

AUDITOR'S REPORT

HARRIS HEALTH SYSTEM INFORMATION TECHNOLOGY CHANGE MANAGEMENT



September 26, 2013

**Barbara J. Schott, C.P.A.
Harris County Auditor**



BARBARA J. SCHOTT, C.P.A.
HARRIS COUNTY AUDITOR

September 26, 2013

Mr. David Lopez
President and Chief Executive Officer
Harris Health System
2525 Holly Hall
Houston, Texas 77054

RE: Harris Health System Information Technology Change Management for the six months ended January 31, 2013

The Audit Services Department performed procedures relative to the Harris Health System Information Technology (IT) Change Management engagement. The objective of the engagement was to evaluate IT's critical control procedures for implementing hardware, network, database, and software changes to Harris Health's IT environment. Our procedures included the following:

- Reviewed and discussed the following documents related to the Change Management process with IT Management:
 - IT Change Management Procedure and Appendices 1-5.
 - IT Change Management Guideline.
- Attended and observed meetings of the Change Advisory Board that approves changes and monitors adherence to Change Management controls and procedures.
- Compared IT's Change Management procedures to leading practices defined by the IT Infrastructure Library and discussed any significant differences with IT Management.
- Selectively tested hardware, network, database and software changes implemented during the six months ended January 31, 2013, for adherence to the following critical control procedures:
 - Compliance with documentation requirements.
 - Obtaining critical approvals and assertions (e.g. business unit completed user acceptance testing).
 - Communicating changes to affected users and executive sponsors.
 - Validating that Emergency Changes were approved in compliance with policy.
 - Disposing of failed and cancelled change requests.
 - Closing out implemented changes.

The engagement process included providing you with a combined engagement and scope letter and conducting an entrance and exit conference with your personnel. The purpose of the letters

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and conferences were to explain the process, identify areas of concern, describe the procedures to be performed, discuss issues identified during the engagement, and solicit suggestions for resolving the issues. A draft report was provided to you and your personnel for review.

The enclosed Auditor's Report presents the significant issues identified during our procedures, recommendations developed in conjunction with your staff, and any actions you have taken to implement the recommendations. Less significant issues and recommendations have been verbally communicated to your staff.

We appreciate the time and attention provided by you and your staff during this engagement.

Sincerely,



Barbara J. Schott
County Auditor

cc: Harris Health System Board of Managers
District Judges
County Judge Ed Emmett
Commissioners:
 R. Jack Cagle
 El Franco Lee
 Jack Morman
 Steve Radack
Mike Anderson
Vince Ryan
William J. Jackson

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OVERVIEW

Change Management procedures were developed to provide for the effective and efficient implementation of changes to Harris Health's information technology (IT) network, hardware, databases, or software. The procedures are also designed to prevent any changes implemented from causing unexpected disruptions to IT operations and to ensure that only properly authorized changes are implemented.

A Change Advisory Board (CAB) ensures compliance with Change Management procedures, supports the authorization of changes, and assists in the assessment, prioritization, and scheduling of changes. The CAB is comprised of IT executive and director level employees. In addition, the procedure classifies IT changes into three types with specific implementation requirements as follows:

- **Emergency Changes:** Changes to remediate an outage, an immediate threat of an outage, or to return a service to normal operations. Because of the need to quickly resolve these issues, the changes are implemented before approval by the CAB, and the supporting documentation is subsequently reviewed and approved by the CAB.
- **Standard Operating Procedures (SOP) Changes:** Relatively common changes (i.e. security update, virus protection updates) and considered low risk. Accordingly, less documentation is required for SOP Changes. Following approval by the CAB, the changes are implemented using an approved standard operating procedure.
- **Normal Changes:** Changes that are not Emergency or SOP Changes. Before the changes are implemented, documentation demonstrating that the Change Management procedure has been followed and that the change is ready to be implemented is submitted to the CAB for review and approval.

Documentation submitted to the CAB includes evidence of proper communication and coordination with user departments, testing of the changes, developing deployment and change reversal plans, review and approval of the IT project group leadership responsible for the change, and review and approval of the CAB member representing the affected IT service area. Unless a change is considered high risk or high impact, the documentation supporting the changes is sent to the CAB members by email to be approved online (Virtual CAB approval).

Virtual CAB approval requires at least three CAB members to approve the change online. Changes approved through the Virtual CAB are authorized to be implemented however a CAB member may place the approved change on the agenda for the weekly CAB meeting for additional discussion.

The CAB meets as a group each Wednesday to discuss scheduled changes that are considered high risk or high impact. Changes that are not approved through the Virtual CAB, or that are placed on the weekly CAB meeting agenda by a CAB member are also discussed. In addition, the CAB members review the Emergency Changes implemented since the previous CAB meeting to ensure compliance with procedures, and review any open changes that are classified as "on hold" or "failed" to determine the cause and consider next steps.

RESULTS

Harris Health's Change Management procedures ensure the effective and efficient implementation of network, hardware, databases, or software changes. The procedures include adequate controls to protect IT and the user departments from unexpected disruptions to vital IT resources. They are consistent with leading practices as defined by the IT Infrastructure Library, an industry recognized source of guidance for IT operations.

In addition, the function of and procedures followed by the CAB are effective in monitoring changes to ensure:

- Changes are adequately documented.
- Critical approvals and assertions are obtained.
- Changes are communicated and coordinated with affected users and executive sponsors.
- Emergency Changes are reviewed for compliance.
- Implemented changes are closed out.

Although Change Management procedures are functioning as designed, certain additional critical controls should be implemented as follows:

- The form (Acceptance Document) that is reviewed by the CAB before approving a change should be updated to include additional instructions for completion of the acceptance testing section to improve the consistency and completeness of information provided.
- Controls to ensure all Emergency Changes are reviewed and approved at the weekly CAB meetings should be implemented.
- The CAB should review on a test basis to ensure that the reasons for cancelled changes are documented and determine whether replacement change requests were initiated where required.

In addition, consideration should be given to adding a post-implementation review of changes to confirm they were successfully implemented and to identify opportunities for improvement.

These issues are discussed in more detail in the following Issues and Recommendations matrix.

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
Acceptance Document	<p>Before authorizing a change, the CAB reviews the Acceptance Document form that has been completed and approved by the business users and the IT project group leadership (directors and above). The Acceptance Document form is a multipurpose form which includes a section for acceptance testing. Changes that can be tested are tested in a test environment before they are implemented.</p>	<p>Specific instructions are not provided for completing the section of the Acceptance Document form relating to acceptance testing. The form currently includes a single “Testing” line with limited space and a checkbox without instructions on what information to include. As a result, although all forms were properly approved, information for acceptance testing was inconsistent and unclear on some of the forms reviewed.</p> <p>Not including instructions for completing the acceptance testing section increases the risk that the forms will be completed inconsistently and may not include information to allow the CAB to ensure testing was completed and the results of the testing</p>	<p>IT Management should update the Acceptance Document form to include instructions for completing the acceptance testing section. The instructions should include:</p> <ul style="list-style-type: none"> • An explanation of when it is appropriate to check the testing checkbox on the form. • Guidance on when it is necessary to include a detailed description of the testing performed. • Instructions on what information should be provided when testing cannot be conducted. 	<p>We agree with this recommendation. We have implemented the following changes to clarify when testing acceptance is required and how to complete the form. We consider this issue addressed.</p> <p>A. We have implemented a new distinct User Testing Acceptance Form and User Testing Exception Form with instructions on how to complete the form.</p> <p>B. The User Acceptance Testing form, includes a section to summarize the test scenarios, document the pass/fail status, add comments/notes, and the scenario testers.</p> <p>At minimum, the Business Contact/ customer, IT Service Owner, and IT Executive must sign and</p>

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
(Continued) Acceptance Document		were satisfactory, which could cause the CAB to authorize a change that has not been adequately tested.		<p>approve the Acceptance Testing form.</p> <p>C. The User Testing Exemption form is used to document the reason why a change cannot be tested. The Business Contact/customer, IT Service Owner, and IT Executive must sign and approve the Testing Exemption form.</p> <p>D. We have expanded the IT Change Management Procedure to include a section on requirements for attaching Testing Results and completing the User Testing Acceptance or User Testing Exemption form.</p> <p>E. IT Employees have received communication regarding these changes and have signed an acknowledgement form.</p> <p>F. CAB members have</p>

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
(Continued) Acceptance Document				also been instructed to check Changes to ensure the approved User Testing Acceptance Form or User Testing Exemption Form is attached prior to approving the Change.
Review of Emergency Changes	Emergency Changes are implemented to remediate an outage, an immediate threat of an outage, or to return a service to normal operations. After an Emergency Change has been implemented, Change Management procedures require Emergency Changes to be reviewed and approved at the weekly CAB meetings to verify compliance with procedures before the status is changed to closed.	Six of 150 (4.0%) Emergency Changes implemented during the six months ended January 31, 2013, were not reviewed and approved at the weekly CAB meetings. Not ensuring that all Emergency Changes are reviewed and approved results in non-compliance with Change Management procedures, which increases the risk of an unexpected disruption in Harris Health IT operations. In addition, opportunities for process improvements may not be identified.	IT Management should enforce procedures requiring review and approval of all Emergency Changes at the weekly CAB meetings. One method of enforcing the procedures would be to compare reports of recently closed Emergency Changes to those that have been reviewed and approved by the CAB.	We agree with this recommendation. We have implemented a new dashboard and Emergency Change review process. We consider this issue addressed. A. We have implemented a new Emergency Change Dashboard that provides information on who reviewed and closed the Emergency Change, a calendar view of when Emergency changes were review and closed, and detail of the Emergency Changes for the current and previous month. B. The Emergency Change Dashboard is reviewed and exceptions are

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
(Continued) Review of Emergency Changes				addressed during the Weekly CAB Meetings.
Disposition of Cancelled Change Requests	IT uses a service management system acquired from an outside vendor to control and monitor change requests. Once a request is initiated in the system, the CAB tracks the change until it is implemented or cancelled. Change requests are cancelled if the change is not approved, or if the change request is replaced by a new change request.	Documentation for 8 of 15 (53.3%) cancelled change requests reviewed did not explain why the change requests were cancelled, or indicate whether a replacement change request was initiated. Not documenting why changes are cancelled, or indicating whether they were replaced by a new change request could cause confusion and increase the risk of delayed implementation of needed changes.	IT Management should require documented explanations of why change requests are cancelled and whether a replacement change request was created, with the reference number for the new change request, so the CAB can determine that all needed changes are timely implemented.	We agree with this recommendation. We have implemented the following changes to improve cancelled Change information. We consider this issue addressed. A. We have expanded the IT Change Management Procedure to include information requirements for cancelled Changes that state: “The Change results must contain information about the reason for the Change Status. If the Change failed or was cancelled, the Change results must answer what happened, why it happened, and any next steps.

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
(Continued) Disposition of Cancelled Change Requests				<p>Cancelled changes must also reference the replacement Change.”</p> <p>IT Employees have received communication regarding these changes and have signed an acknowledgement form.</p>
Review of Cancelled Change Requests		<p>One change request that was implemented during the six months ended January 31, 2013, was not approved by the CAB before or after it was implemented because it was accidentally cancelled after it was implemented as an Emergency Change. As a result, Change Management procedure was not followed, which increases the risk of an unexpected disruption in Harris Health IT operations.</p>	<p>IT Management should provide list of cancelled changes for review by members at the weekly CAB meetings. Documentation for cancelled changes should be reviewed by the CAB on a test basis to ensure compliance with Change Management procedures.</p>	<p>We agree with this recommendation. We have implemented a new dashboard and Cancelled Change review process.</p> <p>A. We have implemented a new Cancelled Change Dashboard that lists Changes that were cancelled during the last 7 days, who cancelled the Change and the information associated with the cancellation.</p> <p>B. The Cancelled Change Dashboard is reviewed during the Weekly CAB Meeting.</p>

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
(Continued) Review of Cancelled Change Requests				C. The CAB assigns cancelled Changes missing the reason and the future Change #, if applicable, for update. D. The CAB tracks the status of these assignments during the Weekly CAB Meetings until the cancellation information complies with the IT Change Management Procedure.
Verification of Successful Changes	The Information Technology Information Library (ITIL) is an industry recognized source of guidance for IT operations. Harris Health IT considered ITIL guidance in establishing its Change Management procedures. According to its 2011 Pocket Guide, ITIL recommends a post-implementation review (PIR) of changes implemented to determine	Change Management procedures do not include performing of a PIR to determine if changes were successfully implemented and to identify opportunities for improvement. Without a PIR, there is an increased risk that failed changes will not be timely identified, or that opportunities for improvement will be	IT Management should consider adding a PIR to its Change Management procedures to confirm changes are successfully implemented and identify opportunities for improvement.	We agree with this recommendation and the following changes will be implemented within the next 3 months. A. We are implementing a new Change Results Survey by November 1, 2013 that will be sent to the Business Contact/ customer and IT Service Owner when Changes are closed. B. The survey will solicit

ISSUES AND RECOMMENDATIONS

Subject	Background	Issue	Recommendation	Management Response
<p>(Continued) Verification of Successful Changes</p>	<p>if the implementation was successful and identify opportunities for improvement.</p>	<p>missed.</p>		<p>confirmation that the Change has met its objectives, that customer and IT Service Owner, stakeholders, and users are satisfied with the results, and that there have been no unexpected side effects.</p> <p>C. Survey results will be tracked by the Change Manager and reviewed during the bi-weekly IT Executive Team Meeting.</p> <p>D. Surveys with positive results will be reviewed for potential to become a best practice. Survey with negative results will be reviewed to identify opportunities for improvement and course of action, if needed.</p>

RISK ASSESSMENT AND SUMMARY OF RECOMMENDATIONS

The risk matrix below presents the assessed level of risk or exposure identified during our procedures. Inherent risk relates to factors that because of their nature cannot be controlled or mitigated by management. Inherent risk includes factors such as legislative changes, number and dollar amount of transactions processed and/or complex nature of transactions. Control risks relate to factors that can be influenced or controlled by management. Controls such as policies and procedures, electronic or manual approvals, system security access, and separation of job responsibilities may be instituted by management in order to mitigate control risk. Control risk is assessed during the planning phase in order to establish the nature, timing, and extent of testing and at the conclusion of the engagement in order to incorporate actions taken to implement our recommendations. The overall risk considers a combination of inherent and control risks.

Inherent Risk:	Control Risk:		Overall Risk:
<input checked="" type="checkbox"/> High <input type="checkbox"/> Moderate <input type="checkbox"/> Low	Prior to Procedures	After Procedures	<input type="checkbox"/> High <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Low
	Adequate	Adequate	
Type of Procedures: Audit			
Purpose: To evaluate IT's critical control procedures for implementing hardware, network, database, and software changes to Harris Health's IT environment.			
Audit Recommendations:			
Priority Rating:	Audit Recommendations: Harris Health System		
1	Update the Acceptance Document form to include instructions for completing the acceptance testing section. The instructions should include: <ul style="list-style-type: none"> • An explanation of when it is appropriate to check the testing checkbox on the form. • Guidance on when it is necessary to include a detailed description of the testing performed. • Instructions on what information should be provided when testing cannot be conducted. 		
1	Enforce procedures requiring review and approval of all Emergency Changes at the weekly CAB meetings. One method of enforcing the procedures would be to compare reports of recently closed Emergency Changes to those that have been reviewed and approved by the CAB.		
1	Require documented explanations of why change requests are cancelled and whether a replacement change request was created with the reference number so the CAB to determine the needed changes are timely implemented.		
1	Provide list of cancelled changes for review by members at the weekly CAB meetings. Documentation for cancelled changes should be reviewed on a test basis to ensure compliance with Change Management procedures.		

2	Consider adding a PIR to its Change Management procedures to confirm changes are successfully implemented and identify opportunities for improvement.
Priority Rating	<ol style="list-style-type: none"> <li data-bbox="338 269 1894 326">1. Implement immediately (30 – 90 days) – Serious internal control deficiencies; or recommendations to reduce costs, maximize revenues, or improve internal controls that can be easily implemented. <li data-bbox="338 331 1894 388">2. Work towards implementing (6 – 18 months) – Less serious internal control deficiencies, or recommendations that can not be implemented immediately because of constraints imposed on the department (i.e., budgetary, technological constraints, etc.). <li data-bbox="338 393 1894 449">3. Implement in the future (two – three years) – Recommendations that should be implemented, but that can not be implemented until significant and/or uncontrolled events occur (i.e., legislative changes, buy and install major systems, requires third party cooperation, etc.).