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Improve Supply Chain Management Capacity at the Public Hospital Under the Ministry of Health in Hanoi

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Abstract

Hospital supply chains are responsible for material procurement, supply management, and delivery of goods and services to patients and medical personnel. In an industry, controlling the flow of products, information, and services frequently entails a large number of independent stakeholders, such as distributors, insurance providers, hospitals, doctors, and other medical personnel. purchasing group companies as well as several agencies. The hospital supply chain has been thrown off balance by the Covid-19

pandemic. Hospitals must effectively control the supply chain in order to do this duty, particularly in the wake of the Covid-19 pandemic. The essay examines the supply chain management situation as it stands at 25 public hospitals in Hanoi that are run by the Ministry of Health. The article proposes solutions to improve supply chain management capacity at public hospitals under the Ministry of Health in Hanoi.

Keywords: Supply Chain, Supply Chain Management Capacity, Public Hospital

1. Introduction

Following the COVID-19 epidemic, more individuals than the medical institutions' capacity to provide care sought medical examinations and treatments. In the first half of 2022, more patients visited the units for examinations and treatments than in the same time the year before. This had an impact on the process of determining needs and putting plans in place for the acquisition of medications, materials, and chemicals. medical facilities' guidance.

Public hospitals under the Ministry of Health in Hanoi are the last level hospitals in the treatment ladder, providing complex, specialized services that require high technology and good equipment. Large, national, even regional hospitals. Public hospitals have constantly been creative and innovative in content and form of operation, actively contributing to the good implementation of the unit's political tasks; creating a vibrant emulation movement with strong spread.

Public hospitals in general and public hospitals run by the Ministry of Health in Hanoi in particular had challenges and supply chain interruptions during the Covid-19 outbreak. As a result, this paper examines the state of supply chain management at Hanoi's public hospitals run by the Ministry of Health and suggests ways to strengthen the system's capabilities.

2. Research overview

Anas Ziat & colleagues (2019) presented a supply chain model in medical facilities. This article provides a general supply chain model for hospitals based on the theoretical basis synthesized by the authors. A three-level structured model is presented in this article, which identifies the most valuable link in the supply chain as coming from both patients and hospital staff. The article also proposed some methods to overcome the most common bottlenecks in the supply chain to enhance supply chain management.

Anas Ziat & colleagues (2022) ^[1] also researched a model to evaluate supply chain management capacity in hospitals. The authors based on traditional indicators to evaluate the performance of supply chain management capacity and proposed the Delphi and SEM models. According to the article, this is an effective model that identifies key factors that promote sustainable operations of the hospital supply chain.

Domestically, author Nghiem Thanh Huy (2020) ^[7] with his doctoral thesis researched the current state of the supply chain and evaluated the supply chain management capacity at military hospitals in Hanoi. The research results also present factors

affecting supply chain management capacity, thereby proposing solutions to improve supply chain management capacity at military hospitals in Hanoi.

However, after the Covid_19 epidemic, the supply chain at hospitals was disrupted. Therefore, there is a need for solutions to improve supply chain management capacity.

3. Theoretical basis

Supply chain at hospitals

The supply chain in hospitals is the procurement of materials, supply management, and delivery of goods and services to medical staff and patients. The process of managing the flow of goods, information, and services in an industry often involves many independent parties, including manufacturers, insurance companies, hospitals, medical staff, distributors, and organizations. Purchasing group organizations and a number of authorities.

The medical and health supply chain begins where medical products are manufactured and then transported to distribution centers. Depending on the type of product, hospitals can purchase products directly without going through the manufacturer or through a distributor, or this transaction process can be conducted through a purchasing group organization - representatives. the hospital side to establish a purchasing contract with the manufacturer.

Health care facilities receive deliveries of medical supplies, which are then kept there. These groups will guarantee that medical personnel always have the supplies they need and that patients always have timely access to life-saving medications.

Hospital supply chain management

In the healthcare industry, supply chain management is a multi-step, sometimes complicated procedure. While some hospitals and associated organizations are concentrating on the distribution of bills and services in the revenue stream, hospitals and related organizations have been taking special steps to reduce expenses in the medical and health sector. While some minimize costs by importing, others concentrate on their supply chains for healthcare.

Another aspect of healthcare supply chain management is the involvement of regulators and healthcare payers including insurance companies. Regulators and payers often decide whether medical resources are appropriate for consumer use and whether medical providers should be reimbursed for providing services to certain patients determined.

Healthcare supply chain management is unique mainly because each stakeholder has its own interests to protect at different stages in the supply chain. Healthcare workers may want to use specific products because they are trained with them while hospitals aim to buy products they can afford.

Patients also have a voice in this healthcare supply chain management process. Health care organizations may often order their own standard medical gloves, for example, but some patients may need more customized medical products such as latex-free gloves, depending on their needs on their health status.

Similarly, healthcare professionals may have a preference for a particular brand of drug or type of medical product, which may lead to cost concerns. For example, healthcare workers will prioritize their preferences for certain products, while financial managers will strive to cut costs and limit

expired products. Sometimes hospitals are faced with medical staff hoarding certain types of medical products.

Criteria for evaluating supply chain management capacity in hospitals

For an organization that is a hospital, criteria for evaluating supply chain management capacity at the hospital are built through each stage as follows:

(1) Evaluation criteria at the stage of medical examination and treatment in general

According to HEA (Vietnam Health Economics Association), "Quality of medical examination and treatment includes two components: professional and technical quality and functional quality. The quality of technical expertise is measured through the number of medical examinations, number of inpatient treatments, mortality rate, cured and non-curable hospital visits, and total number of surgeries. The functional quality of medical examination and treatment services is reflected in the attitudes of staff (doctors, nurses, technicians, receptionists, security guards, housekeepers).

(2) Evaluation criteria at the stage of warehouse and reserve of goods

The assessment of supply chain management capacity at the warehouse and goods storage stage is shown in the organization of storage of medical equipment, medicines and the system of laboratories and pharmacies. at the hospital.

Ensuring equipment storage and medicine supply evaluates the hospital's ability to manage inventory.

(3) Evaluation criteria at the stage of transporting medicine and patients

The stage of transporting patients as well as transporting medicine to patients is one of the important stages in the supply chain for the hospital system. The assessment of supply chain management capacity at this stage is reflected in the quality and timely delivery of patients and medicines. At the same time, the quality of transportation vehicles also evaluates supply chain management capacity.

(4) Evaluation criteria at the location arrangement stage

The location arrangement is reflected in the arrangement of a reasonable medical clinic system that is convenient for patients. Besides, the hospital bed occupancy index shows the ability to meet medical examination and treatment services at the hospital.

(5) Criteria for evaluating logistics supply chain information

Logistics supply chain information is the hospital's internal information system and patient management information system as well as providing necessary information to patients. The criteria for evaluating logistics supply chain information is shown by whether the information is transmitted to patients in a timely, complete and scientific manner.

4. Current status of supply chain management at Public Hospitals under the Ministry of Health in Hanoi

Introduction to public hospitals under the Ministry of Health in Hanoi

According to Decision No. 246/QĐ-TTg issued on February 12, 2014 on promulgating a list of public service units under the Ministry of Health, currently in Hanoi there are 25 public hospitals directly under the Ministry of Health. under

the Ministry of Health, including 4 general hospitals, the remaining 21 specialized hospitals.

- General hospitals are hospitals that can diagnose and treat most diseases (such as Bach Mai Hospital, Hospital, E Hospital, Friendship Hospital, Medical University Hospital).

- Specialized hospitals specialize in examining and treating a group of diseases (such as the National Eye Hospital, National Dermatology Hospital, K Hospital, etc.) or for a group of patients (such as the National Children's Hospital, National Geriatric Hospital, National Obstetrics Hospital,...). Hospital groups have identical assessment and treatment activities due to the primary purpose of these services.

The last institutions on the treatment ladder in Hanoi are public hospitals run by the Ministry of Health. They offer sophisticated, specialized treatments that call for state-of-the-art machinery and advanced technology. big, national, or even local medical facilities.

At the moment, public hospitals frequently engage in the following practices:

The major types of medical examination and treatment activities are those that are performed on request, for patients without health insurance, and for patients who have health insurance. Activities for treating individuals with diseases include both inpatient and outpatient care.

Training activities in the hospital include:

- Continuous training and technology transfer for health officials.
- Rotational training for newly graduated doctors and nurses.
- Training for practice certification.
- Specialized training for doctors and nurses.
- Gradually deploy long-term training types with formal degrees: Specialist doctor, Specialist doctor 2, Doctor of medicine, Nursing university, college, high school
- Preclinical training.
- Training skills, functions and other forms of training for those in need: Medical workers, workers going abroad,...
- Manage full-time students from the University of Medicine, Hanoi University of Pharmacy, colleges, and medical schools who come to practice at the hospital.

Training can be done right at the hospital on a model or directly examining patients or training in the classroom.

Scientific research activities, in recent times, science and technology in the medical field have achieved many important achievements, the results have been successfully applied in the diagnosis, treatment and prevention of human diseases such as: Multi-organ transplantation, stem cell application in treatment, endoscopic surgery, imaging diagnosis, vascular intervention, production of vaccines to prevent human diseases, endoscopic thyroid surgery,...

Line direction: The hospital system is organized according to technical lines. The upper line is responsible for providing technical direction to the lower line. Line direction work is also considered a necessary and regular job of public hospitals.

Disease prevention (Preventive medicine): Along with medical examination and treatment, disease prevention is also an important task of public hospitals. Propagating disease prevention to the people is a necessary work. It will reduce the rate of disease among the population, reduce health care costs, and contribute to preventing the spread and damage caused by epidemics in cases where they arise physically. Propagating to all staff and patients' families at

the hospital information about epidemics, how to prevent and promptly implement the instructions and announcements of the Ministry of Health and raging epidemics.

International cooperation: To absorb modern technical knowledge, the hospital expands cooperation with countries around the world and the region to acquire advanced techniques and apply them to medical examination and treatment and research. scientific research and training. Today, international integration and strengthening international cooperation are the path to medical modernization. People can enjoy high-tech medical services, detect difficult diseases early, and reduce mortality rates.

It can be seen that proper attention to international cooperation has helped strengthen relationships with colleagues and friends around the world, promoting the strengths of each hospital in being at the forefront of cooperation and collaboration. Developing advanced and modern techniques as well as enhancing professional capacity and equipment and facilities.

Medical examination and treatment costs in hospitals should be progressively organized through the strict implementation of Decree 85, the State's regulations on hospital budget revenues and expenditures. This is especially important given the current state of financial autonomy and self-responsibility.

Three sources of funding are available to support these initiatives: the state budget, revenue from joint ventures, and on-the-spot collections for medical examination and treatment services. Every hospital has unique operational features, including varying revenue source proportions and sizes.

Current status of supply chain management at the Public Hospital under the Ministry of Health in Hanoi

To study the current state of supply chain management at the Public Hospital under the Ministry of Health in Hanoi, the author collected primary and secondary data. With primary data, the author conducted in-depth interviews with experts to more clearly identify the supply chain at hospitals as well as the criteria for evaluating supply chain management capacity at hospitals. The author conducted in-depth interviews with structured and unstructured questions. From the interview results, the author built a survey questionnaire and descriptive statistics of the variables using SPSS 26 software. Survey subjects were doctors and patients who came for medical examination and treatment at the hospital. The author built 19 variables to evaluate supply chain management capacity on 5 stages (from results of theoretical research and qualitative research).

Based on the study of Hair, Anderson, Tatham and Black (1998) for reference on expected sample size. Accordingly, the minimum sample size is 5 times the total number of observed variables. This is an appropriate sample size for research using factor analysis (Comrey, 1973).

Thus, the number of samples selected: $n = 5 \times 19 = 95$ samples.

The author randomly distributed 280 votes. The results were 256 valid votes.

(1) Current status of supply chain management at the medical examination and treatment stage

Due to the impact of the epidemic, the number of patients coming for examination has increased, especially patients

who have had Covid and have a history of respiratory problems. However, with the characteristics of public hospitals under the Ministry of Health, there is always a stable force of doctors and nurses with high professional qualifications. Therefore, it still meets the needs of medical examination and treatment.

Survey results for patients coming for medical examination and treatment at the Public Hospital under the Ministry of

Health in Hanoi show that supply chain management at the medical examination and treatment stage is evaluated quite well, the level of medical examination and treatment Quite often, the quality of medical examination and treatment services and support services is rated at a good level. In particular, the waiting time and medical examination and treatment were assessed by the patient to be very fast with the service attitude of the doctors being very enthusiastic.

Table 1: Current status of supply chain management at the medical examination and treatment stage (Descriptive Statistics)

	N	Mean	Std. Deviation
MD.KB1. Frequency of using medical examination and treatment services at the hospital	256	4.128	.685
MD.KB2. Level of satisfaction with medical examination and treatment time	256	3.613	.528
MD.KB3. Level of satisfaction with the quality of medical examination and treatment	256	3.915	.621
MD.KB4. Level of satisfaction with doctors' attitudes	256	3.725	.682
MD.KB5. Level of satisfaction with support services	256	3.932	.696
Valid N (listwise)	256		

Source: Author's survey results

(2) Current status of supply chain management capacity at the reserve and warehouse stage

After the Covid_19 period, bidding and equipment procurement were also limited, thus there was a shortage of medical equipment. On the other hand, stockpiled drugs are also used a lot during the long period of the epidemic, while production is closed, imported drugs are delayed due to border closures as well as delays in transportation.

According to patients' assessments, the number of pharmacy counters at the hospital is not enough to meet patients' needs, although the quality of medicine is still highly appreciated. As for the patient room density, it is still overloaded due to the increased number of patients after the epidemic, although the state of equipment in the patient room is considered modern.

Table 2: Current status of supply chain management at the reserve and warehouse stage

	N	Mean	Std. Deviation
MD.K1. The level of response of the pharmacy system at the hospital	256	3.012	.5275
MD.K2. The level of diversity and richness of drug types	256	3.523	.5948
MD.K3. Level of satisfaction with the quality of drugs and medical equipment.	256	3.869	.6928
MD.K4. Level of satisfaction with patient room density	256	2.715	.5813
MD.K5. Level of satisfaction with the quality of disease prevention	256	3.152	.5416
Valid N (listwise)	256		

Source: Author's survey results

(3) Current status of supply chain management in patient transportation

In the transportation stage, supply chain management capacity at Hospitals is demonstrated through the number of turns and efficiency of transportation work to ensure smooth operations in the chain.

According to survey results, the level of convenience in transporting patients between clinics is not considered convenient for patients.

public hospitals run by the Ministry of Health is quite suitable.

Table 3: Current status of supply chain management in patient transportation

	N	Mean	Std. Deviation
MD.PT1. Level of satisfaction with the quality of patient transport vehicles	256	3.214	.6286
MD.PT2. Level of satisfaction with patient transport time	256	3.578	.6190
MD.PT3. Level of satisfaction with patient transportation services	256	3.681	.6521
Valid N (listwise)	256		

Source: Author's survey results

(4) Supply chain management's current state at the site setup stage

The survey findings indicate that the existing configuration of administrative procedure rooms and clinics at Hanoi's

Table 4: Supply chain management's current location arrangement status

	N	Mean	Std. Deviation
MD.DD1. Reasonable level of arrangement of clinics	256	3.851	.7824
MD.DD2. Reasonable level of arrangement of patient rooms	256	3.623	.6425
MD.DD3. Reasonable level of arrangement of rooms for administrative procedures	256	3.758	.6528
Valid N (listwise)	256		

Source: Author's survey results

(5) The state of supply chain management at the information stage of the supply chain currently

According to survey results, patients do not place a high value on information management in the supply chain, they do not think medical examination and treatment processes are convenient, and many of them are dissatisfied with the care they receive. hospital management.

Table 5: Supply chain management's current state at the information stage of the chain

	N	Mean	Std. Deviation
MD.TT1. Reasonable level of providing information to guide medical examination and treatment procedures	256	2.615	.5629
MD.TT2. A level of patient information system that is current is tracked and maintained.	256	3.163	.6418
MD.TT3. Medical examination and treatment methods' convenience	256	2.552	.5122
Valid N (listwise)	256		

Source: Author's survey results

Throughout its many years of operation, the hospital has consistently upheld its status as a higher-level facility, offering a wide range of medical examination and treatment services, growing its specializations, and creating several new institutes and centers with cutting-edge technology to accommodate all patient demands. The work criteria for technical skills in diagnosis and treatment have been well-met by this cutting-edge and current supply chain management.

However, supply chain management is still primitive and has not been implemented according to the standards of a modern supply chain. Although the chain management mechanism follows all 5 basic steps of medical examination and treatment, transportation, storage, location and information, it is only spontaneous without building specific and clear strategies and plans. Demand is assessed based on preliminary guesses to build supply chain management without detailed, specific, and realistic calculations consistent with objective reality in professional work. every day at the Hospital and in accordance with the development and innovation trends of the market mechanism. Supply chain management is only implemented according to the allocation mechanism, typical of the subsidy mechanism, not creating autonomy for the unit. Hospitals passively receive budget from superiors without being flexible and proactive in exploiting and using funding sources in the most effective way. This shows inadequacies in management and administration.

It can be observed that there are now deficiencies in medical examination and treatment times as well as team qualifications through a survey and assessment of the current condition of supply chain management at public hospitals under the Ministry of Health in Hanoi through 5 phases. a group of physicians, nurses, and other healthcare professionals; administrative processes for medical diagnosis and treatment; a dearth of pharmacy counters; the state of medical equipment that is not really current; Patient transport and medicine dispensing times, patient density, and the layout of rooms for administrative tasks The current information system is insufficient.

Thus, to improve supply chain management capacity, the Hospital Board of Directors is required to constantly improve and improve the quality of the five stages in the supply chain.

Specifically:

1. Medical examination and treatment stage: The hospital needs to shorten the waiting time for medical examination by setting up software on the hospital's website for patients to register for medical examination and treatment online.

2. Reserves and warehouses: Every year, hospitals should review the quantity of each type of medicine and medical equipment. Develop a plan to reserve drugs and medical equipment. Regularly organize public and objective bidding for investment in medical equipment procurement. Developing a plan and gradually expand the stockpile of drugs and medical equipment.
3. Patient transportation: Invest in purchasing more modern vehicles to increase both quantity and quality in patient transportation.
4. Location arrangement stage: Strengthen connection, coordination and implementation between departments and specialized faculties.
5. Supply chain information: Hospitals apply information technology to store patient information. Set up the hospital's app so patients can easily log in and look up their medical information.

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