Health Care 2.0: How Technology is Transforming Health Care

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Health Care Technology

- Technology is revolutionizing the way health care is being delivered
- With advances in technology come significant savings in health care costs

- Connecting doctors to patients
  - Eliminates unnecessary visits to the ER or other health clinic
  - Allows for long-distance medical care
  - Enables continuous monitoring of patients with chronic conditions

- Connecting doctors to doctors
  - Allows doctors to collaborate
  - Enables educational opportunities and training
  - Increases efficiencies in diagnoses and effective treatment
Types of Technology in Health Care

- Electronic Health Records
- Mobile health (mHealth)
- Telemedicine
- Portal Technology
- Self-Service Kiosks
- Remote Monitoring Tools
- Sensors and Wearable Technology
- Wireless Communication
- Real-time Locating Services
- Pharmacogenomics/Genome Sequencing
Electronic Health Records

EHRs are a digital version of a patient’s paper chart containing:

- Medical history
- Diagnoses
- Medications
- Treatment plans
- Immunization dates
- Allergies
- Radiology images
- Lab and test results
Benefits of EHRs

- Ability to be shared with providers in multiple health care organizations
- Improve quality and convenience of patient care
- Increase patient participation in their care
- Improve accuracy of diagnosis and health outcomes
- Improve care coordination
- Increase practice efficiencies and cost savings
- Automate and streamline provider workflow
- Allow for consistency
Current Mobile Capabilities

- Find a Doctor
- Review Claims
- Monitor Exercise
- Research Hospitals
- Enroll in Benefits
- Evaluate Symptoms
- Submit Wellness Activities
Mobile Health Statistics

247 MILLION AMERICANS HAVE DOWNLOADED A HEALTH APP

95 MILLION AMERICANS USE MOBILE DEVICES AS HEALTH TOOLS

&

40,000 MOBILE APPS ARE AVAILABLE FOR TABLETS & SMART PHONES

WIRELESS PILL BOTTLES HELPED INCREASE MEDICATION COMPLIANCE TO OVER 95%

MOBILE HEALTH IS A $1.3 BILLION INDUSTRY AND IS EXPECTED TO REACH $20 BILLION BY 2018

42% OF U.S. HOSPITALS USE DIGITAL HEALTH TECHNOLOGY

Medical Text Message Reminders

- Raise medication adherence by 10%
- More than double the quit rate for smokers
- Save $812 per diabetic patient

MOBILE REMOTE PATIENT MONITORING WILL SAVE THE U.S. $36 BILLION IN HEALTH CARE COSTS BY 2018
Future of mHealth

- There are already 97k+ mobile apps related to health and fitness today
- Growing trend in remote patient monitoring
  - Reduce costs
  - Reduce amount of time spent in hospitals
  - Reduce frequency of hospital visits (Facetime to show doctors skin rashes or injuries)
  - Increase preventive care
- Increase in monitoring chronic disease
  - Monitor glucose, blood pressure and other vital statistics
  - Easily share information with doctors, who can then share with other doctors
  - Ability to adjust medication dosages as needed
- Live stream medical procedures to teach medical students
Telemedicine

- A telecommunications capability that allows individuals to consult with doctors via two-way video, text or email

- Reduces cost and increases efficiencies through better management of chronic diseases, shared health professional staffing, reduced travel times and fewer or shorter hospital stays
  - Improves distance barriers
  - Provides medical services to those in rural areas
  - Quality of telemedicine as good as in-person consultations
  - Can eliminate the possible transmission of infectious diseases
  - Allows for home-bound patients to see a physician without transport by ambulance
Patient Portals

- Web-based access point that allows doctors and patients to communicate and share health information remotely
- Designed to boost patient’s involvement in their care
  - View, download and transmit medical records
  - Review test results
  - Facilitate ongoing doctor-patient dialogue
- Reduce costly paperwork
  - Serves as online billing and payment centers
- Provides Education and wellness tracking
Self-Service Kiosks

- Kiosks in local retail stores allow individuals to monitor health
  - Blood pressure cuffs, thermometers, scales, pulse oximeter, etc
  - Data can be transmitted to a doctor
  - Live video stream with a physician

- Kiosks in hospitals allow patients to register on their own
  - Creates efficiencies in data and time
  - Enables physicians to push clinical information to patients
  - Establishes payment plans
Remote Monitoring Tools

- Enables close monitoring of patients outside of clinical settings
- Data is sent to physicians via telehealth computer systems
- Doctors can be alerted when high-risk patients need immediate attention
- Promotes safety and prevents harm through continuous surveillance of seniors

New technology in the works:
- Sensor mats to place under mattresses to monitor sleep
- Activity monitor to support independent seniors
- Wrist touchscreen devices to allow doctors to monitor patients from anywhere
- Devices worn on the forehead to monitor the severity of sleep apnea
- Wireless and portable fetal monitoring devices for high-risk pregnancies
Sensors and Wearable Technology

- Technology engages and empowers patients to be more involved in their health
- Devices can track heart rate, blood pressure and oxygen levels
- Fitness devices create a competitive environment that drives individuals to get healthy
- Collects massive amounts of data for researchers to improve health care
- Surgeons have been wearing Google Glass as a teaching instrument to give others the perfect point of view during surgery.
Wireless Communication

- Allows health care professionals to retrieve, store, share and send data
- Enables the communication process to be expedited
- Lab tests and alerts can be sent securely using smartphones, web-based consoles or third-party clinical systems
- Creates an audit trail to track communications for compliance purposes
- Deciphers alerts to doctors on messages that require immediate response
- Real-time synchronization to ensure messages and alerts are delivered
Real-Time Locating Services

- Radio frequency ID badges are being used in hospitals to
  - Track and improve the workflow of nurses
  - Track expensive, highly specialized equipment
  - Monitor temperature and humidity in rooms that store medicines, vaccines and tissue samples
  - Monitor hand washing and sanitization of hospital staff to aid in compliance and prevent illness

- Infant tracking devices prevent child abductions
Pharmacogenomics

- The study of how your genes affect your medication response
- Individualized approach for choosing medicine and dosage
- Determines how people’s genetic makeup affects their response to drugs
- May save money by avoiding the trial-and-error approach of prescribing drugs that won’t work
PGx

- Doctors currently determine gene profile of some HIV, breast cancer, leukemia and colon cancer patients to ensure safety and viability of certain drug therapies
- Pharmaceutical companies will be able to produce more powerful medicines, targeting specific diseases
  - Recovery time will decrease and adverse reactions will be minimal, if not eliminated
  - There should be a decrease in overall health care costs due to success of medicine
  - In the future, it may become less practical to perform genetic testing before each prescription and we may see early life gene determination stored in an electronic medical record
Possible Disadvantages of Technology in Health Care

- Security breaches of private medical information
- Concern over decrease in demand for physicians
- Lack of quality patient time with doctors and nurses
- Over-dependency on technology could cause delays in treatment if staff is dealing with computer errors
- Increase in self-diagnosis, causing unnecessary fears and stress to individuals
- The time and cost of implementing new systems
Conclusion: Health Care Technology is the Way of the Future

- Power is shifting from hospitals, doctors and other caregivers to patients, potentially leading to health care improvements.
- Improve health care quality and efficiency
- Prevent medical errors and increase health care accuracy and procedural correctness
- Reduce health care costs
- Extend real-time communications of health informatics among health care professionals
- Easily combine meaningful data for comparisons and analysis