Future Trends in Electronic Health Records

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What’s an Electronic Health Record (EHR)?

- Digital compilation of the healthcare data of a single patient over their lifetime
- Contains demographics, histories, immunizations, medications, allergies, laboratory test results, radiology images, and other pertinent data captured while caring for patients
- Crosses both outpatient and inpatient arenas of care
- Systems supplied by a number of manufacturers and represent a large investment for medical practices and hospitals
- The government has now gotten into the business of pushing adoption and certification
HITECH Act of 2009

- Unprecedented investment ($22 Billion) in healthcare IT to increase adoption of EHRs in the US
- Provides incentive payments under Medicaid and Medicare programs for both hospitals and providers paid when demonstrating “meaningful use” of the systems
- Certifies EHR technology
- Unfortunately, certification and meaningful use requirements don’t address the gaps in necessary functionality and usability of current commercially available systems
Survey of practices replacing EHR software

- Lacks key features
- Too cumbersome
- Hardware failure
- Too generic
- Billing issues
- Too complex
- Poor templates
- Poor architecture

Number of Mentions


Today’s EHR if far from ideal

- Hard to practice medicine without it
- But its hard to practice medicine with it…
- The patient’s record is readily available
- But the information in it is often hard to locate
- We eliminated illegible handwriting
- And replaced it with legible but unreadable notes
• We’ve harnessed sophisticated computer technology
• And inserted it between us and the patient

• Patient safety is driving much of current development with tools for decision support, closed loop med administration, standardization of care, etc.
  − That’s a good thing

• Sharing data between EHRs is problematic, and interoperability is still far off.
  − That’s a bad thing
• The current EHR supports care of individuals
• But few tools are available to take care of populations
• Analytics, if available, support the retrospective analysis of care delivered
• Analytics need to support care as it is delivered

The EHR as we know it will be woefully inadequate to support care as we imagine it
What will drive future changes in the EHR?

• In the short-term
  − Reimbursement changes will
  − Consumerism will
  − The desire to do things better will

• But in the long-term
  − Sensor data will
  − Genomics will
  − Proteomics will
  − Pharmacogenetics will
  − Analytics and “Big Data” will
  − New computing technologies will
Imagine the technology of the future

It’s really not that far off…
Our patient today…

Will be tomorrow’s parent
This sophisticated consumer of healthcare in 2040

- Likely started to use computerized devices by age 2
- Will have thoroughly researched her child’s well care or any illness symptoms on-line before seeking a care provider
- All of her and her family’s lifelong medical data will be stored in a personal health record which she provides to anyone seeing a family member for care

That data will likely include the sequences of each family member’s genome, along with mitochondrial DNA and RNA, proteomic data and whatever else comes along.

- If her child presents with an illness, all of her daughter’s sensor data which monitored a myriad of metabolic and physiological processes will be included in that data.
- Any additional data collected or tests performed when her child arrives for care will be computer generated and no longer idiosyncratic based on a physician’s order.
Our role will be transformed along with the EHR

• All this will result in too much data for the human mind to process
• The analysis of that data will rely on artificial intelligence tools and unfathomable computing power to aid in diagnosis and treatment
• The intelligence built into the EHR will far surpass the decision support tools currently built into our systems today

Dr. Watson, I presume…
If physicians are to have a role in this new reality

- We cannot lose the human touch of medicine
- Patients will continue to rely on the guidance, support and help that only a caring healthcare professional can deliver
- Computers will actually free us from many of the current mundane roles we play which take our focus away from the patient
- Medicine in the future may once again become high touch, ironically through technology

Computing will change, our patients will change, funding for healthcare will change, medical technology will change, but our compassion must not.