



Supply Chain Management of Pharmaceutical Products in Hospitals: A Case Study In A Privately Owned Tertiary Level Hospital

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ABSTRACT: Supply Chain Management (SCM) in the healthcare industry has been neglected in least developed countries like Bangladesh. The proper supply chain management in hospitals is extremely important as it affects the cost and accessibility to healthcare of the patients and community. A SCM study was conducted at Square Hospitals Ltd., a representative of high-end 425-bed tertiary level hospital in Dhaka, Bangladesh. From the case study it is revealed that the supply chain management system of Square Hospitals Ltd is controlled by means of an integrated computerized system. It analyzed various types of data like consumption patterns of medicine, diseases patterns, patient turnover, their length of stay etc. to ensure competitive advantages in procurement and inventory management. Consequently, the hospital is not only able to ensure availability of drugs for the patients, but also can minimize the inventory cost and gains economic advantages in every step of SCM through proper drug use management. It is observed that the Square hospital supply chain system is more responsive than effective. Finally, it can be concluded that there are areas in the supply chain where changes may bring about through improvement in the quality of the service provided by the hospital.

Keywords: Supply Chain Management, Square Hospitals Ltd., inventory management, pharmaceutical care, healthcare facility

I. INTRODUCTION

The ability to deliver products faster and at a lower cost than competitors gives an advantage to organizations [1]. This may be brought around by paying proper attention to Supply Chain Management. Supply Chain Management (SCM) can be defined as, “the planning and management of all activities involved in sourcing and procurement...and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across the companies” [2].

While considerable research has been conducted on supply chain management in the manufacturing industry, the healthcare industry has been neglected [3]. However, in a least developed country like Bangladesh proper supply chain management in hospitals is extremely important as it affects the cost and accessibility to healthcare of the citizens [4].

For their success hospitals are searching for innovative ideas and ways for reducing expenses. At the same time, they are reevaluating their supply chain management components in the hope of developing practices which will assist them in improving the quality of patient care. Hospital Supply Chain Management consists of both medical and non-medical elements. The medical items include clinical and pharmaceutical products, while the non-medical items comprise of products required to provide service to the patients (like bedpans and surgical gowns) as well as administrative goods (like PCs and pens). The players in Hospital SCM include manufacturers, transporters, distributors, suppliers and end-customers [5, 6].

However, due to certain reasons, hospital supply chains are not performing as well as they may. These issues include obsolete IT systems and infrastructure, weak inventory and distribution management, improvised

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procurement systems, lack of top-management involvement and organizational cultures that does not encourage process development [7].

This paper concentrates mainly on high end hospitals in Dhaka city. The institute selected for the case study is a 425-bed tertiary care hospital. Reputed physicians from India and Bangladeshi form its medical team. The hospital has already made a reputation for itself within the country.

II. LITERATURE REVIEW

According to Kazemzadeh *et al* [8] “Hospital Supply Chain Management is a set of approaches to efficiently integrate suppliers or vendors, transport, hospital services (including outpatient, emergency, in-patient, laboratory, radiology, stores and purchase, food, laundry and medicines /equipments) to achieve Total Quality Management (TQM) in health care services by optimum utilization of resources.”

Supply chains can account for up to 30% percent of total costs in hospitals. Efficient supply chain management provides hospitals with the opportunity to control rising costs and at the same time improve patient care [6]. Shou [8] also states that in the healthcare industry, customer satisfaction and reduced costs can be directly linked to efficient supply chain management.

SCM in hospitals include the internal chain and the external chain. Their components are given below:

<ul style="list-style-type: none"> • Patient care unit • Hospital storage • Patient 	<ul style="list-style-type: none"> • Vendors • Manufacturers • Distributors
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The hospital supply chain includes four arenas. These are goods and services planning, procurement and contracting, materials management and working capital management. To set up an extraordinary supply chain, hospitals need to establish an integrated governance system, employ dynamic processes, and automate their IT systems [6].

Integration of the internal and external hospital supply chain may reduce the costs associated with supply chain almost half. Also, it is surmised that nursing staff in any hospital spend 10% of their time performing logistics tasks instead of taking care of patients [9]. In a country like Bangladesh, where there is a permanent shortage of nurses, this causes both increase in costs and reduction of patient care.

III. OBJECTIVES

The broad objective of this research is to examine the current state of the supply chain regarding pharmaceutical products at Square Hospitals Ltd. The specific objectives are to evaluate the Supply Chain Management practices at Square Hospitals Ltd including only the pharmaceutical items or medical products. The problems and prospects, at various stages, of the pharmaceutical supply chain are to be analyzed and appropriate recommendations are to be offered for improvement of the present system.

IV. METHODOLOGY

This paper is based on the study of Square Hospitals Ltd., which is considered a representative of high-end tertiary level hospitals in Dhaka city in terms of customer type, reputation, operation, performance, facilities, etc. The main data collection tools for the case study are interviews and site observations in the links of the pharmaceutical supply chain in Square Hospitals Ltd. The respondents are mainly suppliers, pharmacists, management executives, doctors, nurses and patients of the same institution. Besides the archives of the hospital, secondary data and relevant information have also been collected from different sources like journals, reviews, books and research papers.

4.1 The Hospital

The research site is one of the modern and busiest privately-owned hospitals in Dhaka named Square Hospitals Ltd. A concern of Square Group, the hospital is an affiliate partner of Methodist Healthcare, Memphis, Tennessee, USA, SingHealth, Singapore, Bangkok Hospital Medical Centre, Thailand and Christian Medical College, Vellore, India. The hospital is located in the heart of Dhaka and aims to serve greater portion of the capital city. At present it comprises of two buildings on either side of Panthapath connected by an over-bridge. The main hospital building is 18 stories and is approximately 450,000 sq.ft in size. The second building (ASTRAS) is located across the street and is 16 stories with 136,000 sq.ft.

Through its 70 examination rooms, the outpatient department of this hospital can serve up to 1500 patients daily. The average daily number of outpatients is 1250 and in-patients is around 320. The hospitals’ pharmacies dispense more than 2500 pharmaceutical items with different dosage forms (Table 2) to out-patients, and in-patients in cabins, wards and theatres daily. The daily average turnover of the Pharmacy department is around Tk 1,600,000.00 (Taka Sixteen Lac) equivalent to about 20,000 USD.

The Department of Pharmacy Services at Square Hospital dispenses pharmacy services with a mission to provide compassionate, ethical, accessible, and high quality services to their customers. The Department takes pride in providing high-tech state-of-the-art professional services to the patients round-the-clock, which includes in-patients as well as ambulatory care patients. The Pharmacy Department is staffed with 75 members, including Pharmacy Consultant Pharmacists, Pharmacy Technicians and Pharmacy Support Officers and Assistants. The primary role of the Pharmacy Department at Square Hospital is to care for patients, by providing the right medicines, right patient, right dose, right time and right route including the prescription adherence to the patients.

Table 2: Types of different dosage forms and preparations of locally manufactured and foreign products stocked at the Hospital Pharmacy

Tablets	Vitamins oral and parenteral	Vaccines
Capsules	IV Fluids	Hormones
Solutions	Total Parenteral Nutrition	Immunoglobulin
Suspensions	Ophthalmic preparation	Proteins
External Preparations (Cream, Gel, Ointment etc)	Anticancer Drugs	Immunoglobulin
Injectables	Inhalers	Proteins
Parenteral preparations	Mouth Washes	Immunoglobulin

4.2 Present Practices

Square Hospitals Ltd. is one of the very few hospitals in Bangladesh which has a well designed pharmacy department with adequate facilities to provide desired drugs as prescribed by the physician for in-patients and out-patients. The hospital's pharmacy department is run by the qualified and experienced pharmacists and all the functions of this department is delivered by computerized integrated hospital information system to ensure appropriate and safe medication with minimized adverse drug reaction and consideration of all the undesired factors regarding drugs.

V. DATA ANALYSIS, RESULTS AND DISCUSSION

5.1 Actors In The Supply Chain Management Process

5.1.1 The Suppliers

External suppliers (Table 3) provide the hospital pharmacy with all of the drug/materials the department needs. Square Hospitals Ltd. Is getting almost 41.42% of total consumption from Square Pharmaceuticals Ltd.,. The rest of supplies are from all other local and foreign manufacturers used by the hospital.

Individual suppliers provide order sheets of their own format to the hospital. The pharmacy Assistant highlights the products required, as per the monthly consumption report, in the order sheet and the sheets are signed by the Pharmacist, and Executive Material Management. Then Pharmacy department forwards this order sheet to the Material Management Department (MMD) department. They provide it to the respective supplier. All these activities are followed according to the standard operating procedure (SOP) of the pharmacy department. The suppliers deliver the medicines as per the order.

Table 3: List of major external suppliers to the Square Hospitals Ltd.

Sl.	Supplier	% Supply	Sl.	Supplier	% Supply
1	Square Pharmaceuticals Ltd.	41.42	11	Popular Pharmaceuticals	1.34
2	Incepta Pharma Ltd.	5.25	12	Opsonin Pharma Ltd.	1.34
3	Novartis Bangladesh Ltd.	3.24	13	Ziska Pharmaceuticals Ltd.	1.29
4	Unimed & Unihealth Ltd.	3.13	14	Square Toiletries Ltd.	1.29
5	Beximco Pharma Ltd.	3.13	15	SK+F Pharmaceuticals Ltd.	1.29
6	Sanofi Aventis Bd.	2.68	16	ACME Laboratories Ltd.	1.29
7	Aristopharma Ltd.	2.40	17	Healthcare Pharma	1.17
8	Glaxo SmithKline Bd Ltd.	1.84	18	Orion Infusion Ltd.	1.06
9	Jayson Pharma Ltd.	1.73	19	Reneta Pharma Ltd.	1.01
10	Beacon Pharma Ltd.	1.57	20	Local distributors/agents	7.00

5.1.2 The Warehouse / Pharmacy:

The Hospital operates with one Central Pharmacy Department, two In-patient Pharmacy Departments and two Out-patients pharmacy Departments. The Central Pharmacy, IPD and OPD are open 24 hours seven days a week. Temperature and humidity are strongly maintained in the pharmacies for proper storage of the medicines. Temperature sensitive products are stored in refrigerators according to manufacturer's instruction.

5.1.3 Central Pharmacy Department

The major functions of this department include:

- Drug distribution: to the Out patients, In-patients and floor stock to the nurse station of each floor.
- Drug procurement: Regular purchase, Emergency purchase.
- Inventory and stock maintenance
- Quality assurance of the Medicine: Proper storage, checking expiry date, etc.

After Suppliers deliver medicines to the hospital's warehouse a pharmacy assistant receives the ordered medicines under the supervision of a pharmacist. The material is at first stored in the main warehouse before distribution to the OPD or IPD.

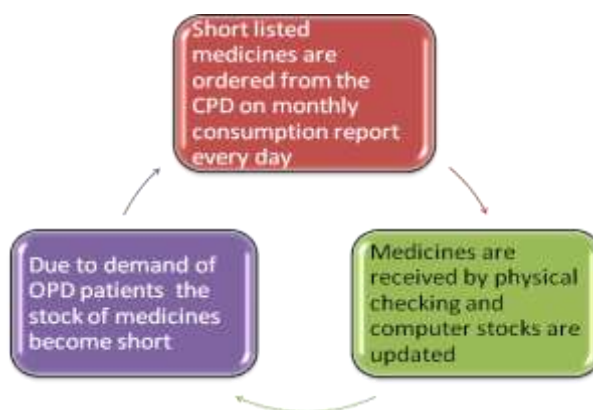


Fig. 1: Flow of pharmaceutical products from Central Pharmacy to Out Patient Pharmacy

Since both the CPD and IPD are located in the 6th floor, so there is no physical movement of products from CPD to IPD in reality. Instead a few medicines are separated, cut off and stored in different selves for dispensing to the in-patients. The in-patient drugs are distributed in the respective floors to the patients' bed side according to American unit dose system ensuring 24 hours supply with proper labeling and identification.

5.1.4 Out-patients Pharmacy Department

In Square Hospitals Ltd. there are two OPD pharmacy departments. One is situated in the main building while the other one is in the extension wing. The major function of this department is to dispense medicines for the out patients. The physicians prescribe the medicines for the patients through online prescription system and advises the patients to collect the prescription from OPD pharmacy. After receiving the prescription from OPD Pharmacy the patients or his/her representatives request pharmacy assistants or officers to deliver medicines according to the prescription. They prepare the bill copy of the medicines of the individual patient's through HIS online billing system with printed drug information. The prescription and bill is attached and handed over to the pharmacist. The pharmacist reviews the prescription and checks with bill then handed over to pharmacy attendants/assistants. The pharmacy attendants/assistants take the medicines from the medicine rack; keep them into a medicine basket. The pharmacist again checks the medicines with prescription ensuring the good dispensing practice through right medication, to the right patient, with the right dose strength and dosage form, to be taken at the right time in right quantity. Finally the medicines are delivered to the patients or his / her representative with advice (Fig. II).

5.1.5 In- Patients



Fig II: Flow Chart of Medicines for Out-patients

Pharmacy Department

There are two In-patients Pharmacy Department at Square Hospitals Ltd. Like OPD pharmacy, one is located in the 6th floor of main building and the other one is located in the 6th floor of the extension wing. The main function of In-patients Pharmacy Department is dispensing the medicines to all admitted patients in the

hospital as prescribed by the consultants. Before dispensing the medicines the pharmacists review the prescription and consult with the respective consultant if required. The IPD pharmacy assistants transcribe and make a bill of prescription against the specific patient through HIS according to American unit dose system. After completion of transcription and billing process in HIS, the pharmacy assistants are delivering it through system. Before delivery he/she is checking the patients' name and admission no. for assurance. Then they are attaching the printed bill copy with the prescription accordingly. The pharmacy attendants on duty are receiving bill and prescription copies. Then they are selecting the medicine items according to the bill from the rack and keeping into a medicine basket. They are keeping the medicines basket on dispensing desk in front of pharmacist (Fig.III).



Fig. III: Materials Flow Chart of Medicines for In-patients

The Pharmacist is reviewing the prescription and checking the bill copy for accuracy, such as admission no, patient name, registration no, doctors' name, billed items, dosage forms, dose and strength, quantity etc. Then the pharmacist is checking the medicines physically with pack size and labeling the medicine with proper identification with the help of pharmacy attendant. They are also writing down the patients' bed number on the medicine box. After completion of the procedure the pharmacist is putting his/her signature on both prescription and bill copy. Finally the pharmacy attendants are carrying the medicine box to the respective nursing floors to deliver medicines.

5.1.6 The Floors, Wards And Units

The Nurses in the respective wards, floors and units receive the medicines from pharmacy sent thorough pharmacy attendant and after checking everything as it is ordered, they keep the medicines on the patients' bedside. Other than this unit dose system, some drugs are stored in the respective floor on the basis of specialty and the medicines used. In any hospital the drug stored in the nursing floors depending upon the specialty of care is termed as floor stock drugs. It should be in minimum quantity. Nurses may use this floor stock in any emergency, keeping records of consumption quantity, date and name of the patient so that he/she may come into the medication coverage as soon as possible. After using any medicine the floor nurse makes a requisition to the IPD pharmacy for replacement.

5.2 Competitive Strategy

The supply chain management system of Square Hospitals Ltd is controlled by means of an integrated computerized system. It analyses various types of data like the consumption patterns of medicine, diseases patterns, patient turnover, their length of stay etc. to ensure competitive advantages in procurement and inventory management. Consequently, the hospital is not only able to ensure availability of drugs for the patients, but also can minimize the inventory cost and gain economic advantages in every step of supply chain management through proper drug use management.

Another competitive advantage of this hospital in terms of medicine management is that most of the products are supplied by top level local pharmaceuticals and multinational companies of the country and approved vendors for foreign items. This ensures timely delivery of quality products in the facility.

5.3 Demand Forecasts

In order to develop an appropriate inventory control, demand forecasting (Table 4) is extremely important. The main forecasting technique being used in Square Hospital Demand is the reorder quantity level (RQL) which has already been setup in the HIS system. When the product quantity goes below the reorder quantity level it shows a different color and the next action is being taken to make it available. The medicines are usually supplied or procured from the locally manufacturing companies, imported medicines from the agencies, emergency purchasing from local pharmacies. This RQL is periodically reviewed.

Table 4: Based on manufacturers and suppliers and sourcing it may differ as stated below:

Sl. No	Manufacturer & Suppliers	Source Category	Average Forecast (in days)	Safety Stock Level in (days)	Lead time in (days)	Replenishment (Lead time)	Inventory (days)
1	Local Manufacturing	Local	90	7	4	11	20
2	Imported Medicines	Local Distributors	90	7	3	10	20
3	Locally procured items	Importers	90	7	3	10	20
		Local	90	7	3	10	20
4	Infusions	Local	120	30	10	40	30

5.4 Strategic Fit

Square hospitals limited follows very specific policy process and guidelines for supply chain management related to pharmaceutical products in order to ensure the smooth flow of drug for its patients. It has already built a competitive strategy to target customer segments and to satisfy needs and priorities of those customer segments. It also studies what competitors are doing and what changes they can offer to have a competitive advantage, like winning customers by offering a lower price (5% discount on locally manufactured medicines) on the product or by providing large varieties of the product and by providing better services. The company has adapted online prescription, and integrated online supply chain system with hospital information system (HIS) and has built the supply chain capabilities of responsiveness and efficiency as well. The pharmacies remain open 24 hours every day in consideration of patient’s need.

5.5 Drivers

Three logistical and three cross functional drivers of supply chain performance act together to establish the supply chain’s balance between responsiveness and efficiency. The comparative positions of performances of Square Hospitals Ltd. in regard to these six drivers (Fig. IV) are assessed:

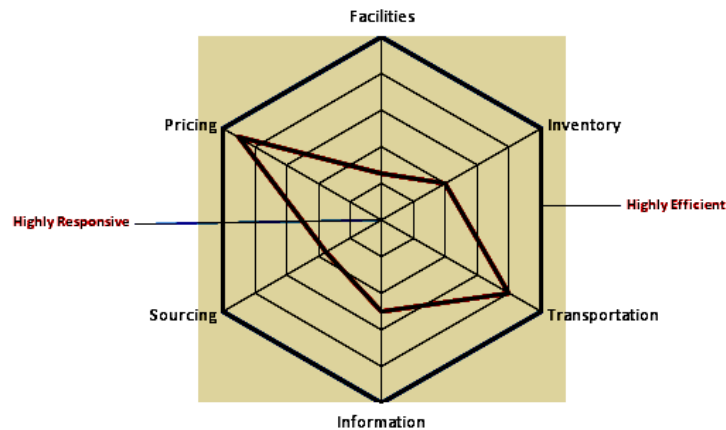


Figure IV: Drivers of Supply Chain Performance for Pharmaceutical Products at Square Hospitals Ltd.

Note: The arms of the figure represent the six drivers of supply chain performance. A driver which is more responsive will be towards the center of the figure while a driver which is more efficient will lie towards the outer edge. As such, it can be seen that Square Hospitals Ltd. is efficient in pricing, while the facilities of the hospital are quite responsive

5.5.1 Facilities

The Central Pharmacy Department (CPD) of Square Hospitals Ltd. is located in the 6th floor of the main hospital building. The CPD supplies pharmaceutical products to two in-patient department (IPD) pharmacies and two out-patient department (OPD) pharmacies. One IPD Pharmacy is located right next to the CPD while the other is in an adjacent building. The IPD pharmacies provide service to more than 300 patients who are admitted in the hospital. The OPD pharmacies, which are located some distance away from; the CPD (though in the same building or an adjacent building) provide service to walk in customers. As such, in terms of facilities it is found to be quite responsive

5.5.2 Inventory

Hospital pharmacies cannot afford to run out of stock in the middle of an operation or when a critically sick patient needs some medicine. They always have to maintain a high amount of buffer stock avoiding the zero inventories. As such, they are more responsive than efficient.

5.5.3 Transportation

Square Hospital Limited's transportation cost, for pharmaceutical products is negligible. In most cases manufacturers/suppliers bear the costs of transporting pharmaceutical products supplying to the hospital. It is quite efficient in transportation.

5.5.4c Information

The use of e-prescriptions is quite common place at Square Hospitals Ltd. Also, Information Technology is used in inventory control, stock maintenance, order placement, etc. Information flow is important in Supply Chain Management at Square Hospitals Limited. It allows management to increase responsiveness as well as efficiency.

5.5.5 Sourcing

Only manufacturing and delivery of pharmaceutical products are 'outsourced' at Square Hospitals Ltd. All other activities are performed by their own employees. It is thus highly responsive in this segment.

5.5.6 Pricing

The selling prices of most pharmaceutical products are regulated by the concerned regulatory authorities of the country. As such, prices do not vary very much. Thus, pricing is quite efficient.

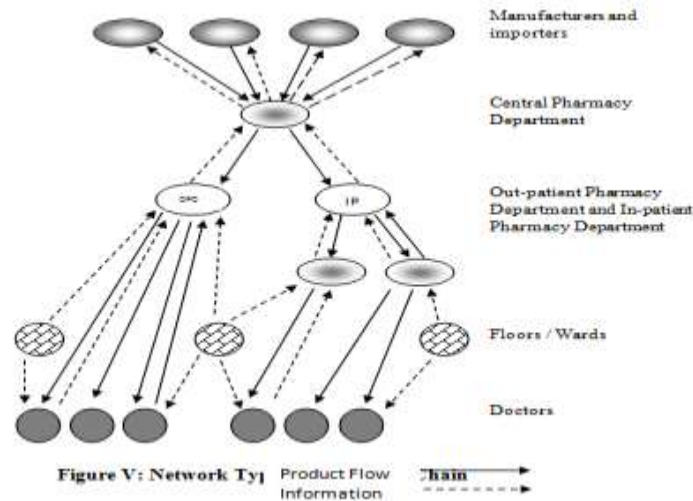
5.6 Distribution Network

The distribution network of Square Hospitals Ltd. and similar institutions is largely retail storage with customer pick up. Pharmaceutical products are picked up by external customers from two out-patient department (OPD) pharmacies and internal customers (different nursing floors/units of the hospital) receive them from two in-patient department (IPD) pharmacies. The Central Pharmaceutical Department (CPD) of the hospital may be compared to the wholesale market. Manufacturers and importers of pharmaceutical products deliver stocks to the CPD. Sometimes there is a reverse flow when out-patients return medicines to the OPD pharmacy.

On the other hand, information flow starts with doctors prescribing medicines. In the case of out-patients the prescription goes directly to the OPD pharmacy through the online prescription system. The patients collect the prescription from OPD pharmacy. For in-patients, information flow from the consultants pass to the IPD pharmacy through the floors, wards or units. Information flows from the IPD and OPD pharmacies to the CPD. When stocks are exhausted information flows from the CPD to Suppliers through the order forms. Thus, the distribution network used at Square Hospitals Ltd. is shown in Fig. V.

The concept of e-health as it evolves, refers to use of Web-enabled system and processes to accomplish some combination of following objectives: cut costs or increase revenues, streamline operations, improve patient or member satisfaction, and contribute to the enhanced of medical care [10]

The move to internet-based programs and services should result in savings for employers, insurers, managed care organizations and government-sponsored programs because of the significant cost-saving opportunities, such as better price, comparison, lower inventory costs, and more efficient health system-wide communications, patient information management, and billing and claims handling [11]



VI. COMPARITIVE PERFORMANCE

The performance of the current network design (Table 5) at Square Hospitals Ltd can be measured along a number of dimensions.

Table 5: Performance of the current network design at Square Hospitals Ltd

Parameters of consideration	Retail Storage with Customer Pickup	
	Theoreticians' Standards	For Square Hospitals Ltd
Response Time	1	2
Product Variety	4	5
Product Availability	4	2
Customer Experience	1-5	2
Time to Market	4	2
Order Visibility	1	1
Returnability	1	2
Inventory	6	5
Transportation	1	1
Facility and Handling	4	2
Information	1	2

Note: 1: matches to the best performance and 6 the worst performance

The performance of the delivery networks (Table 6) for different products / customer characteristics can also be compared to theoretical standards.

Table 6: Performance of the delivery networks for different products/customer characteristics

Parameters of consideration	Retail Storage with Customer Pickup	
	Theoreticians' Standards	For Square Hospitals Ltd.

High demand product	+2	+2
Medium demand product	+1	+2
Low demand product	-1	0
Very low demand product	-2	0
Many product sources	+1	+1
High product value	-1	+1
Quick desired response	+2	+2
High product variety	-1	-1
Low customer effort	-2	+1

+2 =very suitable; +1=suitable; 0=neutral;
-1=unsuitable; -2=very unsuitable

6.1 Shortcomings And Recommendations

Although the supply chain management system of pharmaceutical products at Square Hospitals Ltd. is well organized, there is a room for improvement. The following recommendations are made to the Hospital:

6.1.1 Stock out

During the study it was found that short supply and stock out are common phenomenon which ultimate result in non availability of drug and causes ultimate dissatisfaction among the patients and physicians. Since most of the raw materials of locally produced pharmaceutical preparations are exported items as such the suppliers sometimes fail to deliver the drugs in time.

Though there should be specific policies and procedures for managing drug shortages. The pharmacy's inventory management system has be designed to detect minimum inventory levels and alert the pharmacy to potential shortages, and pharmacy staff are exploring other reliable sources of information regarding drug product shortages. The pharmacy is following strategies for identifying alternative therapies, working with suppliers and collaborating with prescribers. The pharmacy may conduct an awareness campaign in the event of a drug product shortage among the stakeholders. The number of supplier may be increased to meet this shortcoming for a particular generic.

6.1.2 Continuity Of Care

As per exiting practices the role of pharmacists' in-patient care area are limited. Pharmacists should assume responsibility for continuity of care for patients' medication therapy. Pharmacists and pharmacy departments should take a leadership role in developing and implementing policies and procedures for admission, discharge, and transfer so that patients' medication therapy is well managed regardless of patient transitions across care settings. This will help to ensure the smooth drug flow throughout the hospital.

6.1.3 Role Of Clinical Pharmacists

There is absence of clinical pharmacy role in Square Hospital in total clinical areas. Hospital pharmacists though limited in number should play clinical pharmacy role directly with patients on the wards and in other clinical areas, improving patient care. This role can include assessing patients' medicines, educating patients and their families about medicines and how to use them, and discharge planning. Pharmacists play a critical role in preventing the distribution of counterfeit medications. By raising awareness, identifying education materials with practical suggestions, and implementing recommendations to ensure the integrity of the supply chain, pharmacists can help addressing the threat of counterfeit medications

6.1.4 Limited Number Of Point Of Sales (POS) Counters

Square Hospitals serves almost 1200 patients every day in the OPD. There are only five counters at the OPD pharmacy main building. During peak hours it has been found that patients have to wait for a long time to collect their medicine. The long queue occurs due to limited number of service counter. As such it may be suggested, to increase the number of POS counter.

6.1.5 Lack of Knowledge

During the study it was found that the lower staffs working in pharmacy department have inadequate theoretical knowledge about inventory management. Greater expertise should be acquired for the management of inventory and its respective replenishment cycles – to allow for improved order scheduling, demand management, holding inventory reduction and product visibility.

6.1.6 Use Of Semi Manual System In Medicine Delivery

At present delivery of medicine in IPD and OPD is time consuming due to the use of semi manual systems. The use of e-prescription ensures proper flow of information to the concerned persons but medicine is still delivered by hand to the floors. Square Hospitals Ltd. has dumb-waiters to deliver medicine but they are not used to prevent pilferage. Bumrungrad International Hospital of Thailand and other modern hospitals use robotic systems for this purpose. These can be adopted by Square.

6.1.7 Patient Medication Counseling Room

At times patients have to be counseled in private, on the use of medication. Most modern hospitals have private patient medication counseling rooms. Square Hospitals Ltd. has this facility but it is rarely used.

6.1.8 Home Delivery

Square Hospitals Ltd. may initiate home delivery of medicines, where a trained pharmacist will deliver the medicine and counsel patients at their residence. The hospital may provide this service free of charge as part of their social responsibility or charge a minimum rate.

VII. CONCLUSION

Inefficient supply chain management practices will not only hurt a hospital's bottom line but will also reduce its overall performance in a highly competitive industry. Hospital Supply Chain can be considered much more complex than that of other industries. If medicines are out of stock or applied erroneously, it can result in the death of a patient. Thus hospital supply chains have to be more responsive than effective. This was observed in the case of Square Hospitals Ltd. also. The hospital gives more importance to the quick and accurate delivery of medicine to patients and they are quite efficient in this respect. However, there are areas in the supply chain where changes may bring about an improvement in the quality of the service provided by the hospital.

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