

Identification of Enablers and Inhibitors of Supply Chain Management in Indian Hospital

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Abstract:

Management of hospital supply chain is a critical issue as it relates the survival of the human beings. Serving the patient at minimum cost is the objective of hospital supply chain management. Hospital are the main entity where the treatment is provided to the patient. Therefore it is essential that its supply chain thoroughly understood and properly managed. This research paper serve this purpose and shows the problems, enablers and inhibitors of hospital supply chain management. Various techniques also have been discussed in brief in order to improve the performance of the chain. This will helpful to the decision maker in order to improve the patient care at minimum possible cost.

Keywords: Hospital Supply chain, Patients, Inhibitors, Enablers.

1Introduction:

Health care sector has been changed rapidly due to immense competition and increasing effect of patient involvement. Therefore it is necessary to deliver the services in the health sector should be well organized. High quality patient care at feasible cost is the prime objective of any developing countries. Aptel and Pourjalali, (2001) states that a lot of projects have been started in horizontal and vertical integration of supply chain in health care sector. Van Lent et al.(2012) studies the fact that private and public hospital are facing problem for providing the best care of patient because of cost of recruiting the staff. Kim et al. (2016), therefore mention that reduction in cost generally become one of the performance measurement of the hospital.

McKone-Sweet et al. (2005), states that health care organization has still not derive fruitful results of best Supply chain management practices because of very slow rate of adoption therefore it is generally known as highly fragmented and inefficient industry as compare the manufacturing industry. Drupsteen et al. (2013) viewed that different supply chain members works independently focus only on their internal processes and hence involved in price hiking they have lack of coordination between the other departments/members of supply chain. Different programs are generally addressed in hospital to decrease the resource utilization and enhancement of the quality of care of patients but these

programs will not give better results for long time. Landry and Philippe (2004) revealed that internal hospital Supply Chain is the weakest link in the Supply Chain integration. According to the Landry et al. (2016) different medical workers are usually concerned in the internal logistics performance, frequently to reduce the time of patient care. Because of the advancement of technologies, involvement of multiple stakeholders and a dynamic and vibrant environment and complex nature of health care sector enhance the difficulty of adopting the best the practices of supply chain in hospitals. Landry and Beaulieu (2013) mention that patient care and cost reduction can be achieved by proper selection of purchasing activities, inventory management techniques and distribution activities.

The purpose of this research is to understand the different enablers and inhibitors of Hospital supply chain management that will assist the decision makers to improve the best practices in their hospital which will ultimately benefits the patients.

2Hospital supply chain management:

Hospital supply chain management can be defined as the process of integration of material flow and information flow within the hospital. Health care supply chain management can be broadly classified in the two categories:

- Internal Supply Chain Management (commonly known as Hospital Supply chain management) deals with traditional functions of all the supply chain activities related to hospital.
- External Supply Management generally includes the distributors and manufacturer also in supply chain process. External supply chain management combined the customer relation management, technical knowledge management and fund flow management along with the materials and information flow management.

Several research studies suggest that both the external and internal integration is required to fulfil the objectives of supply chain management. Hospital supply

chain management can be considered as the process of flow of medical products, equipments (surgical and clinical) and service from producer to the patient. It can be improved significantly by managing proper flow of information throughout the whole supply chain. Beier, (1995) mention that the performance on internal supply chain management is depends not only the pharmaceuticals goods ,medical instruments and health related accessories but also closely related to the movement of patients within the hospital. In general, the patient flow diagram within a hospital network is shown in figure 1.

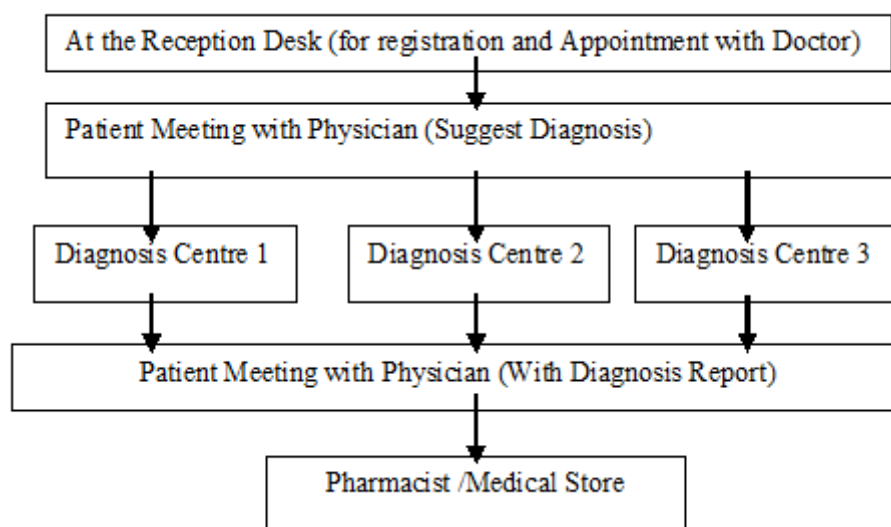


Figure 2.1: Overview of Patient flow within hospital

Success of hospital supply chain management depends on the patient logistics as it defines the unpredictability and complexity of the hospital. The flow of patient can be improved by proper coordination of different departments of hospital as it also reduces the bottlenecks in operation. Both the information, fund and material flows continuously from top to bottom. The principle goal of hospital supply chain management is to increase the quality of patient care at a reduced response time of the physician at the minimum level of cost.

3; Literature Review:

Hospital supply chain management is still a main point of research as it directly involves the human life. Landry and Philippe (2004) mention that most of the researches focus on external supply chain integration as compared to the internal supply chain management. They tried for better management of inventory while applying

Vendors management techniques, faster response time and electronically management of data. Rappold et al. (2011) concluded that hospital supply chain can better managed by proper planning and coordination and management of materials. Bowersox et al. (2010) , Drupsteen et al. (2013), mention that by accurate forecasting, proper management of inventory ,timely delivery of materials and by proper and accurate information sharing can widely improve the internal integration and hospital supply chain management. Some of the authors like Volland et al. (2017) , Bhakoo et al. (2012),states the importance of inventory management on internal integration. According to Schneller (2009), Burns and Lee (2008) states the central purchasing policy is effective for efficient materials management. Tummala et al. (2008), Fawcett et al. (2008) emphasize the critical role of information system for internal integration .Information system is a problem for hospital as it leads

to duplicacy of data ,under utilization of flow of resources if not used properly while other researcher like Tutuncu and Kucukusta (2008),mention that if it is managed properly results well planned and managed inventory and data integrity. Chandra and Kachhal (2004) states the use of internet for purchasing purpose significantly reduce the cost. Landry and Beaulieu (2013) mention the use of barcodes techniques or RFID implementation techniques for inventory visibility. Rego et al. (2014), mention the use of horizontal cooperation between neighbour hospitals to for better supply chain integration.

4 Research Questions:

The present paper focuses on following research question :(1) what are the issues related to hospital supply chain management? (2) What are the different enablers of successful implementation of HSCM practices? (3) What are the different inhibitors of HSCM? (4) What are the tools or techniques can be used which enables the best practices of HSCM? For addressing these important issues exhaustive literature review has been conducted and only then it becomes possible to know the dynamic nature of HSCM.

5 Problems in Hospital Supply chain Management

Major issues in hospital supply chain management are as follows:

5.1 Lack of proper information flow within the different departments of the hospitals:

Breen and Crawford (2005), mention that Information sharing and the use of e-business are directly correlated to the co-ordination and combination of operational processes like procurement, inventory visibility etc. Therefore a lot of researcher focuses to find the role e – services in hospital supply chain management.

5.2 Lack of proper coordination of different processes:

The objective of increasing the patient care at minimum cost is generally depends how well the different processes are integrated .the basic approach to achieve the high performance of HSCM can be achieved by integrating the operational processes in hospital.

5.3 Lack of proper capacity utilization like bed management, staffing and nursing management in the hospitals:

Proper management of capacity like bed, staffing and nursing enhance the patient waiting time and it directly affects the quality of care provided to the patient.

5.4 Lack of proper materials like medicines, equipment (surgical or clinical).

Non availability of materials like medicines, surgical or clinical equipment is also a problem while implementing the HSCM therefore logistic issues plays a vital role within the HSCM [Singh et al. 2016]. Most of the structures fabricated from graphene-based biocomposites are scaffolds intended for tissue engineering applications [Kumar et al. 2020, Kumar et al. 2019, Kumar et al 2020].

5.5 Lack of support from top management :

The major issue in hospital supply chain management is the support from the top management .HSCM principles cannot be applied without the cooperation of strategic management.

5.6 Lack of supply chain education:

The other issues are the lack of motivation, interest and knowledge of SCM principle within the different actors of HSCM.

5.7 Poor inventory management in hospital:

Improper management of inventory increases the patient waiting time and also increases the procurement cost .Vendor managed inventory system ,use of RFID techniques can able to solve the problem but data inaccuracy and increased cost still the issues.

5.8 Unsatisfied staff of hospital:

Sometime worker and staff members who directly or indirectly interact with the patient are not satisfied with the policy issues, operational issues or incentive that will generate the problem proper implementation of HSCM.

5.9 Improper flow of patient:

Because of network design of hospital and improper management of processes within the department of hospital patient flow time has been increased drastically therefore improper flow of patient is the critical issue in HSCM.

6 Enablers for HSCM:

Landry and Philippe (2004) states that Internal supply chain activities considered to be a weakest link for supply chain integration than the external activities. Effective and efficient supply chain management in hospital is necessary for the survival human life. Complete treatment at the right time with optimum processing time is the goal of achieving the hospital supply chain management. HSCM enablers improves the physician patient relationships by providing maximum level of patient care at feasible /optimum cost. It also improve material handling time ,used at all level like doctors, pharmacists etc. Following are the main enablers of HSCM :

6.1 Top Management Support:

The success of Internal or external supply chain management is mostly depends on the support provided by the top management. Without the support of top management the different members can't able to work properly.

6.2 Customer Relation Management:

It focuses on the long term relation between the patient and physician. Dyer and Singh, (1998) studied that Customer Relation Management includes synchronization between the different processes, scheduling, information sharing, increases the faith of the patient towards the hospital and it will be long term benefit for the hospital.

This dimension focuses on maintaining healthy and professional relationships with all the external and internal stakeholders of hospitals. The relationship which is based on mutual trust, coordination and cooperation will enable the hospitals to provide timely healthcare to the patients.

6.3 Lean Principles:

Lean principles are the techniques which reduces the waste from the processes . It is combination of set of activities that provide the satisfaction of patient by providing the right treatment at the right time by eliminating the non value added activities. Sasan T. Khorasani, et al. (2015), studied the use of lean techniques in health supply chain and make a set of principles to be considered in network design in the health care industry.

6.4 Inventory Management:

Electronic data exchange and Vendors managed inventory techniques are the most popular techniques to reduce the inventory in hospital. Managing the right proportion of inventory is a huge task for any hospital. Cost will be reduced if inventory is managed properly. It helps decision makers to improve the patient satisfaction by knowing and real time knowledge of inventory.

6.5 Group Purchasing Organisations:

Enables the timely availability of equipment and medicines at centre of medical stores at the reduced cost.

6.6 Logistics and Network distribution:

Proper logistics and network distribution within the hospital ultimately reduced the patient flow time and directly increase the patient care time.

6.7 Parallel System Affiliation:

By doing horizontal and parallel affiliation with the hospitals at the same level increase the possibility of availability of medicine and equipment at the right time when needed.

6.8 Information systems:

Proper flow of correct information at the right time enables to improve the quality of patient care at the reduced cost.

6.9 Ease: Digital Technology:

Use of digital technology enables the data accuracy and integrity which ultimately increasing the quality of care.

6.10 Third Party Providers:

By including the third party providers hospitals can able to improve the intra coordination. They can increase the efficiency and patient care by including the activities like cleanliness, bed management, linenservices, etc.

7 Inhibitors in HSCM:

Supply chain management is considered to be one of the major actor while improving the condition of the health care sector .Hospital are still not able to achieve its prime objective of providing the high quality of patient care at feasible cost .Timely availability of medicines and treatment is one of the major objective of Hospital supply chain management. Several reasons have been pointed out in the literature like the policies , coordination and cooperation between the members of

supply chain. The following main inhibitors have been observed in Hospital Supply chain management:

7.1 Support from the Strategic Management Level:

Lack of support from the top management is observed as a main problem while implementing the Supply chain Management in Hospital.

7.2 Fragmented Behaviour of Members of HSCM:

The different actors of HSCM are generally acted in a more disjointed manner and provide deferred response to the requests of the other members. The actions of all the members in the HCSC are more personal profit centered to a certain extent than exact requirement of supply chain profit-oriented.

7.3 Conflicting Objectives of Different Actors of HSCM:

Hospital Supply chain management involves the different actors like Physician/Doctor, Staff members, Nurses, Top management, patients and all of them have their individual objectives which are collaboratively conflict among others which represent a problem to adopt the best practices of HSCM .For example patient want the high quality care at the minimum cost while the owner wants the high profitability of the hospital which required the higher cost.

7.4 Technical Understanding of HSCM:

The members of the hospital has very less understanding and knowledge about SCM and it create a problem to implement HSCM. Joseph Mathew et al. (2013) shows that due to this ,managers are unable to control the supply of medicine at right time and it increases the inventory.

7.5 Advancement of Technology:

Jayaraman et al. (2014) have a opinion that due to rapid change of technology advancement in the generation of new product with the same composition and new and better method of diagnosis and treatment also increases the SCM practices in the hospital as the members does not have good practices of procurement ,inventory management system . Also it increases the new way of delivery and distribution of medicines.

7.6 Non Existence of Standardized Codes of Medicines/clinical or surgical Instruments:

Lauer (2004) further, states that due to lack of proper standardized and accepted nomenclature for health care products, surgical and clinical instruments with the liking of physician resulted in increase the level of uncertainties.

7.7 Lack Of Proper Communication or Information Flow Between The Different Actors of HSCM:

Different members of Hospital SCM did not have sufficient faith and mutual trust so that were not share complete and accurate information and due to this ultimately patient has to pay more money and still the service is not up to mark .

7.8 Diffuse Accountability:

As in HSCM more than one member are involved therefore none of them generally take the responsibility as a result some time stock out occurs or some time huge inventory is piled up. Often there is disintegration of responsibility and supremacy between the ministry of health, the hospital, and health staff at the district level which will reduce the practices of HSCM.

7.9 Increased Level of Complexity of HSCM:

Hospital supply chain management can be considered as the highly complex system as it deals with patient dead or life so it will generate the fear of best practices of HSCM.

7.10 Less Wages for Staff used in supply chain program:

Less incentives for the members who were engage in supply chain practices is also considered a barrier for hospital supply chain management practice.

8 Tools Used in Hospital Supply Chain Management:

Various tool and techniques that can be used to achieve best practices of HSCM are as follows:

- 8.1 Implementation of lean tools and techniques
- 8.2 Use of Vendor managed Inventory system
- 8.3 Use of proper RFID to for inventory visibility
- 8.4 Use of internet to flow of information
- 8.5 Supply chain initiative training programs
- 8.6 Use of AHP ,ANP and Fuzzy logic for redesign of network within hospital for minimization of patient flow time.
- 8.7 Cross docking

9 Conclusion & Scope for Future Research:

High quality of patient care at the minimum cost is the success mantra of hospital supplychain management. Responsiveness of the hospital to provide the right treatment of patient at the right time at an affordable cost defines the success of HSCM. High value of patient satisfaction is always the prime goal of HSCM manager. It requires the proper planning and coordination of different stakeholders to identify the barriers and tries to develop a road map which enables the reform in HSCM as it directly affect the human life. HSCM managers identifies information technology and measurement system as the enablers of HSCM while trust on different partners, lack of supply chain education, lack of coordination between the department and improper planning of processes within hospital as the major inhibitors.

Implementation of enablers of HSCM will require the huge effort and road map developed based on considering the issues related to HSCM different political issues and other cultural or mental blocks. Proper management of man power is the key to success of HSCM and HSCM managers continue to provide the education and training of HSCM practices. Formation of right team, with use of right resources utilization will definitely provide the success of HSCM.

Hospital supply chain management still a burning and vibrant field of research. The role of information technology is needed to be understood so that the processes within the hospital can be optimized. Efforts are required to understand the effect of different key factors while implementing the IT service which are now a day's mostly governed by the internet. Other issues which require research is the role of different stakeholder on adopting the best practices of HSCM. It also requires knowing the effect of lean and agile philosophy when implemented along with the principle of supply chain in hospital perspective and how much it is beneficial to achieve the objectives of HSCM. Another major field of research is to identify and examine the different performance measurement indices which can measure the success of HSCM implementation. There are still a difficulty to define the quality of care with respect to patient. Finally the concept of reducing the patient flow within the department is still an emerging field for researchers as it requires the reduction in waiting time of the patient and collaboration of delivery of different processes. New trends development and advancement of

technology how much affect the objectives of HSCM, can still an important and major issue of future research.

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