

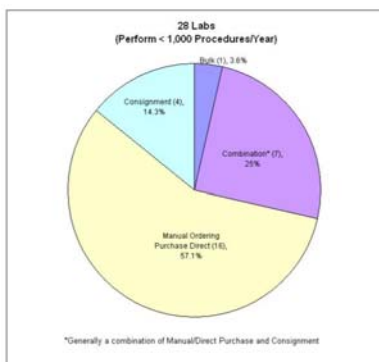
Cath Lab Management: Supply Inventory Models for the Cardiac Catheterization Laboratory

- Rose Czarnecki, RN, BSN, MPM

During the past 30 years, the number of cardiac catheterization labs has grown at breakneck speed. From 1979 to 2001, actual cardiac catheterization procedures increased 315%,¹ making it one of the fastest-growing clinical services. Until recently, revenues have kept pace with this expansion. The average operating margin for a procedure is currently between \$1,000 and \$1,800. In order to maintain attractive profit margins, hospitals can implement certain processes to monitor and control their operating costs. One "smart" process is to develop and maintain inventory control methods to manage supply inventory and purchasing practices.

Growth and Changes Since 2000

The Healthcare Cost and Utilization Project (HCUP), a family of health care databases, developed through a federal, state and industry partnership and sponsored by The Agency for Healthcare Research and Quality (AHRQ), reported that in the year 2000, the average total charge for patients hospitalized for diagnostic cardiac catheterizations increased from \$11,232 in 1993 to \$16,712. Length of stay during that same time interval, decreased from 4.7 to 3.6 days.² During this same time, the "runaway" increases in the expense of providing care and decreases in reimbursements caused hospitals to focus on becoming more cost efficient. Hospitals began to move to a business model approach and sweeping changes were made to bring hospital budgets under control. Despite the revenue generated by cath labs, the expense of cutting-edge technology took its toll, forcing the hospitals to investigate cost-saving opportunities. Cost containment and inventory tracking became a priority, and with it came a new set of challenges. New processes were needed to help cath lab managers track inventory, manage purchasing and subsequently eliminate areas of waste and unnecessary cost. Inventory management processes have now become an essential function of cath lab management and a practice that requires regular oversight.

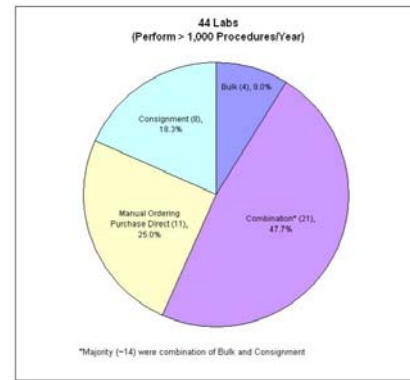


Timely ordering of supplies and eliminating waste, including avoiding items being left on the shelf to expire, is a good way to remain fiscally accountable. Inventory control models, such as consignment and bulk purchasing, are processes that allow administrators to choose an inventory management plan that keeps their supply costs under control. Some labs use one model exclusively, while others utilize a combination of methods. Administrators should become aware of the "best practice" supply inventory methods that are available and develop a system that is manageable for their situation.

Inventory Supply Methods to Consider Consignment Model. Consignment inventory can be defined as goods placed at a customer's location, with ownership of these goods remaining with the supplier. Payment is not made until the item is actually used. It is common practice for supply vendors to have costly products, such as angioplasty balloons and stents, available to cath labs on consignment. The advantage of this model is that there are not any associated up front purchase expenses for the organization. However, having a huge inventory sitting on the shelf can be costly in terms of waste. Most vendors will manage your inventory by rotating the supplies and change out a product when it is ready to expire. There is usually a higher cost added to the item's purchase price to offset the vendor's time required to manage the supply inventory. Consideration must also be given to how much premium space your inventory is

occupying. Consignment allows you to place products on your shelves without actually purchasing them; however, restraint must be used in the number of vendors you consign with, because multiple vendor products can tie up shelf space.

Just-In-Time Purchasing. “Just-in-time” ordering, or the “JIT” model, was first developed in Japan and popularized by Toyota Corporation in the 1970’s. JIT is based on the time-honored concept of “optimal cost/quality relationship” which came about in an effort to rebuild the Japanese economy after World War II. It was done when resources were scarce and the Japanese had to bring quality products into circulation without a large supply inventory. Therefore, they ordered just enough supplies to manufacture their products when needed.



Translating this concept for use in the cath lab means ordering supplies “just-in-time” for use. “The average interventional cath lab has between 300 and 350 different disposable single items to track, making manual inventory management very time-consuming. Additionally, managers are motivated to maintain redundant inventories that reduce the chance that an item will not be available.”³ With JIT, if there is a case which requires a special balloon, ordering is done for one balloon for that procedure. This eliminates the product sitting on a shelf, taking up much needed space, and possibly expiring before use. However, JIT ordering has a few inherent problems related to delivery timing. If delivery is unreliable, any savings which you may have gained by not having the product on hand could very well be eliminated by the canceling of cases or the extra freight cost to get the product delivered in a timely fashion.

Bulk Ordering. Another supply inventory model worth considering is bulk ordering. This is a method commonly employed by vendors where the institution buys a large quantity of supply in exchange for a price break. Bulk ordering is typically done at the end of each quarter or the end of the vendor fiscal year. This can result in significant cost reductions since at these times of the year, vendors may be overstocked and/or attempting to meet sales quotas. Vendors often offer substantial savings if the lab orders in large quantities. This has the potential to save a hospital quite a bit of money, but only if it is a product that is frequently used and would be purchased regardless. This can be an excellent option for high-volume labs which will obviously use a large amount of the product. There is a risk if the product, which is now owned, becomes obsolete, forcing cath labs to use up their large supply before purchasing newer, perhaps superior items (a new angioplasty balloon, for instance).

Bar Coding Inventory Management. A bar code is a set of characters, encoded as a series of vertical bars and spaces, that is scanned, decoded, and transmitted by a special bar code reader to a computer. The computer is then able to access and/or update information about the item scanned from a database that contains information about the item. This information may include price, vendor name, quantity on hand, description, etc. An example of anticipated widespread bar code usage is the FDA ruling for pharmaceuticals in 2004. This ruling requires drug makers to bar code prescription drugs at the unit dose level by 2006. With this technology in place, bar coding applications may be spread to other areas of hospitals. For example, one hospital in Alabama that has been using a bar coding system since the early 1990s has taken it one step further — into the operating room for instrumentation. The bar code enables the hospital to track instrument usage and sterilization. Bar coding provides the opportunity to gather, contain, and analyze information as well as eliminate redundancies, inaccuracies and delays in administrative process.⁴

After the initial cost of installation and implementation, bar coding can be a very cost-effective means of inventory control. The installation of an advanced point-of-care bar coding system costs a 300-bed hospital with 15,000 annual admissions a one-time up front investment of \$700,000 to \$1.5 million, depending upon the computer hardware infrastructure already in place at the hospital, with ongoing costs of approximately \$150,000 annually.⁴ In addition to having a better handle on inventory information, this system can help facilitate developing a just-in-time inventory control system as "supply chain management" becomes more critical to financial status.

Ultimately, it is important to use the system which works best for your institution. Most cath labs will move to a consignment model mainly due to the elimination of up front costs and the convenience of having the vendors change out their supply. Consignment is an option for nearly all cath labs, large or small, and is advantageous in limiting resources on the shelf as well as eliminating outdates and waste. Bulk purchasing may bring about significant savings if it is done carefully and with due diligence given to the amount of product actually being used, but is useful only in higher-volume cath labs that will move through the inventory rapidly. Bar coding is an option that holds promise for future process refinements and will prove useful to all cath labs for inventory tracking and management. In view of the recent federal mandates by the FDA for pharmaceutical companies, requiring all medications have a bar code by 2006 and JCAHO patient safety goals to be implemented by 2007, hospitals will need to implement bar coding to comply with these mandates. It may be worth considering simultaneous implementation of bar coding for inventory control. Just in time can be an important consideration for hospitals looking to decrease cost and inventory. It can free up much-needed space; however careful attention must be paid to the potential cost of extra deliveries. Limited inventory quantities must be outlined in the vendor contract along with who is financially responsible if over-ordering results in stock above identified amounts. Just in time purchasing is more useful to either a small cath lab that performs scheduled procedures (allowing time for the ordering of supplies for elective procedures) or for a facility that performs specialty procedures that are pre-scheduled. Pre-scheduled specialty procedures, such as a balloon valvuloplasty that requires an expensive specialty balloon, are perfect for using the just-in-time inventory system, as the item is ordered only when needed for a scheduled procedure.

Transitioning to a new inventory system can be time- and labor-intensive. You must move or enter all supplies into whatever system you have selected, set par levels and train staff on ordering procedures and practices. The most important consideration is to select the inventory management system that will best fit your cardiac cath lab needs. Then, working with your purchasing department, develop an organized plan for the transition, communicate that plan to your staff, and provide any education regarding the new system, (including ordering practices and documentation of inventory status). Once the new inventory system has been implemented, you should monitor it closely until the system has proven itself. There may need to be some adjustment to par levels and ordering practices once the new system is initiated.

Health Care Visions, Ltd. Survey

Health Care Visions recently conducted a survey of 70 cardiac catheterization labs throughout the country. The survey was geared to inventory management and the results were not surprising. Widespread variation occurs with process but all managers reported growing concern and a need for change.

The survey disclosed that most managers are doing their own purchasing or using a combination of buying outright, consignment, Just In Time and/or bulk purchasing. Labs that perform 1000 or less procedures per year (see pie chart, page 24) reported that most of their inventory is outright purchase or a combination of methods that includes outright purchase. Typically, a staff member manually counts inventory and replaces what is needed. Some managers feel they have better control over inventory with this hands-on approach, but

recognize that when their volumes grow, this method may become too time-consuming and no longer meet their needs. In addition, these managers believe they are unable to control pricing.

Labs that perform more than 1000 procedures per year (see pie chart, page 24) reported using a combination of manual purchase, consignment and/or bulk purchasing. These managers reported being pleased with the financial savings associated with consignment. Supplies are paid for when they are used, without the responsibility of paying for expired items. Bulk purchasing provided good discounts and savings; however, most managers felt that purchasing large quantities of a certain supply created space issues in their labs. Some managers felt they were often left with products sitting on their shelves since they were unable to use the amount they had to bulk order. They also identified that they were responsible for monitoring and rotating their inventory in order to avoid items from expiring. The managers who reported being very pleased with bulk purchasing were able to identify processes they had in place to control some of the above issues. Keeping a 30-day supply of the items can help avoid being caught with products that have expired or are no longer the most current technology. Contracting with the vendor to keep track of inventory and allowing for return of supplies that are not used or are no longer current can help make this purchasing method more user-friendly.

Only 28% of the CCL managers surveyed use the just in time method in combination with other purchasing methods. These managers felt this method solved their space issues and was cost effective. The managers that did not utilize this method stated they would be concerned about the timely delivery of the product.

Purchasing strategies can help overall cost containment efforts demanded by the current financial constraints of providing healthcare. It is important that careful consideration is given to which model, or combination of models, are put into place to maintain and grow profit margins of the cath lab. Focusing energy and attention on methods and results with a defined process of reporting and accountability will be the "trademark" of a successful cath lab manager.

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As seen in: Cath Lab Digest, December 2004