inpatients and outpatients, reducing manual errors, and shortening waiting times. Integrated data across prescribing, pharmacy, and billing modules streamlined workflow and minimized discrepancies. Real-time extraction facilitated ABC–VEN analysis, forecasting, and reporting, improving patient satisfaction and strengthening the center's professional capacity.

5. Conclusion

The selection of the drug list was clearly guided, prioritizing anti-infective/antiparasitic

drugs and focusing on domestic products, reflecting a balance between treatment needs and the policy of developing national production. Drug storage and control strictly adhered to GSP, FIFO, and FEFO principles, ensuring the quality and safety of pharmaceuticals throughout their use. Notably, the application of ABC-VEN analysis demonstrated a rational and optimal approach to resource allocation, confirming the strategic use of the pharmaceutical budget. Finally, the upgrade and implementation of the HIS (Hospital Information System) served as a crucial leverage point, helping to integrate and automate management processes, from prescribing and supply to billing, which led to increased accuracy, timeliness, and ultimately enhanced overall patient satisfaction and the center's operational efficiency.

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