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Improve Patient Care and Operational Efficiencies with IBM Analytics

Healthcare providers are faced with growing demands to operate more efficiently, provide improved care to patients, and adhere to dynamic healthcare legislation.

Accountable Care, Health Information Exchange and Patient Readmissions are prominent themes in the world of U.S. healthcare providers.

The question is how does a provider leverage its data to meet these mandates and where does the provider start?

Turning challenges into opportunity: **The NES Healthcare Framework is purpose built to integrate clinical, operational and claims data into a centralized analytics platform**

Background

The Affordable Care Act (ACA) mandates that healthcare provider reimbursements be tied to quality metrics in accordance with the Accountable Care Organization (ACO) model. Compliance with the ACO model requires that providers have ready access to statistical information derived from their electronic medical records (EMR). In effect, compliance with the ACA requires that providers maintain data marts sourced from an EMR, or risk substantial loss of reimbursements.

The recent Supreme Court decision upholding the ACA has healthcare providers scrambling to develop or upgrade their clinical and financial data marts, and integrate them more closely with EMRs.

Accountable Care Organization (ACO)
Three core principles for the ACO model are:

1. Provider-led organizations with a strong base of primary care that are collectively accountable for quality and total per capita costs across the full continuum of care for a population of patients

2. Payments linked to quality improvements that also reduce overall costs

3. Reliable and progressively more sophisticated performance measurement, to support improvements and provide confidence that savings are achieved through improvements in care.

The key for providers in adhering to ACO principles is measurement of improvement – primarily, improvement in care and improvement in operational efficiency.[1]

Patient Readmissions
Patient Readmission is one metric that has come to the forefront in the ACO model and ACA compliance. Effective October 1, 2012, Medicare started fining hospitals that have high readmission rates of patients due to complications within 30 days of their discharge. The penalties for high readmission rates are one provision in the ACA healthcare law aimed at improving quality of care, operational efficiencies and reducing healthcare costs.

According to government estimates, about two-thirds of U.S. hospitals serving Medicare patients, representing some 2,200 facilities, will be assessed with penalties averaging approximately $125,000 per facility this coming year.[2] According to the ACA, the penalties associated with readmissions are expected to increase annually to a maximum of 3% of the total inpatient revenue paid by Medicare.

Importance of Information
Healthcare providers are generating data at an exponential rate. Sifting through massive amounts of information and having the ability to analyze data such as patient readmission rates is critical for a healthcare provider. Establishing a baseline of information from which to measure improvement is necessary to meeting government compliance mandates, e.g., ACO, and generally operating more efficiently as an organization.

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Case Study: Healthcare Analytics

NES designed and deployed an IBM analytics platform integrating clinical, financial and claims data

Challenges

- Aggregate fragmented data repositories into a central-ized, scalable analytics platform

- Prevent interruption of the existing data warehouse and decision- support operations

- Prepare provider for a large ACO analytics initiative

Design Parameters

- Scale to support provider's ACO ecosystem, span-ning across thousands of clinics serving thousands of patients daily

- Limit impact on Clinical Business applications when sourcing content

- Keep current decision-support processes running during new system deployment

- Establish a HIPAA compliant Data Warehouse

- Design a resilient, easy-to-support analytics interface and solution

Solution

- Assessed clinical business short- and long-term goals

- Developed Analytics roadmap that aligned with client's busi-ness goals

- Conducted Proof of Concept (POC) to demonstrate solution scalability

- Designed and implemented the IBM Netezza data ware-house architecture

- Created the data architecture and robust in-database data quality processes

- Mirrored real-time data from 3 EMR systems, 2 financial management systems, and 2 claims processing systems. These systems service over 100,000 patients weekly across 2000 clinics spanning 6 time zones

- Designed and integrated Clinical, Financial and Claims data marts enabling measured transition to an ACO.

- Integrated IBM Guardium Data Security to enforce HIPAA compliance

Results

- A Big Data platform to support robust informatics, research and clinical decision analytics ecosystem for the nation's largest private care delivery network.

- Elimination of complex ETL processes by mirroring data sources in Netezza. This eliminated performance impact on clinical and financial systems

- Significant reduction in expensive DBA support

- "Out of the box" HIPAA compliance reporting
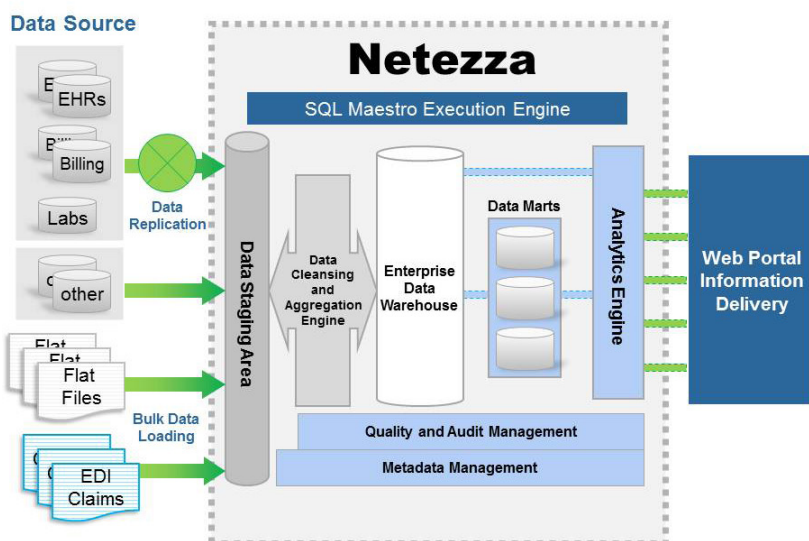
This diagram illustrates a comprehensive, multi-year data analytics initiative for the healthcare organization. The provider's long-term goal was to achieve a systematic, measured transition to becoming an ACO.

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Recommendations for Getting Started with Analytics

ACA compliance and establishing ACO improvement measurements can seem like an overwhelming process. However, small steps can achieve lasting, scalable results.

As an example, one healthcare provider initially had ambitions to establish an analytics framework in an effort to measure their transition to an ACO. To achieve this goal, they were considering an enterprise wide data governance project and technology implementation. NES advised the client to simplify the goals and take a more targeted approach.

The first step was to select just one area of the organization where they were currently unable to produce the necessary compliance metrics. The client chose to start with the emergency department where they were having difficulty with patient throughput – the time from admission to discharge - and with CMS Quality reporting. At this point, NES proposed an assessment to review the state of the data relating to the emergency department. The goal of this exercise was to establish the provider's readiness for analytics. We interviewed stakeholders in the business and on the clinical side of the organization to determine their analytics need. Following that, we conducted the exercise and reviewed things such as data quality, data integration, data models, business intelligence models, business intelligence interfaces and finally their data governance process.

Based on the needs assessment and revised goal, the next step for the NES team would be to map out a data integration and governance process to build a common source of reporting for the Emergency Department. Once acceptable data quality was determined and data sources were defined, the stage would be set for development of an architecture focused on emergency department patient analytics and reporting. Using IBM technologies, the proposed system could be implemented and successfully producing meaningful data in a short timeframe. This short-term solution for one department provides a longer-term analytics foundation that can then be grown, step by step, to develop an enterprise-wide analytics platform across the entire organization.

Summary

To begin the journey to analytics, healthcare providers need to first determine:

• What data is available

• The quality of that data

• Area of the organization should be targeted

• What is the agreed upon goal(s) of the project

Through **NES' Analytics Health Check** we can help answer these questions to determine a providers readiness for analytics. Once we have a clear understanding of the environment and goals, using thoughtful selection and the best analytics technologies, NES will develop an "Analytics Blueprint" specific to your organization. The approach will describe what it will take to get you from where you are today to where you want to be tomorrow. Choosing a scalable,flexible solution approach will allow you to leverage the architecture created for one department, and as priorities dictate, expand it across the entire organization.

To learn more about how NES can assist you on the road to analytics contact us at info@nesystems.com

This Cognos analytics dashboard[3] is another illustration of how a standardized data platform can help an organization to understand both "how are we doing?" and "what should we be doing?" It also provides a foundation for capturing information from multiple sources, across the entire enterprise, in an accurate, consistent fashion.

(1) ** McClellan M, McKethan AN, Lewis JL, Roski J, Fisher ES (2010). A National Strategy to Put Accountable Care Into Practice. 29. pp. 982=990. doi:10.1377/hlthaff.2010.0194. PMID 20439895.

(2)-USA Today

(3)Dashboard graphic:

http://www-935.ibm.com/services/au/gbs/bus/html/healthcare/pdf/ibm_cognos_white_paper_performance_management_in_healthcare.pdf, page 10

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