

Web-based Drug Distribution System (DDS) in Indian Public Healthcare: Challenges & Issues

Renu Garg¹ and Arunesh Garg²

¹System Analyst (TEQIP-II) PEC University of Technology Sector-12, Chandigarh

²Thapar University, Patiala, Punjab

Abstract—Drug Distribution System (DDS) is a computer based system that keeps flow of goods from point of origin to point of consumption. Distribution and utilization of medicines in Government health institutions and facilities is a complex procedure, involving a number of functionaries at various levels. Monitoring and controlling the flow of medicines in such an environment is a challenging job. Proper Drug Distribution System (DDS) is crucial to successful patient care.

Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India has adopted web based Drug Distribution System (DDS) for the supply of medicines in pane India. Drug Distribution System (DDS) is designed to ensure effective management and monitoring of requisition, allocation, disbursement, receipt and consumption in Health Facilities across the process. It provides comprehensive reports on medicine consumption patterns and regular updates on expired/out of stock medicines. This web based Drug Distribution System (DDS) is used by all the stakeholders such as Medical Store Organization, General Medical Store Depots, State Drug Stores, District Drug Stores, indenters, suppliers and Labs etc. This paper provides the relevant aspects of the Drug Distribution System like drug distribution process and procedure, online submission of requisition and distribution by State Drug Store. An attempt is made in this paper to understand the various challenges & Issues in implementation of web based Drug Distribution System (DDS) in Indian public healthcare.

Keywords: Drug Distribution System(DDS), General Medical Store Depots(GMSD), Medical Store Organization(MSO), State Drug Store(SDS), District Drug Store(DDS)

1. INTRODUCTION

Drug Distribution System is the lifeblood of a healthcare system. In health care organizations, Drug Management and Distribution System is a new way of conceptualizing medical supply management. A Drug Distribution System is defined as “a virtual network that facilitates the movement of product from its production, distribution, and consumption.” In considering medicine inventory management and distributions, health care managers are not only concerned with how much of each type of supply, and when, they need to purchase and carry in their stockrooms (inventory) to effectively serve their patients; they also are concerned with their relationships with the companies at the upstream source

of the products to minimize their overall costs in supply management.

The Medical Stores Organization (MSO) is a premier organization of the MoHFW, which is involved in Procurement, storage and supply of medicines, surgical items, medical equipment and other medical supplies/stores required by public health facilities/units across the country as a procurement unit under the Ministry. MSO also distributes the vaccines received from WHO, UNICEF, USAID, DFID and from various other international bodies. Drug Distribution management is therefore, very vital for the MSO so that the medicines are supplied across India in time after proper quality check. The web based drug distribution system for the MSO & GMSD has been implemented which is used by all the stakeholders such as MSO, GMSDs, SDS, DDS, indenters, suppliers, Labs etc are using the online system.

For the long-term sustainability of the programme, as well as to facilitate its fast expansion, it has become necessary to decentralize aspects of drug management and Distribution. At present the Medical Stores Organisation consist of 7 Government Medical Store Depots(GMSDs), located at Mumbai, Kolkata, Chennai, Hyderabad, Guwahati, Karnal and New Delhi. MSO manages distribution of drugs through its 7 GMSDs located across India. At state level for the purpose of Drug Management and Distribution State Drug Stores has been established. Some of the states are having one State Drug store and some of larger states are having more than one SDS.

2. DRUG DISTRIBUTION PROCESS

Medicines are procured by Medical Store Organization through an International Competitive Bidding (ICB) process, based on requirement calculations and technical specifications formulated and pursuant to their approval by a Technical Committee. Distribution of drugs to the range of service delivery outlets under the programme has to be carefully monitored, so as to ensure uninterrupted availability of quality drugs. Requirements at drug stocking points are worked out on the basis of current utilization patterns and expected stocks at the time of delivery. The drug distribution process is depicted in Fig. 1 and summarized below:

- (1) Distribution of drug supplies is primarily effected from the manufacturer to the Government Medical Stores Depots (GMSDs) at New Delhi, Karnal, Mumbai, Kolkata, Chennai, Guwahati and Hyderabad
- (2) Monitoring of drug supplies with regard to requirement and consumption is done through a system of Quarterly Reports, tracking the drug stock position at each district by providing details of the following:
 - (a) Patients put on treatment during the quarter
 - (b) Quantities of different drug items consumed
 - (c) Stock of different drug items received during the quarter
 - (d) Closing stock of drug items
 - (e) Drug requirements of the districts.

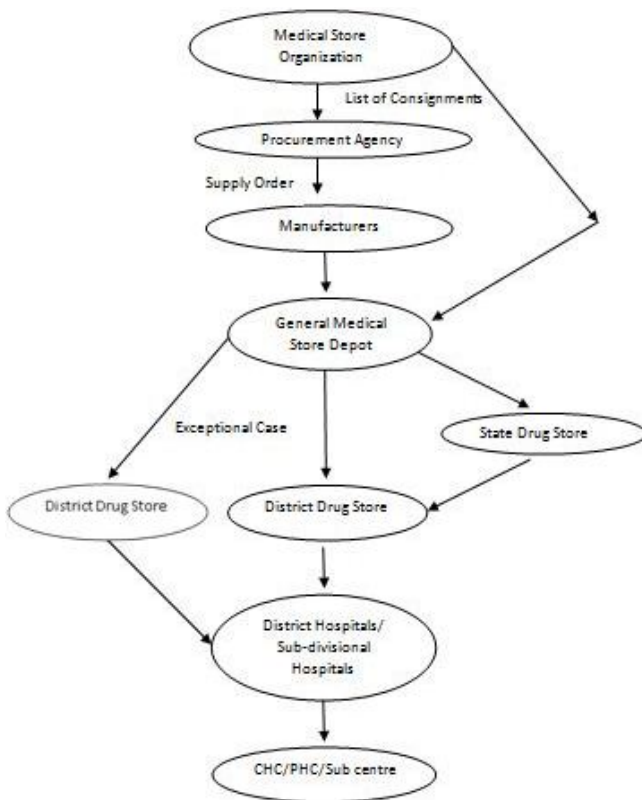


Fig. 1: Drug Distribution Process

3. DRUG DISTRIBUTION PROCEDURE

1. All the registered indenters can send their demands through online system by using their User ID and Password provided to them by the Medical Store Organization on registration.
2. On receipt of the demands through the online system from indenters the Store Section Superintendent of each Depot shall scrutinized the computer generated consolidated demand up to a specified date as specified by the MSO HQ for all items. The Depot Manager /Assistant Depot

Manager In charge scrutinize, confirm/reconfirm and give his approval online before it is transmitted to the Officer In charge for his final approval

3. Demands of each indenters received through the online system can be compiled automatically in each GMSD and the each GMSD shall forward the compiled demands online to the authorized Depot designated by MSO for final compilation of demands and procurement after approval of Office In charge of the Depot
4. The MSO shall authorize any one of the depot / depots for central procurement of Proprietary and Generic items.
5. Consolidated purchase proposals will be formulated by the Purchase Section taking into account the demand received from all the indenters Vis-a vis the stocks in hand, in all GMSDs.
6. The authorized depot shall forward the compiled purchase proposals to MSO HQ for sanction.
7. The Purchase Committee constituted, approved by MSO HQ and in position in concerned GMSD assist the Office In charge of the Depot in the purchasing process of stores.

4. STATE DRUG STORES

SDSs facilitate the distribution of drugs within the State by sharply reducing lead-times for fulfilling drug requests, thereby helping ensure uninterrupted supply of drugs. There is obvious need for all states to have at least one SDS and some of the larger states may need more than one.

Advantages of establishing SDSs include the following:

1. Reduced complexity of logistics management for GMSDs, as intra-State, district level drug requirements, shall be fulfilled directly by SDSs.
2. Significantly improved response times for fulfilling the emergency drug requirements of DTCs, as these shall be serviced from geographically proximate SDS
3. Sharply improved management of drugs inventory at DDCs through the SDCs’ ability to micro-manage and access more current information on drug availability and requirements, etc.

5. WORK PROCESS AT STATE DRUG STORE

This section deals with procedures to be followed for the receipt of drugs at the State Drug Stores (SDS) and immediate next steps for the updation of stock records and storage/stacking of materials. SDSs may receive drugs from multiple sources including:

1. Government Medical Store Depots (GMSDs)
2. SDSs of other states
3. DDCs/ SDSs of the same state

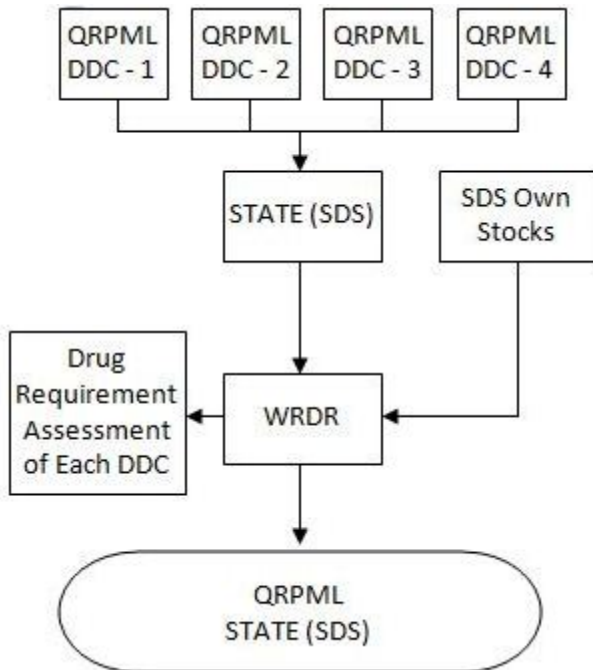


Fig. 2: Work Process at State Drug Store

This section deals with procedures to be followed for the issue and dispatch of drugs by State Drugs Stores (SDS)

SDSs shall issue and dispatch drugs under the following circumstances:

1. Routine quarterly supplies to District Drug Centres (DDCs)
2. Supplies to DDCs against Additional Drug Requests (ADR)
3. Transfers to other SDS(s) in the same state
4. Transfers to SDS(s) in other states.

Issues for the purpose of routine quarterly and additional/supplementary supplies to DDCs or transfers to other SDSs in the same state, shall be determined by the STO/ Dy.STO / Second MO/ Other Responsible Officer (authorized by the STO for the purpose), on the basis of analysis of Quarterly Reports on Programme Management & Logistics (QRPML) and/ or ADRs. Transfers to SDSs in other states, if any, shall be made on the basis of instructions from CTD by filling the requirements on Worksheet for Reporting Drug Requirement (WRDR).

Implementing DTCs shall be linked to the most convenient SDS (in terms of proximity and transportation arrangements), in the case of states having more than one SDS. Ideally DTCs shall only receive supplies from the associated SDS, identified through the above process.

6. CHALLENGES & ISSUES

1. Time Factor: The time factor is probably not as crucial in any other field as it is in healthcare delivery where delay

of a few seconds can cost a life. Moreover, availability of a low cost catheter is as critical as a high value pace maker when it comes to medical care. Therefore, Distribution system have the huge responsibility of making thousands of diverse medical consumables available on time. The challenge is even greater as the number of expected patients are unpredictable; suppliers are unreliable and costs are rising. With recent developments in automation and information technology and emerging trends in the medical supplies industry, materials managers are now better equipped to handle time constraints.

2. Quality Control: The safety of patient is the top priority in healthcare, and materials managers play a crucial role in protecting his / her interest. The biggest responsibility of a materials manager is to ensure that the products purchased for clinical use are of good quality. It can be achieved by developing a 'product evaluation' system consisting of well defined parameters to guarantee that only approved products enter a hospital's stockroom.
3. Area Coverage: The target population is from rural areas to urban areas. The target of the distribution system is to supply the required material from tertiary hospitals to sub-centre level. From state drug store the supplies are distributed at district level, from district upto the village level is a big level of challenge.
4. Reluctance in Technology Adoption: some of the persons feel that the adoption of technology will complicate their work. While using advance technology will relax their work, It becomes hi-tech and easy.
5. Training to Users: There is lack of proper training to the users of the system. Without training it's typical for the employees to manage the whole process from manual to online system.
6. Different work Cultures and Methodologies: The target is to implement the whole system in pane India. There is different work Cultures and Methodologies are used by different areas. There is a big challenge to implement the whole system in different work Cultures and Methodologies
7. Understand the current workflow: In current system the flow of data is different in comparison to the web-based drug distribution system. The online submission of requisition is also need proper mathematical calculation before submission.
8. Cost factor: There is tremendous pressure on materials mangers to initiate serious cost cutting measures. While the cost of medical supplies has been spiraling up, greater number of patients are demanding high quality and reasonably priced healthcare services. Since cost of supplies forms a significant portion of healthcare expense, materials mangers should continuously strive to get better deals.
9. Poor inventory visibility due to lack of data systems: It is nearly impossible to easily track product usage, and

inventory levels are often much higher than actually needed, which creates a cost burden.

10. Lack of tools and standard work processes. If the patient flow increases and supplies are low, this occurs frequently and without warning, individual departments have developed their own contingency methods to mitigate inventory shortages. Acting as the “supplier” to these internal customers, the material management department has little or no visibility to validate the actual product usage. The result is a multitude of hidden processes that foster the growth of inventory and special handling procedures.
11. Distribution of Network Configuration: It deals with the warehouse’s location, production level of goods, etc. It also deals with to finalize the distribution network between the suppliers and hospitals to minimize transportation and inventory costs.
12. Supply Contracts: This deal with maintaining cordial relationships between the suppliers and hospitals by signing Supply Contracts. These contracts specify price, discounts, lead time, quality, etc.
13. Distribution of supplies: A hospital will have to make decisions regarding the storage of supplies or direct delivery at the point of use.

7. CONCLUSION

A good Web-based Drug Distribution System is always patient-centred. The purpose of the system should be to meet the requirements upto sub-centre level. Current challenges and issues are elaborated to enhance improvements in technology and overcome these pitfalls from Web-based Drug Distribution System, Although technology has an important role to play, the emphasis should be on using it in a way that makes a difference to the quality of patient care.

Automating inefficient processes may not yield any productive result. Processes should be reengineered to make them more patients friendly. Cost-effectiveness, time consciousness and safety are key drivers of a patient-centered approach. Once this goal is clear, technology can support and drive the efforts towards realizing efficiencies and improving the quality of health care services.

REFERENCES

- [1] Standard Operating Procedures Manual for State Drug Stores, Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.
- [2] Dr. Anil N. Sarda, Prof. Yogesh J Gharpure, Trends in Inventory Management in health care sector in India – Issues & Challenges,, Vol 4, Issue2
- [3] India Healthcare: Inspiring possibilities, challenging journey- Prepared for Confederation of Indian Industry (CIIMcKinsey report Dec.2012)
- [4] Applying Actual Usage Inventory Management Best Practice in a Health Care Supply Chain’, Vijith Varghese, Manuel Rossetti, Edward Pohl, Server Apras, Douglas Marek. – International Journal of Supply Chain Management IJSCM, ISSN: 2050-7399 (Online), 2051-377
- [5] Supply Chain Management in Hospital (2008) Samuel, Mary , Y. Helio, San Diego State University, San Diego, CA.
- [6] Khurana S, Chhillar N, Gautam VKS. Inventory control techniques in medical stores of a tertiary care neuropsychiatry hospital in Delhi. Health 2013; 5(1): 8-13
- [7] Noorfa Haszlinna Mustaffa, Andrew Potter, “Healthcare Supply Chain Management in Malaysia: A Case Study”, Supply Chain Management: An International Journal, Vol. 14, No. 3, pp. 234 – 243, 2009.
- [8] Derek T. DeScioli, “Differentiating the Hospital Supply Chain for Enhanced Performance”, M.Eng Thesis, Massachusetts Institute of Technology, USA, 2005.