

**UNIVERSITY OF CALIFORNIA DAVIS  
INTERNAL AUDIT SERVICES**

**Perioperative Services  
Operating Room Supply Inventory Management  
Internal Audit Services Project #12-19**

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## MANAGEMENT SUMMARY

As part of the Internal Audit Services (IAS) audit plan for fiscal year 2011-2012, we conducted a review of the UCDMC Operating Room (OR) Supply Inventory Management function reporting to the Perioperative Services Division (PSD). PSD consists of 3 units, the Main Pavilion Operating Room (MOR), University Services Center (USC), formerly known as the Children's Surgery Center (CSC), and the Same Day Surgery Center (SDSC) located in an off-site clinic. The MOR is responsible for managing and ensuring all resources (supplies and instrumentation) are available as necessary to meet the needs of patient care safely and completely without causing delays and cancellations of surgical procedures.

The purpose of our review was to assess the controls employed to minimize inventory loss and carrying costs while ensuring that adequate inventory supplies are on hand to meet patient care needs. To complete our review, we identified and reviewed applicable policies and procedures including OR patient care standards and University policies, analyzed transaction data, examined inventory records, documentation, and procedures, and interviewed Central Processing Unit (CPU) technicians, material management personnel, PSD management and clinical nursing staff. In addition, we also reviewed the physical security controls over access to supply inventories, the reordering and accounting process for supplies and instrument inventories and available inventory management reports. We selected Pod #40 as our process sample and reviewed inventory controls over reordering of general supplies in the CPU through the consignment and implant reordering process by the Pod #40 Clinical Supply Nurse. We also reviewed controls over the Supply and Tissue Implant Room in the Pavilion. Fieldwork was conducted between January 2012 and April 2012, and covered non-pharmaceutical inventory transactions and related instrument control activities for calendar year 2011.

PSD inventory needs are currently managed through several means including a reliance on consigned items from vendors when feasible, just in time (JIT) delivery of supplies through supply contracts with Professional Hospital Supply (PHS) for frequently used items, and through a periodic inventory conducted annually for inventory purchased and stored by UCDMC. As of calendar year 2011, the Perioperative Services Operating Room incurred \$44 million in supply and instrument expense, with a July 2011 physical inventory carrying value of \$5.1 million in OR Supplies. Though largely a manual process, PSD ensures PAR values are maintained and supplies necessary for the OR are on hand and delays to surgery are avoided. There currently is no perpetual inventory system in use at UCDMC limiting the ability of management to more closely track inventory utilization and identify opportunities for improvement along with potential cost savings. While no perpetual inventory system is present for Perioperative Services, such systems can be both costly to implement as well as administer on an ongoing basis. UCDMC has mitigated some risks associated with the lack of a perpetual inventory system by using consigned inventory, exchange carts with PHS for JIT delivery of frequently used supplies, and investigating the cause of substantial variances in expenses versus budgeted line items.

While PSD is effectively managing the OR supply inventory, our review did identify some areas for improvement. Management is planning to enhance physical access controls to key inventory areas, improve loaner instrument tray processing and reconciliation, and they will evaluate whether more refined analysis of expenditures compared to activity in the PSD would provide needed control over the potential for inventory shrinkage. Our detailed observations and recommendations are presented within the body of this report along with corresponding management corrective actions.

## **OBSERVATIONS, RECOMMENDATIONS, AND MANAGEMENT CORRECTIVE ACTIONS**

### **1. PHYSICAL ACCESS SECURITY**

#### **A. The outer double doors to the main CPU Distribution Storage area for supplies and instrumentation are not consistently locked.**

Badge reader security access to the outer double doors to the CPU Distribution Unit where OR supplies and instrumentation are stored is disabled during normal working hours due to mechanical reasons (weight and jamming), that cause the door to only partially open at times. When the badge reader is disabled, access can be gained to the inner set of double doors simply by waving a hand over the sensor located between both sets of double doors. This potentially allows unauthorized access to this area.

UCDHS Hospital Policy and Procedure 2278, Section IV C., in conjunction with UCD PPM 350-60, *Management of Supply Inventories*, requires at a minimum that, "there are proper physical security guidelines and safeguards in place to protect supply inventories in excess of \$50,000 from pilferage, theft, or other loss at all times."

#### **Recommendation**

Perioperative services should repair the access doors to the main CPU to ensure they operate correctly and keep the doors locked with access only granted via the badge reader to authorized individuals.

#### **Management Corrective Action**

MCA 12-19.01: Entry doors to the CPU will have functional locks installed. The unit will only be accessible via card keys by authorized staff. Vendors and other employees without card key access can enter only after being identified by CPU staff.

**Completion date:** Complete. Appropriate action was taken by PSD to address this observation prior to the final report being issued.

**B. Access to Implant Storage Rooms located in the OR Pavilion which contain both manufacturer and hospital owned implants are not secured at all times in accordance with OR Policy.**

Patient Care Standard (PCS) Policy M-1, *Manufacturer's Representative in the Operating Room*, requires the manufacturer's representative be accompanied by a member of Perioperative Services continuously when in a secured Implant area. During our review IAS noted the following:

- Only Perioperative Nurses have badge reader access to Implant Rooms in the OR Pavilion.
- Perioperative Nurses have been known to give their access badges to manufacturer representatives to allow them access without the nurse being continuously present in the Implant Room.
- Perioperative Nurses will leave representatives unattended because they have other pressing OR duties and often cannot be available to provide a continuous presence in the room with a vendor.
- As of the most recent physical inventory valuation conducted in June of 2011, the Implant Rooms contained a significant dollar amount of hospital owned implants including \$896,000 in the Implant Room, \$332,000 in the Cryolife Freezer Storage Room, and \$117,000 in the Bone and Tissue Room.
- There is no means to mitigate the risk of theft of hospital owned implants. A manufacturer representative could potentially remove some hospital owned implants without detection.

**Recommendation**

Perioperative Services should develop and implement procedures to ensure manufacturer representatives are escorted at all times by an authorized employee while in secured areas.

**Management Corrective Action**

MCA 12-19.02: Perioperative Services will ensure vendors are not permitted to enter into secure areas (e.g., the implant room). Staff will be instructed to not provide their card keys to vendors. Staff must accompany vendors to the secure area and stay with the vendor. In situations where OR staff cannot accompany the vendor, the charge nurse or POD leader will do so.

**Completion Date: 2-15-2013**

## 2. OR INSTRUMENT INVENTORIES

**A. The 24 hour rule requirement per Patient Care Standard (PCS) Policy M-8 on Pre and Post OP receipt and removal of Vendor Loaner Instrument Trays is not enforced, impacting CPU workload and complicating reconciliation of charges for missing loaner instrument reimbursement.**

### **1. Vendors are not providing loaner instruments in advance of scheduled surgeries.**

- a) Surgeons and OR schedulers are not always providing sufficient lead times (48 to 72 hours) in advance of the surgery to determine exact loaner instrument needs and contacting the manufacturer representatives in order for them to meet the 24 hour rule. Many surgeons do not schedule their own cases and insufficient communication with schedulers can adversely affect providing adequate lead times. As a result:
  - 1. Responsibility for populating the OR schedule for loaner instrument needs in enough time to meet the 24 hour rule has not been clearly defined in policy. The CPU Unit at times only has a short lead time to contact manufacturer representatives to obtain specialty loaner instrumentation to prevent delaying a surgery.
  - 2. Productivity and efficiency is lost as CPU adjusts reprocessing schedules to meet OR needs when the 24 hour rule is not enforced.
  - 3. Rushing to get instruments to OR on time increases the chance of unnecessary damage and instrument losses.
  
- b) The Censitrac Tray Management System is currently not interfaced with the OR Scheduling system in order to match and adjust processing needs on a real time basis. This further complicates reprocessing schedules, increases labor costs, and can result in process shortcuts in favor of preventing surgery delays over the increased labor costs. The MAT Committee has already identified this issue and is working to address it.
  
- c) Vendors take advantage of non-enforcement of the 24 hour rule which adversely affects CPU internal processes and increases labor costs.
  - 1. Manufacturer Representatives normally deliver trays by courier beginning after 12 noon on the day before the scheduled surgery, even when they have enough advance notice that loaner instruments are needed and can be delivered within the required 24 hours.

2. Policy M-8 requires Manufacturer Representatives to provide inventory sheets and take inventories of loaner trays with CPU techs when delivered for cleaning and sterilization. This rarely if ever happens. Inventories are not verified, which provides no assurance that trays are complete and that PSD has appropriate count sheets on hand to be loaded into Censitrac for assembly and reference purposes. CPU normally assembles and sterilizes between 500 and 600 trays per day. As of March 23, 2012, there were only 2,069 individually identifiable Procedural Container Trays out of a total of 3,992 (or 52%) with count sheets defined in the Censitrac system for inventory and assembly purposes. Without count sheets, PSD cannot support usage of the other 48% of trays.
- 2. Vendors are not being required to remove all products that were brought into surgery within 24 hours of case completion.**
- a) The Censitrac Instrument Tray Management System has the capability to track compliance with the 24 hour rule. However, this customized reporting feature is not utilized nor is compliance enforced to ensure that CPU techs provide accurate bar code scanning of the loaner cart inventory location.
  - b) UCDCMC has no standardized Instrument Inventory Reimbursement Request form for manufacturer's representatives to provide to PSD when applying for reimbursement of missing instruments. UCDCMC currently accepts manufacturer representative documentation without adequate assurance that policy requirements have been met. Although required by policy, we noted no documentation proving:
    - 1) An inventory was properly taken, verified, and documented upon tray arrival;
    - 2) A count sheet was properly included within the tray to verify inventory and use for Censitrac count sheet input assembly requirements;
    - 3) The manufacturer representative indicated compliance with taking inventory after surgery case completion within the 24 hour policy requirement; or
    - 4) Any missing instrumentation from a loaner tray was brought to the attention of the instrument coordinator or their designee prior to removal of the tray from UCDCMC.

Accepting manufacturer contention as the only justification for missing loaner instruments is inadequate and improperly shifts the burden of proof on UCDCMC to prove otherwise.

Management is aware of many of these issues and has established a Management Action Team (MAT) to develop solutions. We support their continued efforts and offer the following recommendations.

## Recommendations

1. PSD should develop an action plan to ensure better coordination of OR surgical needs with CPU efforts to inventory, clean, and sterilize instrument trays in compliance with the 24 hour rule without disrupting patient care. Specifically:
  - a) Establish appropriate policies, procedures, and training needs as defined by the MAT Committee in support of the 24 rule.
  - b) Assign responsibility for establishing instrument needs with appropriate lead times to the surgeons and clinical personnel and develop a consistent mechanism for ensuring manufacturer representative notification in time for meeting the 24 rule.
  - c) Educate surgeons and OR clinicians on the challenges and inefficiencies caused from improper enforcement of the 24 hour rule and how they impact and can improve the process.
  - d) Involve vendor representatives in establishing a workable solution to the problem.
  - e) Continue with efforts to interface instrument tray needs between the OR Scheduling system and the Censitrac Tray Management system in order to reduce instrument reprocessing time and costs.
  
2. Develop an action plan that identifies and tracks vendor compliance with removing all products within 24 hours of case completion. Specifically:
  - a) Educate and monitor CPU tech compliance with ensuring loaner trays are scanned into the loaner cart pick-up location after surgery.
  - b) Require manufacturer representative's to provide count sheets in all instrument trays and ensure a CPU staff member takes inventory of all instruments prior to acceptance in the CPU for cleaning and sterilization.
  - c) Use the count sheets to load instrument inventories into the Censitrac system and establish an accurate listing of instruments for all trays in inventory within the Censitrac information system.
  - d) Develop a standardized missing instrument inventory reimbursement request form to be completed by manufacturer representatives. At a minimum require manufacturer representatives provide appropriate documentation in support of such claims, including: (1) an inventory was completed upon arrival with a CPU staff member and a verified count sheet was provided, (2) the post-operative inventory verification was completed within 24 hours of surgery, and (3) an agreed upon date between Instrument Supervisor and vendor on timeframe (e.g., 2 weeks) to locate any missing loaner instruments.
  - e) Utilize the custom reporting features of the Censitrac Tray Management system to track compliance with policy when necessary.

**Management Corrective Action**

MCA 12-19.03: When a loaner tray is deposited into the CPU it will receive a stamped time and date sheet. If the tray is not picked up after 24 hours, the vendor will receive notification by phone and via RepTraks that the tray must be picked up, and that we no longer accept responsibility for the tray.

Clinics notify the OR and CPU of cases that require loaner trays 48 hours in advance of surgery. The vendors receive notification at that time, with verification at 24 hours before surgery. Vendors are required to bring in trays 24 hours in advance. Staff do inventory when trays arrive, and when trays are assembled after the surgery.

**Completion Date:** Complete. Appropriate action was taken by PSD to address this observation prior to the final report being issued.

**3. No consistent process is in place to conduct periodic reviews of instrument tray contents and reduce the quantity of unused instruments in circulation.**

Instrument trays at UCDCMC are procedure and surgeon specific. As surgeons change over the years, instruments are added to existing trays without identifying and removing unused instruments. As a result, inventories have grown, instrument costs have increased, and significant production and handling costs continue to mount in order to account for, and maintain, unnecessary inventories.

**Recommendation**

Develop a periodic process involving OR surgeons and nurses for reviewing instrument tray inventories and adjusting tray and count sheets accordingly with the goal of reducing unused instruments per tray and eliminating surgeon specific trays (when possible).

**Management Corrective Action**

MCA 12-19.04: Perioperative Services will create a management action team to review the ongoing instruments needs related to trays. Lead surgical technicians and OR nurses will look at trays to determine what instruments are needed.

**Completion Date:** Complete. Appropriate action was taken by PSD to address this observation prior to the final report being issued.

**4. There is currently no standard procedure for reconciling inventory count sheets and returning instruments to the CPU to minimize lost or damaged instrumentation.**

Patient Care Standards Policy C-2, *Counting Sponges/Instruments/Sharps in the OR* and Policy I-4, *Case Containment in the Operating Room* identify and quantify the use of Instrument count sheets in a different control manner than CPU Distribution. OR Nurses account for instruments in total for the procedure rather than individually by instrument tray as is done by the CPU. There is no current matching process performed between the two count sheets resulting in lost, damaged, and misplaced instruments between locations. Inconsistent instrument handling and return practices to CPU have also contributed to these losses. Issues identified include:

- Excessive breakage and damage to instruments occurs because of inconsistent handling and return practices to CPU. Delicate instruments are damaged and broken at times by not returning them with careful and proper positioning.
- No process exists to ensure all containers and instruments from one OR procedure are returned to CPU at the same time to reduce occurrences of lost or missing inventory.
- There is an expense to repair and replace damaged and lost instruments, however, it is very difficult to isolate the problem because; (1) PSD does not currently measure loss from damaged instruments associated with a specific procedure, and (2) significant time may have elapsed after surgery before an instrument is identified as broken.
- According to PCS Policy C-2, nurses are supposed to identify and tag broken instruments before returning them to CPU. This is not happening on a consistent basis.

**Recommendation**

Develop a process for providing better inventory control of instruments between OR and CPU by ensuring the following:

- a) Return all instruments and tray containers from the same OR procedure at the same time to CPU for reprocessing.
- b) Establish a consistent protocol for reasonable care and positioning of instruments when returning to CPU to avoid unnecessary damage and breakage.
- c) Establish a process to discretely track lost and damaged instrument costs associated with each procedure.
- d) Periodically track and review cases of damaged and lost instruments to identify the root cause for continued process improvement.
- e) Educate OR nurses on the need to identify and tag all broken instruments before returning them to CPU to expedite reprocessing, and establish a process to track that tagging is taking place on a per procedure basis. Establish goals and incentives for OR nurses to meet tagging objectives.

### **Management Corrective Action**

MCA 12-19.05: Perioperative Services will start a trial whereby Initial and final instrument counts in the OR will be reconciled with instrument counts in CPU using the Censitrac sheets. Part of this trial will include a check-in procedure of case cart content by the scrub personnel. As the scope of this tracking process expands, any trends in instrument loss/damage will permit Perioperative Services to focus on specific areas where loss/damage of instruments appears high. Efforts will be made to decrease loss and damage. On a longer term basis Perioperative Services will continue its quest to reduce unnecessary instruments in trays.

**Completion Date: 1-15-2013**

## **3. SUPPLY INVENTORY MONITORING**

### **A. PSD expenses inventory items when purchased and conducts a physical inventory only once per year, thus limiting the ability to track inventory usage and stock on hand and creating increased risk for shrinkage due to theft or misappropriation.**

PSD inventory needs are currently managed through several means including a reliance on consigned items from vendors when feasible, JIT delivery of supplies through supply contracts with Professional Hospital Supply (PHS) for frequently used items and through a periodic inventory conducted annually for inventory purchased and stored by UCDMC. As of calendar year 2011, the Perioperative Services (Operating Room) incurred \$44 million in supply and instrument expense, with a July 2011 physical inventory carrying value of \$5.1 million in OR Supplies. Though largely a manual process, PSD ensures par values are maintained and supplies necessary for the OR are on hand and delays to surgery are avoided. There currently is no perpetual inventory system in use at UCDMC limiting the ability of management to more closely track inventory utilization and identify opportunities for improvement and potential cost savings. While no perpetual inventory system is present for Perioperative Services such systems can be both costly to implement as well as administer on an ongoing basis. UCDMC has mitigated some risks associated with the lack of a perpetual inventory system by using consigned inventory, exchange carts with PHS for JIT delivery of frequently used supplies, and investigating the cause of substantial variances in expenses versus budgeted line items. However, by expensing inventory carried by UCDMC at the time of purchase and only conducting a physical inventory on an annual basis, there is increased opportunity for theft or misappropriation of these items that would be difficult to detect.

**Recommendation**

Perioperative services should conduct a feasibility study to determine if implementing a perpetual inventory system to improve management and oversight of supply inventories is justified given the costs and staffing resources necessary to implement such a system. At a minimum PSD should review existing practices for tracking supply inventory owned by UCDCMC and determine what additional tracking measures and controls should be put in place to quantify the impact of inventory shrinkage in order to assess and take action as warranted.

**Management Corrective Action**

MCA 12-19.06: Management acknowledges the possible advantages of a perpetual inventory system, however at this time due to operational and budget constraints has selected to continue current processes for inventory management.

**Completion Date: No action required**

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