February 28, 2011

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#### Subject: Major Supply Inventory Management and Charge Capture Interventional Radiology Audit Project 2011-43

The final audit report for Major Supply Inventory Management and Charge Capture – Interventional Radiology, Audit Report 2011-43, is attached. We would like to thank all Supply Chain and Interventional Radiology personnel for their cooperation and assistance during the audit.

Because we were able to reach agreement regarding corrective actions to be taken in response to the audit recommendations, a formal response to the report is not requested.

The findings included in this report will be added to our follow-up system. While management corrective actions have been included in the audit report, we may determine that additional audit procedures to validate the actions agreed to or implemented are warranted. We will contact you to schedule a review of the corrective actions, and will advise you when the findings are closed.

UC wide policy requires that all draft audit reports, both printed (copied on tan paper for ease of identification) and electronic, be destroyed after the final report is issued. Because draft reports can contain sensitive information, please either return these documents to AMAS personnel, or destroy them, at the conclusion of the audit exit conference. AMAS also requests that draft reports not be photocopied or otherwise redistributed.

Stephanie Burke Assistant Vice Chancellor Audit & Management Advisory Services

#### Attachment

#### cc: D. Brenner

- J. Deetz
- T. Jackiewicz
- G. Matthews
- T. Perez
- M. Sonnenshein
- C. Tiernan
- S. Vacca

# AUDIT & MANAGEMENT ADVISORY SERVICES



# University of California SanDiego

Major Supply Inventory Management and Charge Capture Interventional Radiology February 2011

**Performed By:** 

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## **Approved By:**

Stephanie Burke, Assistant Vice Chancellor

Project Number: 2011-43

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Attachment A: Inventory Management Controls Matrix

## I. Background

Audit & Management Advisory Services (AMAS) has completed a review of Interventional Radiology major supply inventory management as part of the approved audit plan for fiscal year 2010-11. This report summarizes the results of our review.

Interventional Radiology (I/R) performs diagnostic angiographic studies; and vascular and nonvascular interventional procedures for UC San Diego Health System (UCSDHS). Services are provided on an inpatient and outpatient basis, at UCSD Medical Centers Hillcrest (Hillcrest), and La Jolla (Thornton).

The Hillcrest I/R supply inventory is conducted on a periodic basis. Some physical counts are completed monthly, and a full physical inventory count is conducted annually by an independent party. Financial Services makes adjustments to the I/R inventory asset account to reflect the inventory balance on hand, based on the physical inventory counts conducted monthly and annually. In January 2007, Supply Chain Management Services (Supply Chain) assigned a Storekeeper to assume overall responsibility for managing the Hillcrest I/R supply inventory. The Storekeeper's responsibility includes monitoring the I/R supply inventory on a daily basis, managing inventory par levels, stocking standard supply items from the Hillcrest storehouse, facilitating the purchase and receipt of non-stock supplies, managing consignment items, and monitoring inventory and consignment items for product outdates.

UCSDHS utilizes the *MediClick for the Supply Chain* (MediClick) system as a tool to manage supply chain operations. The I/R Storekeeper submits supply requisitions and records receipt of supply items in MediClick. Data is available within MediClick to assist I/R management with monitoring supply inventory. The Hillcrest I/R physical inventory balance was \$1,221,976, with an additional \$386,118 in consignment items as of June 30, 2010. Expenditures for I/R clinical supplies for July 1, 2010 through November 30, 2010 are provided in the following table.

Account	Thornton (203)	Hillcrest (763)
1038031 – Prosthesis	\$123,997	\$327,235
1038034 – General Surgical Supplies	\$25,556	\$280,084
1038041 – Other Medical Material, Supply	\$319,557	\$603,380
TOTAL	\$469,110	\$1,210,699

Supply Chain inventory management responsibilities do not include supply charge capture. I/R management is accountable for ensuring appropriate supply charges are submitted to the hospital billing system.

## II. Audit Objective, Scope, and Procedures

The objective of our review was to evaluate the major supply inventory management infrastructure in the UCSDHS I/R suites to determine whether process controls provided reasonable assurance that an adequate level of supplies was on hand, inventory shrinkage was minimal, and high value supply items were charged to patient accounts as appropriate.

We completed the following audit procedures to achieve the project objective:

- Interviewed faculty and staff involved in I/R inventory management and/or oversight of I/R inventory management;
- Evaluated inventory management controls (*Attachment A*);
- Evaluated a sample of 49 major supply and inventory items at the Hillcrest I/R site consisting of UCSDHS owned inventory and consignment inventory items to test physical inventory controls;
- Tested and evaluated a sample of 49 inventory items at the Hillcrest I/R site and 30 inventory items at the Thornton I/R site to verify that outdated products were not retained inventory; and,
- Analyzed a sample of 31 items to determine whether the Charge Description Master (CDM) contained an appropriate supply cost for billing purposes.

The I/R inventory at both sites includes both stock and non-stock (also know as "file" supplies) items. The scope of this review was limited to major supplies in the non-stock category.

## III. Conclusions

We concluded that the supply management processes at the Hillcrest and Thornton I/R sites ensured that supplies were available for scheduled cases, and product outdates were effectively managed. However, based on existing processes, it was not possible to ascertain if supplies were charged correctly and/or if inventory losses had occurred at Thornton I/R. The use of new automated tools or expanded use of MediClick system reports or functions would likely improve the efficiency of inventory management procedures and oversight, provide additional information related to the inventory analysis, improve controls related to separately billable items, and assist with ensuring that the CDM is accurately updated and maintained.

We also noted that I/R inventory management oversight could be improved. Procedures and staffing were inconsistent between the Hillcrest and Thornton sites, and were primarily manual. As identified in *Attachment A*, process controls were not sufficient in some cases to ensure that supplies purchased by I/R were in fact used by I/R and subsequently billed to I/R cases at an appropriate cost.

#### **IV.** Observations and Management Corrective Actions

A. I/R Inventory Management Oversight, Consistency and Efficiency

Additional automated processes and system reports are needed to improve overall accountability and effectiveness of current I/R inventory management oversight.

#### Inventory Management Oversight

During our review, we determined that I/R management significantly relied on the staff responsible for inventory management at each location to ensure that inventory levels were reasonable based on usage and expiration dates, and to communicate issues related to outdated products and/or lost supplies. Because several I/R management positions were vacant, certain MediClick inventory activity reports were not being reviewed on a consistent basis. A list of I/R outdated supplies was prepared and reviewed monthly. However, the total outdated supply cost was not included. Consistent management oversight of inventory management reports is needed at both locations to ensure that procedures are completed as efficiently as possible, and to identify necessary corrective actions such as modifying par levels or consigning items, ensuring billing of separately billable supplies, and modifying inventory processes on timely basis.

Major supplies and/or devices are often separately billable to third party payers. Both periodic and perpetual inventory process controls should include a reconciliation of inventory data. The reconciliation performed for periodic inventory management includes the following financial data to verify the accuracy of the ending physical inventory:

Beginning Inventory Balance Plus: Supply Purchases Minus: Separately Billable Supplies Used Minus: Other Supplies Used Minus: Expired Products <u>Minus: Lost Products</u> Ending Inventory Balance

In a prior review of I/R charge capture utilizing the PatientKeeper (PK) system (AMAS project #2009-19A), AMAS determined that a reconciliation of supply inventory usage to billed supply charges was not completed for either site to ensure that charges for separately billable supply items were submitted to the billing system. We also noted that periodic reviews of supply charge capture were not performed. As a result, unbilled high cost consumable supplies were found in the cases included in the AMAS test sample, resulting in potential lost

revenue. In order to assist management in ensuring that separately billable supplies are appropriately charged to a case, Imaging Services management agreed during fiscal year 2009-2010 to periodically reconcile I/R inventory usage to billed supply charges on a sample basis. However, due to resource constraints, I/R was not able to implement that monitoring process at that time. We continue to believe that this reconciliation process would not only provide assurance that high cost supplies are being charged to cases, but would also provide a basis for establishing inventory par levels for those supplies and is a component of periodic inventory valuation processes.

## Inventory Process Inconsistencies between I/R Locations

We identified the following differences in inventory management practices between I/R locations:

Hillcrest	Thornton
Performed by a Supply Chain storekeeper dedicated to managing I/R supply inventory.	Performed by an I/R technician in addition to his other responsibilities <sup>1</sup> .
Most ordering was performed to replace items used during cases, identified on supply labels provided to the storekeeper by I/R technicians.	Most ordering was performed by a technician by completing a spot check of supplies, noting those that were below the par level and communicating a reorder request.
The physical inventory was maintained in MediClick.	A physical inventory balance was not maintained.
PAR levels were documented.	PAR levels were not documented.
Consignment inventory was maintained on site.	Consignment inventory was not maintained.
Inventory was locked in cabinets within the locked I/R suites after normal business hours.	Inventory was not locked in cabinets. However, the I/R suite was locked after normal business hours.
Lost inventory was identified and recorded in MediClick	Lost inventory was not identified and documented because physical inventory balance was not maintained.

#### Thornton

Thornton supply inventory has been managed informally because the technical staff was competent to manage the smaller case load in addition to performing

<sup>&</sup>lt;sup>1</sup> The technician's other responsibilities included patient care and flow, assisting physicians, timekeeping, troubleshooting equipment, coding of patient services and separately billable supplies into PatientKeeper (PK), CDM maintenance, scheduling of patients, scheduling of technicians, dictation coordination, assisting with coding review, evaluation of employees, and assist with human resources within I/R. The technician performed all Thornton inventory functions, including stocking, ordering, oversight of outdated products, and coordinating supply changes for the Hillcrest and Thornton sites with the Operating Room Standards Committee.

supply purchasing and inventory functions. The lack of formalized inventory management procedures at Thornton contributed to weaknesses in inventory controls identified in *Attachment A*.

Informal supply management processes at Thornton did not provide I/R management and the inventory technician with the information needed to effectively manage supplies on hand based on par levels, and evaluate expenditures related to outdated supplies and lost items. According to the inventory records for the Hillcrest I/R site, individual (separately billable) I/R supplies can cost up to \$5,520 per item. Based on interviews with some I/R staff and one I/R physician, AMAS determined that the informal process at Thornton was sufficient to ensure that inventory was available for scheduled cases. However, the effectiveness of the process was completely dependent upon the diligence of I/R technicians and physicians.

In early 2012, the UCSDHS anticipates initiating the construction of the Jacobs Medical Center, a 245 bed hospital adjacent to the 119 bed Thornton Hospital. As the capacity for providing medical services increases at Thornton, it is likely that the number Thornton I/R cases will increase. Therefore, a dedicated inventory coordinator may be required to effectively manage the Thornton inventory.

#### **Hillcrest**

Based on the physical inventory testing performed, we determined that the Hillcrest inventory management process was working effectively; however, inventory data was maintained manually. Inventory par levels were not maintained within the MediClick system, primarily due to slow system response times that prevented timely updates. Therefore, an inventory master spreadsheet maintained by the Storekeeper was utilized to document the Hillcrest inventory par levels and to record supply purchase and usage transactions. Utilization of a spreadsheet could result in inadvertent errors such as input errors and data corruption or miscalculation, which are inherent risks associated with the use of spreadsheets,. Supply Chain has mitigated those risks by restricting access to the inventory master spreadsheet to a specific group of users. AMAS also noted that the use of the inventory master spreadsheet requires duplicate data input; however, this is required to efficiently manage inventory with the intranet connectivity limitations. Standardizing the inventory process for all I/R sites may provide for procedural cross-training and backup among inventory coordinators. Additional efficiencies may be realized by integrating additional automation into the inventory management process.

## Charge Description Master Maintenance – I/R Major Supplies

I/R uses the PK system to submit charges for separately billable supplies. Supplies are identified on payer claims using the service codes contained within

the CDM. I/R management is responsible for the accuracy of CDM service codes and associated prices. For separately billable supply items, CDM prices are calculated using a formula based on the supply type and cost. However, Supply Chain buyers are responsible for purchasing supply items, and I/R management and staff may not be aware of price increases. As a result, CDM prices may not be updated as needed to ensure that supply costs are recovered.

To determine whether supply prices in the CDM were sufficient to recover supply costs, AMAS selected a judgmental sample of 31 high price I/R supply active CDM service codes from the Infopac *Charge Description Master*, *FMSCDM01*, for each location. To select the sample, AMAS requested that the Supply Chain storekeeper provide a list that mapped the MediClick supply items selected for focused review to the associated CDM service code. The list included the storekeeper's determination of the price and type of each item. Because certain supply items included in the sample had not been mapped to CDM service codes, or had not been cataloged in MediClick, the storekeeper was unable provide the information needed to test 10 of the items in our sample. It was possible that the 10 service codes were no longer being used to process supply charges, but had not been deactivated in the CDM. However, the I/R technician and Supply Chain storekeeper did not have the requested information readily available. In addition, automated analysis of supply prices included in the CDM service codes.

Based on the analysis of the remaining 21 codes in the sample we determined:

- 13 of 21 CDM code prices (62%) had a variance of greater than five percent when using the average cost of all supply items;
- 16 of 21 CDM codes (76%) were charged at prices that had a variance of greater than five percent when using the cost of the highest supply item;
- 17 of 21 CDM codes (81%) contained prices that had a variance of greater than five percent when using the cost of the lowest supply item;
- Price variances for items in the sample ranged from -27.54 percent to 83.06 percent; and,
- Two CDM codes were created for the same inventory items at one location. The prices and descriptions were different for each code.

Audit tests showed that CDM pricing may be inaccurate and/or the range of supply item costs contained within specific CDM codes may be too diverse to ensure that an accurate price can be maintained. Automatic reporting of price changes to cost centers and/or automatic recalculation and analysis of CDM pricing based on the current inventory pricing via an integrated automated tool would assist in ensuring accurate billing for separately billable supplies via CDM maintenance procedures.

Inpatient services to Medicare patients that include separately billable supplies are typically reimbursed at a case rate based on the applied diagnosis-related group (DRG). However, not all payers use the same claim payment methods and supplies that are correctly billed could yield additional reimbursement.

## <u>Potential Automated Solutions – Comparison of Inventory Usage to</u> <u>Charges</u>

MediClick is utilized by Hillcrest and Thornton to submit supply requisitions. AMAS noted that MediClick contains a Patient Charge Entry module that is available from the vendor, but not currently implemented, that would allow patient charges to be imported for comparison with supply inventory transactions. The MediClick Patient Charge Entry module allows for designation of "patient chargeable" items and allows for recording patient charges against items that have been requisitioned for patient use. Also, the MediClick Patient Charge Reconciliation Report would provide information on the quantities of items charged and not charged to patients. Supply charges currently being entered into PK by I/R technicians could potentially be interfaced with the Patient Charge Entry module to provide comparative information. By using an integrated automated tool, it may be possible to:

- Map separately billable major supply items to the CDM and perform automated analysis for CDM maintenance and automated billing purposes.
- Accurately track and modify par levels related to the usage and billing of major supply/separately billable supply items, identify lost item costs, and perform reconciliations to assist in oversight activities related to inventory management and revenue management.
- Manage and track supply outdates and expenditures electronically based on the expiration date stored within the automated tool.
- Generally perform inventory management by an individual at a remote location to the inventory sites.

The implementation of additional functionality in MediClick, and/or the creation of additional reports from MediClick and PK would provide better information and facilitate inventory monitoring. UCSDHS management should also consider an automated inventory system that could be integrated with the billing system to further improve the management of high cost supplies for hospital cost centers.

#### **Management Corrective Actions:**

1. UCSDHS management in consultation with the Supply Chain Director and Decision Support will consider identifying an integrated automated inventory management system that would facilitate efficient and formalized inventory oversight and day to day management activities that would benefit I/R and other cost centers that utilize high value supply items in patient care activities.

- 2. I/R management will:
  - a. Include inventory management oversight responsibilities within the job description for one of the I/R management positions currently under recruitment.
  - b. Perform a periodic reconciliation of inventory usage to billed supply charges for a sample of five high dollar cases at each site to ensure that supplies have been billed, and to assist with inventory management oversight.
  - c. Collaborate with the Supply Chain Director to request a part-time dedicated inventory coordinator be established for Thornton I/R reporting to Supply Chain management. This position would be responsible for standardizing the inventory process between locations, formalizing the Thornton I/R inventory process, and addressing the inventory control weaknesses identified in *Attachment A*.
  - d. Work with Supply Chain management to receive timely notification of price changes for all billable supplies.
  - e. Work with Revenue Cycle Administration and Supply Chain to create a table that identifies the CDM service code used to charge for all supply items that are not included in I/R case rates to assist with accurate billing practices and CDM updates.
  - f. Request that Supply Chain catalogue all separately billable supplies in MediClick on a timely basis.
  - g. Assign CDM maintenance oversight responsibilities to one individual supported by a trained backup; and require that CDM service codes for supplies be re-evaluated periodically to ensure that the prices cover supply cost plus an appropriate mark-up.

## B. Consignment Vendor Oversight

Consignment vendors were allowed access to the UCSD consignment and non-consignment supply inventories, unaccompanied by the Supply Chain storekeeper or other I/R staff.

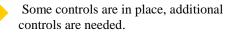
During our evaluation of I/R major supply inventory controls, AMAS was advised that consignment vendors were not accompanied into the Hillcrest I/R suite by the Storekeeper. Typically, other I/R staff were present within the suites when the consignment vendors were on site, however, they were involved in other tasks. Unsupervised consignment vendor access to consignment inventory or UCSD owned inventory increases the risk of inventory loss.

## **Management Corrective Action:**

I/R management will ensure that consignment vendors are directly supervised by point of service staff when accessing the supply inventory storage area policy as required by department policy.

					Control	Present	
	Inventory Control Procedure	Required by Policy <sup>i</sup>	Strongly Preferred	Recommended	Thornton	Hillcrest	Planned Management Corrective Actions (MCAs)
GENERAL	1. Written policy stating management's objective regarding inventory and operating procedures.	x			•	•	Finding A: MCA 2
	<ol> <li>Procedures or systems to provide sufficient periodic information and data to permit effective monitoring of inventory supply costs by management.</li> </ol>	X				•	Finding A: MCAs1and 2
	3. Procedures to identify problem areas disclosed by the monitoring process.		X		•	<b></b>	Finding A: MCAs1and 2
	4. Procedures to remedy problem areas disclosed by the monitoring process.		X		•	•	Finding A: MCA 2
	5. A process for evaluating inventory risk and reporting to appropriate levels of management.		X		<b></b>	<b></b>	Finding A: MCAs1and 2
	6. Separation of Duties within key inventory processes.	X			•	•	
MATERIAL	1. Procedures to reasonably assure that only the supplies required to be purchased are in fact purchased.	X				•	Finding A: MCA 2
	2. Procedures to reasonably assure that purchase activities are appropriately authorized by management.	X			•	•	

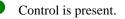
Additional controls are planned or pending.



					Control	Present		
	Inventory Control Procedure	Required by Policv <sup>i</sup>	Strongly Preferred	Recommended	Thornton	Hillcrest	Planned Management Corrective Actions (MCAs)	
	3. Procedures to reasonably assure that changes in inventory supply requirements are implemented timely to preclude acquiring improper items.	x			•	•		
MATERIAL (continued)	4. Procedures to reasonably assure that inventory ordering procedures consider whether what is on hand and what is needed is sufficient, but not in excessive quantities.	x				•	Finding A: MCAs1and 2	
	<ol> <li>Procedures to identify and monitor supply of critical inventory. (Including consideration of the cost of carrying inventory versus the cost resulting from stock outages.)</li> </ol>			X		•	Finding A: MCAs1and 2	
	6. A procedure to promptly notify suppliers when there is a change in requirements and specifications.			X	•	•		
	7. Procedures to reasonably assure that only supplies that are ordered are accepted.		X		•	•		
	8. Procedures to reasonably assure that acceptance of delivered materials occurs only upon sufficient inspection verifying the description and quantity.		X		•			
	9. Procedures to reasonably assure that inventory supplies received are sufficiently controlled until issued, including:							



					Control	Present	
	Inventory Control Procedure	Required by Policv <sup>i</sup>	Strongly Preferred	Recommended	Thornton	Hillcrest	Planned Management Corrective Actions (MCAs)
	a. Storage in designated areas pursuant to procedures that require:						
	1. Restricting access only to custodians;		X				Finding B
	2. Identification system that facilitates subsequent location;			Х		•	Finding A: MCA 1
	3. Orderly arrangement and storage;			Х			
	<ol> <li>Periodic physical counts and subsequent comparison to written records by individuals independent of the custodians;</li> </ol>	X				•	Finding A: MCAs1and 2.
	5. Adequate physical protection.	Χ					
MATERIAL (continued)	b. Procedures to provide reasonable assurance that all inventory issued transactions are accurately recorded, including physical counts.	X				•	Finding A: MCAs1and 2
	c. Procedures to identify and use or otherwise dispose of obsolete and slow-moving supplies.	X			•	•	Finding A: MCAs1and 2
	d. Procedures to reasonably assure that dispositions of inventory are recorded (wastage, returns, etc.).	x					Finding A: MCAs1and 2
	e. Procedures to reasonably assure that returns are appropriately recorded with respect to physical inventory and financial credit.	X			•		Finding A: MCAs1and 2



Additional controls are planned or pending.



Some controls are in place, additional controls are needed.

					Control		
	Inventory Control Procedure	Required by Policy <sup>i</sup>	Strongly Preferred	Recommended	Thornton	Hillcrest	Planned Management Corrective Actions (MCAs)
FINANCE	<ol> <li>An accounting system that reasonably assures the following transactions pertaining to inventory are recorded in compliance with University Medical Center Policy and Generally Accepted Accounting Principles (GAAP):         <ul> <li>Purchase of supplies;</li> <li>Adjustments to record differences in comparison of physical counts with corresponding recorded amounts.</li> </ul> </li> </ol>	X				•	. Finding A: MCAs1and 2
	<ul> <li>2. Procedures for minimizing the financial risk associated with long-term commitments to suppliers.</li> <li>a. Establishing appropriate funding through constant &amp; timely negotiating and approval of contracts;</li> <li>b. Timely payment of invoices.</li> </ul>	X			N/A	N/A	
SAFEGUARDING	1. Procedures that provide reasonable assurance that investment in inventory is sufficiently protected from theft, sabotage, and physical damage from acts of God.	x			•	•	Finding A: MCAs1and 2 Finding B
	2. Procedures that provide reasonable assurance that access to patient identifiable information is restricted to authorized individuals.	X			N/A	N/A	



Some controls are in place, additional controls are needed.

	Control						
	Inventory Control Procedure	Required by Policy <sup>i</sup>	Strongly Preferred	Recommended	Thornton	Hillcrest	Planned Management Corrective Actions (MCAs)
INFORMATION SYSTEMS	1. User's manual that describes the applicable procedures, forms, and descriptions.		X		•	•	
	2. Controls that ensure user access is restricted to only data that is required for the user to fulfill his or her assigned responsibilities.		X		•	•	
	3. Controls to associate each transaction with the user that initiated that transaction entry.		X		•	•	



<sup>&</sup>lt;sup>i</sup> Required by Policy: MCP 703.1F – Centralized Purchasing; Campus PPM 520 – Material Management; Campus PPM 300-85 – Control Standards for Supply Inventories; BUS-54 – Operating Guidelines for University Supply Inventories.