Overview of Health Informatics

ITI

BMI-Dept
Fellowship

Week 2

Overview of Health Informatics

ITI, BMI-Dept  Day 3

6/12/2010
Agenda

1. Health Informatics Stakeholders
2. Health Informatician Carrier Profile
3. Barriers to HIT Adoption
4. Tasks
Health Informatics Stakeholders (Hoyt, 2008)

- Insurance Companies
- Government
- Medical Educators
- Research
- Technology Vendors

- Nursing and supporting Staff
- Patients/people
- Clinicians
- Hospitals
- Public Health

Health Informatics
Health Informatics Stakeholders
(Hoyt, 2008)

Common goals:

• Reduce medical errors and resultant litigation
• Provide better return on investment
• Improve communication among the key players
• Improve the quality of care
• Reduce duplication of tests or prescriptions ordered
• Improve patient outcomes, like morbidity and mortality
• Standardize care among clinicians, organizations and regions
• Improve clinician productivity
• Speed up access to care and administrative transactions
• Protect privacy and ensure security
Health Informatics Stakeholders
(Hoyt, 2008)

- Online searches for health information
- Web portals for storing personal medical information, making appointments, checking lab results, e-visits, etc
- Research choice of physician, hospital or insurance plan
- Online patient surveys
- Online chat, blogs, podcasts, vodcasts and support groups
- Personal health records
- Telemedicine and home Telemonitoring
Health Informatics Stakeholders
(Hoyt, 2008)

Clinicians

- Medline searches
- Online resources and digital libraries
- Patient web portals, secure e-mail and e-visits
- Physician web portals
- Clinical decision support, e.g. reminders and alerts
- Electronic health records (EHRs)
- Personal Digital Assistants (PDAs) with medical software
- Telemedicine and telehomecare
- Online continuing medical education (CME)

- Voice recognition software
- Electronic (e)-prescribing
- Disease management and registries
- Picture archiving and communication systems (PACS)
- Pay for performance
- Health Information Organizations (HIOs)
- E-research
Health Informatics Stakeholders (Hoyt, 2008)

- Patient enrollment
- Electronic appointments
- Electronic billing process
- EHRs
- Web based credentialing
- Telehomecare monitoring
- Practice management software
- Secure patient-office e-mail communication
- Electronic medication administration record
- Online educational resources and CME
- Disease registries
Health Informatics Stakeholders (Hoyt, 2008)

- Incident reports
- Syndromic surveillance as part of bio-terrorism program
- Establish link to all public health departments (Public Health Information Network)
- Geographic information systems to link disease outbreaks with geography
Health Informatics Stakeholders (Hoyt, 2008)

- Nationwide Health Information Network
- Information technology pilot projects
  - Disease management
  - Pay for performance
  - Electronic health records and personal health records
  - Electronic prescribing
- “Ethical and Legal issues”
Health Informatics Stakeholders
(Hoyt, 2008)

• Online medical resources for clinicians, patients and staff
• Online CME
• Medline searches
• Video teleconferencing, web conferencing, podcasts, etc
Health Informatics Stakeholders
(Hoyt, 2008)

- Electronic claims transmission
- Trend analysis
- Physician profiling
- Information systems for “pay for performance”
- Monitor adherence to clinical guidelines
- Monitor adherence to preferred formularies
- Promote claims based personal health records and information exchanges
- Reduce litigation by improved patient safety through fewer medication errors
Health Informatics Stakeholders (Hoyt, 2008)

- Interoperable electronic health records
- Electronic billing
- Information systems to monitor outcomes, length of stay, disease management, etc
- Bar coding and radio frequency identification (RFID) to track patients, medications, assets, etc
- Wireless technology
- e-intensive care units
- Patient and physician portals
- E-prescribing
- Health Information Organizations (HIOs)
- Telemedicine
- Picture archiving and communication systems (PACS)
Health Informatics Stakeholders (Hoyt, 2008)

- Database creation to study populations, genetics and disease states
- Online collaborative web sites e.g. Microsoft SharePoint
- Web services to pull together multiple participants at e.g. the National Institute of Health
- Electronic forms e.g. Microsoft InfoPath, IBM Lotus forms
- Software for statistical analysis of data e.g. SPSS
- Literature searches
- Randomization using software programs
- Improved subject recruitment using EHRs and e-mail
- Online submission of grants
• Applying new technology innovations in the field of medicine: hardware, software, genomics, etc
• Data mining
• Interoperability
Health Informatics Stakeholders (Hoyt, 2008)

- Insurance Companies
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- Medical Educators
- Research
- Technology Vendors
- Nursing and supporting Staff
- Patients/people
- Clinicians
- Hospitals
- Public Health

Health Informatics

Informatician
Who is the Health Informatician?! Time to ask this question

- Health Informatician or Informatisit is the one coordinating, synchronizing and managing different efforts provided by different health informatics stakeholders.

- In other word “Orchestrating”.
Why Health Informatics as a career?!

- There is a huge need
  - Big incidence of preventable medical errors, WHO, 1/10 patients
  - More hospitals go through automation
  - Government needs more control
- It’s a new discipline, so need more candidates at:
  - Hospitals
  - MoH
  - Vendors
  - Etc...
    There is a space for many (Physicians, Nurses, Pharmacists, IT-cians, ...etc)!
- Many initiatives are arising (Telemedicine, NHIN, EHR, ...etc)
- Very interesting, exciting and dynamic!
- Income...!!
Health informatician, Carrier Profiles (BioHealthmatics)

1. Medical Informatics Program Designer
2. Clinical Systems Analyst
3. IT Clinical Process Engineer
4. IS Clinical Project Leader
5. SW Developer
6. IT Training Director
7. Help Desk Assistant
8. ...etc.
1. Medical Informatics Program Designer:

Working among a research team in designing & developing SW programs such as: drug database and database management system to support CDSs, systems to support RHIOs and radiology information systems. These programs gather and process clinical data and finally report the results to the end-user. Medical Informatics Program Designer utilizes his gained knowledge on Information Retrieval, Database Management Systems and support systems in designing the required program specifications.
2. Clinical Systems Analyst:

- Gathering end user requirements and recommendations on the currently implemented HIS/or planned HIS. Utilizing her/his Medical informatics background in identifying the facing problems and hospital precise requirements to the HIS vendors;
- Developing, implementing and evaluating the HISs used within the healthcare facility;
- Pre and post go-live support to different stakeholders regarding HIS;
- Periodic checking and troubleshooting any problems regarding the HIS, ranging from human-ware and software to physical infrastructure related to the HIS, and
- Making recommendations about the best HIS to be used and the recommended customization including technical and confidentiality/security issues
3. IT Clinical Process Engineer:

Designing the blueprints for data-flow across the healthcare facility. These blueprints contain the developed/enhanced systems to achieve the optimal/customized information system across the healthcare facility. IT Clinical Process Engineer works on hardware, software and human-ware related to the HIS. IT Clinical Process Engineer participates with IT and Management staff in order to practically implement these blueprints.
4. IS Clinical Project Leader:

Leading the team to design, develop and evaluate clinical projects. IS Clinical Project leader plan, schedule, direct, monitor, coordinate the team's activities in addition to identifying/allocation resources to manage and implement the project. She/he is also responsible to develop milestones necessary for ongoing project evaluation as well as reporting about the project to stakeholders.
5. SW Developer:

Participating with the clinical-programs developing team members in developing different Software that support clinical processes utilizing her/his Software Engineering and Programming skills.
6. IT Training Director:

Is responsible for making short and long term training plans, developing, implementing and evaluating these plans. IT Training Director collaborates with the hospital manager and HR staff in order to achieve these goals.
Health informatician, Carrier Profiles  
(BioHealthmatics)

7. Help Desk Assistant:

• Provides a wide range of IT support to healthcare-facilities stakeholders, ranging from basic computer skills to deep HIS functionalities usage.

• She/he is playing a very important and appreciated role.
What else?!
Barriers to HIT Adoption
(Hoyet, 2008)

1. Inadequate time
2. Cost
3. Lack of Interoperability
4. Change in Workflow
5. Privacy
6. Legal issues
7. Behavioral Change
8. Inadequate workforce
Barriers to HIT Adoption, Inadequate time (Hoyet, 2008)

- Busy Clinicians used to say “we do not have enough time” to:
  - Read
  - Learn new technologies
  - Research vendors
Barriers to HIT Adoption, Cost (Hoyet, 2008)

• Technology costs much
  – Hardware (Computers, networks, modalities, ...etc)
  – Software (EHR, Hospital Information System, ...etc)
  – Human ware (It-cians, trained personnel,...etc)

• Not always available

• Priority debates
Barriers to HIT Adoption, Lack of Interoperability (Hoyet, 2008)

• Fictional health information organization or NHIN need:
  – Well adopted data standards and protocols
  – Nationwide/international implementation
Barriers to HIT Adoption, Change in Workflow (Hoyet, 2008)

“The main challenges are not technical; it’s more about integrating HIT with workflow, making it work for patients and clinicians who don’t necessarily think like the computer guys do” (Clancy, 2005)

Source: http://www.atilimited.net/his/Clinical-Workflow.jpg
Barriers to HIT Adoption, Privacy (Hoyet, 2008)

- Health Insurance Portability and accountability Act (HIPAA) adoption, 1996
- Who has the right to disclose patient’s information, when, why,...??
Barriers to HIT Adoption, Legal Issues (Hoyet, 2008)

• Who is the responsible for errors, in which HIS is involved?!
• How can a hospital share patient’s information with other affiliations?
• when, where, why,…etc
Barriers to HIT Adoption, Behavioral Change (Hoyet, 2008)

• The most challenging barrier
• Communicate, Share, Respect, Adopt, Team working, Motivate,...etc
• Five stages of medical technology acceptance (Knoll, 2005)
  1. Abject horror
  2. Swift denunciation
  3. Profound skepticism
  4. Clinical evaluation
  5. Acceptance as standard of care
Barriers to HIT Adoption, Behavioral Change (Hoyet, 2008)

The Stages of Behavior Change

1. Precontemplation (unaware of the problem)
2. Contemplation (aware of the problem and of the desired behavior change)
3. Preparation (intends to take action)
4. Action (practices the desired behavior)
5. Maintenance (works to sustain the behavior change)

Sources: Grimley 1997 (75) and Prochaska 1992 (148)
Barriers to HIT Adoption, Inadequate Workforce (Hoyet, 2008)

“there is a need for a work force capable of leading implementation of the electronic health record and other technologies” (Hersh, 2004)
Barriers to HIT Adoption, What else?!  

• Moving from the paper based systems
Health Informatics, as a Need

Maslow’s Hierarchy of Needs

- Physiological
- Safety
- Belonging
- Esteem
- Self Actualization

Where is the need for Health Informatics?
Tasks

• Read the required papers
• Investigate more about other carrier profiles
• Prepare a presentation about your working environment, highlighting the new roles according to carrier profiles discussed today
• Please visit: http://wps.prenhall.com/hss_understand_plagiarism_1/
• Then send the result to the supervisor
Thanks
By: ITI-BMI Dept.
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