Partnerships between Informatics and Clinical End Users

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What are the factors shaping Electronic Health Records?

- Industry – Vendors, Market Factors, New Technologies
- Academics/Informatics – Evidence, Basic Science (Genomics), Research, Innovation, Ideas, Personalized Medicine
- Government- Meaningful Use, Compliance, Regulatory Requirements
What is hampering development and innovation?

- Government regulation, compliance, and meaningful use
- Who will control the future direction of Medical IT? Government? Academics? Professional Societies?, Vendors?, or ?
- We are at a crossroads where Academics and Professional Societies can begin to direct and have a major role and impact on where the industry goes and can take the lead to benefit clinical end users...
Areas where Informatics can take the lead

* Providing and maintaining evidence-based content
* Real time Clinical (Cognitive) Decision Support
* Interpreting and integrating basic science breakthroughs into the Electronic Health Record (Genomics)
* Leading Meaningful use and compliance rather than the government fulfilling this role
* Designing the Electronic Health Record and Clinic of the Future – Innovations in Hardware, Software, Peripheral Devices, and Usability
* Data Aggregation and clinical research on larger cohorts (national and international)
* Interoperability Standards, Standardization of Master Files
* Usability Labs and Optimization
Early adopters of EHR’s were academics and large organizations that could develop or afford cutting edge systems.

Academics and large organizations could/can maintain content

Most late adopters are smaller organizations and community hospitals that cannot maintain content nor desire to do so.

How will content management be addressed?
EHR Vendors/Content Vendors – the middle men/women who translate academics and journals to order sets, template-based documentation. (Zynx, UpToDate, HealthWise, et al.)

Academia (Universities, etc.)

Professional Societies (ACC, AAP, ACS, et al.)

Customers – limited bandwidth

Content to interactive content to personalized medicine (e.g. pediatric head trauma consortium)
Evidence-based content

- Best solution – have the experts maintain the content, not a middlemen/women translating it to the end users
- Maintenance of content on central servers with near real-time updating of content (Demo – hosted content with imbedded XML objects)
- Advantages – organizations will gladly pay for these service (they already are), evidence would be updated near real time, a true solution to content management, substantial improvements in outcomes
Currently many EHR’s support sending and receiving de-identified data to central servers and receiving back real time recommendations

Examples – Pediatric Head Trauma Consortium, Neofax, Dosing Algorythms, et al.

Especially beneficial if we not only incorporate not only recommendations but also actionable XML links and personalized responses based on de-identified data that is received.

Other examples – Radboud University– NL, UVA – Genomics, et al.
* Genomics
* How do we leverage basic science to improve outcomes? Health Maintenance (e.g. – screening recommendations)? Advanced dosing regimens (e.g. narcotic dosing)? Personalized Medicine?
* There is a great need to translate this data and get it into health care to change outcomes on a much shorter time line. Vendors will develop software once Informatics has defined what the next frontiers are but will almost never develop these within the vacuum of their development shops. They develop what customers ask for, not necessarily what they see in distant future. Who will help define the futures?
* Retrospective versus Prospective Studies using the Electronic Health Record
Leading Meaningful use and compliance rather than the government fulfilling this role

- Meaningful Use or Meaningless Use?
- Meaningful use has taken on a life of its own.
- Who will own what benchmarks are measured and documented against going forward?
- How can we create workflows to support data capture which are not onerous or untenable?
- Who will set the stage moving forward? Government? Professional Organizations? Informaticists? Or?
- Meaningful Use is mapped out now into the teens and twenties... its not going away. Adoption was not necessarily the primarily purpose
Designing the Electronic Health Record and Clinic of the Future – Innovations in Hardware, Software, Peripheral Devices, and Usability

- Handhelds, iPads, SmartPhones, Touchscreens, Webcams, eICU’s, telemedicine, eVisits, remote monitoring...
- Usability Labs and Workflow Efficiency
- User Interfaces for Patients, Clinicians, Ancillaries, et al.
- PCP and specialty workflows
- Device Integration
- Room and Facility Design – Commercial Builders and Architects are setting up divisions to look at needs/designs for the future
- Unique Use Cases – Battlefield, Ships/Cutters, Disconnected workflows
Visit Roadmap
Bringing Services to the Patient

![Diagram of a hospital layout with arrows indicating services to the patient. The diagram includes arrows pointing to various services such as Business Services, Pharmacy Services, and Lab Services.]
Bringing Services to the Patient
Bringing Services to the Patient
Room Layout with Mechanical Arm Desk

PC on wooden table that rotates toward the exam table.
PC with Mechanical Arm
Alternative Room Configuration
Spinal Disk Herniation

Instructions

You have signs of a ruptured or herniated disk in your neck or back. Disks are the soft tissue cushions that are found between the bones of the spine. When a disk herniates, a part of the material inside the disk pushes out. This may cause pressure against the nerves near the spine. In the neck this results in pain in the neck, shoulder, and down the arm. In the lower back a ruptured disk causes pain in the back, buttock, and down the back of leg, or sciatica. Numbness and weakness may also be signs of a ruptured disk.

Disk herniation is very common. Only a small number of patients with disk problems need more treatment than bed rest and pain medicine for relief. **Pressures on the disks of the lower back are much higher in the sitting position. It is important that you avoid prolonged sitting until the pain and back spasms improve.** Lying on your side is the preferred position.

You should rest or sleep on a firm mattress (use a sheet of plywood under the mattress if necessary). Water beds do not provide enough support. You should avoid bending, lifting, or any other activity that increases your pain. Traction applied to the neck or back may help reduce symptoms. Special braces may also be beneficial. When your pain improves, you should resume normal activity gradually. Take periods of rest throughout the day.

Aspirin, ibuprofen, anti-inflammatory medicines, narcotics, and muscle relaxants may be used to reduce symptoms. Cold or hot packs applied for 30 minutes every 2-3 hours may also help relieve pain or spasms. Spinal
Telemedicine

Virtual Visits

Store and Forward
Telemedicine

E-visits with real time video conferencing
Data Aggregation and clinical research on larger cohorts (national and international)

- Data Warehousing
- Merging patient populations across multiple sites
- Creating larger patient cohorts to gain statistical significance
- Real-time research using the EHR rather than prospective studies that can decades
- Issues to address – data standardization, legal agreements, tools and logic to assess these huge data repositories and look for trending which can then be assessed by informaticists
- Translating, disseminating, and applying these findings to patient care near real-time and through peer-reviewed venues
Interoperability Standards, Standardization of Master Files

* Data Exchange
* The benefits of discrete data
* How can we quicken the pace of standardization of data elements?
* How can we accomplish this internationally?
* HIE’s versus direct data exchange
New User Interfaces

* Single pane with vertical scrolling
* Up to 3 panes horizontally with no scrolling
* Which is most efficient and for what areas? Which panes should be data review and which ones should be actionable panes?
Questions?

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