

Health Management Information Systems

Unit 7 Medical Imaging Systems

Objectives

- Examine the purposes, processes, and management issues
- Understand the economic and technological factors associated with digital displays
- Describe the major challenges
- Describe the future directions

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Medical Imaging

- Medical imaging is the technique and process used to create images of the human body for clinical purposes or medical science

http://en.wikipedia.org/wiki/Medical_imaging

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Digital Imaging

- Digital imaging is the creation of digital images
- Term is often assumed to imply or include the processing, compression, storage, printing, and display of such images.

http://en.wikipedia.org/wiki/Digital_imaging

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Imaging Informatics

- Subdiscipline of biomedical informatics
- Concerned with
 - Acquisition of image in or conversion to digital form
 - Analysis, manipulation, and use of those images once they are in digital form

Shortliffe, E., *Biomedical informatics: computer applications in health care and biomedicine*

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Why Use Imaging Systems

- Detection and diagnosis
- Assessment and planning
- Guidance of procedures
- Communication
- Education and training
- Research

Shortliffe, E., *Biomedical informatics: computer applications in health care and biomedicine*

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Imaging Systems and HealthCare Processes

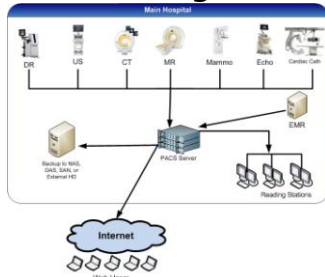
- Acquiring/managing images
- Interpreting images
- Communicating the interpretations

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PACS Configuration



<http://www.keystonemedical.com/Multi-Modality-PACS/pacs-configurations>

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Format Standards

- Digital Imaging and Communications in Medicine (DICOM)
 - Standard for the electronic exchange of medical images and the data associated with the images
- Health Level Seven (HL7)
 - Message standard

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Management Issues

- Storage Concerns
 - Film versus digital
 - Image modalities differ
 - Contrast and spatial resolution requirements
 - Number of images or the size of the data sets
 - Raw or processed data
 - Use of data compression

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Management Issues

- Image integration
 - Viewing stations
 - On-line image databases
 - Image-management systems
 - Networks

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Management Issues

- Technological Factors Associated with Digital Displays
 - Radiologist
 - View and interpret
 - Referring clinicians
 - Review and consultation
- Economic Factors Associated with Digital Displays

Shortliffe, E., Biomedical informatics: computer applications in health care and biomedicine

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Major Challenges

- Integration with other information systems
 - Hospital Information Systems (HIS)
 - Radiology Information Systems (RIS)
 - Standalone
 - Components of HISs

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Integration Example

- PACS integration
 - Hospital information system
 - Radiology information systems

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Major Challenges

- Reporting methods
 - Dictation/transcription
 - Speech recognition
 - Structured

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Future Directions

- Advances in medical imaging technology
- Development of standards
- Expansion of meaningful use

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Summary

- Purposes, processes, and management issues
- Challenges with imaging systems
- Future directions

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