Clinical & Business Intelligence:
Data Management – A Foundation for Analytics

Data Governance

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Introduction

Healthcare is rapidly digitizing immense amounts of clinical, financial, and operational data. To perform analytics health systems need to integrate these data from a complex set of internal applications including inpatient and ambulatory EHRs, laboratory information systems, pharmacy systems, and ERP systems. Complicating this may be the need to pull in data from affiliated provider's EHR systems, payers, external laboratories, pharmacies, and benchmarking consortia. In such a complex environment it is important that good data governance practices are followed to ensure that data used to create analytic outputs, such as dashboards and scorecards, are well understood, trusted and accessible. Please refer to the other modules of the Data Management – A Foundation for Analytics series[1] for discussions on data integration, data enrichment and enhancement, and data storage.

The intended audience of this data governance module is executives, managers and data practitioners who are facing new or expanding data integration demands while trying to leverage data to drive clinical and business improvements. At its core data governance is a quality control discipline that puts business and clinical owners in charge of their data. It brings together key stakeholders to catalogue and build an inventory of data stores and key data elements. It utilizes data standards, data definitions and well-designed work flows to validate and ensure consistency of the data across the enterprise. A successful data governance program takes considerable time and effort to put in place and requires sustained effort across the organization.

Because of the vastness of the data across organizations, data governance should begin by focusing on data that are needed for monitoring and assessing the quality and performance of important organizational objectives. From a clinical perspective this could mean data such as diagnoses, procedures, orderables, providers, and service lines that drive regulatory reporting like the Joint

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[1] See http://www.himss.org/library/clinical-business-intelligence/related-links?navItemNumber=13236

Commission's Core Measures. From a financial perspective this can mean data in charge masters, or data concepts such as what is an admission or a discharge, how an episode is defined, and how are lengths of stay calculated.

Governance focuses on managing these data and data concepts from their initial capture in a transactional system such as an EHR or laboratory system, through its aggregation into reporting data stores and warehouses, and finally through its disposal and archiving. The intent is to make sure that each step of the data management process is controlled and the effects of processes on the data are well documented and understood. Key types of data that should be managed by the data governance function are:

- Transactional data including both structured, semi structured and unstructured data
- Reference and Master Data
- Medical terminologies and vocabularies
- Data stored in data marts and data warehouses
- Information on artifacts such as reports and dashboards

Organizations initiate data governance efforts for a variety of reasons. A common scenario that gets at the heart of the need for data governance is when the information and metrics from one report / dashboard do not agree with that from another report / dashboard. The organization may spend considerable time tracking down the discrepancies only to find out that they were driven by either the timing of when the information was produced or that the definitions of key fields such as patient type or the meaning of an encounter differed. This can lead to an environment where staff do not trust their information or believe that their information is better than others. Data governance seeks to put in place better data management processes and practices so that these types of situations are minimized and the organization can trust the information used to drive improvements in processes, quality, financial performance and decision making.

Data Quality

Data quality is a main emphasis within data governance. The quality of data can be measured across a number of dimensions: completeness, accuracy, timeliness, syntactical correctness (e.g., data are captured and stored in a well-conceived data model), and semantic correctness (e.g., data are encoded using proper healthcare terms – see Terminology Services in the *Data Enrichment / Enhancement* module). Healthcare data is inherently complex and multiple facets of data must be considered in a governance program.

- **Data definitions** – making sure that data are well understood across the organization

- **Data lineage** – documenting how data are created, transformed and intermingled
- **Data accuracy** – making sure that data accurately reflect the clinical and business transactions and activities of the organization
- **Data consistency** – making sure that data within and across data stores provide a consistent representation facts
- **Data accessibility / availability**– making sure those who need data to perform their job function have access to relevant data
- **Data security** – making sure that data access is restricted to those who have a legitimate and legally allowable need for the data

Implementing Data Governance

Because data governance is a shared responsibility across the organization, it is important that it have sponsorship from senior leaders across the organization. These leaders should make available resources in their parts of the organization needed to participate in the data governance process. This may be particularly difficult because oftentimes these resources may be some of those who are most knowledgeable on how data are captured, integrated, enriched and stored. Key roles in the process include:

- **Executive Decision Makers**
  Executive Decision Makers are executives from across the clinical, business and technical areas. Many times these individuals are part of an executive data governance committee that oversees organization-wide data governance activities. A committee may:
  - Identify specific strategic and analytic goals and the data assets needed to support them
  - Provide direction on data ownership and stewardship
  - Make available resources in their organization to perform data governance activities
  - Approve investments in data and analytic capabilities

- **Data Stewards**
  Data Stewards are staff in the clinical and business areas that have a deep understanding of how data are created and used. Examples of staff who may serve in this role are lead nurses who know how clinical data are captured and billing department staff who understand how the coding process works. These stewards:
  - Develop consistent definitions and interpretations of data and data concepts so that information can be consistently interpreted
  - Document where data originates and the processes that act on it
  - Help ensure data quality, accuracy, consistency, timeliness, validity, and completeness

    - Define appropriate controls to address data security and privacy requirements

- **Data Advocates**
  Data Advocates support the process of using data to drive organization improvement. They include IT staff who ensure access to data and analysts who use data to drive improvements across the organization. These staff:
    - Ensure that data and information can easily be accessed
    - Help the organization use data in reporting and analytical processes
    - Help instill a data driven culture across the organization

In setting up a data governance function, certain processes, technologies, and organizational structures need to be put in place to help manage data across the organization. Key items that must be included within this data governance infrastructure are:

- **Standards** for defining
    - Data definitions
    - Taxonomies
    - Master reference data
    - Enterprise data model

- **Processes** for managing
    - Data definitions
    - Data quality
    - Data change management
    - Data access

- **Organizational responsibilities**
    - Data governance oversight
    - Roles and responsibilities
    - Planning and prioritization
    - Training
    - Data Stewards
    - Data Custodians

- **Technologies** for managing
    - Data dictionaries (sometimes called a metadata repository)
    - Master Data Management (MDM) tools
    - Data access and discovery tools
    - Data manipulation tools

- Data integration tools

Additional Resources

Links to more information on data governance:

- The Data Governance Institute
  http://www.datagovernance.com
- The Data Governance Society
  http://datagovernancesociety.org
- The Data Governance and Stewardship Community of Practice (DGS-COP)
  http://www.datastewardship.com
- Data Governance Professionals Organization (DGPO)
  http://www.dgpo.org
- Enterprise Information Management Institute
  http://www.eiminstitute.org
- Harris J, Davenport T. Competing on Analytics: The New Science of Winning. *Harvard Business School Publishing Corporation*. 2007. p. 240. ISBN 1-4221-0332-3.

For More Information

Organizations beginning their work efforts in healthcare data management are also advised to seek out other modules in the *Clinical & Business Intelligence: Data Management – A Foundation for Analytics* series:

- Data Integration
- Data Enrichment / Enhancement
- Data Storage

The series is available in the Resources and Tools section[2] of the HIMSS Clinical & Business Intelligence Resource Library.

[2] See http://www.himss.org/library/clinical-business-intelligence/related-links?navItemNumber=13236

Task Force Contributors

This paper is a product of the HIMSS Clinical & Business Intelligence Information Management and Data Technology Task Force. Its contributors include:

Task Force Chair

David Dobbs, PMP
maxIT-VCS, a SAIC company

Task Force Contributors

David Dobbs, PMP – *team lead*
maxIT-VCS, a SAIC company

Theresa Burkhart, MS, MHA, FACHE
Rush Health

Jason Oliveira, MBA
Recombinant By Deloitte

John Sharp, MSSA, PMP, FHIMSS
Cleveland Clinic

HIMSS Staff

Shelley Price, MS, FHIMSS
HIMSS

Nancy Devlin
HIMSS