Component 6 - Health Management Information Systems

Unit 9-1

Administrative, Billing, and Financial Systems

Objectives

- Explain applications that need to be integrated in health care information systems
- Describe the strategies used by health care organizations to ensure integration of functions
- Discuss the critical elements needed to integrate billing, financial, and clinical systems

---

Health Care Information System (HCIS)

- Information system used within a health care organization
  - Facilitates communication
  - Integrates information
  - Documents health care interventions
  - Performs record keeping
  - Otherwise supports the functions of the organization

Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

HCIS Components

- Patient management and billing
- Department management
- Care delivery and clinical documentation
- Clinical decision support
- Financial and resource management

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Patient Management and Billing

- Systems that support patient management functions
  - Example
    - Patient identification
  - Supporting technology
    - Master patient index
- Houses centralized database
  - Patient financial, demographic, registration and location data

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Department Management

- Systems that support a department's information needs
  - Example
    - Health Information Management Department systems
  - Supporting technology
    - Electronic Document Management Systems
- Supplies data to patient databases

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Care Delivery and Clinical Documentation

- Systems that support the delivery of the care and documentation of that care
  – Example
    - Clinical information systems
  – Supporting technology
    - Electronic clinical order entry and results reporting
- Houses centralized database
  – Patient clinical data

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Clinical Decision Support

- Systems that support the clinical staff with data interpretation and decision-making
  – Example
    - Medication Administration System
  – Supporting technology
    - Bar-code medication administration (BCMA)
- Accesses patient and other databases

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006

Financial and Resource Management

- Systems that support business functions
  – Example
    - Accounts Payable System
  – Supporting technology
    - Claims administration
- Houses centralized database
  – Financial and employee data

Integration

- Arrangement of an organization's information systems
  - Efficient and effective communication
  - Bring together related parts into a single system

Application Integration

- Patient management and billing
  - Patient tracking
- Department management
  - Electronic document management
- Care delivery and clinical documentation
  - Order entry and results reporting

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Application Integration

- Clinical decision support
  - Computer-based physician order-entry
- Financial and resource management
  - Patient profiling

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Systems Integration Strategies

- Data preservation
- Separate information management plan components for
  - Data management
  - Applications and business logic
  - User interface

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Key Components of Enterprise Integration

- Master person index
- Single sign-on
- Context management
- Common code sets
- Data warehouse

Critical Integration Elements

- Information is available when and where it is needed
- Users must have an integrated view
- Data must have a consistent interpretation
- Adequate security must be in place

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

Data and Process Integration

- Data integration
  - Interface engine
- Process integration
  - Operational workflow
  - Human organizational systems

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.
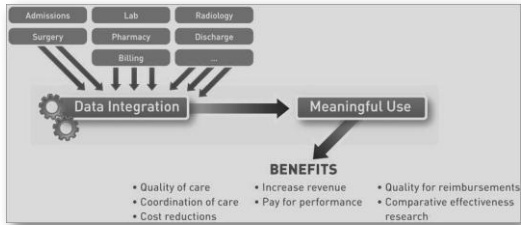
Interface Engine

- Translates and formats data for exchange
- Controls data flows between applications
- Central connecting point for all interfaces

Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.

HL7 Messaging Standard

- Health Level Seven (HL7)
  - Message standard
  - Supports clinical practice
  - Move data in standard formats

From Islands of Information to Meaningful Use

Business Intelligence Applications

- Allows for
  - Data analysis
  - Correlation
  - Trending
  - Reporting of data across multiple sources

Business Intelligence Applications

- Examples
  - Clinical and Financial Analytics and Decision Support
  - Query and Reporting Tools
  - Data Mining
  - Online Scoreboards and Dashboards

Business Intelligence & Data Warehousing for Healthcare. Clinical Informatics Wiki. 2008.
Available from: http://www.informatics-
review.com/wiki/index.php/Business_Intelligence_&_Data_Warehousing_for_Healthcare

Summary

- Applications that need to be integrated in health care information systems
- Healthcare organizations strategies to ensure integration of front-end clinical data collection and back-end billing functions
- Critical integration elements
- Data analysis and trending

References

- Vogel, LH, Perreault, LE., Management of Information in Healthcare Organizations. In: Shortliffe, E, Cimino J, eds: Biomedical informatics: Computer Applications in Health Care and Biomedicine. Third Edition. New York, NY: Springer; 2006.