

## Developing a Successful Off-Site Supply Support System for Surgical Services

*Defines key success factors for planning and implementing an off-site supply system for Surgical Services, primarily related to Ambulatory Surgery. Facility planning, inter-site transport issues, and three operations case examples are presented.*

Historically, Surgical Services Departments have found the cost-effective management of transport and storage of supplies a consistent challenge. In recent years, the trend toward off-site surgery centers and off-site support centers has further complicated supply chain management. Provider consolidation is intensifying with the formation of regional IDNs and national networks, such as Columbia/HCA and Tenet. With consolidation comes an effort to streamline management, standardize processes, and adopt the “best practices” of those in the new network. One consistent direction has been the integration of several materials management departments and functions into a singularly managed entity and sometimes a centralized distribution center. The development of off-site supply support centers requires design and implementation plans that are influenced by both distribution and clinical knowledge. This paper is intended to guide the clinical staff in supporting the development of a successful off-site supply support system for Surgical Services.

Success factors for surgical off-site support centers:

### i) Mission

A shared mission is an important success factor. The definition and scope of the off-site support center should support the mission of surgical services. There is so much rhetoric today. Some mission statements read like a last will and testament. A mission statement should be a concise description of the reason for something to exist. We believe the mission for surgical services should focus on three elements: excellent customer service, quality outcomes, and cost-effective use of resources. The mission statement of the supply center should support your mission.

#### (1) Excellent customer service

Boil it down to basics. For the off-site support center, the customer is surgical services and you should receive what you need, when you need it, in the manner and quantity you agree upon. A key here is what you mutually agree to.

#### (2) Quality outcomes

For the support center, quality should be measurable. An example would be measuring the accuracy and timeliness of deliveries.

#### (3) Cost-effective use of resources

The services of the support center can help you provide a smooth running supply delivery system. Improved supply delivery increases your productivity, which improves your cost-effectiveness.

(a) A supply support center should help you accomplish your mission by ensuring that you have the right supplies, at the right time, in the right place, and delivered and controlled (with an emphasis on control) in a cost-effective manner.

## Developing a Successful Off-Site Supply System cont'd.

### ii) Planning

#### (1) Design planning

Valuable tools for you to use in working with your facilities people, materials managers, and possibly even architects are flow charts and process maps. You can simply “draw” these processes yourself to aid in informed discussions, or you can use a management engineering student, or work with a consultant. A decision must be made as to what items will be ordered direct, received, and stored by surgery. One “path” you want to illustrate is the one taken by items that will be supplied directly to the surgery center, such as consignment instruments and possibly implants. Then, develop a separate flow chart for the items that will be supplied from the off-site supply facility. This will probably entail most of your supplies. Some questions to answer are: What is delivered, and by what means, such as on pallets, in totes, on carts, in case carts, etc.? Are you receiving supplies by the case, general backup supplies, specialty supplies (possibly to be stored by the specialty in a specialty cart), sterile linen, sterile instruments (by the set and individually), sterile utensils? What about paper supplies, pre-op kits, drugs and IV’s, medical records? Look at what you need to support the processes in your facility and identify who is going to order, supply, distribute, store, and discard these items. And whatever the method of delivery, the facility design must accommodate the floor space required to receive, move, store, and return these carts or containers or totes or pallets. Process mapping identifies your tasks and can help you identify what you need when. Developing flow charts is a very valuable tool for you to use to ensure adequate space is available for the delivery method or methods you choose. Flow charts may also help identify possible conflicts with your infection control standards.

#### (2) Implementation planning

Many people do not discuss implementation planning until a facility is nearly complete or a new process of off-site delivery has been determined and the “contract signed.” We experienced a situation where an off-site warehouse being built to supply an entire hospital, as well as surgery, was four weeks from implementation before anyone realized no provisions had been made for transporting supplies within a truck and to the user departments. Just as there is proven value in imagining winning the race as you train, there is value in imagining

and mapping options for implementing the entire supply delivery process early in the design phase. We’ll discuss more about implementation and project management later in this document.

### iii) Management structure

#### (1) On-site

We are seeing great success with a relatively flat management structure where cross-functional teams are empowered to manage processes and serve customers. Flexibility in duties and schedules are the norm. The biggest challenge seems to be the traditional one of establishing and nurturing relationships, in this case with the off-site distribution personnel. Having someone be the person with the supply distribution people is key to supporting a successful off-site supply system. The contact person does not need to be a manager, but definitely needs to be familiar with supplies used, processes that need support, and regulations and recommendations for handling surgical supplies.

#### (2) Off-site

Management of the off-site facility usually consists of those in charge of the numbers and those in charge of getting the “stuff” to you. Records are kept of what is ordered, what is back ordered, what is returned, how many stat orders are filled, how many supplies are standardized versus specials or slow movers, and how often specific supply requests change. These numbers convert to the cost of the service. This information should be shared with the surgery center’s manager or appointee on at least a monthly basis in order for the two facilities to work together to ensure cost-effectiveness in the system and identify issues for quality and/or cost improvement. Again, it is relationship building and maintenance that ensure a successful partnership here -both at a management level, and between support personnel.

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### iv) Facilities

#### (1) Warehouse

Our number one suggestion to you is that you become familiar with the warehouse and the processes and procedures used there. Follow the path of your supplies. You should use your judgment to evaluate if your supplies are stored and protected appropriately. For instance, how often are the supplies handled? Multiple handling increases the opportunity for “events” that may compromise sterile packaging and negatively affect costs. You also want to look at the environment close to open supplies. Most successful warehouses we have seen stress protection from dirt and weather, and they have processes in place for routine cleaning. However, in one warehouse we saw open boxes containing sterile supplies and boxes of mouse poison in many areas of the same room. Another warehouse had dogs running loose inside all day. We do not believe these situations are the norm. We are simply saying that YOU should go to the warehouse and evaluate the adequacy of OR supply storage. Go there, be aware, be involved.

#### (2) Clean room

We bring up the issue and definition of a clean room because this concept has created misunderstandings in the evolving off-site service center industry. We all want our supplies to be dispensed in a clean environment. However, a clean environment can be maintained outside of the rules, regulations, air return requirements, etc., of a “clean room.” However, if an off-site service center is processing instruments, obviously it needs a “clean room” for which specific principles and guidelines are followed. This confusion over definition has caused extra expense in design, implementation, and operating expenses of off-site supply support centers.

Here again we urge you to discuss processes with your supplier. For instance, we toured several off-site warehouses where the nurse managers had never visited. On one occasion we saw totes sitting on the floor. The totes were then filled with case supplies and loaded on a cart. When they arrived at the surgery center, the totes were placed on top of clean case carts and taken directly into the operating room. We are not suggesting that you avoid using totes, but that you help define the processes surrounding their use. From the viewpoint of those who pro-

vide your support services, washing totes may not be a requirement at these warehouses. Two sources stated that they were lucky if the totes were washed every six months. Then, someone else was usually hired to do it for them. We are not necessarily recommending totes be washed with each use, but rather that you be involved in deciding the processes and procedures that make sense for your operation. These scenarios are shared with you to “enlighten” you, so you can deal more effectively with your situation. So, work with your off-site personnel to develop processes that promote work efficiencies for them and protect your environment at the same time.

#### (3) Sterile processing

We are seeing some growth in the off-site processing of sterile instruments. One firm has been in the business of reprocessing instrument sets off-site for over 15 years and now services more than 30 facilities in the northeast. Another firm on the West Coast is now servicing a number of facilities. And several integrated delivery networks are consolidating sterile processing. If your surgery is going to receive sterile instruments from an off-site facility, you will be asked to help evaluate the standardization of instruments and instrument sets, determining which instruments you will keep and clean, such as micro instruments, and what inventory levels you will need to keep on hand. Sterile processing is much more regulated in healthcare, and we are seeing a high degree of compliance with regulations at these facilities. However, you should be familiar with the practices at your processing center, and talk to other customers the center is servicing. Personnel at one ambulatory center even stated that they were especially pleased with how well the off-site service maintained and repaired their instruments.

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### (4) Docks

In terms of following the path of your supplies, you might be tempted to say “Who cares?” when you get to the docks. Of course, the dock is part of the “path of the supplies.” If you are fortunate to have covered enclosed docks both at the off-site warehouse and at the ambulatory surgery center, perhaps this part of your flow chart will be simple, with no complicating issues. However, many off-site surgery centers do not have a dock. Supplies may be lowered on a lift attached to the truck, or the truck may back up to a fixed lift. In one case we saw, the cart was routinely exposed to snow; the picture would be even bleaker during spring rains. What affect does the weather have on your choice of containerization for your supplies? Obviously in some locations with frequent inclement weather, and where you do not have covered docks, you need greater protection from the elements. In another incident, we observed that a dock was approximately seven inches higher than the truck floor. When the empty carts were being taken off the truck at the warehouse, the truck driver placed a ramp from the dock to the truck. But when the full carts were being loaded onto the truck he did not bother with the ramp, but “dropped” the carts into the truck. This jolt caused supplies to shift inside the cart. Surgery could not understand why supplies frequently were jumbled or about to fall out when the cart was opened. Just follow the path!

## v) Inter-site transport issues and equipment

### (1) Infection control

Again, we encourage you to take an active role in defining infection control procedures throughout the supply chain.

### (2) Security

Different levels of security may be applicable depending upon the items being transported, such as very expensive instruments, implants, or pharmaceuticals. Security may be more of an issue in an inner city location than a rural delivery situation. Some distributors have complained that totes “disappeared” from their inventory—for use at home? This may be like seeing neighbors mowing their lawns in scrubs. If inexpensive totes and scrubs disappear, what else should we be tracking and protecting? We’re only suggesting this is one issue in your planning, not that we need to go overboard and lock up everything to the point that productivity and efficiency suffers.

### (3) Efficiency

Speaking of efficiency in relation to supplies, we mean your having what you need accurately and in a timely manner. Another way to say this is that your staff does not have to go to several areas to pull for cases, for specialty supplies, for room supplies, or even for lab supplies, such as containers for specimens. One facility we visited had an excellent system for receiving and storing traditional OR supplies; but when someone needed a specimen container, they had to go to the desk for a key, go down a hall outside the sterile core, and get the container from a locked room managed by an outside lab. Even small breaks in your flow pattern can affect overall efficiency in the department.

Another type of efficiency relates to ergonomics and body mechanics. Here are some questions for you to consider: Why do some folks put heavy instrument sets in the bottom of case carts? Why are some case supplies delivered in the bottom of tall containers accessed from the top, which requires a short person to do handstands and exhibit the derriere in order to retrieve supplies? Why is linen frequently delivered in tubs, increasing the possibility that someone may strain his back lifting heavy linens from a toe-touch position? We recently visited a CS where a worker put large wire carts through an automatic cart washer. One particular cart had a solid bottom that would not drain and dry. She routinely LIFTED the end of this three-foot wide by five-foot long stainless cart to get it to drain. The choice of carts affects staff work processes. And poor ergonomics in our workplaces not only decreases our efficiencies, they potentially injure our staff. So, watch the ergonomics associated with your supply delivery, storage, retrieval, use, and disposal.

A third type of efficiency relates to how long it takes to inventory and replenish all areas, including room supplies and specialty supply storage or carts. We have been told that folks have saved up to 50 percent of their supply management time by simply dividing, organizing, and labeling storage areas. Find someone who likes to organize and elicit his or her help. Then set up procedures to ensure the organization is maintained. Training new folks will also become easier and less frustrating.

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### (4) Timeliness

We have alluded to timeliness factors related to routine procedures and processes. There are also timeliness factors related to the unexpected. Have methods to borrow and return instruments from another facility for procedures your facility rarely performs. Have supplies organized, labeled, and readily available when the unexpected happens, such as an accidental puncture or aneurysm or heart attack. Have backup processes for delivery of case supplies needed for add-ons. Identify routine processes and establish a schedule that ensures timeliness in deliveries, then identify processes to support the unexpected.

### (5) Waste management

What is the “path” of keeping soiled separated from clean? Where are soiled linen, soiled instruments and utensils, medical hazardous waste, and trash stored before being recycled or disposed? In one facility the hazardous waste had to be returned to the main site, and since there had been some difficulty in obtaining a dumpster for the off-site surgery facility, the trash was also returned each day to the main site. This is where developing flow charts in the design phases can be so valuable. Will you have enough space to hold waste, a process for cost-effectively disposing of waste?

### (6) Vehicles

Our only helpful hint about vehicles has to do with cross utilization of vehicles in order to fully utilize these assets. We do not need dedicated vehicles just to transport instruments, or supplies, or linen. Cubing out a truck, or filling it to greatest capacity, is the most cost-effective use of the truck and also of the transport personnel. Some have advocated that it is acceptable to combine soiled and clean in the same truck at the same time. This can work if there are adequate safeguards in place to keep them separate.

## vi) Operations

Who does what where? On-site and off-site. We will share three abbreviated case studies. These are from actual examples, but we will keep them anonymous so we can consider them and not the facilities or people involved, as this is not an endorsement or a promotion of either:

(1) In the first case, a surgery schedule is developed at the off-site ambulatory surgery center. The computerized schedule is downloaded through a network to the same

system at the main hospital the day before the scheduled surgeries. A pick list is generated in the supply area of the main OR. Disposable supplies are placed in case drawers, and the drawers are placed in a transport cart. This cart is delivered by truck to the surgery center the afternoon prior to the surgeries. Other general supplies which have been ordered by the ambulatory surgery center through the same computerized system are also delivered just-in-time in these carts from the main hospital—either from OR stock or CS storage. This way, only individual supplies come into the ambulatory surgery center, instead of cases and cartons.

Once the carts arrive at the surgery center, the case drawers and supplies are off loaded onto a clean cart that is reserved for the restricted environment. Case drawers are then placed into clean case carts. Either before or after this step, the case carts are taken to the instrument/specialty supply storage area where the rest of the items on the pick list are pulled, including the instrument sets. When the supplies are taken out of the drawers in the OR, it is only the second time they are delivered by the case, just-in-time, from the main hospital. The surgery center personnel stated they were able to gain from the volume discounts enjoyed by the hospital and decrease their overall inventory space requirement from the typical 10-15 percent of the facility to only four percent of their facility allocated to supply storage. Only clean returns are on the carts when they return to the hospital. The surgery center staff further stated that they reduced the on-site inventory of back-up supplies by 90 percent over similarly sized surgery centers. They process all of their instruments on site for their six rooms.

(2) In a second facility, case supply needs are communicated electronically to a distribution vendor. The vendor delivers the case supplies in pre-labeled “case boxes” to the surgical receiving area at the ambulatory surgery center. The vendor then opens the “case boxes” and places the already bagged supplies into “case drawers” which fit into the case carts at the center. The vendor then discards the boxes. Surgical personnel distribute the case drawers and add the pick list specialty items and instruments. Surgery center personnel do not touch the supplies from the vendor until surgery set up.

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(3) In a third facility, case supplies, general supplies, and instrument sets are delivered daily in enclosed case carts. As in the first case study, supplies (as well as instruments) for several surgical cases are transported in one cart. The supplies and instruments are placed on a back table and transported to the OR. After the case, the instruments and utensils are returned in the case carts. Trash is returned in separate case carts. Soiled linen is returned in tubs to the contract linen supplier. Instrument sets borrowed from the main OR are specially tagged so that they are promptly processed and returned. A record of their use and return is maintained in CS. One of the main challenges in this facility was the system for managing and receiving department credit for returns (unused supplies). Currently unused items are used to replenish par levels of stock, and volumes of supplies that exceed par levels are labeled and returned on a designated cart once a week. Daily exchange of the return cart was not necessary. This facility does not as yet have the luxury of a fully computerized and networked OR scheduler and inventory management system. Full computerization will be a valuable tool for them in the future. In the meantime they have developed their own partially computerized, partially manual system in which the schedule is communicated to the main site two days in advance and the case supplies are delivered the day before the scheduled surgery. They felt their success was due in large measure to having the on-site system managed by a very competent surgical technician, and to the conscientious creation and maintenance of good relationships with CS, general stores, and the delivery personnel from the main hospital.

### vii) Scheduling

Effective production and supply delivery scheduling can increase efficiencies and lower or control costs.

#### (1) Production

Production scheduling takes into consideration turn-around times, such as the amount of time it takes to process instruments or utensils, or the amount of time it takes on average to pull supplies for a case, or the amount of time necessary to transport supplies in a truck from site to site in bad weather or good. It also takes into account the level of backup supplies (par levels) you chose to keep on hand and how often it is practical to replenish or reorder. Take your process map and determine the maximum and minimum times required for each step

in order to help determine your production schedule.

#### (2) Delivery

The delivery schedule includes such issues as when the department or off-site ambulatory surgery center is operational and whether you want deliveries scheduled when there are no surgery personnel available to receive. It means deciding what will be delivered to receiving, to outside the sterile core, to inside the sterile core, to the OR 's themselves, and by whom. In other words, where will the materials "hand off" occur? Other issues in the delivery schedule are the actual timing of when things should be delivered, how far in advance, how often, and whether there are contingency plans for weather or other unexpected events. You also need to consider when you need items to be picked up, such as specimens, reprocessibles, returns, and waste. Again, your process maps will guide you.

### viii) Performance measurement and management

Are you tired of being examined, stretched, weighed and quantified? The bad news is that this bean-counting approach has added some permanent facets to our management requirements. The good news is that there are more tools available for our use in measuring performance than ever before.

#### (1) Resource productivity

For instance, look again at your process map and look at the activities that are using resources. You can measure those activities in terms of time required, of costs consumed, of quality of outcomes (document the definition of quality for an activity, such as 100 percent accuracy in case cart supplies), and then (just as importantly) measure the change in these measurements over time. If you currently have a 90 percent fill rate for supplies, track improvement until the agreed upon goal is reached, such as a 98 percent fill rate.

#### (2) Cost savings

Some of the cost savings we typically measure in the supply chain are a one-time decrease or cost savings in inventory or an ongoing cost saving due to a permanent change, such as changing to a lower-cost supply item. There are cost savings related to a faster turn in inventories or delaying payment of an item until it is used, such as in some consignment arrangements. Standardizing of supplies and instrument sets typically results in long-term savings due to lower overall inventories.

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You can also measure your surgery supply expense per selected variables, such as costs per surgical service, or by procedure, or by physician by procedure. Then you can measure change as different variables are changed, such as standardization of supplies.

### (3) Quality and reliability management

Benchmarks for quality and service should be established relative to customer satisfaction (such as through satisfaction surveys of end users), and by timeliness of deliveries or cycle time or response time to unusual requests. How reliable is the service in terms of error rates, few back orders, short lead-times, lack of damaged supplies, and in promoting “partnering” activities, such as consistently suggesting ways to save costs without sacrificing quality of care?

Whether you outsource the supply support service, or your hospital system creates its own off-site model, executive support and commitment is critical for success. Surgical Services management may be a significant influencer in obtaining a similar commitment from the surgeons and anesthesiologists. With careful planning, many Surgical Services departments have created very successful off-site supply support systems. You can too. Herman Miller for Healthcare has experience in supporting these planning efforts. We would be happy to share our knowledge and expertise in this area with you and your project teams.

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