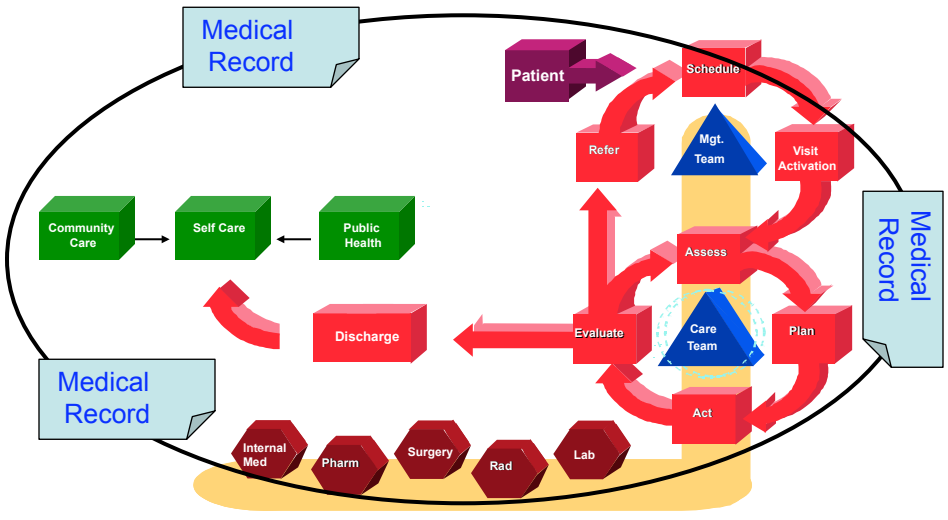
Electronic Medical/Health Records

HINF1100

Fall 2008

Information System in Healthcare Lifecycle



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Medical Record

- **The function of a medical record are:**
  - Means of communication between care providers
    - Care providers leave notes on the medical chart
  - Single point of data access on the patient's current illness
    - All test results, observations, diagnosis, medications
  - Working space for care providers
    - Record ideas, differential diagnosis, care details
  - Single point for all patient's data – patient data archive
    - All records of care provided to the patient

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Paper Based Medical Record

- **Physical aspects of paper record (positives)**
  - Portable and access is self-contained
  - Paper and pen are familiar methods of recording information
  - Access to information on paper feels very direct
- **Physical aspects of paper record (negatives)**
  - Can be used by one person at a time and at one location
  - Consumes a lot of space and is susceptible to damage
  - As the patient's record grows, finding information is difficult
  - Cannot actively guide the physician to make informed decisions
    - Cannot actively participate in the care process

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Electronic Medical Record

- "EHR is a secure, real-time, point-of-care, patient-centric information resource for clinicians" (HIMSS, 2003)
- The EHR is a computer stored collection of health information about a person linked by a personal identifier
- EHR is a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are
  - patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data and radiology reports.

  The EHR has the ability to generate a complete record of a clinical patient encounter, as well as supporting other care-related activities directly or indirectly via an interface, such as
  - evidence-based decision support, quality management, and outcomes reporting.

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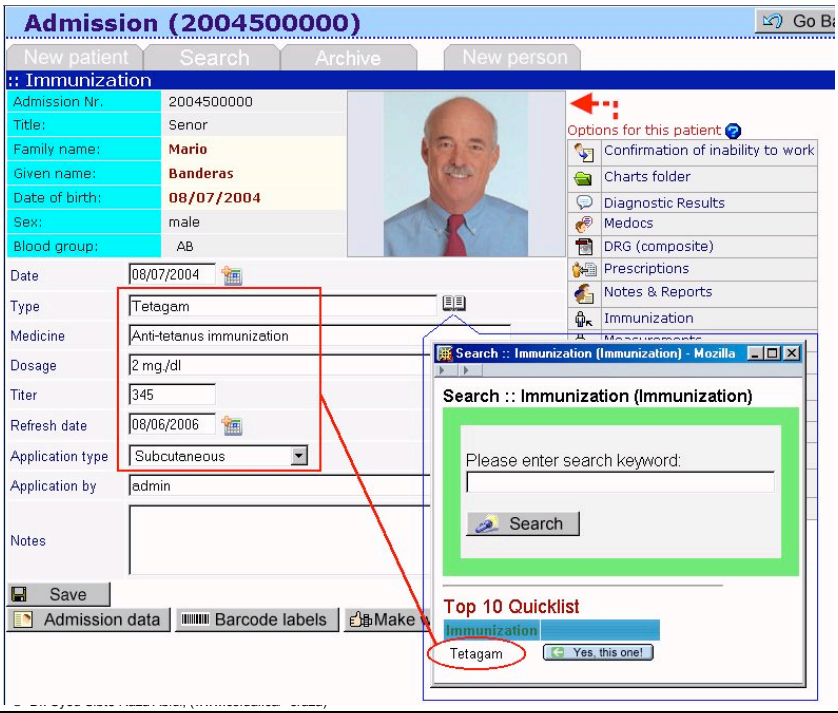
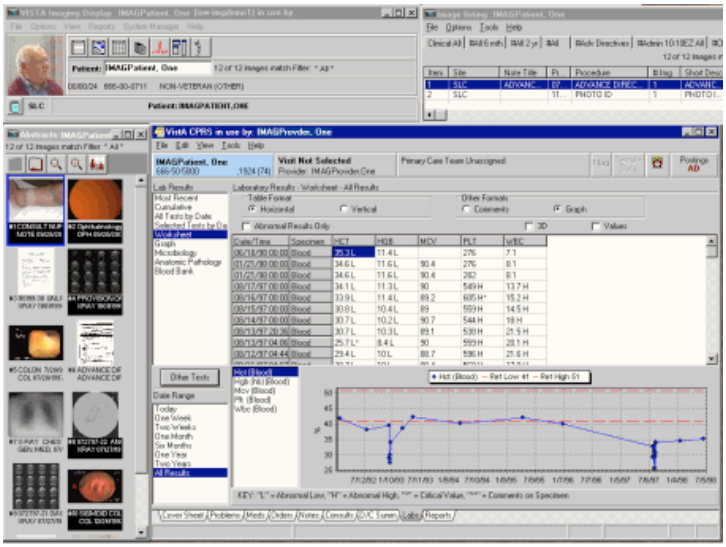


EMR



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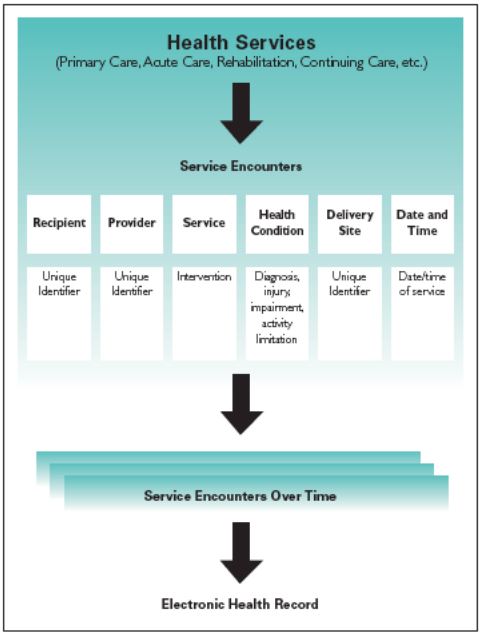
EHR Structure for Health services

- **Unique Identifiers**
  - Provider, Patient, Site
- **Code for Service**
  - Intervention/Treatment code
- **Code for Health Conditions**
  - Disease code
- **Time Stamp**



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Some Terms

- **Electronic Medical Record (EMR)**
- **Electronic Patient Record (EPR)**
- **Electronic Health Record (EHR)**
- **Computer-based Patient Record (CPR)**
- **Personal Health Record (PHR)**

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Elements of an EMR

- Patient demographics
  - Age, gender, address, etc
- History, examination and progress reports
- Medication
- Clinical practice guidelines
- Appointment scheduling
- Reminders, allergy lists, and immunization status
- Laboratory and tests
- Medical imaging studies

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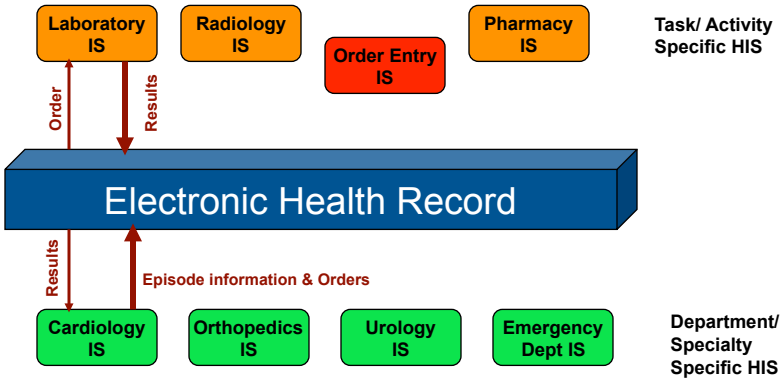
EMR in Practice



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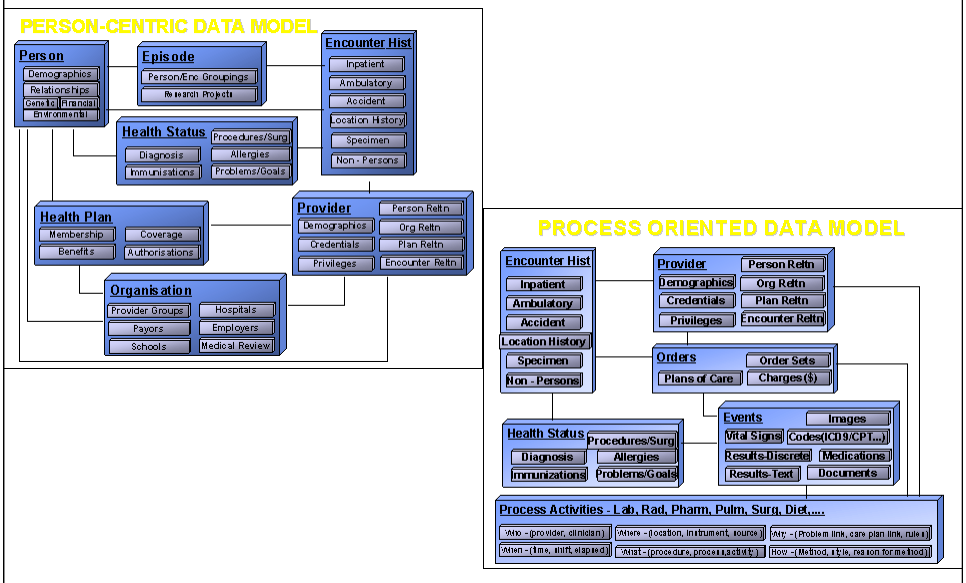
EHR Data Model



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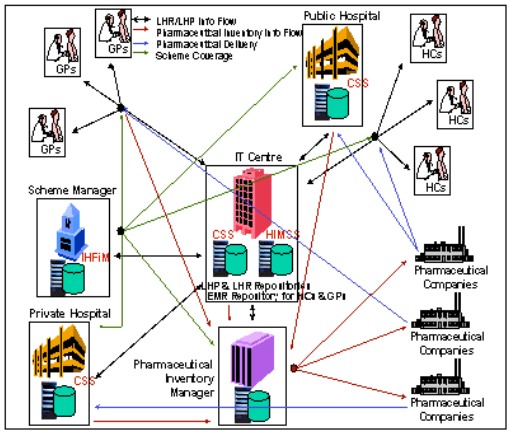
EHR Collection and Distribution



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EHR Core Capabilities – Active Participation in Clinical Care (Physicians)

- **Health information and data capture and its management**
  - Provide access to key patient information - such as patients' diagnoses, allergies, lab test results, and medications
- **Result management**
  - Allow all care providers have quick access to new and past test results
- **Order management**
  - Enable care provides to enter and store orders for prescriptions, tests, and other services
- **Decision support**
  - Provide reminders, prompts, and alerts to
    - ensure regular screenings
    - preventive practices
    - identify possible drug interactions
    - facilitate diagnoses and treatments
- **Electronic communication and connectivity**
  - Provide efficient, secure, and readily accessible communication among providers and patients

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EHR Core Capabilities

- **Patient support**
  - Provide tools that give patients access to their health record to support to improve control of chronic conditions, such as diabetes
    - interactive patient education
    - home-monitoring
    - self-testing
- **Administrative processes**
  - Provide computerized administrative tools, such as scheduling systems
- **Reporting**
  - Electronic data storage enables health care organizations to
    - quickly respond to federal, provincial, and private reporting requirements
    - reporting to support patient safety and disease surveillance

EHR Functions

- Provide secure, reliable, real-time access to patient health information when and where it is needed
- Captures and manages episodic and longitudinal patient information
- Functions as the care providers primary information resource during the provision of patient care
- Assists with the planning and delivery of patient care
- Captures data used for quality improvement, risk management, resource planning and performance management
- Captures patient information for billing and reimbursement (insurance)
- Support clinical research
- Supports clinical trials and evidence-based research

EHR Benefits

- Replaces paper-based medical records
  - Paper-based records are incomplete, fragmented (different parts in different locations), hard to read and (sometimes) hard to find
- Provides a single, shareable, up to date, accurate, rapidly retrieveable source of information that is potentially available anywhere at any time
- Requires less space and administrative resources
- Potential for automating, structuring and streamlining clinical workflow.
- Provides integrated support for a wide range of discrete care activities
  - decision support, monitoring, electronic prescribing, electronic referrals radiology, laboratory ordering and results display
- Maintains a data and information trail that can be readily analyzed
  - medical audit, research and quality assurance, epidemiological monitoring, disease surveillance ....
- Supports continuing medical education

EHR Barriers

- **Technical matters**
  - uncertain quality, functionality, ease of use, lack of integration with other applications
- **Financial matters -**
  - initial costs for hardware and software, maintenance, upgrades, replacement, ROI
- **Resources issues**
  - training and re-training; resistance by potential users; implied changes in working practices.
- **Certification, security, ethical, privacy and confidentiality issues**
- **Doubts on clinical usefulness**
- **Incompatibility between systems**
  - user interface, system architecture and functionality can vary significantly between suppliers' products

Personal Health Records (PHRs)

- "… electronic application[s] through which individuals can maintain and manage their health information (and that of others for whom they are authorized) in a private, secure, and confidential environment"
- " … an Internet-based set of tools that allows people to access and coordinate their lifelong health information and make appropriate parts of it available to those who need it. PHRs offer an integrated and comprehensive view of health information, including information people generate themselves such as symptoms and medication use, information from doctors such as diagnoses and test results, and information from their pharmacies and insurance companies"

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Types of PHR

- A provider-owned and provider-maintained digital summary of clinically relevant health information made available to patients
- A patient-owned software program that lets individuals enter, organize and retrieve their own health information
  - patient's concerns, problems, symptoms, emergency contact information, etc.
- A portable, interoperable digital file containing selected, clinically relevant health data that can be managed, secured and transferred
  - Smart cards, personal digital assistants, cellular phones and USB-compatible devices that can be plugged into almost any computer

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PHR Platforms

- EHR-linked PHRs
  - MyChart
- Password-protected web-based applications
- USB-based tools
  - E-HealthKEY, CapMed Personal HealthKey™
- CD-ROM
  - CapMed Personal Health Record™

PHR Advantages

- Consumer-focused; patient-focused.
- Empower patients to be more involved in their own healthcare decisions
- Promote preventive self-care
- Support self-care of chronic diseases
- Help improve patient health data validity and quality control
- Support patient safety initiatives
- Support patient and health services mobility and shared care
- Provide ready access to emergency patient data
- Provide content to help populate a life-long EHR
- Streamline communications between citizens and healthcare providers.

THE END

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