Evaluating Self-Distribution
A Guide for Healthcare Executives

Introduction

In an effort to reduce the costs of medical products and exert control over the supply chain, some hospitals and integrated delivery networks (IDNs) have implemented or are considering implementing a strategy known as self-distribution.

With self-distribution, the hospital or health system sources products directly from manufacturers and then delivers them in appropriate quantities to the healthcare providers within its network. The system takes on the responsibilities and associated costs of performing the procurement, warehouse management, inventory control, order fulfillment, transportation, and other roles that previously rested with an outside distributor.

Self-distribution is not a fit for every healthcare organization. This paper will provide a decision-making framework for hospital and health system executives to effectively plan and account for the strategic, operational, legal, and financial impacts of adopting this supply chain model.

Process for Evaluation of Models

The investigation into self-distribution is essentially a make-or-buy decision. It starts at the strategic level. Decision-makers should evaluate:

- The health system's core competency(ies)
- Desired outcomes from a possible change of model
- Criteria for measuring success
- The health system's risk tolerance

The evaluation may then proceed to the operational and financial level. A full understanding of the organization's current cost of procurement and distribution, annual supply spend, and fill rates is crucial to carrying out a robust study. Every necessary operational component required for both the present distribution model and all potential self-distribution scenarios must be assessed in terms of the needs and associated costs of:

- People
- Processes
- Services
- Facilities
- Technology

Finally, **every operational transaction of self-distribution must be identified and analyzed** in terms of people, processes, services, technology, and facility requirements and their upfront and ongoing costs.

Self-distribution is not the right solution for every hospital or healthcare system. However, every organization can benefit from identifying its total procurement costs and taking steps to reduce them to make its supply chain more efficient.

Strategic Considerations

Will self-distribution add to or detract from patient care?
At the strategic level, perhaps the most critical consideration for the hospital or system contemplating self-distribution is the question of *core competency*. Many hospitals and health systems have very efficient materials management systems that could be expanded into self-distribution operations. However, the institution's primary focus is patient care and in determining how best to manage supply costs, executives must ensure that quality care remains the organization's primary management objective.

What do you hope to accomplish and how will you know if you accomplish it?
Another strategic consideration is the goals to be achieved by implementing self-distribution and the criteria to measure success in meeting those objectives.

What savings are possible, and does the return offset the cost and risk of such a major initiative?
The value of undertaking a system-wide change must be quantified by calculating its return on investment (ROI). What other opportunities will be deferred in favor of investing in self-distribution?

How much risk is the organization willing to assume?
All capital investments are risks. There is risk that the enterprise will not achieve the expected savings/financial return; there is also risk that required service levels will be more difficult to achieve than expected.

Is executive commitment and support present and is there someone willing and able to lead the initiative?
Driving self-distribution through an organization requires executive sponsorship and the identification of a senior executive willing to champion this major organizational transformation.

Can your organization commit the needed resources for 5–10 years, and is that the best use of scarce resources?
Self-distribution requires a significant capital investment for a warehouse, equipment, inventory, technology, and personnel. These are long-term commitments.

Is the organization's annual spend sufficient to make the investment worthwhile?
A minimum of $30 million in annual medical product purchases has been identified as the gate for obtaining operational efficiency in a self-distribution model; some proponents put the figure at $50 million.

Does the healthcare system's geography make sense for self-distribution?
IDNs located in a tight geography are more likely to succeed than those with far-flung locations which increase delivery costs. Some experts say a geographic radius of more than 200 miles does not lend itself to a self-run warehouse. The healthcare system's current locations and future expansion plans should be considered.

Is the system's technology and level of supply chain expertise conducive to self-distribution?
If the system lacks an advanced technology platform, the focus should be on technology adoption *before* self-distribution. Similarly, if the system is not already a supply chain leader in terms of people and processes, these should be addressed before considering a new supply chain model.

SUCCESS FACTORS FOR SELF-DISTRIBUTION

- **Strategic alignment** of the self-distribution activity with organizational goals
- **Senior-level executive sponsorship** to champion the transformation and support it as a long-term commitment
- **Sufficient capital** (which Gartner estimates could approach $40 million over the first three years) to pay for warehouse space, vehicles, equipment, technology, inventory, labor, and on-going maintenance and improvements
- **Volume** of $30 to $50 million in annual medical supply purchases; total supply chain spend in excess of $100 million
- **Staff expertise** to perform the higher level operations required for self-distribution
- **Tolerance for risks** (including financial risks and others such as flooding, labor problems, etc.) because a self-distributing IDN loses the safety net of an outside prime vendor
- **Standardization** of products and GPO contract portfolios
- **Manageable geography** so transportation costs are reasonable
- **Technology** to facilitate closed loop communication and process efficiencies

The Operational Processes of Self-Distribution

On the surface, self-distribution seems simple: buy products, store them, and deliver them to the point of use. Beyond that first view, however, it is a much wider-ranging and complex endeavor – one that involves a series of critical processes to perform and finance on a much larger scale to assure that a healthcare organization has a fully functional and optimal self-distribution operation.

It is helpful to consider each of these processes, understand how they are managed through a traditional outsourced distribution model, and analyze the effort and cost required to take those functions in-house.

Purchasing

IDNs that in-source distribution must create direct purchasing relationships with hundreds of vendors whose products were previously acquired through a distributor. This results in a vast increase in both the number of suppliers and transactions that must be managed. On the front end of each supplier relationship, increased staff time is required to source products, negotiate prices, and set up credit and terms. On an ongoing basis, there are exponentially more orders to place and track.

Issues such as order reconciliations, price changes, recalls, and product expiration dates are now handled by the hospital directly with each separate supplier rather than through the distributor. Backorders and returns must also be resolved one-by-one, manufacturer by manufacturer.

Self-distribution is likely to significantly decrease the share of purchasing that the system does electronically. Most full-line hospital distributors are electronic data interchange (EDI) capable, so even if vendors do not use EDI, the hospital is able to place orders electronically for those manufacturers' products through the distributor. An IDN that adopts self-distribution will now have to work directly with those non-EDI vendors. Therefore, upfront identification

of suppliers that do not use EDI, and those that use EDI only to accept orders but not for more advanced transaction sets such as advanced ship notifications and price changes, is an essential part of assessing a shift to self-distribution.

Inventory Management

Inventory represents money that is not available for other uses, so most hospitals seek to minimize their inventory levels in order to free up cash. However, the facility must have sufficient product available to avoid stock-outs that can compromise patient care.

Commercial hospital distributors stock 20-30,000 individual products. Self-distributing IDNs may be able to reduce that number considerably through standardization, but will still need to maintain appropriate levels of inventory to ensure that products are available when needed by the healthcare providers in the system.

Materials management personnel are required with the expertise to determine minimum order requirements and calculate economic order quantities for hundreds of suppliers. Each manufacturer's lead time, consistency, and order fill rate must be ascertained to reach accurate quantities that will result in consistent product availability at the lowest possible inventory cost.

To effectively manage inventory, the distribution center's management must focus on several important variables including:

- **Fill rates.** Maintaining the high fill rates necessary to support patient care can be harder for self-distribution facilities than for outside distributors. Large commercial distributors are maintaining inventory levels sufficient to meet the needs of their many customers – if one hospital has a spike in admissions, their increased supply needs can be easily met because of the larger amount of inventory carried by the distributor. If a product is back-ordered with the manufacturer, the distributor carries other brands which can be offered as temporary substitutes. In a self-distribution situation, the distribution center may have a more difficult time dealing with demand fluctuations and plans should be in place to cover these situations.
- **Overstock and returns.** Overstock inventory is a huge cost; organizations that self-distribute must manage their inventory very carefully to prevent an increase in overstock or dead inventory. One particular risk factor is manufacturer return policies which may be less flexible than distributors' policies.
- **Hidden costs of inventory.** Every time a product "stops" or "starts" in the supply process, someone must take action or set space aside to hold it, which adds to total costs. Many commercial distributors offer technologies and processes to help hospitals reduce the hidden costs of inventory, such as just-in-time or other low-unit-of-measure services tailored to the individual institution's needs. The self-distributing IDN will need to find ways to address these hidden costs.

Warehouse Management

Most self-distribution operations require a separate warehouse where the organization receives shipments, stores products, and does the pick-pack-ship activities required to fulfill product orders for users. Major capital outlays will be required for:

- Rental or purchase of the **warehouse space** (if this space is already available, then this should still be factored in as an opportunity cost since the space could otherwise be used or even sold)
- **Utilities and maintenance** for warehouse facilities
- **Storage equipment** such as shelving, containers, refrigerators, and freezers
- **Handling equipment** such as forklifts, conveyors, palettes, and slipsheets
- **Technology** for a warehouse management system (WMS) and supporting hardware such as computers, printers, bar code scanners, etc.

These are both substantial and long-term investments. Obtaining warehouse space, for example, often requires a 5–10 year lease. If the self-distribution operation is discontinued, the healthcare system may continue to be burdened with these costs.

Specific supply chain talent will be required to select the space, negotiate leases, design the warehouse layout, equip the space, evaluate and implement software systems, develop processes and training, and manage the warehouse and its staff on an ongoing basis.

Receiving

Receiving activities will increase dramatically with self-distribution – more manufacturer deliveries, more trucks, more traffic at the loading dock. If the operation is located on-site at the IDN location or in some other area where space is limited, this can be a significant issue.

Scheduling of deliveries may be more challenging than in an outsourced model. Most distributors deliver on a tight schedule based on the customer's needs; direct vendors may not have the ability to be as predictable and accommodating. Staff time will be required to manage delivery timing.

Pick and Pack

Assembling and fulfilling orders is often referred to as "pick and pack." Speed and accuracy are critical to avoiding costly error resolution, restocking, and ultimately a very inefficient second order. Employee training and a rigorous quality assurance process for accuracy in picking and packing orders are necessary for day-to-day efficiency. Reliable warehouse employees are essential but can be difficult to attract and retain.

Transportation, Freight and Shipping

Transportation and associated costs for a self-distribution operation must be factored into the analysis of the effort. Two kinds of transportation costs should be considered:

- **Freight costs charged by manufacturers.** Some manufacturers include delivery costs in the price of the product, but many charge for it separately.
- **Internal transportation costs.** A self-distribution operation will likely require an increase in the need to transfer products from the central receiving/storage area to the individual departments or provider locations within your system.

The self-distribution operation may opt to outsource transportation services to a third party or build and run its own courier service; planning and assessment should compare the costs of each. Examples of the types of costs that might need to be accounted for in a do-it-yourself model include:

- Vehicle acquisition or lease
- Trained drivers
- Route analysis and maximization software—transportation management software (TMS)
- Fuel (the variability in fuel pricing should be factored in to avoid overly optimistic estimates)
- Vehicle maintenance
- Insurance

Some self-distributing hospitals have noted the challenges associated with understanding CDL truck driver requirements and the other federal, state and local truck driving regulations that come with self-managed distribution and an in-house courier service.

Information Technology

Efficiencies in distribution are driven by information technology. A move to self-distribution will likely require significant investments in software, hardware and qualified personnel to manage these systems. A technically integrated supply chain management system includes every step of the procurement process:

- Identifying the need for a product
- Placing the order into the system
- Executing a purchase order
- Tracking the order
- Receiving the product
- Storing the product
- Delivering the product to the department
- Paying the invoice
- Resolving any product-related issues
- Closing the purchase order

All facilities in the system will need to share a common IT platform as well as a common materials management information system (MMIS) and warehouse management system (WMS).

In their own operations, distributors use handheld and other automated communication technologies such as bar code scanning equipment, pick-to-voice, and radiofrequency identification (RFID) to reduce the costs of inventory tracking and ordering. To achieve success with self-distribution, the healthcare organization must also employ these automated communication technologies to reduce the cost of maintaining its par areas.

When developing a cost estimate of a self-distribution strategy, these technologies and their routine upgrades and periodic replacement must be included in the evaluation. Training costs should also be included, not only for the IT and materials management staff but also for hospital staff using and interfacing with the systems.

Customer Service

The departments and healthcare providers within your system will expect prompt and efficient service from your self-distribution operation. This will require sufficient staff to take orders, resolve returns, answer questions about order status, and handle special requests.

Contract Administration

Managing vendor contracts is an enormous job for any hospital even without the increase in the number of contracts that results from self-distribution. Keeping the item master up-to-date with the most current product descriptions and contract pricing is a time-consuming but necessary task.

Ensuring that each product purchased receives the lowest available contract price, that internal systems reflect recent price changes and unit of measure changes, and that contract compliance is maximized is critical to cost efficiency. When a healthcare provider uses a group purchasing organization (GPO) and orders through an outside distributor, the distributor assumes the responsibility of tracking and updating the contract pricing for each item and billing the hospital at the best available contract price. Some distributors guarantee price accuracy and are audited regularly to ensure this guarantee is fulfilled. Self-distributing IDNs will need the contracting administration expertise to handle these activities solo.

Additional contracting related activities that the IDN will likely take on in a self-distribution model include:

- Authorizing its GPO(s) to authorize GPO contract pricing when electing to purchase off a GPO's agreement and buying direct from manufacturers that sell only through distribution channels.
- If the system includes affiliated providers representing several classes of trade having different price points for the same products, possibly implementing a rebate tracking system and process rebates with manufacturers.

If the system adopts a self-contracting model along with self-distribution, then the IDN will also assume full responsibility for product evaluations, price negotiations, and many other contract administration processes. Whether the IDN continues to use a GPO or not, contract administration activities will expand significantly and additional staff time and training will be required.

Accounts Payable/Finance

Self-distribution is an organization-wide commitment and the accounts payable/finance department is directly and significantly impacted.

Medical products manufacturers typically have more stringent credit requirements and terms than those offered by distributors. To stock its own warehouse with medical and surgical products, the IDN should be prepared to pay manufacturers within 30 days and potentially in 15 days or fewer to qualify for prompt-pay discounts.

In addition, because of the increased number of suppliers selling directly to the hospital or system, the accounts payable department will process hundreds or even thousands of additional invoices each month. Non-healthcare industry averages show that the fully allocated cost of paying an invoice is $13 per invoice. For the healthcare industry, where automation is often lacking, the average is likely higher.

This cost-per-invoice will increase with self-distribution due to the larger number of separate vendors (because it costs less to process multiple invoices from one vendor than multiple invoices from multiple vendors). Part of necessary due diligence will be to establish the IDN's actual cost to process an invoice and multiply that by the estimated increase in the number of invoices resulting from the change in model.

Human Resources

Self-distribution requires additional staff, and therefore more support from the HR department. Contracting, supply chain, and IT personnel must have specialized talent and experience. The financial analysis should contain a determination of the staffing requirements for various self-distributing operational models and include a 24/7 scenario. A gap analysis can be used to identify the staff core competencies and skills required to succeed with self-distribution and compare them to the knowledge, skills, and abilities of current employees.

Legal

The self-distributing healthcare system may need to address certain legal issues, including:

- The legal structure of the self-distribution operation and its relationship with the affiliated hospital(s) or IDN(s)
- Legal risks that may be involved in self-distribution (for example, product liability, OSHA compliance, etc.)
- Operational risks involved in the increase in supplier relationships (for example, payment or contract disputes)

Cost Accounting

Product procurement, inventory control, and product movement costs are very labor intensive and spread throughout the hospital. One study found that up to 85% of the cost of medical product procurement is related to activities performed by nurses, other caregivers, and other non-supply chain personnel. The dispersal of these activities makes self-distribution difficult to properly analyze and compare with other models.

A DIFFERENT VIEW OF COSTS

Activity-based management (ABM) is a method many organizations use to gain a new view of costs. For example, an analysis of the hospital's emergency room using ABM would report costs differently than the traditional accounting report, for example (hypothetically):

EMERGENCY ROOM COSTS

TRADITIONAL ACCOUNTING VIEW		ABM VIEW	
Salary/Fringe	$460,000	Treat Patient	$300,000
Space	$50,000	Resolve Problems	$70,000
Depreciation	$50,000	Complete Paperwork	$90,000
Supplies	$30,000	Procure Supplies	$80,000
Other	$10,000	Expedite Supplies	$20,000
		Housekeeping	$40,000
Total	**$600,000**	**Total**	**$600,000**

Since costs cannot be managed unless they are identified and accounted for, ABM is a useful tool to provide a complete picture.

Health systems' accounting systems can underestimate true supply chain costs in two ways:

1) **By failing to properly allocate all overhead expenses.** For instance, if costs such as employee benefits or IT expenses are borne in full by the healthcare system rather than being allocated to the supply chain operation based on an accurate analysis, the operation will appear to be less costly than it actually is.

2) **By overlooking the implications of different models on staff time beyond the supply chain personnel.** For example, if one model creates additional work for clinical staff because some products are requisitioned through an in-house operation while others are requisitioned from outside vendors, the staff time should be measured and accounted for through an activity-based accounting analysis.

Recommendations

1. **Investigate the viability of self-distribution in a broader context of reducing total supply chain costs.** This approach assures that all significant cost reduction opportunities in the procurement process are identified. Typical project objectives should include:

   - Finding the *supply chain strategy* that best supports your organization's core mission and competencies.
   - Reducing *caregivers'* time spent on procurement or administrative activities so they can focus on patient care.
   - Identifying and possibly *outsourcing activities* that distract from your core mission and competencies.

2. **Address gaps in current supply chain practices before considering self-distribution.**

   - *Product standardization* should be a prerequisite to self-distribution rather than an objective. Commercial distributors offer customized solutions to help customers adhere to product formularies, which allow the IDN to achieve this goal without the capital investment required by self-distribution. Once product usage is highly standardized, the IDN is in a much better position to efficiently implement self-distribution as a potential next step.

   - *Standardization to one contract portfolio* is a related prerequisite which will provide near-term savings through tier optimization.

   - *Automation gaps* should be overcome prior to taking on self-distribution (although self-distribution will require further investments) Supply chain processes should utilize on system-wide IT platforms; maximize electronic requisitioning, order processing, automated communication; and use EDI for ordering from vendors.

3. **Understand the full cost structure of product procurement through a financial analysis using ABM or another comprehensive analytical tool.** With as much as 85% of procurement labor and overhead costs incurred outside of materials management, a thorough understanding of the activities related to procurement and handling is critical to a cost analysis of self-distribution, but highly valuable on its own as well.

   - Measure *activity costs* such as the cost of issuing purchase orders and the cost of paying invoices and benchmark them to industry best practices.

   - Identify *redundant or inefficient activities* such as multiple avenues for purchasing the same products. The potential cost savings from consolidating redundant procurement processes into an operational centralized purchasing system is substantial and should be a system-wide goal.

4. **Be cautious about combining procurement systems for medical products with those for other types of equipment and supplies.**

   Some health systems have consolidated purchasing and materials management for a variety of products and services, including office supplies, linens, janitorial products, patient information management, lab supplies, medical products, and more.

   Managing multiple supply chains through common processes and personnel may offer some efficiencies, but it is important to recognize that the services involved with selecting and procuring medical products are substantially different than those for non-clinical items:

   - Medical products are directly related to patient care; many are invasive, many are technically sophisticated.

   - Medical products comprise a greater portion of the budget.

   - Many medical products are bulky and expensive to handle (for instance, IV solutions and incontinence products).

   - Some medical products require refrigeration or other special handling.

For these reasons, special expertise should be applied to the analysis of products directly involved in patient care.

5. **In analyzing potential supply chain models, distinguish carefully between self-distribution and self-contracting.** Investment and expertise is required for either, but the capital outlay for self-distribution is far greater. Be sure to assess the risks and benefits of each separately.

6. **Make a distinction between the price of medical products and internal costs to procure and manage these products.** Reducing total procurement costs, not just prices, should be the goal of every health system.

   - Pricing is only a fraction of the total cost of obtaining, owning, and using medical products. Decisions that reduce supply spending but require more staff time and/or greater capital outlay can increase overall costs in the long run.
   - Pricing is important but sometimes out of the hospital's control. However, the costs that surround procurement activities within the organization can and should be carefully controlled.

Self-Distribution Investment Considerations

PEOPLE	**COST ESTIMATE**
Contracting and purchasing agents	
Pickers and packers	
Drivers	
Operations/warehouse manager	
Warehouse employees	
Accounts payable staff	
Customer service personnel	
CAPITAL	**COST ESTIMATE**
Additional inventory—approximately one month's supply	
Warehouse space	
Warehouse equipment	
Trucks or other delivery vehicles	
Information Technology	
PROCESSES (training, consulting, etc.)	**COST ESTIMATE**
Inventory management	
Technology	
Contract management	
Pick, pack, ship	
Transportation	
ONGOING COSTS	**COST ESTIMATE**
Software updates	
Other	