November 13, 2012

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#### Subject: Cardiac Catheterization Laboratories Audit Project 2012-12

The final audit report for UCSDHS Cardiac Catheterization Laboratories, Audit Report 2012-12 is attached. We would like to thank all UC San Diego Health System 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 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 this time. AMAS also requests that draft reports not be photocopied or otherwise redistributed.

Terri Buchanan Interim Assistant Vice Chancellor Audit & Management Advisory Services

Attachment

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# AUDIT & MANAGEMENT ADVISORY SERVICES

Cardiac Catheterization Laboratories November 2012

#### Performed By:

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Approved By:

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Project Number: 2012-12

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Attachment A – Non-stock Supply Management Flowchart Attachment B – CCL Charge Capture Process Flowchart Attachment C – Audit Results by Business Process

#### I. Background

Audit & Management Advisory Services (AMAS) completed a review of Cardiac Catheterization Laboratory (CCL) business processes as part of the approved audit plan for Fiscal Year 2011-12. This report summarized the results of our review.

The UC San Diego Health System (UCSDHS) CCL provides the facilities, equipment and resources to complete specialized procedures in the fields of cardiology, cardiothoracic surgery, neurology, cardiac imaging, and vascular surgery. In 2011, the CCL received the America College of Cardiology Foundation's NCR ACTION Registry-GWTG (Get with the Guidelines) Gold Performance Achievement Award in recognition of CCL management's success in implementing a higher standard of care for cardiac patients.

The CCL operates in two facilities: three procedure rooms at the Sulpizio Cardiovascular Center (CVC), adjacent to the UCSD Medical Center La Jolla (Thornton Hospital); and one procedure room at the UCSD Medical Center Hillcrest. The state-of-the-art CVC opened in August 2011 and is the primary location for cardiovascular procedures. The Hillcrest location remains open to serve the public in the surrounding area, but has performed a decreased number of scheduled procedures since the opening of the CVC.

From July 1, 2011 through April 30, 2012, UCSDHS physicians and CCL staff performed 2,296 procedures (2,124 in the CVC, and 172 at Hillcrest). A financial overview for this period is summarized in the following table<sup>1</sup>:

July 1, 2011 through	CVC	%	Hillcrest	%	Total
April 30, 2012					
Revenue	\$30,560,119	90%	\$3,640,700	10%	\$34,200,819
Salary and Benefits	\$1,914,435	78%	\$563,061	22%	\$2,477,496
Expense					
Medical Supplies	\$3,282,939	85%	\$601,765	15%	\$3,884,704
Other costs	\$1,088,568	57%	\$839,178	43%	\$1,927,746
(primarily					
depreciation)					
Total Expenses	\$6,285,942	76%	\$2,004,004	24%	\$8,289,946
Gross Margin	\$24,274,177	94%	\$1,636,696	6%	\$25,910,873
Gross Margin %	79%	-	45%	-	76%

Supply transfers, and continued maintenance of certain staffing levels, equipment and information systems resulted in relatively lower gross margins for Hillcrest during this transition period.

<sup>&</sup>lt;sup>1</sup> This data was obtained from the April 30, 2012 ALB110T 110 Flex Trend Detail Report.

CVC supply purchases and inventories are managed by Supply Chain Services (SCS) Storekeepers using the MediClick system. The Hillcrest CCL has a dedicated Resource Management Specialist (RMS), who monitors supply usage, prepares order requisitions, and forwards supply order information to the CVC Storekeepers for entry into MediClick. The non-stock supply management flowchart for both locations is included as *Attachment A*. AMAS was advised by SCS management that MediClick consultants have been engaged to recommend process improvements that will better utilize system features and further improve the accuracy and efficiency of supply inventory management.

CVC and Hillcrest CCL procedures are scheduled in the Operating Room Scheduling Office System (ORSOS). To ensure that ORSOS includes all scheduled procedures, the CCL staff ensures that all add-on procedures are entered into ORSOS the following business day.

Procedures performed in both CCL locations are documented in the MacLab system. This system is designed to capture the critical details of what occurred during a procedure including patient vital signs, supplies used and medications administered.

Hospital technical charges for CCL procedures are recorded on billing sheets, and manually entered into the Patient Care Information System (PCIS) charge entry system by CCL staff daily. Physicians complete encounter forms to capture the associated professional fees. Encounter forms are forwarded to and processed by the UCSD Medical Group. CCL charge capture processes are depicted in *Attachment B*.

#### II. Audit Objective, Scope, and Procedures

The objective of our review was to determine whether business process controls were adequate to ensure that operations were effective, financial information was accurate, and that business transactions complied with University policy. Based on our initial risk analysis, audit fieldwork was focused on evaluating CCL charge description master (CDM)<sup>2</sup> content, charge capture processes, and medical supply management.

We completed the following procedures to achieve the project objective:

- Reviewed the Health System Policy (MCP) 724.1D *Charge Entry*, and MCP 723.1E, *Charge Description Master Maintenance*;
- Reviewed CCL business documents and financial reports for Fiscal Year 2010-11 and the period July 1, 2011 through April 30, 2012;
- Reviewed payroll time reporting and adjustment reports for February 2012;

<sup>&</sup>lt;sup>2</sup> The CDM is a comprehensive listing of all goods and services which may be charged to a patient account. Besides procedure codes, descriptions, and prices, it also lists the appropriate Current Procedural Terminology (CPT) codes for each payer category.

- Analyzed significant revenue and expense variances for both locations for the period from July 2011 to April 2012 by reviewing the ALB110T Flex Trend Detail Report;
- Conducted interviews with the Cardiology Service Line Associate Administrator, the CCL Nurse Manager, the Hillcrest RMS, and other CCL personnel to gain an understanding of the financial expense allocation and charge capture processes;
- Observed a procedure being performed to identify documentation practices and supply management;
- Contacted representatives from the following Medical Center departments to discuss operations issues in their areas of expertise:
  - Biomedical Equipment Services,
  - Health Information Services (HIS),
  - Revenue Cycle Administration (RCA)
  - o Financial Services,
  - o Financial Administration,
  - o Payroll,
  - Pharmacy and,
  - Radiology Information Systems;
- Discussed CCL supply chain management processes with the SCS Assistant Director, the Hillcrest RMS, and the CVC Storekeepers;
- Gained an understanding of the supply ordering and inventory management processes and created a process flowchart (*Attachment A*);
- Gained an understanding of CCL charge capture processes and created a process flowchart (*Attachment B*);
- Performed an analytical review of CDM service codes to evaluate consistency between locations;
- Evaluated the timeliness of charge capture by reviewing the Late Charges by Count and Dollar reports from July 2011 through February 2012;
- Conducted reasonableness tests for the Hillcrest supply variance by analyzing trends and comparing supplies billed to orders to determine whether supply expenses and adjustments appeared appropriate; and
- Performed detailed testing of the documentation used to generate and enter charges for day(s) selected judgmentally for each location (February 2 and 8, 2012 for Hillcrest; and February 22, 2012 for the CVC) to verify that the processes were working as described.

The scope of this review focused on general business processes and did not include evaluation of compliance with federal and state regulations that are typically assessed by the California Department of Public Health (CDPH) or The Joint Commission (TJC). In addition, audit tests of charge capture focused on evaluating whether the charge codes were accurately transmitted to the hospital billing system; and included a limited assessment of whether the correct Current Procedural Terminology (CPT) codes were selected based on discussions with a RCA certified medical coder.

#### III. Conclusion

Based on the procedures performed, we concluded that CCL business process internal controls provided reasonable assurance that operations were effective, financial information was accurate, and that business transactions complied with University policy in most cases. *Attachment C* provides the results of the business review.

While completing our review, we also identified opportunities to improve charge capture accuracy through a quality assurance review; and enhance supply inventory processes and accuracy through effective utilization of the MediClick system, and increasing the frequency of physical inventory counts. Significant variances in equipment depreciation expense also identified the need to verify the items included in the CCL equipment inventory.

These issues are discussed in more detail in the remainder of this report.

#### IV. Observations and Management Corrective Actions

#### A. Charge Capture and Monitoring

# The timeliness, completeness and accuracy of charge capture could be improved.

#### Charge Review Process

MCP Policy, 724.1 – *Charge Entry*, requires timely and accurate charge processing in order to ensure appropriate reimbursement and to associate accurate costs with services rendered.

To evaluate the completeness and accuracy of charge capture process, AMAS judgmentally selected a sample of 14 cases from the February 2 and 8, 2012 ORSOS schedule for Hillcrest; and the February 22, 2012 ORSOS schedule for the CVC. MacLab system reports, CCL billing sheets and Epic operating notes were obtained for each procedure performed on these days. AMAS verified the following:

- A signed patient consent was obtained for each procedure;
- A billing sheet was prepared for each case;
- Consistency of procedures and supplies entered in the MacLab report, the billing sheet and the procedure notes; and,
- The charges entered on each billing sheet were consistent with the charges entered into the patient's account in the Financial Management System (FMS).

AMAS obtained the assistance of an RCA certified medical coder to assist with verifying that CPT codes were accurate for outpatient procedures reviewed.

A summary of the audit results is included in the following table:

Total Number of Cases Reviewed	14		
Average number of days between the charge service date and the charge posting date:	4.9 days		
Exceptions noted:	Number of cases with errors	Approximate \$ value	
Medications not charged	4	\$198 *	
Medications incorrectly charged to patient account	3	(\$114)	
Supply items not charged	6	\$1,158 *	
Supply items incorrectly charged	2	(\$201)	
Procedure incorrectly charged to patient account	1	(\$7,104)	
Net Dollar Impact		(\$6,063)	

\* Excludes medications and medical supplies that did not have a CPT code or price.

CCL staff input charges into PCIS based on the information entered on the billing sheet without comparing the items on the billing sheet to the MacLab report. Several charge capture errors could have been avoided if that comparison had been performed.

The RCA certified medical coder who assisted with our review performed a quality assurance review of the charges submitted for CCL outpatient procedures (performed Monday through Friday). She verified coding accuracy and completeness; and prepared/forwarded charge error reports to the CCL for correction<sup>3</sup>. For the period from December 2011 to February 2012, RCA identified 55 cases with errors, with an approximate net dollar value of 48K<sup>4</sup>.

RCA management indicated that staff may not be able to continue performing CCL charge quality assurance reviews due to resource constraints. This could result in CCL submitting charges that are not accurately coded, which would generate charges that do not comply with Center for Medicare and Medicaid Services (CMS) regulations. Considering the large number of cases with errors identified, the coding complexity, and the financial significance of the procedures performed, CCL management should consider adding a staff member with coding

<sup>&</sup>lt;sup>3</sup> There is not a staff member to perform this process when the coder is not at work.

<sup>&</sup>lt;sup>4</sup> The total charge variance was based on the primary price listed in the CDM.

expertise to help ensure billing accuracy and to minimize that risk of fines and penalties related to billing for medically unnecessary services.

# **Management Corrective Actions:**

CCL management will:

- 1. Require staff to compare the MacLab report to the billing sheet, on a sample basis, prior to entering charges into PCIS to ensure that all charges are accurately captured.
- 2. Consider adding a medical coding expert to the CCL staff with responsibility for performing CCL charge quality performance reviews.

#### Timeliness of Charge Posting

MCP 724.1D requires that charges be posted within 24 hours of the date the services are rendered and re-submitted within 48 hours if rejected on the charge reject report (FMSS037 or FMSS038).

To evaluate the timeliness of charge entry in the CVC and Hillcrest CCL units, AMAS analyzed the Late Charges by Count Report (FMSS238), which included data for July 2011 through February 2012. We noted that, on average, 21% of charges (CVC) and 15% of charges (Hillcrest) were posted five days to nine days after the date of service; and 14% (CVC) and 26% (HC) were posted 10 days or after<sup>5</sup>. The staff member with primary responsibility for completing charge entry is located in Hillcrest. CVC billing sheets must be transferred to Hillcrest for processing, which may cause delays. Improving the efficiency of transfer of billing sheets to Hillcrest should assist in timely entry.

#### **Management Corrective Action:**

CCL management will improve the timeliness of charge capture by identifying a more efficient method of transferring charge documents from the CVC to Hillcrest.

<sup>&</sup>lt;sup>5</sup> Some of the late postings could be as a result of subsequent charge corrections processed by CCL staff based on analysis by Revenue Cycle Management staff as described in *Attachment B*.

# **B.** Equipment Inventory

# An equipment inventory should be completed for both locations to determine if depreciation charges are over-stated.

AMAS' review of the ALB110T 110 *Flex Trend Detail Report* for the period from July 2011 to April 2012 identified significant depreciation expense budget variances for the Hillcrest cost center. To analyze the variance, the RMS obtained AM260, *Asset Report*, for both CVC and Hillcrest cost centers and identified equipment that appeared to be incorrectly allocated to the CCL cost centers.

Although Biomedical Equipment Services conducts equipment inventory every year, only a sample of equipment items are selected from prior fiscal years. CCL management would benefit from a complete equipment inventory to ensure that equipment purchases, transfers and disposals were accurately captured and that depreciation charged to the CCL cost centers was not over-stated.

# **Management Corrective Actions:**

CCL management will:

- 1. Complete an equipment inventory for both locations.
- 2. Select a sample of equipment inventory items to verify on an annual basis.

# C. Medical Supply Management

#### The medical supply inventory balances did not include complete data.

#### Medical Supplies Ordering Process

The Hillcrest RMS placed supply replacement orders based on the packaging labels collected after procedures were performed; and a review of the MacLab supplies summary report for each procedure, to ensure that supplies used without a packaging label were also replenished. This secondary process did not appear to cause delays in the process, based on the reduced number of procedures being performed at that location.

The CVC Storekeepers depended primarily on the packaging labels collected to re-order supplies and to make entries into MediClick to reduce the supply inventory balance. If packaging labels were misplaced or discarded, a supply item would not be re-ordered until a visual count was performed, and MediClick

balances would not be entirely accurate. However, the comparison of the packaging label to the MacLab report was not feasible at the CVC based on the higher volume of procedures performed at that location, and some differences in the information provided on the packaging label and the supply item detail in the MacLab reports.

AMAS compared the packaging labels to supplies used/billed per the MacLab report and billing sheet for procedures performed at the CVC on February 22, 2012. Our analysis identified two supply categories for which the packaging labels collected by the Storekeepers exceeded the number of supply items documented on the MacLab report.

AMAS was advised by the Storekeepers that they communicate frequently with the CVC nursing staff regarding supplies needed for scheduled procedures, which assisted with ensuring that the necessary supply items were on hand. However, other system/process alternatives should be explored to ensure completeness in ordering and improve the accuracy of supply inventory data.

#### **Inventory Counts**

CCL units utilize a periodic inventory system. However, we noted that all medical supplies were not physically counted on a periodic basis and compared to system generated inventory records to verify consistency and determine the level of inventory shrinkage. Inventory adjustments were made monthly by reducing inventory based on packaging labels retained for items used during procedures, and increasing inventory for supply orders received. New items purchased were counted prior to adding them to stock, but supply items that were not used and ordered were not counted. A physical inventory count of all items was conducted once at the end of the Fiscal Year. To ensure the accuracy of inventory records, and to identify supply inventory losses, a physical inventory should be completed more frequently.

#### Consistency of Inventory Data

MediClick was the system of record for medical supply inventory for both CCL locations. The CVC Storekeepers also maintained a master inventory log (excel spreadsheet) outside of the MediClick system to track supply usage and orders. Both inventory systems were updated when supplies were used and orders received.

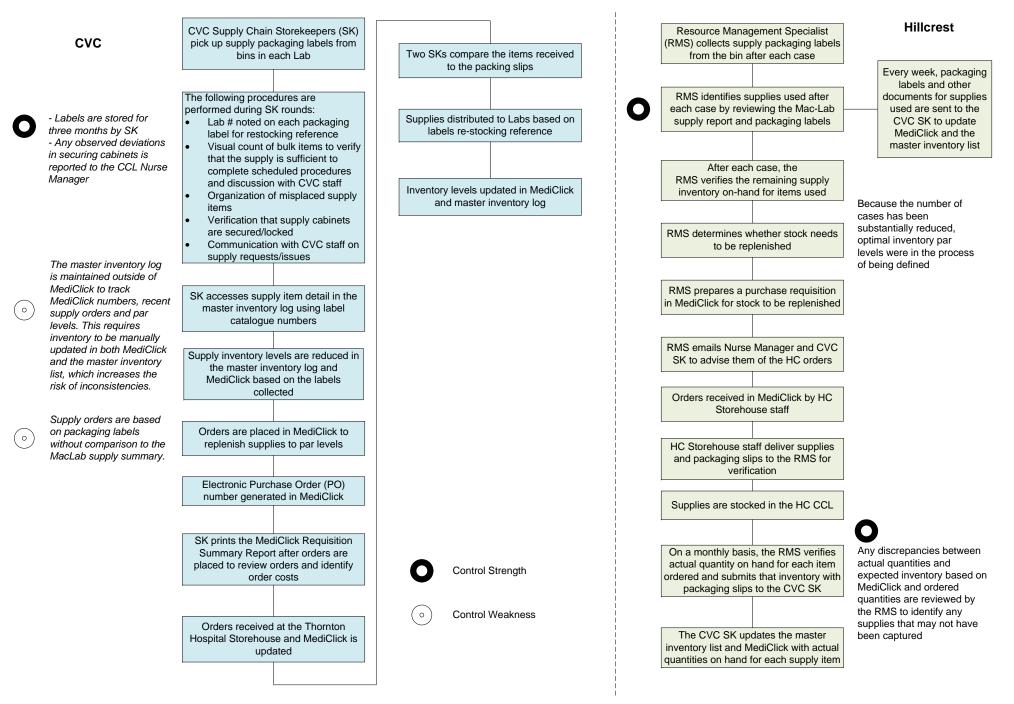
To verify the consistency between MediClick inventory and the master inventory log, AMAS judgmentally selected a sample of seven supply items from the master inventory log and compared the number of items on the log to MediClick. We

noted that one of the seven items had been updated in the spreadsheet but not in MediClick. We also compared a judgmental sample of six used supply packaging labels to the master inventory log and to MediClick data. One of six items had been updated on the inventory log, but not in MediClick. As MediClick is the system of record, CVC Storekeepers should migrate away from the use of a separate inventory log to ensure accuracy of data. Because MediClick supply inventory data is included in the Medical Center financial statements, data accuracy is critical.

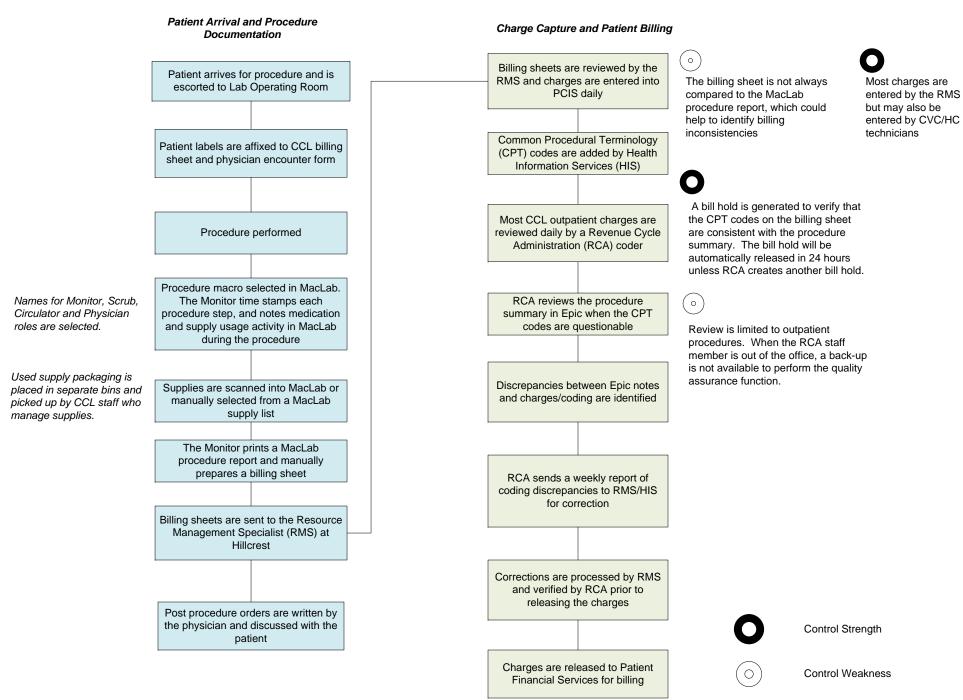
# **Management Corrective Actions:**

- 1. SCS management has consulted with MediClick to explore system features that improve the effectiveness and accuracy of supply management.
- 2. CCL physical inventory counts will be conducted every 6 months or more frequently, if indicated, based on the number of variances identified.
- 3. SCM management will require CVC Storekeepers to migrate away from using the inventory log tool, and utilize MediClick to manage daily inventory adjustments.

#### Cardiac Catheterization Laboratories Audit & Management Advisory Services Project 2012-12 Non-Stock Supply Management – Cardiovascular Center (CVC) and Hillcrest (HC) – Attachment A



#### Cardiac Catheterization Laboratories Audit & Management Advisory Services Project 2012-12 CCL Charge Capture Process – Attachment B



		AMAS Audi	t Review Procedur	Risk & Controls			
Business Process	Analytical Review of Financial Data	Internal Control Questionnaire/ Separation of Duties Matrix	Process Walk-through (Ltd Document Review)	Transaction Testing (Sample Basis)	Balance Reasonable (Yes or No)	Audit Conclusion	Comments
Staff and/or Patient Safety Management			$\checkmark$	Reviewed oversight procedures with the Safety Coordinator.	Yes	Satisfactory	One Safety Officer was designated for both sites. Safety web sites were used to provide personnel with safety instructions and notices on a monthly basis.
Patient Scheduling		$\checkmark$	$\checkmark$	Discussed scheduling with CCL staff. Reviewed the schedule for selected days.	Yes	Satisfactory	CCL patients were scheduled in the Operating Room Scheduling Office System (ORSOS). Procedures not scheduled in advance were input into ORSOS the following business day.
Transaction Processing - Non-Payroll Expenditures	V	$\checkmark$		Reviewed the Expanded Budget Summary Report for both CCL cost centers for July 2011 through December 2011. Evaluated the reasonableness of expenses, and discussed charges with management.	Yes	Satisfactory	Expense account transactions appeared reasonable.
Medication Management	$\checkmark$	$\checkmark$	$\checkmark$	Discussed with CCL management, and compared pharmacy	Yes	Satisfactory	CCL medications were managed in Pyxis by Pharmacy personnel. CCL medication

		AMAS Audi	t Review Procedur	Risk &			
Business Process	Analytical Review of Financial Data	Internal Control Questionnaire/ Separation of Duties Matrix	Process Walk-through (Ltd Document Review)	Transaction Testing (Sample Basis)	Controls Balance Reasonable (Yes or No)	Audit Conclusion	Comments
				charges to CCL recharges.			charges appeared appropriate.
Information Systems Environment		$\checkmark$	$\checkmark$	Interviewed information system support staff for to discuss system access management and backup processes.	Yes	Satisfactory/ Improvement Needed	MacLab and HeartLab systems were used by CCL staff and were backed up off-site. We noted that MacLab system access management could be improved. Radiology Information Systems support staff agreed to remove the auto log-in feature in MacLab and activate the screen lock-out feature to prevent unauthorized access. CCL employees who transferred out of CCL did not always have HeartLab access de-activated. The CCL Technician who coordinates staff separation procedures will ensure in the future that employees are removed from access. ( <i>Exit Conference Item</i> )

		AMAS Audi	t Review Procedur	Risk &			
Business Process	Analytical Review of Financial Data	Internal Control Questionnaire/ Separation of Duties Matrix	Process Walk-through (Ltd Document Review)	Transaction Testing (Sample Basis)	Controls Balance Reasonable (Yes or No)	Audit Conclusion	Comments
Timekeeping & Payroll	$\checkmark$	$\checkmark$	$\checkmark$	Reviewed clocking reports and adjusting timekeeping entries for February 2012.	Yes	Satisfactory	Adjusted timekeeping entries appeared reasonable. No significant variances noted.
Clinical Research Activity		$\checkmark$		Discussed research activity with department management.	Yes	Satisfactory	Limited research activity.
Travel	$\checkmark$	$\checkmark$		Discussed department travel process. Reviewed total travel amount.	Yes	Satisfactory	Travel costs were insignificant.
Medical Records Management		$\checkmark$		Discussed business document and health record storage with CCL management.	Yes	Satisfactory/ Improvement Needed	Retention of and security for MacLab procedure reports and CCL billing sheets needed to be improved. CCL management will consider adopting a three to six month retention period for billing sheets and MacLab reports, and will secure those documents in a locked cabinet. ( <i>Exit Conference Item</i> )

		AMAS Audi	t Review Procedur	Risk & Controls			
Business Process	Analytical Review of Financial Data	Internal Control Questionnaire/ Separation of Duties Matrix	Process Walk-through (Ltd Document Review)	Transaction Testing (Sample Basis)	Balance Reasonable (Yes or No)	Audit Conclusion	Comments
Charge Description Master Maintenance	$\checkmark$	$\checkmark$	$\checkmark$	Compared the CDM for the two CCL cost centers.	Yes	Satisfactory	Minor inconsistencies and omissions were noted, which did not create a billing risk for the CCL. Issues identified were forwarded to Revenue Cycle Administration CDM Manager for resolution.
Charge Capture	V	$\checkmark$	$\checkmark$	Reviewed MacLab reports, billing sheets and PCIS entries for selected days for both locations to test for accuracy and completeness of charges.	No	Improvement Needed	Charge Capture errors were identified. Comparison of MacLab reports to billing sheets would assist in accurate charge capture. ( <i>Audit Report Finding A</i> )
Equipment Management	V	V	$\checkmark$	Contacted Biomedical Equipment Services to discuss equipment maintenance and inventory. Discussed significant depreciation variances with CCL management.	No	Improvement Needed	An annual equipment inventory was performed for sampled items for a selected fiscal year. Approvals were established for capital equipment purchases. However, analysis of the Asset Report by CCL management identified discrepancies in equipment recorded. A complete inventory should be conducted. (Audit Report Finding B)

		AMAS Audi	t Review Procedur	e	Risk & Controls Balance Reasonable (Yes or No)	Audit Conclusion	
Business Process	Analytical Review of Financial Data	Internal Control Questionnaire/ Separation of Duties Matrix	Process Walk-through (Ltd Document Review)	Transaction Testing (Sample Basis)			Comments
Supply Inventory Management	$\checkmark$	$\checkmark$	$\checkmark$	Reviewed inventory oversight with Supply Chain Services (SCS).	No	Improvement Needed	A complete physical inventory of medical supplies was not performed periodically to effectively monitor purchases and usage and help to ensure that accuracy of supply inventory data in the hospital financial statements. Enhanced procedures are needed to ensure completeness in the ordering process. There is need to migrate away from using the CVC master inventory log to only using MediClick to record supply usage and orders.
							(Audit Report Finding C)

The following business processes were not applicable to CCL operations: Cash and Recharge Processing