Emerging Impacts on Artificial Intelligence on Healthcare IT

Session 300, February 20, 2017

James Golden, Ph.D., Christopher Ross, MBA
This presentation will meet all of the HIMSS IT Value STEPS. The conversation will center on how the use of AI to derive insights from data and information will drive improvements in Patient Engagement, Physician Workflow, and Identify New Clinical Protocols. We will discuss real-world examples and show how a thoughtful strategy to bring AI into the healthcare organization can lead to cost savings and improved clinician and patient satisfaction.
Speaker Introduction

James B. Golden, Ph.D.
Senior Managing Director,
PwC Healthcare Analytics

Christopher J. Ross, MBA
Chief Information Officer,
Mayo Clinic
Conflict of Interest

James B. Golden, Ph.D.
Has no real or apparent conflicts of interest to report.

Christopher J. Ross, MBA
Has no real or apparent conflicts of interest to report.
Agenda

• Learning objectives for this session
• A brief overview of the AI landscape for Healthcare IT
• The problem of clinical information overload for physicians
• Is AI a potential solution to address the problem of clinical data and information overload for physicians?
Learning Objectives

- **Describe** clinical capabilities using artificial intelligence and machine learning approaches such as IBM Watson and Google Deep Mind
- **Manage** knowledge obtained from artificial intelligence approaches and pull insights from clinical data
- **Employ** and realize value from clinical data sources using artificial intelligence and machine learning approaches
- **Create** real value from clinical analytics programs that formulate insight through artificial intelligence and machine learning
“We have lots of information technology. We just don’t have any information.”
Artificial Intelligence is a branch of computer science dealing with the simulation of intelligent behavior in computers.

Topic Areas within Artificial Intelligence (non-exhaustive)

AI techniques, such as Machine Learning, become more accurate and more useful when given access to large volumes of data. Healthcare “big data” has accelerated recent advances in clinical AI.
Healthcare is one of the most data rich industries, driven by digital health adoption, images, and electronic medical records

30% of all the electronic data storage in the world [is] occupied by the healthcare industry
-Harvard Business Review

- Data Generation in Healthcare
- Between electronic medical records, digitized diagnostics, and wearable medical devices, the average person will leave a trail of more than 1 million gigabytes of health-related data in their lifetime
- The proportion of American hospitals with an electronic health record has grown eight-fold in recent years, from 9% in 2008 to 76% in 2014
- For physicians, the comparable increase in PHR adoption has grown from 17% to 51%

Source: Harvard Business Review, CSC, IBM
Value-based care, population health, and comparative effectiveness research initiatives, are also pushing health data expansion faster than other industries

**Health Analytics and AI Drivers**

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<th>Transition to Value-Based Care</th>
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<td>• In order to be reimbursed and avoid penalties under the value-based care delivery model, healthcare providers must report numerous process and performance measures to quality and regulatory bodies</td>
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<td>• Providers will need sophisticated analytics programs for continuous monitoring of financial and quality performance for each population of patients</td>
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<th>Focus on integrating clinical and claims data for population management</th>
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<td>• Integrating clinical data from the digitization of medical records with claims data can be used to improve overall care, reduce unnecessary clinical procedures and identify early risk factors for certain patient populations</td>
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<td>• Sophisticated analytics programs will provide an opportunity for healthcare organizations to better manage population health data, provide access to data in real time, and improve patient care</td>
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<th>New healthcare data generation from consumers</th>
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<td>• In addition to an influx of massive amounts of structured and unstructured data, healthcare organizations must make sense of increasingly complex data sets (wearable data, images, social media, etc.)</td>
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<td>• Analytics can help to seamlessly collect multiple data sources and types, converting data into actionable insights that impact patient outcomes and increase operational efficiencies.</td>
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THE DIGITAL HOSPITAL: 82 COMPANIES REINVENTING THE PRACTICE OF MEDICINE
Cancer Therapy FDA Approvals 2007 - 2016

Number New Drugs or New Indications FDA Approved

Source: fda.gov
Novel Therapy FDA Approvals 2006 - 2015

CDER New Molecular Entity (NME) and New Biologic License Application (BLA) Filings and Approvals

*The 2015 filed numbers include those filed in CY 2015 plus those currently pending filing (i.e., within their 60 day filing period) in CY 2015.
- Receipts that received a "Refuse to File" (RTF) or "Withdrawn before filing" (WF) identifier are excluded.
- Multiple submissions (multiple or split originals) pertaining to a single new molecular/biologic entity are only counted once.
- The filed number is not indicative of workload in the PDUFA V Program.
The problem of data and information overload for clinicians
This presentation will meet all of the HIMSS IT Value STEPS. The conversation will center on how the use of AI to derive insights from data and information will drive improvements in Patient Engagement, Physician Workflow, and Identify New Clinical Protocols. We will discuss real-world examples and show how a thoughtful strategy to bring AI into the healthcare organization can lead to cost savings and improved clinician and patient satisfaction.
Questions?

- Jim Golden, Ph.D. (james.b.golden@pwc.com) @gbmdna
- Christopher Ross, MBA (Ross.Christopher@mayo.edu)

- Please complete the online session evaluation. Thank you!