UTSouthwestern
Medical Center

University Hospitals Building and Fixed Equipment Maintenance Audit

Internal Audit Report 18:12

February 23, 2018

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Executive Summary

Background

The University Hospitals Facilities Maintenance and Operations team (Hospital Facilities) is responsible for providing and managing all routine building and fixed equipment maintenance and repairs for University Hospitals. Hospital Facilities has an annual facility repair and maintenance budget of approximately $10 million, a capital projects budget of $3.9 million for fiscal years 2017 and 2018 to maintain over 2,000 pieces of fixed equipment at Clements University Hospital and Zale Lipshy University Hospital.
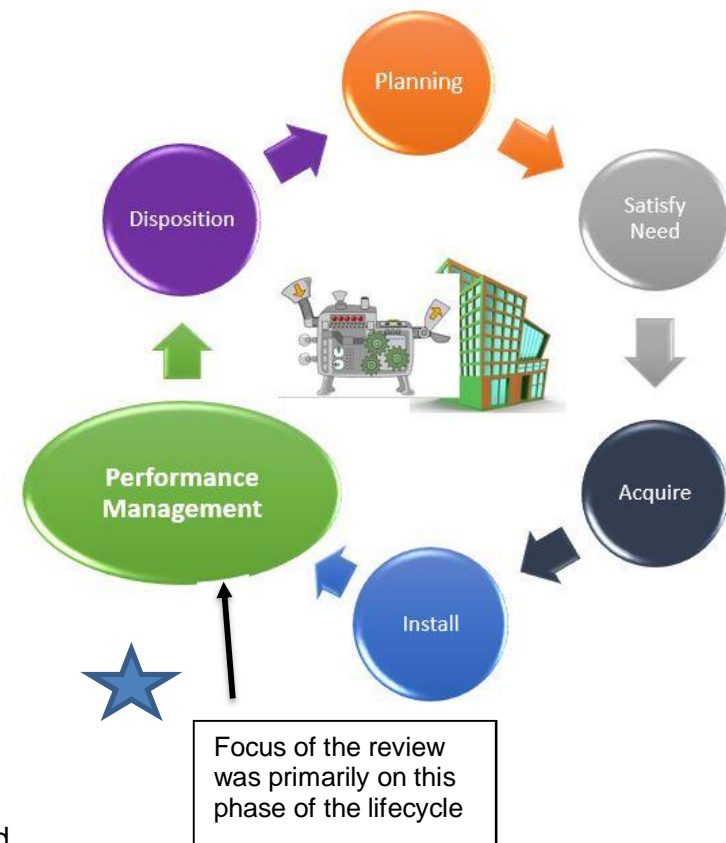
Hospital Facilities is also responsible for managing repair and preventive maintenance records as required by the Joint Commission. The Joint Commission visits every three years to review compliance with statutory requirements. There were no issues of non-compliance identified during the most recent visits to Clements University Hospital and Zale Lipshy University Hospital.

Hospital Facilities has combined staffing of 82 employees across 13 teams, including Central Data Acquisition System (CDAS) operators, work control coordinators, plant operators, building maintenance specialists, and other trades.

Hospital Facilities manages assets using the Asset Lifecycle model depicted to the right. This audit focused primarily on the performance management phase of the Lifecycle and further included evaluation of the acquisition and disposition of assets to determine each facilities' needs. Additional information is located in Appendix B.

The inventory of assets managed by the team are maintained in Microsoft Excel files. Repair and maintenance work order tracking records are maintained in the PeopleSoft Maintenance Management system. Monthly equipment maintenance activity and supporting printed forms are maintained hard copy in binders.

Managing Asset Lifecycle

- Planning
- Satisfy Need
- Acquire
- Install
- Performance Management
- Disposition

Focus of the review was primarily on this phase of the lifecycle

Executive Summary

Scope and Objectives

The Office of Internal Audit has completed its University Hospitals Building and Equipment Maintenance audit. This was a risk based audit and part of the Fiscal Year 2018 Audit Plan. Overall objectives for the audit included determining the adequacy and effectiveness of operational processes and internal controls to ensure effective and efficient achievement of objectives, compliance with key institutional policies and procedures, safeguarding of assets, accuracy of reporting and to determine appropriate controls are in place for:

- Capture of building and equipment maintenance needs and requirements
- Identification and monitoring of preventive maintenance and routine repairs
- Compliance with Joint Commission requirements
- Management and monitoring of warranty program service requirements
- Effectiveness of work order tracking and performance
- Evaluation of appropriateness of PeopleSoft system access and approval workflows.

We conducted our examination according to guidelines set forth by the Institute of Internal Auditors' International Standards for the Professional Practice of Internal Auditing.

Conclusion

Although only minimal opportunities were identified in the manual processes reviewed during this audit, overall, the tracking and evaluation of preventive maintenance across University Hospitals is manual, increasing the risk of data entry errors, missing records, and noncompliance with federal and state laws and regulations and Institutional policies and procedures. The evaluation of timely cost benefit analysis and forecasting of required preventive maintenance is manual, increasing the risk of higher spend in labor, repairs and maintenance costs.

The use of an automated maintenance management system for tracking and reporting asset lifecycle, maintenance, work orders and warranties will improve the ability to accurately predict maintenance needs and ensure optimal performance of equipment based on equipment age. In addition, improved work order management and monitoring will help ensure effective assessment of labor, supply costs and overall improved performance evaluation. The PeopleSoft Maintenance Management Module, currently used for processing customer service requests for equipment repairs, does not have preventative maintenance reporting capabilities because it does not contain key fields needed manage this process. A capital project for FY 2019 will provide these enhancements.

A specific strength identified during the audit pertains to quality and efficient customer service. Technicians on site at each of the hospitals provide real-time customer service as needed, reducing the time needed for minor requests to be resolved.

Executive Summary

The following table provides a summary of the observations noted, along with the respective disposition of these observations within the Medical Center internal audit risk definition and classification process. See Appendix A for Risk Rating Classifications and Definitions.

Priority (0)	High (0)	Medium (3)	Low (1)	Total (4)

#1 Establish Processes to Track and Monitor the Frequency of Asset Maintenance and Repairs – Manual tracking of equipment maintenance and repairs does not provide for automated forecasting, monitoring and reporting of maintenance needs per asset, which increases the risk of data errors and/or omissions.

#2 Improve Work Order Tracking Process – The University Hospitals' work order tracking tool has limited functionality and does not capture all key information, such as tracking of repairs and maintenance per asset, estimated time to complete, labor costs or repair/replacement costs.

#3 Improve Segregation of Duties for Work Order Functions in the PeopleSoft Maintenance Management Module – Functional access granted to certain PeopleSoft Maintenance Management user accounts does not provide for proper segregation of duties, increasing the risk of inaccurate or unauthorized transactions.

Management has plans to address the issues identified in the report and in some cases has already implemented corrective actions. These responses, along with additional details for the key improvement opportunities listed above are listed in the Detailed Observations and Action Plans Matrix (Matrix) section of this report.

Executive Summary

We would like to take the opportunity to thank the departments and individuals included in this audit for the courtesy extended to us and for their cooperation during our review.

Sincerely,

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Detailed Observations and Action Plans Matrix

Observation	Recommendation	Management Response
Risk Rating: Medium n 1. **Establish Processes to Track and Monitor the Frequency of Asset Maintenance and Repairs** Preventive maintenance and repairs are not forecasted, tracked and reported by individual assets. · Forecasting of maintenance needs per asset is not available. Preventive maintenance records are documented in hard copy, scanned to a shared network drive, printed and placed in binders. The technician performing the work, their supervisor and manager sign these printed copies monthly. The binders are maintained in an office for internal and external reviews. · Equipment performance is measured and evaluated manually. Maintenance continues as long as the equipment performs. The cost of continuous repairs and maintenance versus purchasing new equipment is not systematically evaluated. · More than 38% of the equipment at Zale is aged between 29-31 years. As such, the maintenance needs are higher, time to equipment failure has higher risk, and the risk of unsatisfactory performance or malfunctioning increases.	1. Evaluate tools and systems to track, forecast and monitor maintenance and repairs by asset, including warranties in place, performance level, etc. 2. Develop reporting to monitor excessive asset maintenance, preventive maintenance needs and overall asset performance.	**Management Action Plans:** 1. In coordination with Information Resources, post Project Reboot, we will develop a project plan to improve the functionality of tracking within the PeopleSoft Maintenance Management Module to include asset tracking, maintenance work orders, warranty monitoring, and performance monitoring. Additionally, we will perform a cost/benefit analysis for PeopleSoft to determine if feasible to move into development. a. In the interim, while this action plan is in development, the Facilities Management team will work with Information Resources to populate the asset numbers into the existing functionality within the module so tracking can be improved. 2. As a part of the project plan, we will develop reporting to aid in analysis of operations to include excessive asset maintenance, historical and forecasted preventive maintenance and overall asset performance. **Action Plan Owners:** Vice President of Facilities Management and Interim Associate Vice President, Information Resources

Detailed Observations and Action Plans Matrix

Observation	Recommendation	Management Response
Without forecasting, review and reporting of frequency of each asset's maintenance and repair needs, there is an increased risk of excessive costs outweighing the benefit of the asset.		**Target Completion Date:** December 31, 2018 for development of the plan with anticipated implementation in calendar 2019.

Detailed Observations and Action Plans Matrix

Observation	Recommendation	Management Response
Risk Rating: Medium n **2. Improve the Work Order Tracking Process** Work orders are initiated and completed in PeopleSoft, however tracking and reporting is limited due to missing key elements within the system. - Work order data captured does not include asset ID number, estimated and actual time to complete and maintenance costs associated with the request. - Dashboards in Power BI report the status of work orders. However, there are no benchmarks established for ensuring optimal work order performance for expected resources and costs. Incomplete tracking of key information related to work orders increases the risk of inefficiencies, excessive costs and time and incomplete evaluation of equipment performance.	1. Establish performance expectations to estimate labor needs, time to complete and repair costs to add to each work order. 2. Establish the system functionality to link work orders to asset inventory to aid in reporting of equipment performance. 3. Establish work order monitoring procedures to evaluate equipment efficiency and labor performance.	**Management Action Plans:** 1. In conjunction with the project plan noted in #1 above, improve the functionality of tracking within the PeopleSoft Maintenance Management Module to include labor estimates and actual time to complete as well as other material costs associated with the work order. a. In the interim, while this project is in development, the Facilities Management team will develop benchmarks for work order budget resources that can be utilized in PeopleSoft 9.2. 2. As noted in #1 above, the functionality will be updated to link the work orders to the individual assets in inventory. 3. As a part of system implementation, the Facilities Management team will develop monitoring reporting and review procedures to routinely evaluate equipment efficiency and labor performance. **Action Plan Owners:** Vice President of Facilities Management and Interim Associate Vice President, Information Resources

Detailed Observations and Action Plans Matrix

Observation	Recommendation	Management Response
		Target Completion Date: 1. – 2. December 31, 2018 for development of the plan with anticipated implementation in calendar 2019. 3. November 2019 and dependent on anticipated implementation date.

Detailed Observations and Action Plans Matrix

Observation	Recommendation	Management Response
Risk Rating: Medium n 3. **Improve Segregation of Duties for Work Order Functions in the PeopleSoft Maintenance Management Module** Access to functions granted to certain users in the PeopleSoft Maintenance Management Module does not provide for proper segregation of duties. The following are examples: · Two technicians have the ability to create and assign work orders, move work orders to completed status after work is completed, and approve the work orders. This presents the risk that work orders could be created, work performed and approved without management oversight and authorization. · Other technicians have access to create and assign work orders, and move work orders to completed state. This could result in conflicting user roles in the work order process. Conflicting role access increases the risk of inaccurate or unauthorized transactions.	1. Coordinate with Business Administrative Systems to ensure excessive access granted to the two noted technicians is promptly removed and the required access level appropriate for their job function is assigned to them. 2. Review the access granted to the noted technicians to create and assign work orders and coordinate with Business Administrative Systems to limit their access to the minimum required for their job function. 3. Where user access to conflicting duties is needed, justify and document a compensating control to mitigate any risk that may arise. 4. Review the periodic security access report to ensure appropriate employee PeopleSoft access.	**Management Action Plans:** 1. We have coordinated with BAS to adjust the noted security access to remove the excessive security access. 2. We have coordinated with BAS to adjust the security access for creating and assigning work orders to only those that require the access based on their job function. 3. Going forward, as conflicting user access is identified, we will document the compensating controls. 4. We are working with BAS to determine who currently receives this report and get it routed to us for review. **Action Plan Owners:** Assistant Vice President, Hospital Facilities Maintenance and Operations **Target Completion Date:** 1. Completed 2. April 30, 2018 3. Ongoing 4. April 30, 2018

Detailed Observations and Action Plans Matrix

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Observation	Recommendation	Management Response
Risk Rating: Low n 4. **Establish Reporting Protocol to Ensure Inventory Records are Updated** The University Hospitals' asset inventory used for equipment maintenance is manually tracked in an Excel database, which increases the risk that individual assets and key asset information could be inadvertently updated or removed resulting in inaccurate reporting. · During 2017, both Zale and Clements Hospitals had new inventory items added and existing inventory items removed; however, the inventory listing was not updated to reflect the addition and removal of these assets. · The Excel tracking files can be accessed and edited by all employees on the Facilities team, increasing the risk of erroneous or unauthorized modifications. Manual tracking of assets and associated maintenance records increases the risk of inaccurate records and equipment failure resulting from incomplete maintenance.	1. Until the system development is completed, review and update the inventory listing periodically to ensure asset changes are correctly reflected. 2. During system development, identify the appropriate fields needed to capture required data for Joint Commission reporting. 3. Restrict the inventory Excel files by making the files password protected.	**Management Action Plans:** 1. As interim procedures until new system functionality is developed, we will include in our monthly review and update meetings with the Facilities managers, a step to review the asset inventory listing and identify any changes that are needed. 2. As a part of #1 above, include in project requirements the necessary fields for capturing required data for Joint Commission. 3. Add password protection to the Excel file used to track asset inventory and limit use of the password to Assistant Vice President and Managers. **Action Plan Owners:** Assistant Vice President, Hospital Facilities Maintenance and Operations **Target Completion Date:** 1. Completed 2. December 31, 2018 for development of the plan with anticipated implementation in calendar 2019. 3. Completed

Appendix A – Risk Classifications and Definitions

As you review each observation within the Detailed Observations and Action Plans Matrix of this report, please note that we have included a color-coded depiction as to the perceived degree of risk represented by each of the observations identified during our review. The following chart is intended to provide information with respect to the applicable definitions and terms utilized as part of our risk ranking process:

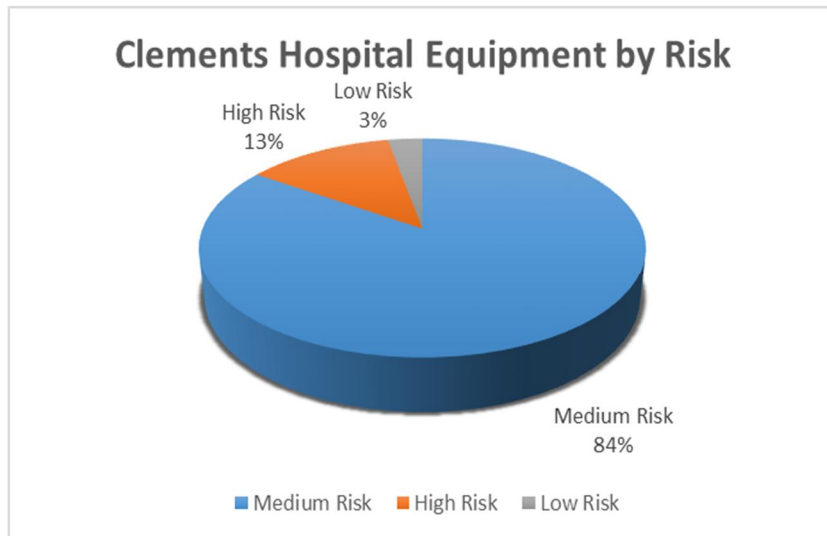|	Degree of Risk and Priority of Action	
Risk Definition- The degree of risk that exists based upon the identified deficiency combined with the subsequent priority of action to be undertaken by management.	**Priority**	An issue identified by Internal Audit that, if not addressed immediately, has a high probability to directly impact achievement of a strategic or important operational objective of a UT institution or the UT System as a whole.
	High	A finding identified by Internal Audit that is considered to have a high probability of adverse effects to the UT institution either as a whole or to a significant college/school/unit level. As such, immediate action is required by management in order to address the noted concern and reduce risks to the organization.
	Medium	A finding identified by Internal Audit that is considered to have a medium probability of adverse effects to the UT institution either as a whole or to a college/school/unit level. As such, action is needed by management in order to address the noted concern and reduce the risk to a more desirable level.
	Low	A finding identified by Internal Audit that is considered to have minimal probability of adverse effects to the UT institution either as a whole or to a college/school/unit level. As such, action should be taken by management to address the noted concern and reduce risks to the organization.

It is important to note that considerable professional judgment is required in determining the overall ratings presented on the subsequent pages of this report. Accordingly, others could evaluate the results differently and draw different conclusions.

It is also important to note that this report provides management with information about the condition of risks and internal controls at one point in time. Future changes in environmental factors and actions by personnel may significantly and adversely impact these risks and controls in ways that this report did not and cannot anticipate.

Appendix B – Maintenance and Repair Records

Following are graphs depicting equipment by hospital based on Joint Commission patient safety risk parameters. The assessment provides the current state of equipment for patient safety based on repair and preventive maintenance history utilizing the Joint Commission parameters.

Clements Hospital Equipment by Risk

- Low Risk 3%
- High Risk 13%
- Medium Risk 84%

Legend: ■ Medium Risk ■ High Risk ■ Low Risk

Zale Lipshy Hospital Equipment by Risk

- High Risk 2%
- Not rated 1%
- Low Risk 1%
- Medium Risk-Increased Maintenance Needs Due to Age 38%
- Medium Risk 58%

Legend:
- ■ Medium Risk
- ■ Medium Risk- Increased Maintenance Needs Due to Age
- ■ High Risk
- ■ Not rated

Graph 1: Clements University Hospital equipment is relatively new as the hospital opened in December 2014, so most of the assets are less than four years old.
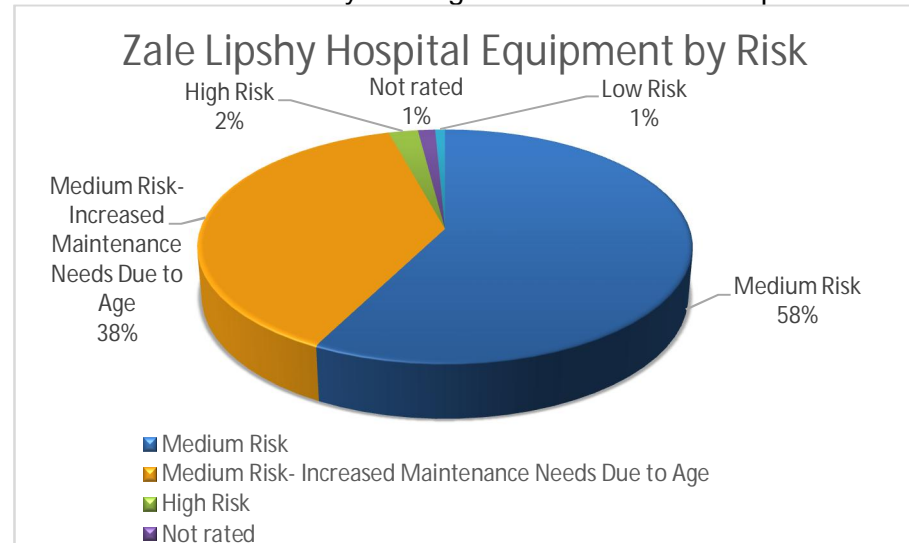
Graph 21: Zale Lipshy University Hospital equipment is primarily rated Medium risk and 38% of the assets in this category have increased maintenance needs due to age. Assets in this category are greater than 29 years old.

Appendix B – Maintenance and Repair Records

Assets Overview Process Map

Hospital Accounting

Capital Project approval by the appropriate levels based on $ amounts

Hospital Facilities Management

Hospital Manager receives and sets up the asset at the Hospital location [3]

Hospital Manager enters the Asset in the Excel Inventory Listing per Hospital [1]

Asset Needs Maintenance or/and Repairs?

A new asset needs to be purchased

Repairs → Work Order is Entered in PeopleSoft and Routed to a Technician

[4] Technician Completes the work and Closes Work Order in PeopleSoft

Supervisor reviews, Approves and Closes Work Order in PeopleSoft [2] → Work Order Records are retained in PeopleSoft

Maintenance

Each Appropriate Shop performs maintenance based on type of Asset

Technicians within each Shop completes, scans and prints maintenance records monthly

Supervisors/managers Approve the Maintenance Records Monthly [3] → Maintenance Records are retained in Paper Binders

Observations:
1. Frequency of Asset Maintenance and Repairs
2. Work Orders tracking Process
3. Inventory Records
4. PeopleSoft Maintenance Module Access Segregation of Duties