Role Of Artificial Intelligence
And Big Data In Health Care:
Are Doctors’ Jobs In Danger

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Disclosures
• None

What isn’t Artificial Intelligence?

What is Artificial Intelligence (Currently…)?

• Linked to a specific problem (as opposed to generalized)
• Algorithmic

AI is Already Present in YOUR Everyday Life

Reasons AI in Healthcare Makes Sense

• Healthcare is a HUGE market (projected $8.7 Trillion by 2020)
• Repetition is common:
  • Billing
  • Common clinical diagnoses
  • Radiology
  • Pathology
  • Laboratory
• Tolerance for (human?) error is low
• Non-human solutions may increase healthcare availability and reduce disparities
Examples of Artificial Intelligence in Healthcare (Today)

Artificial Intelligence Outperforms Pathologists in Diagnosing Metastatic Breast Cancer / December 12, 2017 by F. Perry Wilson

An artificial intelligence algorithm has outperformed expert pathologists in diagnosing metastatic breast cancer in a study that may completely disrupt medical imaging.

Google are Using 46 Billion Data-Points to Predict Patient Outcomes

Artificial Intelligence in Drug Discovery

- Aggregate and Synthesize Information
- Understand the Mechanisms of Disease
- Repurpose Existing Drugs
- Generate Novel Drug Candidates
- Validate Drug Candidates
- Design Drugs
- Design Preclinical Experiments
- Run Preclinical Experiments
- Design Clinical Trials
- Recruit for Clinical Trials
- Optimize Clinical Trials
- Publish Data
Barriers to AI in Healthcare

“Healthcare” is actually a diverse set of hundreds of occupations

Limitations in robotics. Anything that requires manual skill is harder to imitate

What you imagine a robot is...

What a robot is...

Non-logical components in healthcare administration

• When was the last time you tried to slot a patient for a procedure or argued with a colleague about an unnecessary procedure that they wanted...

Knowledge gaps in health administration (the “art” of medicine)

Lack of uniformity (so implementation requires multiple interfaces – think different EHR)
Regulations lag behind progress

How Can Doctors Protect Themselves from The Inevitable?

Fast Adoption
• Integrate tools into your practice to increase efficiency
• Avoid being blindsided by advances you had not anticipated
• Differentiate reality from myth

Believe in the Roadblocks

Choose an Obscure Field
• Most early efforts will focus on mainstream population health
• Being a niche expert will help you remain safe (for now)
• Example? Vascular Medicine...

Perform Procedures
Be Clinically Excellent

@Angiologist