# The next generation of health care information technology



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#### The business model of health care is undergoing major change



**Proactive health management** 

Fragmented, niche care

**Cross-continuum care system** 

Reward for volume

Reward for quality, safety & efficiency

#### Clinician-centric

### **Patient / consumer-centric**

#### This change is largely driven by reimbursement reform



#### Business model changes are consequential: the Uber effect



#### Three major leaps in IT over the last 25 years

#### Business use of the World Wide Web

Social network sites worldwide ranked by number of active users (in millions, as of Jan. 2017)



# Consumer adoption of mobile devices



#### The third leap – intelligence – is already prevalent in our everyday lives



#### Pursuing the next generation of health care intelligence



#### Data extraction

- NLP
- Image
- Video



#### Cognitive interaction

- Provider
- Consumer

#### Operational process modeling



#### **Clinical models**

- Prediction
- Process

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#### Business model changes & IT leaps leverage each other



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Gibraitar. Its purpose: to capture and abduct a high-value Jihadist arms buyer. Its authors: an ambitious Foreign Office Minister, a private defense contractor who is also his bosom friend, and a shady American CIA operative of the evangelical far-right. So delicate is the operation that even the Minister's personal private secretary, Toby Bell, is not cleared for It.

Three years later, a disgraced Special Forces Soldier delivers a message from the dead. Was Operation Wildlife the success it was cracked up to be—or a human tragedy that was ruthlessly covered up? Summoned by Sir Christopher "Kit" Probyn, retired British diplomat, to his decaying Cornish manor bouss, and closely observed by Kit's daughter. Emily, Toby must choose between his conscience and \* Read more



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#### Managing populations will lead to a new class of HIT



#### The range of data collected will expand significantly



## Population health spectrum: super utilizers



# Re-classification of discharge locations

Discharge Locations	Actual (Historic)	Model recommends higher level	Model recommends lower level	Model
Home	67.1%	11%	19%	66.4% 🐺
Home Health	13.2%			15.5% 🛧
SNF	14.7%			14.2% 🐺
Rehab	2.4%			1.6% 🐺
LTAC	2.6%			2.3% 🞝

#### Readmission intervention effectiveness: results

Follow-up visits can significantly reduce readmission risk.

Most appropriate time for a follow-up visit is two days after discharge; not effective after two weeks.

Patients with readmission risk score of ~65 benefit most from two-day follow-up visit. Note: effect of follow-up visit diminishes as you move further from 65 (higher or lower)

Likelihood of follow-up visit within two days diminishes if it is not scheduled while patient is still in the hospital.

#### Machine generated documentation



#### Exam room sensor data



#### Providing a dynamic plan for health



#### Federated research and analysis using deep learning



#### Telehealth use will accelerate



American Telemedicine Association, 2015

#### Consumers are engaged in more than a series of transactions

Harvard Business Review



SALES & MARKETING

#### **Competing on Customer Journeys**

by David C. Edelman and Marc Singer

FROM THE NOVEMBER 2015 ISSUE

# Usability remains a major issue

# Healthcare **IT** News

#### TOPIC



**Electronic Health Records (EHR, EMR)** 

## AMA demands EHR overhaul, calls them 'poorly designed and implemented'

Latest study confirms typing and clicking consume more than half the workday for doctors.

## How do we "solve" usability?

Advance payment reform

Improve use of user-centered design methods

Leverage advances in technology

Continuously review and tune clinical and operational processes

#### Learn from others

## Uniform Grocery Product Council Board of Governors (1973)

Robert A. Stringer, General Foods	Fritz Biermeier, Red Owl Stores, Inc.	
K. Marvin Everts, Jr. Stokley Van Camp	Alan Haberman, First National Stores, Inc	
William J. Hollis, American Can Company	Arthur D. Juceam, Lehn & Fink Products	
Robert R Koenig, Super Valu Stores, Inc	Curt Kornblau, Super Market Institute	
Robert F. Lee, Johnson & Johnson	Donald P. Lloyd, Associated Food Stores, Inc.	
Thomas P. Nelson, General Mills, Inc	William E. Oddy, Jewel Food Stores	
John L. Strubbe, Kroger Company	Wilbur Stump, Stump's Enterprises, Inc.	



# How do we "solve" interoperability?

Meaningful provider incentives to be efficient & effective across a continuum of care

Collaboration & leadership by those who have incentives

Vendor openness & interoperability

Standards development

Transparency of industry progress

# Questions?