Data Quality Management Model (1998) - Retired

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Data is driving more and more healthcare industry decision making. This is evidenced by the many initiatives to capture outcome data, such as the:

- Joint Commission on Accreditation of Healthcare Organization's ORYX
- proposed home health data set known as Outcomes and Assessment Information Set (OASIS)
- Minimum Data Set (MDS) for long term care
- National Committee for Quality Assurance's (NCQA) Health Plan Employer Data and Information Set (HEDIS)

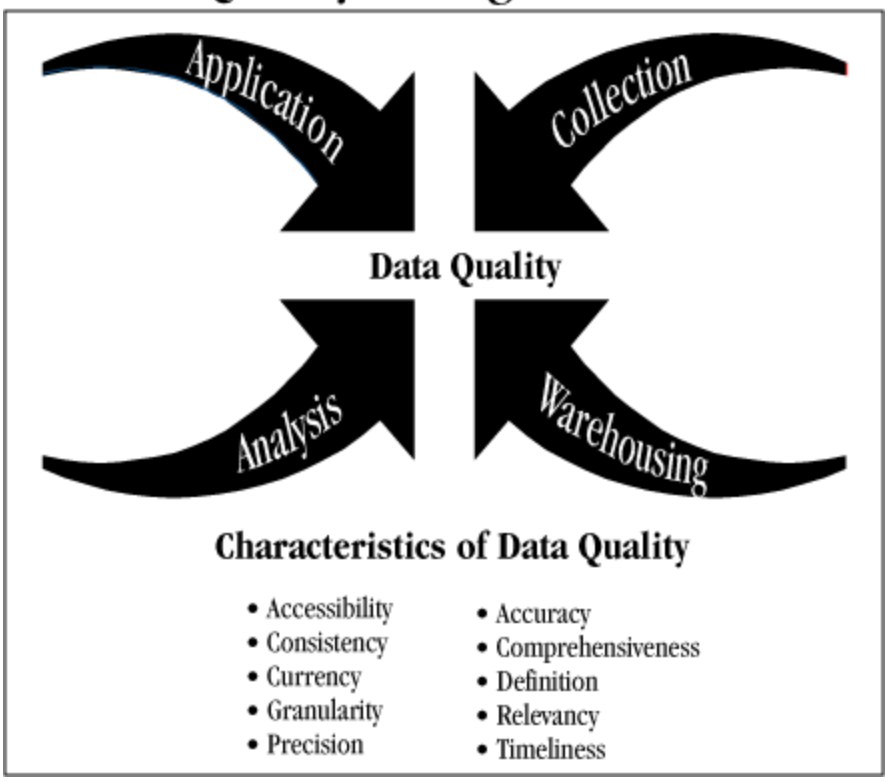
This data will be used within facilities to monitor performance improvement efforts and to improve outcomes. In addition, it will be used comparatively among facilities as benchmarks.

These data sets have one thing in common: They draw on data as raw material for research and comparing patients and institutions with one another. Consequently, to ensure the data's quality, organizations must not only invest in the technology that derives the information but in the people with the skills to manage it as well.

The quality of data is the outcome of data quality management (DQM). DQM functions involve continuous quality improvement for data quality throughout the enterprise and include data application, collection, analysis, and warehousing. DQM skills and roles are not new to HIM professionals.

To illustrate them, the DQM model was developed. It includes a graphic of the DQM domains as they relate to the characteristics of data integrity and examples of each characteristic within each domain. The model is generic and adaptable to any care setting and for any application. It is a tool or a model for HIM professionals to transition into organization or entity-wide DQM roles.

Data Quality Management Model



Application -- The purpose for which the data are collected.

Collection -- The processes by which data elements are accumulated.

Warehousing -- Processes and systems used to archive data and data journals.

Analysis -- The process of translating data into information utilized for an application.

Characteristic	Application	Collection	Warehousing	Analysis
Data Accuracy Data are the correct values and are valid.	To facilitate accuracy, determine the application's purpose, the question to be answered, or the aim for collecting the data element.	Ensuring accuracy involves appropriate education and training and timely and appropriate communication of data definitions to those who collect data. For example, data accuracy will help ensure that if a patient's sex is female, it is accurately recorded as female and not male.	To warehouse data, appropriate edits should be in place to ensure accuracy. For example, error reports should be generated for inconsistent values such as a diagnosis inappropriate for age or gender. Exception or error reports should be generated and corrections should be made.	To accurately analyze data, ensure that the algorithms, formulas, and translation systems are correct. For example, ensure that the encoder assigns correct codes and that the appropriate DRG is assigned for the codes entered. Also, ensure that each record or entry within the database is correct.

Data Accessibility Data items should be easily obtainable and legal to collect.	The application and legal, financial, process, and other boundaries determine which data to collect. Ensure that collected data are legal to collect for the application. For example, recording the age and race in medical records may be appropriate. However, it may be illegal to collect this information in human resources departments.	When developing the data collection instrument, explore methods to access needed data and ensure that the best, least costly method is selected. The amount of accessible data may be increased through system interfaces and integration of systems. For example, the best and easiest method to obtain demographic information may be to obtain it from an existing system. Another method may be to assign data collection by the expertise of each team member. For example, the admission staff collects demographic data, the nursing staff collects symptoms, and the HIM staff assigns codes. Team members should be assigned accordingly.	Technology and hardware impact accessibility. Establish data ownership and guidelines for who may access data and/or systems. Inventory data to facilitate access.	Access to complete, current data will better ensure accurate analysis. Otherwise results and conclusions may be inaccurate or inappropriate. For example, use of the Medicare case mix index (CMI) alone does not accurately reflect total hospital CMI. Consequently, strategic planning based solely on Medicare CMI may not be appropriate.
Data Comprehensiveness All required data items are included. Ensure that the entire scope of the data is collected and document intentional limitations.	Clarify how the data will be used and identify end-users to ensure complete data are collected for the application. Include a problem statement and cost-benefit or impact study when	Cost-effective comprehensive data collection may be achieved via interface to or download from other automated systems. Data definition and data precision	Warehousing includes managing relationships of data owners, data collectors, and data end-users to ensure that all are aware of the available data in the inventory and accessible systems. This also helps to	Ensure that all pertinent data impacting the application are analyzed in concert.

	collected data are increased. For example, in addition to outcome it may be important to gather data that impact outcomes.	impact comprehensive data collection (see these characteristics below).	reduce redundant data collection.	
Data Consistency The value of the data should be reliable and the same across applications.	Data are consistent when the value of the data is the same across applications and systems such as, the patient's medical record number. In addition, related data items should agree. For example, data are inconsistent when it is documented that a male patient has had a hysterectomy.	The use of data definitions, extensive training, standardized data collection (procedures, rules, edits, and process) and integrated/interfaced systems facilitate consistency.	Warehousing employs edits or conversion tables to ensure consistency. Coordinate edits and tables with data definition changes or data definition differences across systems. Document edits and tables.	Analyze data under reproducible circumstances by using standard formulas, scientific equations, variance calculations, and other methods. Compare "apples to apples."
Data Currency The data should be up-to-date. A datum value is up-to-date if it is current for a specific point in time. It is outdated if it was current at some preceding time yet incorrect at a later time.	The appropriateness or value of an application changes over time. For example, traditional quality assurance applications are gradually being replaced by those with the more current application of performance improvement.	Data definitions change or are modified over time. These should be documented so that current and future users know what the data mean. These changes should be communicated in a timely manner to those collecting data and to the end-users.	To ensure current data are available, warehousing involves continually updating systems, tables, and databases. The dates of warehousing events should be documented.	The availability of current data impacts the analysis of data. For example, to study the incidence of diseases or procedures, ICD-9-CM codes may be used. Coding practices or the actual code for a disease or procedures may change over time. This should be taken into consideration when analyzing trends.
Data Definition	The application's purpose, the question to be	Clear, concise data definitions facilitate	Warehousing includes archiving documentation and	For appropriate analysis, display data needs to

Clear definitions should be provided so that current and future data users will know what the data mean. Each data element should have clear meaning and acceptable values.	answered, or the aim for collecting the data element must be clarified to ensure appropriate and complete data definitions.	accurate data collection. For example, the definition of patient disposition may be "the patient's anticipated location or status following release or discharge." Acceptable values for this data element should also be defined. The instrument of collection should include data definitions and ensure that data integrity characteristics are managed.	data. Consequently, data ownership documentation and definitions should be maintained over time. Inventory maintenance activities (purging, updates, and others), purpose for collecting data, collection policies, information management policies, and data sources should be maintained over time also.	reflect the purpose for which the data were collected. This is defined by the application. Appropriate comparisons, relationships, and linkages need to be shown.
Data Granularity The attributes and values of data should be defined at the correct level of detail.	A single application may require varying levels of detail or granularity. For example, census statistics may be utilized daily, weekly, or monthly depending upon the application. Census is needed daily to ensure adequate staffing and food service. However, the monthly trend is needed for long-range planning.	Collect data at the appropriate level of detail or granularity. For example, the temperature of 100° may be recorded. The granularity for recording outdoor temperatures is different from recording patient temperatures. If patient Jane Doe's temperature is 100°, does that mean 99.6° or 100.4°? Appropriate granularity for this application dictates that the data need to be recorded to the first decimal point while appropriate granularity for recording outdoor temperatures may not require it.	Warehouse data at the appropriate level of detail or granularity. For example, exception or error reports reflect granularity based on the application. A spike (exception) in the daily census may show little or no impact on the month-to-date or monthly reports.	Appropriate analysis reflects the level of detail or granularity of the data collected. For example, a spike (exception) in the daily census resulting in immediate action to ensure adequate food service and staffing may have had no impact on analysis of the census for long-range planning.

Data Precision Data values should be just large enough to support the application or process.	The application's purpose, the question to be answered, or the aim for collecting the data element must be clarified to ensure data precision.	To collect data precise enough for the application, define acceptable values or value ranges for each data item. For example, limit values for gender to male, female, and unknown; or collect information by age ranges.		
Data Relevancy The data are meaningful to the performance of the process or application for which they are collected.	The application's purpose, the question to be answered, or the aim for collecting the data element must be clarified to ensure relevant data.	To better ensure relevancy, complete a pilot of the data collection instrument to validate its use. A "parallel" test may also be appropriate, completing the new or revised instrument and the current process simultaneously. Communicate results to those collecting data and to the end-users. Facilitate or negotiate changes as needed across disciplines or users.	Establish appropriate retention schedules to ensure availability of relevant data. Relevancy is defined by the application.	For appropriate analysis, display data to reflect the purpose for which the data were collected. This is defined by the application. Show appropriate comparisons, relationships, and linkages.
Data Timeliness Timeliness is determined by how the data are being used and their context.	Timeliness is defined by the application. For example, patient census is needed daily to provide sufficient day-to-day operations staffing, such as nursing and food service. How-ever, annual or monthly patient census data are needed for the	Timely data collection is a function of the process and collection instrument.	Warehousing ensures that data are available per information management policy and retention schedules.	Timely data analysis allows for the initiation of action to avoid adverse impacts. For some applications, timely may be seconds. For others it may be years.

	facilityís strategic planning.			

Related AHIMA Practice Briefs

- Designing a Data Collection Process (May 1998)
- A Checklist to Assess Data Quality Management Efforts (March 1998)
- Maintenance of Master Patient (Person) Index (MPI) -- Single Site or Enterprise (October 1997)
- Merging Master Patient (Person) Indexes (MPI) (September 1997)
- Master Patient (Person) Index (MPI) -- Recommended Core Data Elements (July/August 1997)
- Developing Information Capture Tools (March 1997)
- Data Quality (February 1996)

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Reference

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