Healthcare industry Supply Chain Strategies

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Healthcare industry's current focus in supply chain management is primarily focused on tracking, monitoring and visibility of the supplies and assets as well as transactions such as billing, payment and managing inventory (not "planning" inventory). For example, many existing solutions offer bar coding to enable purchasing organizations to track usage, re-order to minimums and replenish to the demand. It also shows the inventory levels at all locations and offers automation to check out inventory. In some cases, they provide re-order points to avoid shortages. Typically, they keep track of usage and availability but do not have any predictive methods of deciding how much is needed and when; or to ensure coordination of resources. They provide an automated re-order point capability which is a rather primitive way of handling inventory. *In general, such solutions are transaction-based without any modeling capability to predict the future and perform planning*. A number of hospitals use JIT (KANBAN) system for better inventory management. Although this is a useful technique but it cannot perform "predictive planning." It is more of an *execution* system much the same as "re-order" points. If there are fluctuations in demand, then the system fails because of having always a *fixed* quantity. It can also lead to unnecessary

inventory, since there is always a back-up quantity, which leads to keeping more than twice the quantity that might be needed. Planning is more of a predictive approach that models usage of supplies and assets and optimizes the availability thereof.

Application of inventory and supply chain planning technology

Hospitals and healthcare industry tend to have a dynamic supply chain that requires demand prediction including seasonality as well as ensuring availability of supplies. Sales, Inventory & Operation Planning (SI&OP) is a methodology that periodically examines future demand and plans inventory as well as supply availability and production. The steps involved are: forecasting and demand planning, so that a consensus plan is developed as to what SKUs are needed, how much, where and when. This is based on statistical forecasting as the baseline and then fine-tuned by a collaborative process amongst the users. In general, this first step alone yields millions of dollars in savings to avoid building up unwanted inventory or creating shortages that need to be replenished by paying premiums. The second step is for the system to recommend how much inventory is needed for each SKU and when, based on stochastic algorithm that deploys probability distribution of usage for every SKU at every location. Third step is to evaluate availability of resources (equipment, critical parts and supplies, operation rooms, physician availability, etc) based on expected demand.

Such solutions, described above, integrate to transaction systems that manage the data and do the tracking and usage. In manufacturing they use ERP systems to keep track of POs, inventory, general ledger, receivables etc. In healthcare, the point-of-use systems contain much of the needed data to perform planning. After a plan is completed, a message is sent to the transaction systems indicating what to ask each supplier in terms of what is needed and when. The latter will also create the POs as needed. Once the suppliers confirm the receipt of the order and commit to delivery, the planning system would then update itself and during the next planning session will take into account what is expected to arrive and how much more or less maybe needed. The planning cycle could be daily, weekly or monthly in order to adjust to the dynamics of the environment.

The immediate benefits are:

- Reduction of wait time for patients as well as caregivers resulting in a much better utilization of all the resources: people and equipment.

- Coordination of Operation Rooms and other critical areas that require multiple resources, supplies and parts come together.

- Given that there is a large amount of available data, the question is how it can be used to bring different data sources together so that decisions are made as to what to buy, what to plan and what options there are to reduce cost and improve wait times for both Dr's and patients.

- Analysis of patient demand trends and forecasting the bottleneck areas improve the operations and predictively avoid shortages and wasteful spending of equipment and services not necessarily needed. Patient flow, discharge management, length of stay, and the use of equipment and operating rooms etc. are all part of predictive analysis to eliminate unnecessary cost and better preparedness for receiving and treating patients.

- The bottom line is matching future demand vs. capacity to avoid excesses and shortages, at the same time having the right level of inventory and resources available to meet the potential changes of demand.

For more information on this topic and learn more about Adexa innovations contact info@adexa.com.

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