





Best Practices in Surgical Instrument Inventory Management

BY RANCE BARHAM, CCSVP, CONSULTANT, SURGICAL ASSET MANAGEMENT—AESCULAP INC.
AND DAVID E. ORTIZ, MBA, CCSVP, CONSULTANT, SURGICAL ASSET MANAGEMENT—AESCULAP INC.

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LEARNING OBJECTIVES

1. Understand how to perform a full instrument inventory and condition assessment of all surgical trays in the facility
2. Describe the critical aspects of optimizing count sheets
3. Identify the factors to consider when implementing an electronic instrument tracking system

Every Sterile Processing department (SPD) is expected to be as productive as possible with the resources available to them. The goal is to keep equipment moving efficiently and accurately between the SPD and the OR. Achieving this goal helps ensure that surgeons have the sterile instruments they need for surgeries performed. When things do not run smoothly, hours can be wasted searching for lost items or correcting errors related to inaccurate or incomplete trays. Operating budgets and capital expenses can reach as much as \$500,000 in new and replacement instrument costs annually due to poor management and high use of flash sterilization.¹ Instrument management technology can improve productivity by addressing a number of key potential problem areas, including documentation, reporting, lost or damaged instrument issues, and data storage.

It is critical to have evidence-based processes for managing and tracking surgical items from the time they are ordered until they are reprocessed, returned to a vendor, or the sets are

placed in storage. The need for validated processes is necessary for all surgical facilities, especially organizations with a large number of operating suites and a high volume of inventory.

When defining best practices for managing surgical instrument inventories, the following steps will help drive efficiencies and sustain change:

- Taking a careful initial instrument inventory.
- Performing an instrument condition quality assessment of the instrument inventory.
- Optimizing the accuracy of all count sheets.
- Implementing a tracking system.
- Conducting a data migration of back-stock inventory.

Objective 1: Understand how to perform a full instrument inventory and condition assessment of all surgical trays in the facility

First, it is important to take an honest look into the accuracy of current inventory records. It is common among perioperative departments to lack an accurate grasp of true inventory numbers



in terms of number of tray types and total number of each tray type per specialty. Working knowledge of inventory is often passed down from senior perioperative staff to junior members; however, it is rarely (if ever) confirmed.

An inventory audit should be conducted by each service line (or specialty) to determine how many trays of each type are physically on hand. One important factor for the SPD is to include any volume of instruments processed for outside clinics or internal departments, such as the Emergency Department, catheterization lab, pain clinic, and Labor & Delivery. This audit includes smaller wrapped trays, kits and peel packed items as well. The capture of this information will be important in the future for optimizing utilization and staffing.

The inventory audit should be conducted by staff members who have knowledge of all storage spaces. The audit should be conducted during a period of low OR volume or fewest scheduled cases. This allows for a greater number of trays to be available either on hand or on the storage shelves at any given time. One immediate benefit of conducting an inventory audit of trays is the discovery of idle inventory. These are trays that have not been used in long periods of time or have been made obsolete. Idle inventory can be broken down and the instruments and container items repurposed where there is the greatest need. Peel pack storage and inventory may also have many idle instruments that can be useful elsewhere. The removal of idle inventory helps create additional space on storage shelves that can be used to relieve crowding in other storage areas or simply make it easier for staff to access trays.

Conducting a thorough inventory of the facility's instrumentation is critical at the beginning. This will take a significant amount of time, but it will provide the knowledge of the facility's total cost of



Include Peel Packs in Inventory

ownership (TCO) and transparency of the condition of its inventory. When starting a count of the inventory, establish a system of marking the instruments and trays. Utilizing a colored sticker system is effective, but make sure not to place the stickers on the instruments themselves due to sticky residue that could be left on the surface of the instrument. Place the colored stickers on the temporary locations where the first inventory count will take place.

Establishing specific nomenclature while inventorying is imperative for consistency when migrating that information over to its final electronic platform—whether in an Excel spreadsheet or using another back-stock inventory data system the facility chooses. Caution should be taken if instruments without identifying markings are discovered. Those instruments should be removed from the inventory. Without identifying markings, it would be challenging to train staff members on the instrument and very difficult to correctly reorder the unmarked instrument.

Examination for identifying markings is just one part of the qualitative review of instruments. This review step is a “deep dive” to examine the instruments under a magnifier to understand the condition of the inventory and assess the functionality of each piece. This



No Index Numbers on Similar Sets Limits Traceability

step often requires the greatest amount of time because it involves identifying instruments that are heavily pitted, broken, in need of repair and/or beyond repair. Removing these instruments from circulation can help prevent negative clinical outcomes for the patient and protect OR and SPD staff against injuries and infection.

Objective 2: Describe the critical aspects of optimizing count sheets

Count sheet accuracy is crucial to both the OR and SPD because both areas need accountability for instruments at all times. Inaccurate count sheets could potentially lead to errors or delays that affect patient care. As a guideline, a basic count sheet should include:

- Tray name
- Tray index number (#1, #2, etc.)
- Instrument quantity by type
- Instrument name with description/ dimensions, catalog number, and manufacturer
- Total number of instruments in the tray

It is important to keep in mind that the better the information on the counts sheets, the more effective the tracking system will be. Additional information specific to the tray can also be included. As an example, the mode of sterilization and container items can be added to a tray description in a tracking system,



The Heart Hospital

Date _____ ASSEMBLED BY: _____

NEW CORONARY ARTERY SET # _____

CAT#	MANU F.	DESCRIPTION	QTY	SPR	COUNT	COUNT
LEVEL #1 Tray						
FORCEPS (x11)						
80-1732	USMAN	BLUE DARTS TITANIUM FCP 7"	3			
7B403R	ANALOG	ANGLED DEBRAKEY FCP 8"	1			
DC12000-2173	DELICATA	LEGACY GERALD MICRO 1.0M FCP 8 1/2"	3			
BD160R	ANALOG	CUSHION GOLD TIP FCP	2			
FM372R	ANALOG	DENNIS MILLS FORCEP	2			
DILATORS (x 4)						
MB217	ANALOG	1.0MM GARRETT DILATOR 8 1/2"	1			
MB258	ANALOG	1.5MM GARRETT DILATOR 8 1/2"	1			
MB259	ANALOG	2.0MM GARRETT DILATOR 8 1/2"	1			
MB261	ANALOG	3.0MM GARRETT DILATOR 8 1/2"	1			
(Place in provided box) (Place on rubber mat)(X1488)						
LG EPICARDIAL RET			(X2)			
BV024R	ANALOG	1.0 EPICARDIAL RET 4TMM	1			
BV025R	ANALOG	MED EPICARDIAL RET 4TMM	1			
			(X4)			
MP143R	ANALOG	NERVE HOOK	1			
110-191	JART	BEAVER KNIFE HANDLE (Insert)	2			
1001-506A	SCARLAN	YELLOW-DOG APPLIER	1			
LEVEL #2 Tray "DEMAGNETIZE FMS08"						
NEEDLE HOLDERS (x 6)						
8010-2171	DELICATA	LEGACY JACOBSON N.H. 8"	2			
8010-2173	DELICATA	JACOBSON MICRO N.H. 8"	2			
804423	DELICATA	HEAVY LEGACY JACOBSON N.H. 9"	2			
SCISSORS (x 6)						
C180R	ANALOG	TENOTOMY SCISSORS 5 1/2"	1			
7010R	ANALOG	TENOTOMY SCISSOR 7"	1			
8210R	ANALOG	25 DEG. POTTS SCISSORS 6 1/2"	1			
8210R	ANALOG	45 DEG. MICRO POTTS SCISSORS 4 1/2"	1			
8210R	ANALOG	90 DEG. POTTS SCISSOR 6 1/2"	1			
8210R	ANALOG	125 DEG. POTTS SCISSOR 6 1/2"	1			
INDICATOR						
TOTAL			11			

The Heart Hospital

Date _____ ASSEMBLED BY: _____

CORONARY ARTERY SET # _____

CAT#	MANU F.	DESCRIPTION	QTY
LEVEL #1			
FORCEPS (x12)			
80-1732	USMAN	BLUE DARTS TITANIUM FCP 7"	3
7B403R	ANALOG	ANGLED DEBRAKEY FCP 8"	1
DC12000-2173	DELICATA	LEGACY GERALD MICRO 1.0M FCP 8 1/2"	3
BD160R	ANALOG	CUSHION GOLD TIP FCP	2
FM372R	ANALOG	DENNIS MILLS FORCEP	2
DILATORS (x 4)			
310-386	JART	1.0MM GARRETT DILATOR	1
310-387	JART	1.5MM GARRETT DILATOR	1
AL0866-1	WELDER	1.7mm GARRETT DILATOR	1
310-388	JART	2.0MM GARRETT DILATOR	1
310-390	JART	3.0MM GARRETT DILATOR	1
(Place in provided box)			
MD00778491	MESLINE	LG EPICARDIAL RET	1
MD00646274	MESLINE	MED EPICARDIAL RET 4TMM	1
(Place on blue mat)			
MD00646199	MESLINE	NERVE HOOK	1
110-191	JART	BEAVER KNIFE HANDLE (Insert)	2
1001-506A	SCARLAN	YELLOW-DOG APPLIER	1
LEVEL #2			
NEEDLE HOLDERS			
3003-354	SCARLAN	LEGACY JACOBSON N.H. 8"	2
3003-181	SCARLAN	JACOBSON MICRO N.H. 8"	2
3003-366	SCARLAN	HEAVY LEGACY JACOBSON N.H. 9"	2
3003-234	SCARLAN	FLAT JACOBSON N.H. 8 1/2"	2
SCISSORS			
7007-06	SCARLAN	TENOTOMY SCISSORS 5 1/2"	1
70072115C	SCARLAN	TENOTOMY SCISSOR 7"	1
7007-540	SCARLAN	25 DEG. POTTS SCISSORS 6 1/2"	1
7007-542	SCARLAN	45 DEG. MICRO POTTS SCISSORS 6 1/2"	1
7007-442	SCARLAN	45 DEG. POTTS SCISSOR 6 1/2"	1
7007-546	SCARLAN	90 DEG. POTTS SCISSOR 6 1/2"	1
7007-548	SCARLAN	125 DEG. POTTS SCISSOR 6 1/2"	1
INDICATOR			

TOTAL

which greatly reduces the opportunities for errors during assembly.

Objective 3: Identify the factors to consider when implementing an electronic instrument tracking system

Once a tray's inventory audit is completed, an electronic version should be created. Access or editing privileges should be limited to only a few individuals with responsibility for inventory management. The more accurate the information going into an instrument tracking system, the stronger and more useful the outputs will be.

Prior to implementation, consider the organizational goals. Is total accountability the goal or is implementation simply meant to import data from a manual system to an electronic?

Today's tracking technology offers robust data collection that provides users with many tools to accomplish broad goals as well as specific tasks. There are significant advantages to implementing an electronic tracking system, including the following:

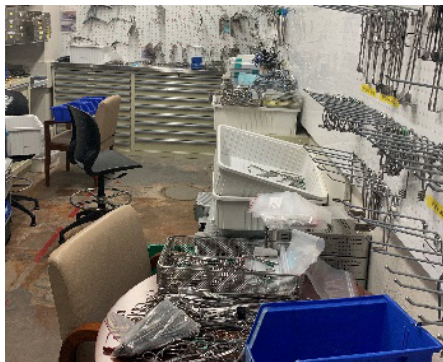
- Improved traceability of trays. Current location and status lets employees know where to find particular trays at any given moment.
- Usage history can be determined and used to establish an effective instrument tray preventative maintenance program. Forecasting demand for trays through usage reports provides staff members with a roadmap of work to come. This can be useful when building staff schedules or staffing models.
- Maintaining a surgical inventory preventative maintenance and repair schedule. These are often kept manually or left up to the repair vendor, which can sometimes lead to some trays getting missed or not being included in the rotation. Trays and high-value items, such as endoscopes, can be scanned and noted in the system as "out for repair."
- Updating on-hand inventory counts. If a tray falls into idle status after a period of time, the tracking system can tag the set and send a report listing the tray with other idle inventory to a

designated staff leader. Staff leaders can then make the decision to pull the tray from inventory.

- Improving employee productivity tracking.
- Monitoring staff training and inservices.
- Maintaining accurate reorder information and equipment utilization.
- Monitoring the processing volume, which can be used to measure operational capacity.

After implementing the instrument tracking, it is important to establish how to effectively store the instrument back-stock inventory. Options for storage include:

- A peg board
 - Carts
 - A drawer system
 - Other types of organized storage
- For greater efficiency and consistency, minimize labeling so users are required to use the electronic back-stock system to identify the location of instruments in stock.



Before Back-Stock Inventory



After Back-Stock Inventory

For consistency and compliance for all who use the tracking system, it is important that the system be simple to use, easy to customize and update, and remove manual processes. The data input should be clean, and the output should be presented in a digestible format that allows the OR and SPD teams to:

- View insights
- Receive alerts and notifications
- Connect to other systems for services such as repairs, training and consultation

Conclusion

SPD and OR professionals are expected to process and assemble an ever-increasing number of complex surgical instrument trays and devices with efficiency and accuracy. Multiple ORs and other departments touch thousands of instruments daily, and the sheer volume, combined with other

challenges, creates a massive instrument inventory and distribution task.

If a facility's SPD does not have an effective instrument management system, it has little ability to track vital usage, and in some cases, it forces the SPD to complete fast-turn and immediate-use processing—often skipping vital quality assurance steps in an effort to keep up with the ever-changing OR schedule. The results can be delays in the OR schedule and, potentially, an increased risk to patient safety.²

Conducting a thorough inventory of the facility's instrumentation, optimizing count sheets, and implementing a robust tracking system and back-stock inventory can help drive efficiencies in both the SPD and OR. Implementation of these surgical instrument inventory best practices may streamline OR and SPD productivity, minimize errors in selection and

maintenance of the surgical instrument inventory, and help optimize care of the surgical patients.²

REFERENCES

1. Brooks, T. "Steps in the Management of Surgical Instrumentation." *Infection Control Today*. www.infectioncontrolday.com/view/steps-management-surgical-instrumentation.
2. Guedon, AC, Wauben, LS, Van der Eijk, AC, et al. "Where Are My Instruments? Hazards in Delivery of Surgical Instruments." Published Online First: October 20, 2015. DOI: 10.1007/s00464-015-4537-7.