MedDigX: Week 2 Key Concepts

2.1 | Introduction To Week 2

Democratized media- The rise of platforms like Twitter, Facebook and Tumblr has enabled every doctor or patient to be a publisher. Since the early days of the printing press and even through to mass media, there have been two players in the communication world-- the broadcaster and the audience. But with the internet, the audience has become the broadcaster. Now, patients and physicians alike have access to their own communication channels and publication platforms.

Intuitive medicine- The care for conditions loosely diagnosed by symptoms and pattern recognition and treated with therapies of unclear efficacy. Intuitive medicine is dependent upon clinical judgment and is frequently considered the art of medicine.

Precision Medicine- The delivery of care for diseases that can be precisely diagnosed and treated with predictable evidence-based treatments.

Medical Crisis of Knowledge- A term that refers to the fact that scientists and healthcare providers are collecting more information and creating more knowledge than previously generated. While physicians could previously be up to date with information through a single 200 page journal this no longer applies as health related information is now measured and produced in terabytes.

2.2 | How Doctors Access Information

Supercomputers- A type of digital technology that has radically expanded our capacities for conducting scientific research both at the population scale of big data and at the molecular scale of personal genome sequencing.

Knowledge Doubling Curve- A theory developed by Buckminster Fuller in 1982 which projected that the rate of growth of human knowledge will grow exponentially in the computer age and that the sum total of human knowledge will double every year.

Artificial Intelligence (AI) Systems- A type of decision support system that in the healthcare setting can serve as a smart repository for the world's research and enable doctors to consult databases to get up-to-the-minute information ultimately tailored to the specifics of the individual patient.

Curators of Knowledge- An emerging skill which requires physicians to use their expert training to tailor the results of research to their individual patients by taking account of the

context of their daily lives.The ability to contextualize information may represent a new skill for human health care providers who serve as intermediaries between data-driven personalized medicine and the nuanced, but powerful, social, economic, and cultural features of a patient's life.

2.3 | Information in the Clinical Setting

Electronic Health Records (EHR)- An EHR is a digital repository for a patient's entire medical history. The goal of widespread adoption of EHRs is to make better use of the health related data already being collected within our healthcare system. The terms 'EHR' and 'EMR' (electronic medical record) are sometimes used interchangeably, though many users see EHRs as more patient-facing, while EMRs serve a more purely clinical function. In the era of digital medicine, the vast quantities of data that are being generated could facilitate the rise of a learning healthcare system.

"To Err is Human-- Building a Safer Health System"- A report published by the Institute of Medicine in 1999 that concluded that there are 44,000 to 98,000 preventable deaths from medical errors every year in the United States. The IOM further concluded that these errors came at a cost of $17 to $29 billion per year.

Medical Priesthood- A term coined by the Institute of Medicine in 1999 to categorize the various medical errors which were causing thousands of patients to die needlessly and with no one held to account.

"Crossing the Quality Chasm-- A New Health System for the 21st Century"-A report published by the Institute of Medicine in 2001 that argued for the importance of integrated EHRs.The authors noted that health care organizations, hospitals, and physician groups typically operate as separate silos, acting without the benefit of complete information about the patient's condition. The authors called for a nationwide infrastructure to support healthcare delivery, consumer health, quality measurement and improvement, public accountability, clinical and health services research, and clinical education. This commitment, they said, should have lead to the elimination of most handwritten clinical data by 2010.

Health Information Technology for Economic and Clinical Health (HITECH) Act- The HITECH Act was enacted as part of the American Recovery and Reinvestment Act of 2009 to promote the adoption and meaningful use of health information technology. Funding from the act was meant to provide support to achieve lift off for the creation of a nationwide system of EHRs.

2.4 | The Wearable Device and the Quantified Self: The Devices

Self-Tracking Device- A self-tracking device can be an app on a smartphone, a device like an EKG that connects to a smartphone, a FitBit, a Nike FuelBand, the Withing blood pressure cuff, sensors that turn your smartphone microphone into a mobile diagnostic tool, and more.

Biometric Data- Biometric data encapsulates a wide variety of information that can be captured from sensors including blood pressure, heart rhythm, respiratory rate, oxygen concentration in the blood, heart rate variability, cardiac output and stroke volume, galvanic skin response, body temperature, eye pressure, blood glucose, brain waves, intracranial pressure, muscle movements, components of lung function and mood. This is in no way an exhaustive list of the forms of biometric data.

Quantified Self- A new movement that involves using digital technology to capture biometric data about individual users. These data may be captured passively through the digital footprints that individuals leave as they shop, read, or communicate online.
Or quantified self data may be captured actively through users wearing clothing or accessories designed to capture specific health metrics like heart rate or number of steps taken.

Consumer-facing wearables- This term refers to self monitoring tools like Fitbits that can be purchased off the counter or online from electronic vendors. These consumer-facing devices, both mobile and tethered, can allow patients to capture data on their own. Consumer facing wearables are not to be confused with medical devices which undergo a rigorous FDA approval process prior to being used in controlled experiments. Consumer-facing wearables are not necessarily subject to the same rigorous testing. Consequently two different devices that claim to measure the same thing may produce radically different results.

White Coat Hypertension- a phenomenon that occurs when a patient is in a doctor's office which makes him/her nervous, and in turn produces artificially high and inaccurate blood pressure readings

2.5 | The Wearable Device and The Quantified Self: Who Is Using Them?

"The Wearable Future"- A study conducted by PricewaterhouseCoopers that argues that slightly over 20% of the US population has adopted some kind of wearable technology.

"Tracking for Health"- A study conducted by Pew Research Center which distinguished between the practice of self-tracking and the use of technology for self-tracking.

The study found that 69% of American adults track at least one health indicator, such as weight, diet, exercise routine, or symptom, either for themselves or for someone else. The research also found that many people track using low tech means, such as pen and paper or their own memory.

Apple's HealthKit- A service pioneered by Apple Inc. to push health data from consumer's phones to their doctors.

Blue Button Initiative- An initiative sponsored by the federal government which allows patients to download their own EHRs

OpenNotes- An important and successful project supported by the Robert Wood Johnson Foundation, that has been piloted to see what would happen if patients were able to access their clinicians' notes in their EHRs.

2.6 | The Wearable Device And The Quantified Self: Data in the Clinical Setting

Epic Systems-The dominant EHR provider for US health care systems.

MyChart- Epic system's patient-facing portal for accessing lab results.

2.8 | The Rise of "The Public Physician"

Public Physician- The public physician creates content, collaborates, writes, records, shares, connects, and has conversations where the entire world can see. The public physician is involved in the dissemination of ideas beyond the confines of traditional filtered media and real-life encounters.The doctor in the digital age is defined by the ability to talkback, engage, connect with, and most importantly, create the knowledge that's being used by other physicians.

2.9 | The Public Physician: Opportunities and Challenges

Participatory Online Culture- The increasing need for physicians to become part of the process of information and knowledge production online. Doctors are no longer solely confined to working within their clinics and instead increasingly need to engage online by producing new knowledge relevant to their clinical practice.

Human transparency- Is the currency of social dialogue in the new digital world. Previously, human transparency was not considered to be of professional value by pre-digital standards. The challenge for this public generation of physicians is how to maintain some level of transparency and authenticity while at once presenting themselves in a way that maintains the confidence of those under their care.

2.10 | The New Obligation to Create

Public Intellectual-175 years ago American poet Ralph Waldo Emerson suggested a critical social role for what he called the public intellectual. When a person trained in a discipline decides to write and speak to a larger audience than their professional colleagues, Emerson wrote, he or she becomes a public intellectual. Public action and public thinking was part of being a whole person. It was a civic and personal responsibility.