

January 5, 2016

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Subject: *Epic Reporting
Project #2015-33*

Background

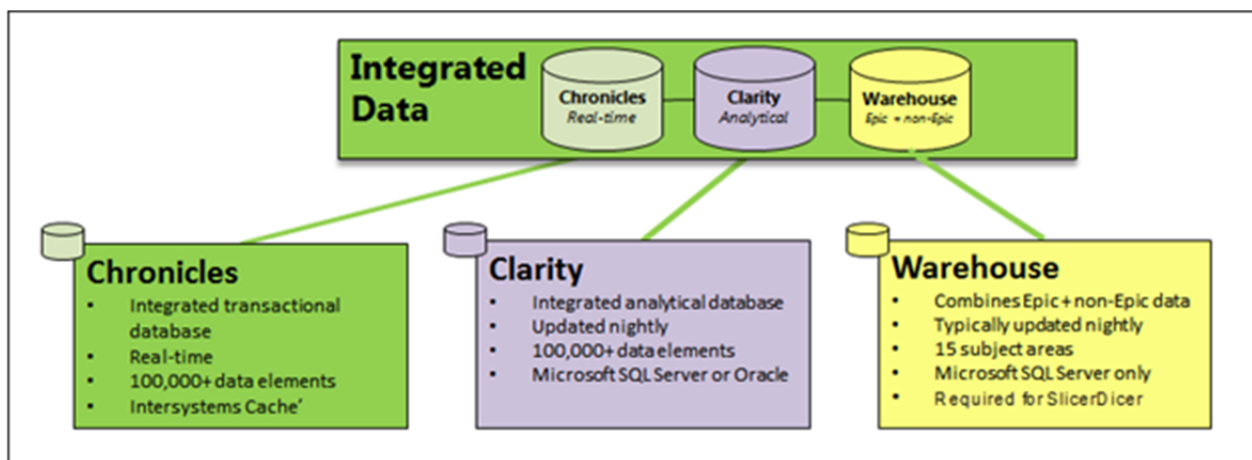
Audit & Management Advisory Services (AMAS) has completed an assessment of UC San Diego Health System (UCSDHS) Epic Reporting as an advisory service on the approved Fiscal Year 2014-15 audit plan. This report summarizes the results of our review.

The Epic Enterprise suite is the primary repository of clinical and revenue cycle data for UCSDHS. Epic reports are used within departments and clinical units to facilitate health care services, monitor patient visit statistics, and evaluate the effectiveness of resource utilization. Epic data is also used to support quality and incentive programs such as Meaningful Use, Delivery System Reform Incentive Payments (DSRIP), and others.

Epic Data Sources

There are three primary sources for Epic data:

- Chronicles – an integrated transactional database for real-time application data;
- Clarity – an analytical database housed on a dedicated server that contains data extracted from the production server nightly; and
- Warehouse – The Cogito Data Warehouse is part of the Epic Enterprise Intelligence suite that integrates Epic and non-Epic data in order to broaden the scope of analytical reporting. This warehouse is in development at UCSDHS and has not yet been deployed to end users.



Source: Epic Cogito ergo sum - Choosing the Right Tool

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Epic Reports

There are four types of Epic reports: Reporting Workbench, Application Reports, Dashboards, and Crystal Reports. The key characteristics of each type reporting tool is listed below.

Reporting Workbench	Application Reports	Dashboards (Radar)	Crystal Reports
Chronicles	Chronicles	Chronicles	Clarity
Real time reports for short time frames or operational needs on a day to day basis.	Real time data reports with more structured and less customization available than in a Reporting Workbench report.	A summary view of Reporting Workbench reports that highlight important metrics and/or favorite reports.	Complex and data intensive reports using historical data which can be run without impacting the production server.

Since Epic was implemented in October 2013, statistics for report usage at UCSDHS show significant increases in report users, unique reports, and report runs. The following table showed percentage increases from October 2013 to September 2015 for Crystal Reports and Workbench Reports.

Categories	Crystal Reports	Workbench Reports
Percent Increase in Number of Unique Users	93%	56%
Percent Increase in Number of Unique Reports	81%	55%
Percent Increase in Number of Report Runs	97%	113%

Source: Report Library Usage Statistics, RW Usage Statistics, and Crystal Usage Statistics. Period: October 2013 through September 2015.

To facilitate the growth in demand and provide for more effective data management, UCSDHS is working to implement the Cogito Data Warehouse. This analytical tool will allow decentralized users to work with real-time report results and use self-service queries to explore data. Through the Cogito Data Warehouse, management will have access to more comprehensive enterprise-wide reports, dashboards, and ad-hoc analysis for management and decision making.

Decision Support Team

Epic reporting needs are managed through the UCSDHS Decision Support (DS) Enterprise Reporting team. DS oversees the Clarity data server, monitors Clarity user access, supports other users, develops and modifies Epic reports, and manages report utilization resources. As of May 2015, there were a total of 83 Clarity users. A detailed breakdown of the user type is listed below.

User Type	Number of Users
Decision Support Team	18
Epic Team	8
Other Clarity Report users (decentralized departmental users)	21
External Consultants	11
Epic Consultants	3
System Server Accounts	22
Total	83

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DS is also developing a self-service reporting mechanism that could empower a different level of decentralized department user to meet the data needs. This reporting functionality would be in a separate environment, which would not access Clarity or Chronicles data directly, but would house many commonly used reports for department self-service reporting needs. This will increase user flexibility and data utilization. In addition to user security review and monitoring which should be conducted by DS, it is critical that the decentralized departmental users receive additional functional training in report writing tools to ensure accurate and effective report generation techniques.

Objective, Scope, and Procedures

The objective of our review was to provide input from an advisory services perspective on UCSDHS Epic reporting standards and governance. We completed the following procedures to achieve our objective:

- Obtained an understanding of Epic report platforms and report change management;
- Reviewed DS policies and procedures;
- Discussed Epic data reporting processes and user management with the DS Director and staff;
- Reviewed Clarity user orientation processes;
- Examined Clarity User Lists and user certification status to evaluate DS user monitoring and management;
- Reviewed Clarity report request, development, and distribution practices;
- Discussed processes for Epic report code maintenance and report decommissioning;
- Reviewed Epic report inventory and monitoring efforts; and
- Participated in Clinical Data Warehouse Update meetings.

Conclusion and Supporting Comments

Our review concluded that DS provided effective oversight of Epic reporting tools and processes, and led a well-managed Epic reporting function, particularly during system implementation and upgrades. DS oversight of Clarity access and reports was effective, as they monitored user certification and new version training status to ensure user knowledge and experience were updated with current Epic versions. They also effectively communicated with users via Epic Clarity Users' Group meetings and email communications, which shared the current status of Epic system improvements, Clarity coding changes, policies, and new initiatives. Further, DS developed or drafted policies and procedures to improve data access, resource utilization, and issue resolution procedures. We also noted that DS is continuously working with data warehouse upgrades, user expansion, and report security to meet the enterprise's growing and decentralized reporting needs.

We noted several opportunities for improvement in implementing best practices to further strengthen Epic reporting oversight processes. Executive sponsorship would assist in developing strategies to enhance system report management and data utilization, and support DS efforts and policy related to user access. With the support of a governance body, DS efforts to enforce policy for user access would be strengthened. Formalized processes for Epic report request,

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oversight, and decommissioning processes would further enhance report management and minimize risk of sensitive data exposure. Finally, an organized department website would be an effective tool to provide information such as department policies, procedures, process flows, report development and management processes, in a consistent manner. These opportunities are discussed further below, and summarized in *Attachment A*.

As report management becomes more complex and integrated with other systems, additional administrative staff resources would assist DS in future efforts related to Epic report management, and in deployment of new reporting tools and data sources to support evolving institutional reporting needs.

Epic Report Governance

Due to UCSDHS reorganization and senior management changes in the last two years, there has been limited executive management involvement in Epic reporting oversight and governance. Since the implementation of Epic, DS has managed Epic reporting access and processes in the absence of this formal executive sponsorship. During the Epic Revenue Cycle implementation period, DS has become expert in extracting data and preparing reports from the Epic system. Policies and procedures were developed or drafted to improve data source access, resource utilization, and issue resolution procedures. To ensure Clarity user's knowledge and experience, DS provided orientation guidelines and mentorship to the users. DS monitors user certification status and system upgrade training. Monthly email notifications and quarterly user group meetings share Epic system improvements, Clarity coding changes, policies, capacity usage, and new initiatives.

Executive governance for Epic reporting processes would provide senior leadership sponsorship and institutional support for DS efforts. As healthcare is becoming more dependent on information management to achieve clinical and quality of care standards, and as UCSDHS's Epic reporting demands increase, it is crucial to ensure a strategic leadership view of the institution's data and report management processes. Executive sponsorship would assist in defining report management strategy and formalizing governance for this function. An Epic report governance body could assist in engaging all key parties and promote the importance of Epic report quality throughout the organization. Best practices for Epic report governance would include the following key functions:

- Defining, approving, and communicating report strategies, policies, standards, procedures, and metrics;
- Tracking and enforcing report policies, standards, and procedures; and
- Sponsoring and overseeing the delivery of report management projects and services.

Policy Enforcement

DS policy 1.01, *Business Intelligence Access*, states that access to Clarity requires Epic training and certification in order to ensure appropriate Epic knowledge is obtained when accessing the database. Most Clarity users had training and certifications. However, four of 83 Clarity users (5%) were not in compliance with this policy. Lack of sufficient required knowledge by those

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generating reports could lead to inaccurate reporting, and inefficient database queries that can drain the system capacity and impede other report writers from completing their work.

As DS is planning to expand the decentralized departmental user base, it is critical to ensure user training and certification for the Epic application in order to provide reasonable assurance of accuracy in reporting, proper access security, and enhanced resource utilization. Executive sponsorship through a governance body could provide additional support to DS in enforcing these policies consistently.

Epic Report Development Processes

During our review, we noted opportunities for improvement in the development, organization, and maintenance of Epic reports. Some report requests were processed through an iShare - Change Management Request. Since the Epic implementation in 2013, this iShare site was used for all Epic request processes, including Epic report requests. As a result, the Epic report requests were not easily filtered out among all requests. In addition, some requests to DS for report development may be received by email or telephone. As a result, the DS staff would need to either download or enter the request to the project list, otherwise the iShare data was not able to provide a complete work list. This process required additional administrative tasks to monitor project effort.

As Epic report demand grows, a single process or system for tracking Epic report requests may be appropriate to streamline this process and enable efficient review and monitoring. Additional key fields could be added to the database as needed in order to standardize Epic report request and development processes and to enhance project monitoring tasks.

As a best practice, report development processes should include the following elements:

- *Standard report request processes* would ensure adequate and consistent information is collected and key data fields are included to fully capture requestor information, type of report, issues, area impacted;
- *Prioritization criteria* should be established and consistently used. DS currently uses the UCSDHS Issue Prioritization Guideline and management input;
- *Report quality checks* could be incorporated as part of periodic peer review process;
- *User acceptance sign-off* would confirm the report meets the user's needs;
- *Standard Report retention criteria* provides a record maintenance guideline including retiring report processes, and
- *A well-organized report library* should facilitate management review of current and valid Epic reports which can be easily searched.

Our review noted that some of these processes and criteria were obtained and shared with Clarity users during user meetings or emails. However, processes may not be viewed or shared publicly by all users. An organized department website could be an effective management tool to assist in providing department policies, procedures, process flows, report development and management processes, and links to other UCSDHS sites in a consistent manner.

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Managing Unused Reports

DS monitors Epic report utilization for Report Workbench and Crystal reports. Management reports¹ used by DS indicate that a large number of Epic Crystal Report were routinely generated but not being viewed. These report batches use up processing resource time, and the report output files use storage space. If Epic reports are not viewed or validated periodically, there is increased risk of unauthorized access to sensitive data. Therefore, it is important to decommission aged and unused reports when they are no longer needed or have been replaced by other reports.

To fully understand the impact of retiring a report, DS would need to know who can currently access the report, how they access it, and whether it is actually being generated and viewed. Epic tools are available to identify all affected users and associated linkable templates. These tools could be used in evaluating report usage and assisting in report decommissioning processes. A report retention policy, endorsed by a governance body, could also describe how long the report will be kept, what reports will be archived, and other factors concerning the retention of the reports. Currently, DS is working to assess unused Epic Crystal Reports.

Audit & Management Advisory Services appreciates the cooperation and assistance provided during the review.

UC policy requires that all draft 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 or destroy them at this time.

If you have any questions regarding this report, please call me at 534-3617.

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¹ Report Library Usage Statistics, Report Workbench Usage Statistics, and Crystal Usage Statistics

***Epic Reporting
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Attachment A***

Objective	Current Actions	Observations	Suggestions
Formalize Executive Sponsorship	<p>DS effectively manages report access and processes in the absence of formal executive sponsorship. Policies and procedures were developed or drafted to formalize user access, report requests, resource utilization, and report development.</p> <p>In addition to Epic report development and modification, DS provides guidelines and assistance to users. DS holds Epic User Group meetings and provides monthly updates on Epic changes and system updates to Clarity users.</p>	<p>The number of Epic reports has grown rapidly since Epic Enterprise implementation. DS also experienced increases in ad-hoc Epic report requests from external parties.</p> <p>Non-Epic data is expected to be included in order to provide analytical reporting at enterprise-wide level to support decision making processes.</p> <p>DS is planning to expand a self-service level user group in order to fulfill users' needs and improve data utilization.</p>	<p>UCSDHS should consider formalizing a governance committee to provide executive sponsorship in Epic reporting governance. This committee should approve and communicate Epic reporting strategy to the Epic community.</p> <p>This committee should include representatives from the application team and information system leadership, as well as business unit leadership, in order to provide a comprehensive view when defining and approving Epic reporting strategies and policies.</p>
Consistent policy enforcement	<p>DS has a policy regarding user certification and training required to access Clarity. DS also provides user orientation guidelines and mentorship; monitors user access and certification status; and manages database capacity utilization.</p>	<p>Four of 83 Clarity users (5%) were not be fully compliant with the DS policy regarding user's qualification and certification requirements. Lack of sufficient system knowledge may lead to inefficient database queries that drain the system capacity and impede other report writers from completing their work.</p>	<p>DS should enforce policies regarding Clarity user's qualification, certification, and performance requirements for external users. Executive sponsorship for this policy could help DS enforce policy consistently.</p>
Standardize Epic report development process	<p>Epic report requests may go through UCSDHS iShare Change Management Request process or communication with the DS staff directly.</p> <p>UCSDHS Prioritization Guidelines were adopted to classify risk level.</p>	<p>The UCSDHS iShare Change Management Request is used for all Epic requests. The Epic report requests are mixed with other Epic issues. There was no clear way to distinguish requests for Epic reports from these other issues.</p>	<p>DS should consider further standardizing report request, development, quality assurance, and maintenance processes to enable better visibility and oversight for these requests. A single process or system for tracking Epic report requests may be appropriate</p>

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Attachment A***

Objective	Current Actions	Observations	Suggestions
	<p>Management input was obtained in prioritizing project list. Project status was monitored accordingly.</p>	<p>Epic report project worksheets were created separately for review and monitoring.</p>	<p>In addition, a department website could provide users with information about key processes. This website could include information on:</p> <ul style="list-style-type: none"> • key department functions; • policies and procedures; • training and qualification for accessing the data warehouse; • report request processes; • report prioritization guidelines; • report quality checks; • user acceptance sign-off; • report retention guidelines; • report library; and • report retirement processes.
<p>Manage Report Inventory</p>	<p>Monthly Crystal Report Usage reports are run automatically and the output file stored in a shared drive. After review, this report is emailed to DS staff for follow up.</p> <p>DS focused on the top five reports by total run counts and plans to initiate a cleanup effort in the near future.</p> <p>Hundreds of Report Workbench reports were available in the report library.</p>	<p>DS noted that a large number of Epic Crystal reports were running routinely and were not being viewed. These batches use up processing resource time and the report output files take storage space.</p> <p>This situation could also apply to the Report Workbench reports. As a result, there is increased risk of unused reports available for improper use and unauthorized access.</p>	<p>DS should develop a consistent process for report review and retirement to minimize the risk of sensitive data exposure and to improve utilization of Clarity data resources.</p> <p>DS should consider establishing a report retention policy that describes how long the report will be kept, what reports will be archived, and other factors concerning the retention of the reports. Executive sponsorship for this policy could help DS enforce policy consistently.</p>