NATIONAL ASSOCIATION OF Community Health Centers

rchn community health foundation

RSM McGladrey

Data Warehousing Part 1:
What is a Data Warehouse and How Your Organization Can Benefit

Presented by:

David Hartzband, D.Sc.
Director, Technology Research
RCHN Community Health Foundation

Matthew Grob, CPHIMS, FHIMSS
Director & Practice Leader, Health IT
RSM McGladrey

NACHC FOM-IT Conference
November 11, 2009

Agenda

- What Is A Data Warehouse
- Usefulness of a Data Warehouse
- What Should We Measure?
- Components of a Data Warehouse
- Planning for a Data Warehouse
- Questions

A Data Warehouse . . .

- Supports strategic planning and quality management;
- Fosters improved outcomes for patients, populations and provider organizations;
- Enables public health initiatives; and
- Permits health care providers to influence policy and payment reforms.

What is a Data Warehouse?

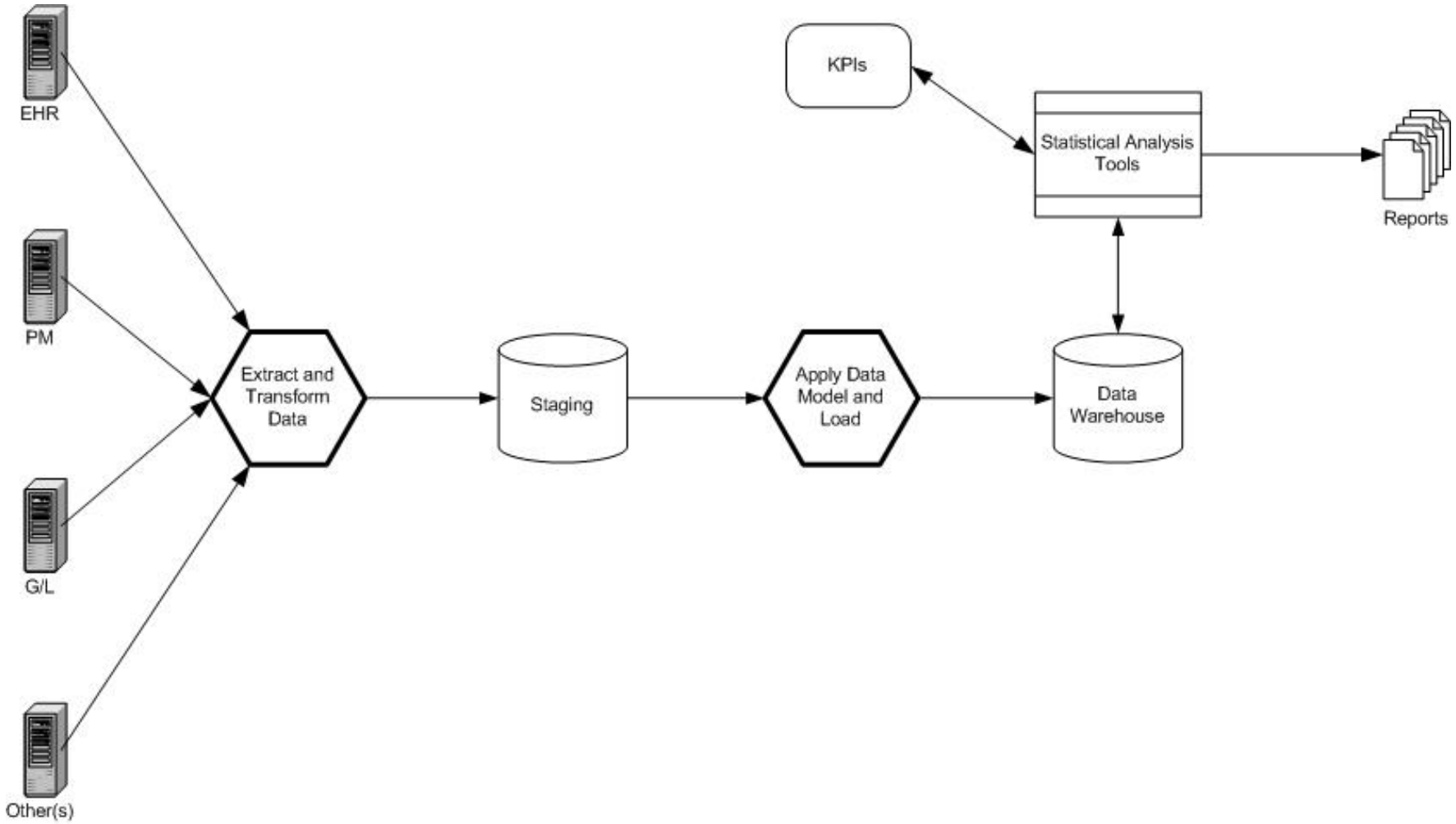
A data warehouse is an extract of an organization's data — often drawn from multiple sources — to facilitate analysis, reporting and strategic decision making. It contains only alpha-numeric data, not documents or other types of content.

The data is stored separately from the organization's primary applications and databases such as practice management systems and electronic health records. The data is transformed to match a uniform data model, cleansed of duplicates and inaccuracies, and is extracted with business intelligence and reporting tools. A data warehouse contains the entire scope of data and can be used for both very general and very specific analysis and reporting

What is a Data Warehouse (cont'd)

- Individual systems such as PM and EHR are transactional in nature.
- Such systems may have robust reporting capabilities, but do not support executive and strategic decision support;
- A Data Warehouse is similar in concept, but different from Business Intelligence applications;
- A Data Warehouse integrates and normalizes data from multiple disparate sources and adds the element of a longitudinal view over time.

Data Warehouse – Simple Model



RSM McGladrey

rchn community health foundation

"And while my plan may lack coherence, it makes up for it in the exhilarating sensation of velocity and momentum created by all of these cool little arrows!"

RSM McGladrey

rchn community health foundation

Usefulness of a Data Warehouse

Data warehouses are generally most useful to a community health center within the context of participation in a larger organization such as a HCCN, large multi-site health center, or PCA. This is both because the fixed costs of establishing a warehouse when shared across a group of providers allows each to achieve economies of scale, and because the volume of data that can be collected and used for trending and comparison is that much greater. Aggregate provider warehouses are also important at the patient-specific level because a particular patient may be seen in multiple participating centers.

It is the opportunity to integrate and normalize data from multiple disparate sources, and to apply analytic tools and processes that leads to the usefulness of a data warehouse.

Usefulness for the Patient

- Medical Informatics: the scientific discipline that determines what data is useful and necessary for healthcare practice, education, and research.
- Chronic Disease Management: knowing not only the patient's personal history, but how other patients with similar characteristics respond to a particular therapy or treatment protocol.
- Continuous Feedback Loop: a data repository continuously and repeatedly updated as new information becomes available.

Usefulness for the Population

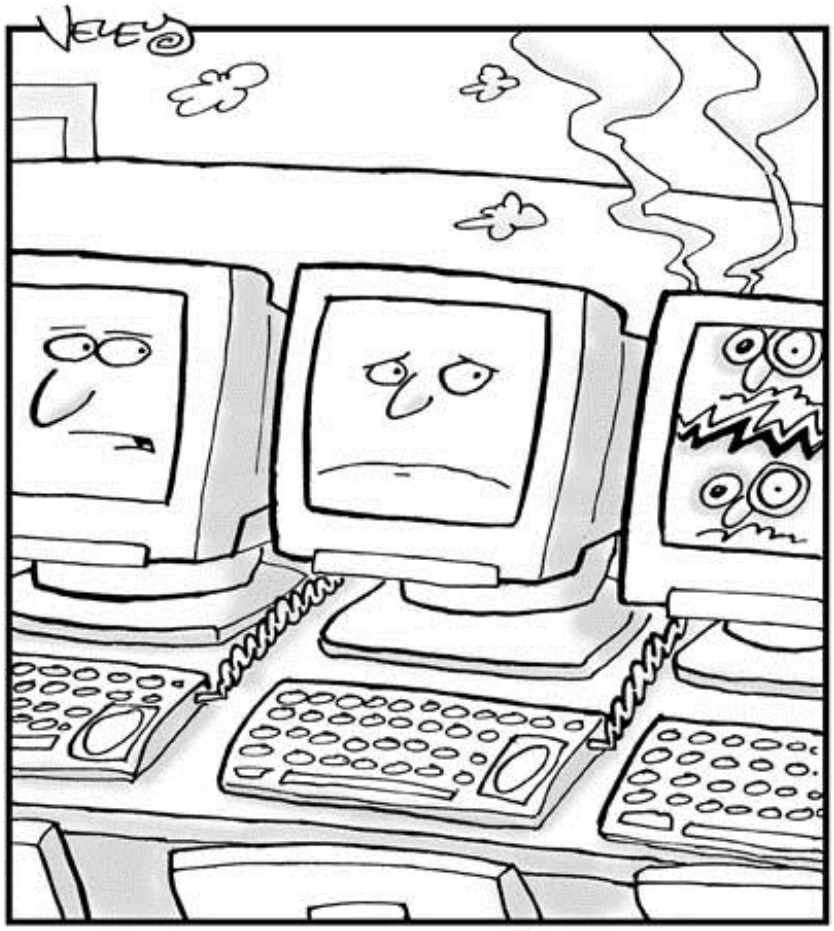
- Determine if screening initiatives and preventive care measures are working.
- Focus on specific population groups and/or providers to monitor chronic disease management.
- Support bio-surveillance efforts through the tracking and trending of diagnoses and antibiotic prescribing.
- Retrospective population focused analysis:
  - Are the demographics of the health center or the community changing?
  - Are our patients moving or being displaced?
  - Are there environmental factors linked to a specific geographic location that are impacting our patient populations?

Usefulness for the Provider

- Identify best practices in the treatment of a chronic condition:
  - Which providers have patients with better outcomes?
  - Which providers may need reinforcement based on the less than optimal outcomes of their particular patients?
- Which providers are achieving clinical goals?
- Which patients are adhering to treatment plans and medication compliance?
- Identify opportunities that may exist to improve care and outcomes.
- Foster the “collegial competition” that many providers engage in when data and information are transparent, thus improving outcomes.
- Help satisfy the goals of pay-for-performance initiatives.

Usefulness for the Organization

- Use information to gain knowledge about an organization, how it is operating, and how to improve the decision making processes.
- Develop benchmarks to determine how individual centers within a given HCCN or PCA are performing and to establish standards against which they can be measured.
- Plan for operational needs such as space, supplies, and human resources.
- Provide insight for financial modeling.
- Demonstrate performance information when negotiating reimbursement levels.
- Enhance reporting opportunities for internal management purposes as well as for grant and other regulatory requirements.
- Provide information of use to quality information organizations.
- Aid in fiscal management and projections.



"It's one of the harsh realities of life, Harry:
Bad information happens to good computers.
Get used to it."

RSM McGladrey

rchn community health foundation

What Should We Measure?

Key Performance Indicators (KPI) are core measures that decision makers can use to gauge the performance of the health care enterprise in clinical and financial areas. In addition to a clear understanding of the processes in your organization, formulating KPIs requires clear goals and performance requirements for each process. Quantitative and qualitative measures of process outcomes must then be compared with organizational goals and serve as the basis for adjusting processes and resources. Such goals should be SMART – Specific, Measureable, Achievable, Realistic and Timely.

Adapted from Developing a Data Warehouse for the Healthcare Enterprise
Bryan Bergeron, MD Editor

Sample KPIs

- Wait times (100% Scheduled, 100% Open Access, Hybrid)
- Visit lengths
- Procedure time
- Cancellation rates
- Pharmacy days in inventory and out of stock rate
- Inventory utilization and turnover
- Lab, Radiology, Consult utilization and report turnaround times
- Employee cost
- Staff turnover
- Sick, PTO, O/T rates and costs, including by relationship (e.g. O/T related to Sick and PTO)
- Budget variance
- Revenue generation/collection by department/provider
- Cost of services

It Doesn’t Have To Be Big or Expensive

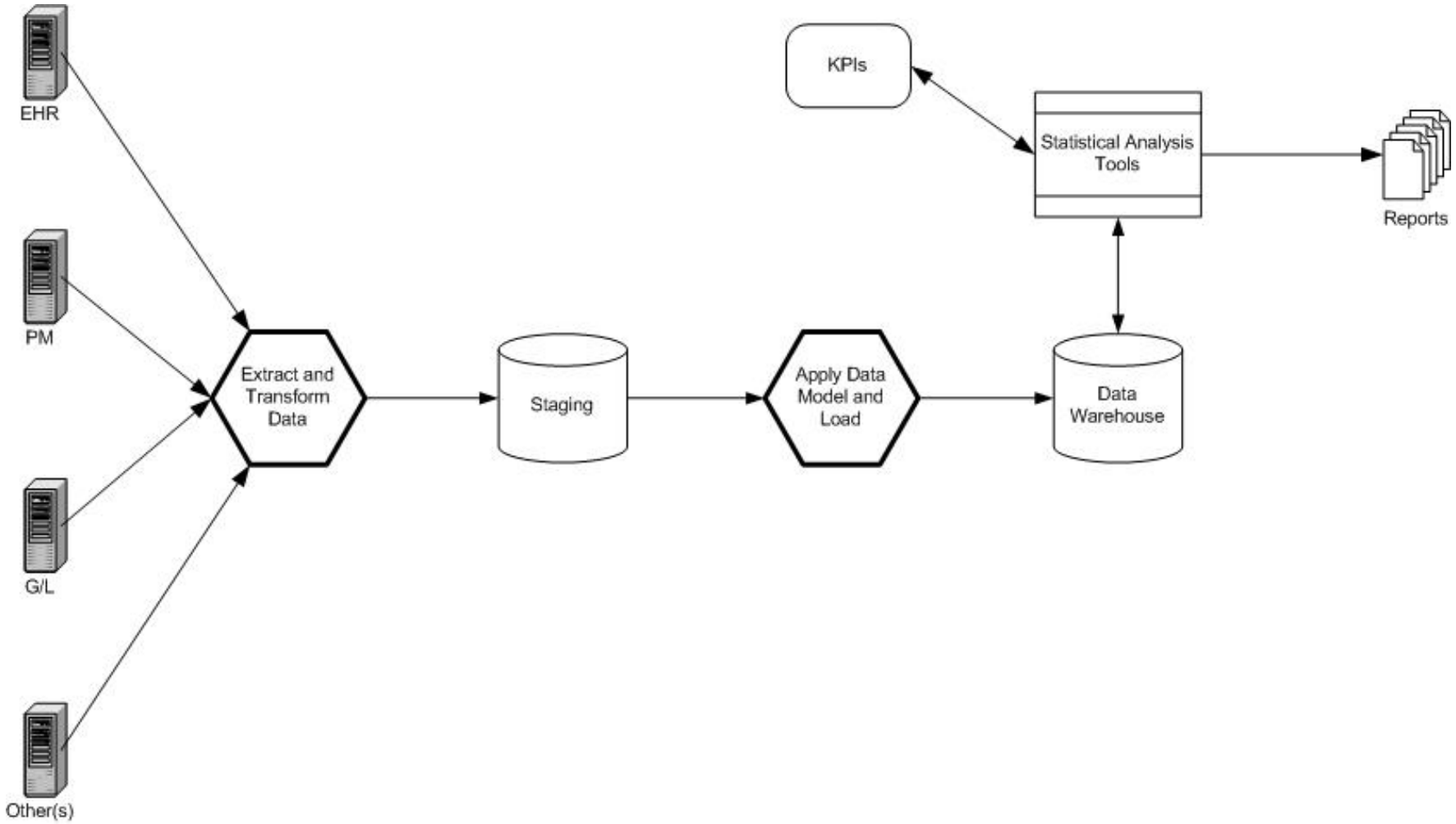
It can be as simple as Microsoft Access and some elbow grease: Current reports from a homegrown data warehouse at a large CHC:

- Provider Productivity
- Encounter Revenue Comparison to Budget
- Cash Collections by Activity Type (Payer Source) and Location
- Cash Collections by Location
- Charges, Reductions, Payments by Division and Major Category (Payer Source)
- Charges, Reduction, Payment report by Division and Location/Department
- Encounters by Division and Location
- Encounters by Division and Major Category (Payer Source)
- Paid and Unpaid encounters by Division and Major Category (Payer Source)
- State/Grant Reports
- Dental Grants - Treatment Plan Completion Rates
- Dental Grants - Frequency of Encounters and Procedures
- Delta Dental Grant – Data for Outcomes Report
- Convenient Care Grant
- Homeless Grant
- UDS Data
- State-specific Reporting
- HIV Encounters

KPI and Measure Development

- Definition and Rationale
- Benchmark and Target Values
- Report/Display Format(s)
- Source Data
- Formula
- Access Level
- Owner
- Frequency (Source Data and Reporting)

Data Warehouse – Simple Model



RSM McGladrey

rchn community health foundation

Components of a Data Warehouse

- Source Data
- Extract and Transform Process
- Cleanse Data
- Normalize Data as per Data Model and Load Process
- Database Management System
- Develop Queries Reflecting KPIs and Other Desired Knowledge using Statistical Analysis Tools
- Reporting Application for Output

Planning for a Data Warehouse

- Scope of Participants
  - Which organizations will participate?
  - How will they interact?
- Governance
  - Who will provide oversight for the project?
  - Who will govern operation?
  - Who will prioritize query requests?
  - Who will set targets?
  - Who will monitor compliance?

Planning for a Data Warehouse

- Cost
  - How much will it cost to implement?
  - How much will it cost to operate?
  - How will costs be allocated amongst participating organizations?
- Resource Allocation
  - Who will build it?
  - Who will operate it?
- Sustainability
  - How will the value be measured in order to justify continued funding and operation?

Questions

Matthew Grob
(212) 372-1606
matthew.grob@rsmi.com

David Hartzband
(617) 324-6693
dhartzband@rchnfoundation.org

RSM McGladrey

rchn community health foundation