

Chapter 14

Is Artificial Intelligence (AI) Friend or Foe to Patients in Healthcare? On Virtues of Dynamic Consent – How to Build a Business Case for Digital Health Applications

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ABSTRACT

Failure to appropriately measure Value is one of the reasons for slow reform in health. Value brings together quality and cost, both defined around the patient. With technology we can measure value in the new ways: commercially developed algorithms are capable of mining large, connected data sets to present accurate information for patients and providers. But how do we align these new capabilities with clinical and operational realities, and further with individual privacy? The right amount of information, shared at the right time, can improve practitioners' ability to choose treatments, and patients' motivation to provide consent and follow the treatment. Dynamic Consent, where IT is used to determine just what patients are consenting to share, can address the inherent conflict between the demand from AI for access to data and patients' privacy principles. This chapter describes a pragmatic Commercial Development framework for building digital health tool. It overlays Value Model for healthcare IT investments with Patient Activation Measures and innovation management techniques.

DOI: 10.4018/978-1-5225-1817-4.ch014

ARTIFICIAL INTELLIGENCE (AI): THE PATIENT'S FRIEND OR FOE?

Where can AI improve health services? The short answer is, wherever Big Data lives. Policy makers and healthcare administrators are grappling with the recent emergence of Big Data in healthcare. These can include large linked data (from electronic patient records,) streams of real-time geo-located health data (collected by personal wearable devices, etc.) and open data (from shared datasets.) Together these form Big Data, a realm rich in new research opportunities and avenues for commercial exploitation. (Kostkova, 2015)

AI in Health Systems

It is nearly impossible for doctors to stay abreast of all the new and changing rules governing their fields, on top of the constant innovations taking place therein.

In the paper, *Analysis of Questions Asked by Family Doctors Regarding Patient Care*, (Ely, J. W. et al. 1999) observed 103 physicians over one workday. Those physicians asked 1,101 clinical questions during the day. The majority of those questions (64%) were never answered. Among questions that did get answered, the physicians spent less than two minutes looking for their answers.

Obviously, providing quick answers to clinical questions will always improve the quality of healthcare. No wonder the Chief Health Officer at IBM Corporation, Rhee Kyi, a physician earlier in his career, recognizes the role IBM Watson will play in healthcare delivery. Watson, and other commercial solutions, promise to provide insights, reveal patterns and relationships across data sets. The allure of Watson lies in its being designed to work with unstructured data, such as genetic data and the free text portions of electronic health records.

The expectation is that research on large, shared medical datasets will provide radically new pathways for improving health systems as well as individual care. Facilitating personalized or “stratified medicine,” such open data can shed light on causes of disease, and the effects of treatment.

Some of the most powerful applications can be found in Public Health, where data sets from communities of practice, social networks, and wearable devices can be mined for a wide spectrum of public health monitoring, and launch of persuasive technologies for public health interventions. However, these fascinating opportunities develop against a backdrop of decades of under-investment in public health systems, which lack the resources to tackle the full range of health threats, from potential chemical or biological attacks, to serious chronic disease epidemics, or emerging infectious diseases like Zika. (*Trust For America's Health*, 2016)

The allure of analytics here is obvious. It can help health systems crunch data to improve care quality and reduce costs, especially for organizations that aim to profit under shared savings or financial risk contracts. How can we balance cost, value and liability in a regulated healthcare industry?

Me, My Health Care Circle, and AI

Another area where AI can be hugely helpful is in presenting data and helping patients make sense of it. After all, they are confronted with the same challenge as their doctors: quantities of specialized information that can be life saving, or just the opposite. The patient's informed consent is required in every aspect of care – from their contributing biological samples preparing for complex surgeries, to

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