HITC2014 Keynote

The Future of Health Information Systems

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Past Chair, mHealth Initiative
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Past CEO, Medical Records Institute
Cited as one of the 20 selected people “who make US healthcare better” (HealthLeader magazine)

... and Healthcare
Forecasting the Future in HITC:
The vision may be right but the technologies change.

Will it take another 100 years to realize how healthcare must change in the digital society?

How Telemedicine was envisioned 100 years ago

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We live through an historic intersection: The Emerging Digital Society

Knowledge is not brain-centric anymore. Knowledge is system-centric.

This means that no doctor can rely on what (s)he learned decades ago. The quality of care depends how your doctor manages the information system.
What Does This Mean For Healthcare?

**Internet**
- New digital devices and apps will improve decision making
- Patients will be researching health issues the same way as consumers research product/service information

**Communication**
- Digital Communication with patients and colleagues

**New Software**
- New apps will replace the doctor’s intuition
- Physician’ skills will depend increasingly on their way to research/manage information/communicate
- Quality of care will be more closely monitored

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Automation Will Reach Healthcare

- Factories will be run by machines
- Very few people will be needed in offices

In Healthcare:
- Patients will check themselves from home into hospitals
- Robots do more and more surgery
- Apps will guide the care process
- Many healthcare tasks will be automated
- Patient identification, interoperability, and privacy will finally be solved

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21st Century Medicine

- Genetics
  - DNA building block developments
  - Decay-fighting microbes
- BioTech
  - Magnetic Levitation
  - Artificial Brain Cell Creation
  - Anti-Bleeding Gel
  - Smart pill
- Nanotechnology
  - Neuromodulation
  - Electric underwear to fight bed sores
- Medical Devices
  - Speech restorer
  - Artificial nerve generator
  - Muscle stimulator
  - Liver scanner
  - Printed bones and other body parts
- Personalized Medications
  - Artificial self-powered limbs
  - Stabilizing insoles to avoid falls
  - Cancer spit test
  - Smart contact lens
  - Human powered equipment
  - Asthma sensors
  - Pollen vaccines
The Promise of HITC

• HITC will be at the center of the health delivery service
  – Communication
  – Cost reduction
  – Patient participation

All these concepts have been in the works for some time. It is time to include all of them in a new approach.
Healthcare Systems Changes

- Patients must become active participants in the healthcare process through digital technologies
- Clinical and Financial Transparency: Transparent clinical processes and reduction of costs
- The examination and care process are moving to the “virtual care space” between patient’s home, doctors’ offices, hospitals and clinics, as well as other fitness and health providers
- The collective expertise of care and wellness providers must be brought to the care process
- A system based on episodic or periodic evaluation must migrate to one that provides continuous assessment

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HITC-driven Healthcare

Approx. 90% of treatment activity takes place during the encounter

Provider-centric activities

Approx. 10% of treatment activities takes place during the encounter

Orchestrated healthcare: Every professional involved in a person’s health is playing a part just like every musician in an orchestra
Medical Knowledge

- Over 70% of patients are getting clinical advice from the Internet
- But the system should tell the provider what the patient learned on the Internet and from whom
- The concept of patients advising each other has been very helpful and has great promise.
- Shouldn’t the patient be able to ask the doctor by email or text message? Or better: in a secure app?

“I already diagnosed myself on the Internet. I’m only here for a second opinion.”

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What is needed for E-care Systems?

20
Al-based Diagnostic Support

15
Electronic Streamlined Financial Functionalities

5
mHealth: Medical Knowledge Apps

5
Digital Communication with Patients

Health and Fitness Cooperation

Better Systems Documentation

Electronic Streamlined Administrative Functionalities

Algorithm Apps for diagnostic decision support: *Holographic Input-home diagnostics-augmented reality-personal genomics-concept-based digital diagnostics*

Automatic financial systems: Real-time financial transactions-cost estimates for providers and patients—“all-digital communication”

Increased use of medical apps – optimized app management

Laws-Data Protection-Financial- Professional

Interdisciplinary care -professional Issues

Solving the current documentation riddle

Online: appointments – registration - referrals and orders – administrative management tasks

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= expected number of years until mainstream use may be achieved
Documentation is the bottleneck of the healthcare process costing billions of dollars and causing many errors. Solving this problem will be the key to future HITC. Sorting, assembling, indexing, fact checking, dispersing data and solving discrepancies (particularly in coding). VERY DIFFERENT FROM CURRENT HIM
Hurdles

Professional and Legal
- Telemedicine Laws
- Privacy Laws
- Financial Changes
- Customs and Habits
- Financial Crisis
- Documentation Issues

Patients
- Patient Motivation and Education
- Gamification of Health
- User friendliness
- Interoperability

Technologies/Systems
- New systems for providers with better functionalities and easier use
- From EHR systems and MU to e-care functionalities
- Open Digital Systems
Patient’s complete health history

Appointment management and home check-in

Medication history and communication with several pharmacy options

Communication with hospitals and clinics

Preferred Health Info Resources

All communication in secure app mode:
No X12, HL7 or other outdated standards

Apps:
- Capturing patient data at home
- Fitness and wellness (integrated)
- Provider Management

Virtual visit app
This means:

**Communication**
- New strategy: HIEs (less centralized communication hubs such as RHIOs, etc.)
- Reduction of outdated messaging standards.

**ID**
- No standards work on patient ID systems as the device will be the ID with biometric Identification.

**EHR**
- New EHR strategies should replace Existing EHRs.
- MU goals must be adjusted to the new infrastructure of discrete data and the new data ecosystem.

**PHR**
- The PHR must be integrated into the data ecosystem of a patient’s information base – note: a turn from previous efforts.
The revolution of HITC

• HIS/Hospital and legacy systems have to be adjusted or replaced
• Existing standards organizations from the 20\textsuperscript{th} century do not fit well into this picture
• Small companies and developers have to be integrated (think of 12 million Apple developers, for instance)
• When this infrastructure is in place, there is lots of room for additional functionalities (apps)
In summary

• Such a system could be implemented today
• But in the US, legislation and stakeholder interests will make the transition difficult
• It is likely that other countries will first reap the benefits of the HIT system of the future
Thank You!

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“I predicted such systems 15 years ago. It is good to see the emergence of some systems. I have great hope for the next couple of years!”

My latest book is available from Amazon as paper book or eBook