

## Is it time to relocate your central storeroom?

Consider these factors as you evaluate an on-site vs. off-site location

By Sean O'Neill and Andri Purkanto

### QUICK TAKE>>>

As hospitals evaluate how to best use space to maximize revenues, more and more facilities are looking at whether it makes sense to move the central storeroom to an off-site location. Such facilities can offer distinct financial advantages, but a thorough analysis should be conducted to determine if this option is best. Issues ranging from cost to impact on inventory control to capital equipment requirements and more need to be considered. Steps included in this article will help you evaluate your options.

Hospital leaders, trying to maximize operations, sometimes ask materials managers tough questions such as: “Can we convert the central storeroom to revenue-generating space by moving it to another location?”

This is a strategic decision in which materials management leadership must balance a number of considerations. Once the space is transitioned to revenue-generating functions, it becomes difficult to bring materials management operations back on-site. While there are many operations that outsource utilizing distributor-based programs, some vice presidents and directors have a concern over the long-term cost savings and contract leverage. These leaders are asking, “Can we achieve off-site, hospital-run central storeroom capability and maintain control? What model is required for materials management to provide the same service level while operating from a less-expensive off-site location?”

This report provides analysis and factors to consider when exploring the feasibility of maintaining control and running an off-site materials management operation. No single solution is ideal in all regards. Rather, materials management professionals and hospital leadership need to comprehend and qualify each alternative and evaluate its advantages and disadvantages before deciding upon the strategic direction that is most beneficial

for their institution. To make a prudent decision, one should evaluate each alternative financially and operationally.

#### On-site model

The prototypical on-site central storeroom model provides materials management with full control of inventory and supply chain operations. The bulk materials are received across the dock, unit-based orders are manually picked from the central storeroom and the orders are delivered directly to the units. The stat inventory and resupply stock, existing management and supervisory structures are on-site and in close proximity to customers to provide quick response and a high level of customer service and support by addressing problems immediately and not compromising patient care.

While the on-site location offers proximity advantages, the basement or ground-level location has inherent limitations that are not generally ideal for warehousing operations and decrease the overall operational effectiveness. For example, dock operations, which are used to service hospital operations that include the kitchen, linen, waste, mail and materials management operations, are difficult to access and are capacity constrained.

This situation is typically compounded by inefficient processes and lack of staging space, requiring additional coordination and full-time equivalent effort

# INVENTORY

to manage daily peak demands. In addition, a low clear height in the central storeroom reduces space use, which increases space and direct picking labor requirements. These characteristics create operational inefficiencies and safety concerns throughout the lifetime of the building.

Moreover, on-site real estate is getting scarcer and, when used for nonrevenue-generating purposes, entails a high opportunity cost. This raises the fundamental question of whether the on-site warehouse space is better used as revenue-generating clinical space or possibly for current support services. In light of these considerations, is an off-site operation a viable option?

## Off-site model

The off-site model can be executed in such a way that materials management main-

tains full control of inventory and supply chain operations. While there are several variations, the fundamental concept of the off-site materials management model is that the primary central storeroom warehouse inventory operation is relocated from the on-site space to an off-site location, either leased or purchased, within a couple miles of the hospital.

The off-site warehouse serves as the central storeroom and receiving operation for the hospital. The central storeroom houses the bulk inventory and is designed to support the unit-based picking operations. The off-site warehouse serves as a primary receiving operation for materials (central storeroom and surgical), equipment and mail to alleviate dock activity at the hospital, while pharmacy, food and linen shipments continue to be received directly at the hospital (see illustration below).

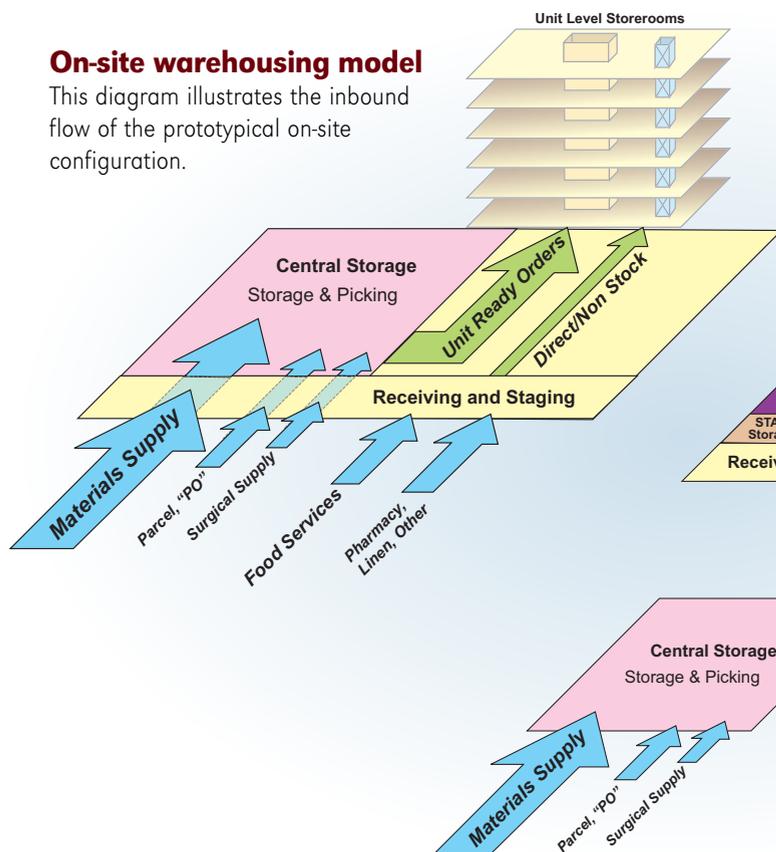
Moving to the off-site model entails storing a large percentage of inventory at a distance from the hospital. If not planned properly, the off-site model could compromise customer service levels and, potentially, patient care. Therefore, going off-site requires a restructuring of materials management to ensure that customers still receive the service levels associated with the traditional on-site model.

Planning for a successful off-site operating model requires a review of the process, technology, infrastructure and staff.

A benefit of the off-site alternative is its ability to take advantage of a “clean sheet” approach to develop a lean management design for the most efficient operations. The off-site alternative requires a stat warehouse at the hospital in case of an emergency. This ensures clinical staff has

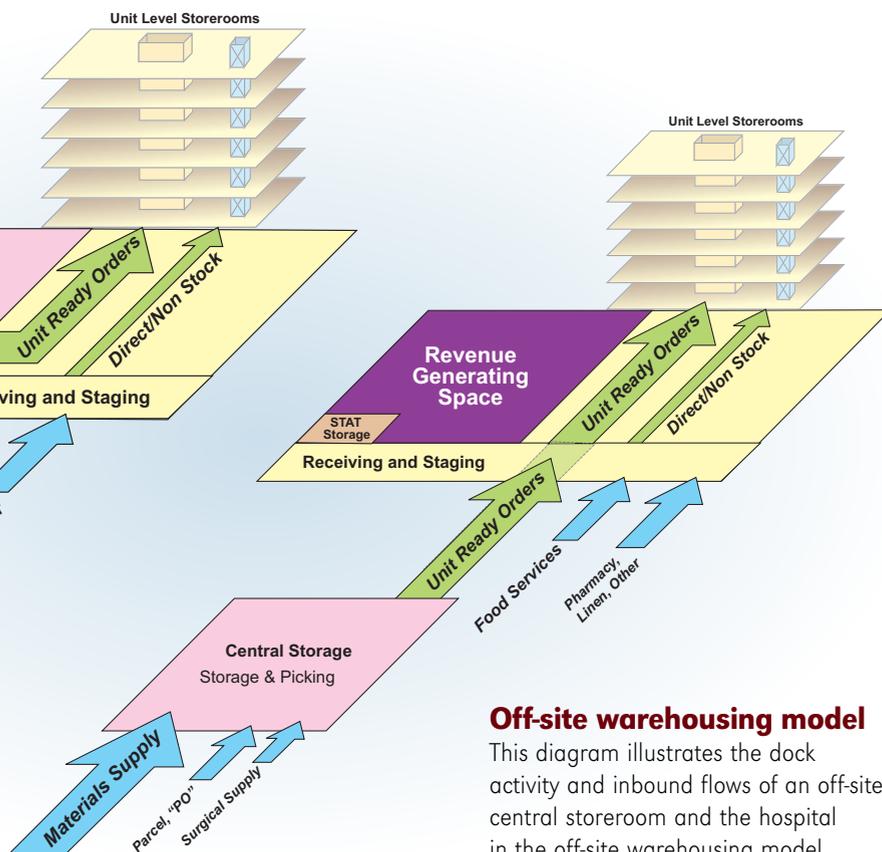
## On-site warehousing model

This diagram illustrates the inbound flow of the prototypical on-site configuration.



## Off-site warehousing model

This diagram illustrates the dock activity and inbound flows of an off-site central storeroom and the hospital in the off-site warehousing model.



Source: St. Onge Co., 2009

## CASE STUDY

### Which way to grow?

An 800-bed hospital is experiencing significant institutional growth, requiring increased capacity and space requirements for clinical and support services. There is an immediate need to expand the kitchen operations. The materials management central storage is adjacent to the dock operations and in the path of the kitchen expansion. Furthermore, the current materials management central storage area is out of capacity and in need of expansion.

The materials management leadership team was challenged to find warehousing and distribution alternatives to meet the expected growth. The team identified the two most feasible alternatives, based on the growth plan, infrastructure considerations and resource availability. The alternatives are to expand the current on-site warehouse or to move it to an off-site location.

The team leveraged lean tools and value stream maps to detail the working elements required for each option and developed a comprehensive understanding of materials and process flow from receiving through put-away, storage, unit-based picking and ultimately to the point of care. The team, after benchmarking other hospitals and industry distribution operations to gauge world-class operating strategies, developed a business case analysis for each option on the basis of financial, strategic, tactical and operational criteria to assess and determine a recommended alternative. The table above (see next page) summarizes critical factors evaluated prior to developing the final recommendation.

The team quickly concluded that the off-site alternative had the best financial qualification. The alternative avoids the on-site construction capital required to expand the current warehouse space. At \$200 per square foot for construction costs, it would

immediate and 24/7 access to supplies. A properly engineered lean off-site facility has low operating costs, high throughput productivity and the flexibility to accommodate future institutional growth. A properly engineered warehouse could appreciably reduce space requirements and annual operating costs.

Off-site warehouses also offer the benefit of allowing the hospital to select a location with a best-in-class distribution design infrastructure that meets the operations defined requirements.

The off-site facility should be selected with a high clear height (20 feet minimum). This enables a lower cost through a high-density storage configuration and results in a smaller space requirement. On-site real estate is significantly more expensive than off-site space (although market dependent, the ratio is approximately 4:1). This alternative provides a good return on investment or financial justification by lowering the annual space costs and alleviating institutional space constraints, thereby enabling clinical space growth and incremental revenue without a hospital expansion.

The success of the off-site alternative will depend on the ability to staff the new operation. This will require a review of the current staffing plans and consideration of transferring existing employees to the new facility, figuring out logistical requirements associated with the new off-site location and hiring and training new employees according to the new process and procedures.

While there are benefits in recovering on-site space, moving off-site will require incremental capabilities for the materials management operations to ensure that the institution receives the same service levels associated with the traditional on-site model. Additional elements include an on-site stat supply storeroom and the transportation required to move material between the off-site facility and the hospital. The hospital will need to purchase or lease a truck and add transporta-

tion staff to deliver the daily scheduled unit-based orders and respond to stock requirements.

#### What to ask before moving off-site

When an institution is space-constrained, there is the potential to move the materials management operations off-site to free up valuable and limited real estate for revenue-generating clinical functions. When planned, designed and managed properly, running an off-site materials management warehouse does not compromise service levels and patient care.

To ensure success of the off-site initiative, materials management leaders should carefully assess the following questions:

- Is there a clinical need to expand? Is there a need for current on-site central storeroom space?
- Do we understand our inventory and order profile and characteristics?
- What planning is required to ensure success?
- What risks are involved in moving to an off-site model?
- What is the impact on inventory control and service level associated with the off-site alternative?
- What quantity and type of items should be stored in the stat warehouse?
- How should the off-site central storeroom and supply chain model be engineered to achieve highly efficient supply chain operations?
- What is the resulting financial justification of moving off-site? What is the capital requirement and annual operating cost for the initiative? What is the expected operating cost and associated return? **MMHC**

**SEAN O'NEILL IS VICE PRESIDENT - PRINCIPAL FOR ST. ONGE CO., YORK, PA. (WWW.STONGE.COM), AND ITS HOSPITAL PRACTICE. HE CAN BE REACHED AT SONEILL@STONGE.COM. ANDRI PURKANTO IS A PROJECT MANAGER WITH ST. ONGE.**

# INVENTORY

## On-site vs. off-site evaluation

	On-site	Off-site
On-site warehouse space	26,000 square feet	3,000 square feet*
Off-site warehouse space	n/a	16,000 sq. ft.
Warehouse staff	14 FTE	12 FTE
Transportation staff	n/a	2 FTE
Materials mgmt. doors required/available	4 req'd/3 avail.	3 req'd/4 avail.***
Initial capital required	\$3.2 million	\$850,000**
Annual operating cost	\$1.5 million	\$1.2 million

\*Stat warehouse space is on-site to accommodate emergency orders. \*\*Includes purchase of two shuttle trucks to transport orders from off-site warehouse to hospital. \*\*\*Dock doors have been adjusted to account for compactor. Source: St. Onge Co.

cost \$2 million to build a 6,000-square-foot expansion. This off-site alternative also provides a lease option; the market rate for off-site warehouse space allows significantly lower operating costs than if operating on-site. The team was able to secure a warehouse building eight miles from the hospital at a \$10 per-square-foot lease rate. As shown in the table above, the off-site alternative is a financially superior option. It requires less initial capital and provides a lower annual operating cost.

The on-site alternative has the benefit of close proximity to customers to provide quick response to demands. The team understands customer demand fluctuations and the importance of providing a high service level

that addresses problems immediately and does not compromise patient care. Logistically, the off-site warehouse could deliver a rush order to the hospital loading dock in 30 minutes. To accommodate emergency orders and unpredictable demand fluctuations, a 3,000-square-foot stat warehouse is planned on-site at the hospital. This warehouse holds two to three days of supplies for critical inventory items.

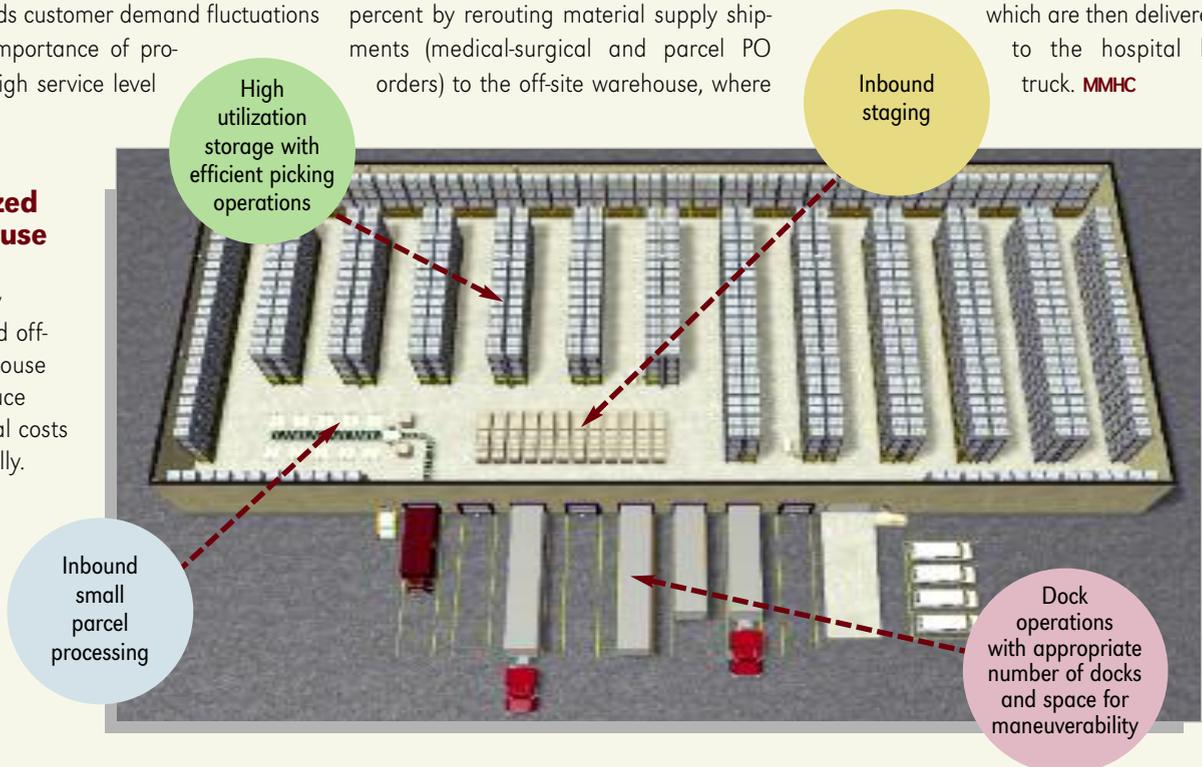
The off-site alternative provides an opportunity to engineer the ideal layout and process flow for the most effective warehouse operations. The off-site warehouse reduces on-site loading dock activity by 40 percent by rerouting material supply shipments (medical-surgical and parcel PO orders) to the off-site warehouse, where

inbound shipments are received, processed, and stored. A best-class industry benchmark study of hospital-run, off-site operations concluded that the ideal inventory turn target is in the order of 20 turns/year or 18 days of supply (DOS) inventory. Understanding inventory characteristics and unit order profiles, the team determined that the ideal storage configuration was four-high, single-deep selective rack storage with case flow rack storage and picking on the first level. To achieve efficient picking operations, a centralized area was planned with case-flow rack technology that is strategically located in the center of the warehouse, which is dedicated to high-volume stockkeeping units.

This properly engineered operation requires 25 percent less space and achieves a 20 percent reduction in direct labor. The off-site warehouse is the primary site for picking replenishment orders for the par locations within the patient care units. Daily unit orders are generated at the hospital and transferred off-site for processing and fulfillment. The orders are picked onto carts, which are then delivered to the hospital by truck. **MMHC**

## Optimized warehouse design

A properly engineered off-site warehouse could reduce operational costs dramatically.



Source: St. Onge Co., 2009