

The Peaks & Pitfalls of Artificial Intelligence

November 20, 2018

Agenda

- Welcome
 - Jennifer Covich Bordenick, CEO, eHealth Initiative and Foundation
- Discussion & Comments
 - David Cohen, Division Vice President, Cerner
 - Lindsey Jarrett, PhD, Lead Strategist, Cerner's Intelligence Organization, Cerner
 - Matthew Keating, Director, Booz Allen Hamilton
- Q & A





Housekeeping Issues

- All participants are muted
 - To ask a question or make a comment, please submit via the Q&A feature and we will address as many as possible after the presentations
- Technical difficulties:
 - Use the chat box and we will respond as soon as possible
- Questions:
 - Use Q&A feature
- Today's slides will be available for download on eHI's Resource page www.ehidc.org/resources





Our Mission

eHealth Initiative's mission is to serve as the industry leader convening executives from multi-stakeholder groups to identify best practices to transform healthcare through use of technology and innovation. eHI conducts, research, education and advocacy activities to support the transformation of healthcare.





Multi-stakeholder Leaders in Every Sector of Healthcare





































Current Initiatives and Member Meetings

Convening
Healthcare
Executives
to Conduct
Research &
Identify Best
Practices

- Technology and Analytics to Improve Patient Care
- Workflow for Quality Improvement
- Data Governance: A Framework for Value-Based Care
- Addressing Privacy in Non-HIPAA Covered Entities
- Effects of Prior Authorization in Healthcare
- Sharing Behavioral Health Information in Light of the Opioid Epidemic
- Clinical Data Drives Success in VBC for Medicaid MCO
- Leveraging Patient Data to Improve Outcomes and Reduce Costs
- Influence of Artificial Intelligence on Healthcare
- Improving Pop Health by Addressing SDOH With A Multi-Stakeholder Approach
- Electronic Medication Adherence and Patient Safety





eHealth Resource Center Available With Best Practices & Findings

Best Practice Committees contribute to the eHealth Resource Center www.ehidc.org/resources which provides assistance, education and information to organizations transforming healthcare through the use of information, technology and innovation. The Resource Center is a compilation of reports, presentations, survey results, best practices and case studies from the last 16 years.

Download Our New Reports at www.ehidc.org

Artificial Intelligence in Healthcare The Machines Are Here & Improving Healthcare





Artificial Intelligence in Healthcare Cerner



Lindsey Jarrett, PhD
Lead Strategist, Cerner's
Intelligence Organization

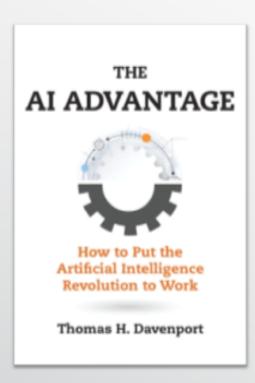


David CohenDivision Vice President





Al Advantage by Thomas Davenport*



Al Can Support 3 Business Needs:

- Robotic & Cognitive Automation: Automating Business Processes
- Cognitive Insight: Gaining Insight Through Data Analysis
- Cognitive Engagement: Engaging with customers and employees

Virtual observations to reduce patient falls and operational costs

Between 700,00 and 1,000,000 people in the United States suffer from preventable falls in the hospital every year. These falls contribute to a range of complications and increased healthcare utilization. ¹⁷ In 2016, Atrium Health implemented a 3D-motion tracking camera system, based on AI that monitorsfallrisk patients at Carolinas Rehabilitation hospitals. The system enables the hospital to observe 12 patients at a time with one staff member at the centralized monitoring station, reducing costs of sitters, restraints and net beds. The motion detector alerts the monitoring technician of patient movement, prompting a recording asking the patient to return to bed; two-way audio communication with nurses; and bedside assistance with the care team. Since implementation of the system, there have been zero falls for the patients observed, while the overall unassisted fall rate fell 51 percent. ¹⁸



2 Way Audio



Patient



Monitoring technician

- System agnostic
- One camera sensor per patient bed
- Central monitoring station
- Visual and audio alerts
- Two-way room communication



Reduces Falls

3D zones positioned around the patient bed or chair

Additional use cases



Patient Safety

Safety zones to detect tampering with invasive line/ tube placement



Patient Elopement

Wide angle of room to detect elopement



Visitor Monitoring

Patient safety zones to prevent drug diversion and abuse

All while significantly reducing sitter costs





Mission Health

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Mission Health reduces falls to zero, calls the \$4.8 million in cost avoidance only the beginning



Wasser Health-pointy Clemer Risbard Climanuer, results in partir falls, RCV and platined future arrivancement

Association in policing a transferme observation sold on to hip reduce policis belongements fals with relay. Through a ording partnering with Corne: the Ashendo, NC supplicitation system added Corner Polant Observer to se reasociations of contest foliation in Association.

Owing the tribuith study the average fore rate - as measured per USOO patient days of one - dropped horn four per more to zero.

"Fath are constitute that several well intertuned interventions have not school," and Marc Wester, DC FACP, service vice president of enteredient, "So one wants that palent hard, and it couled scientificated costs."

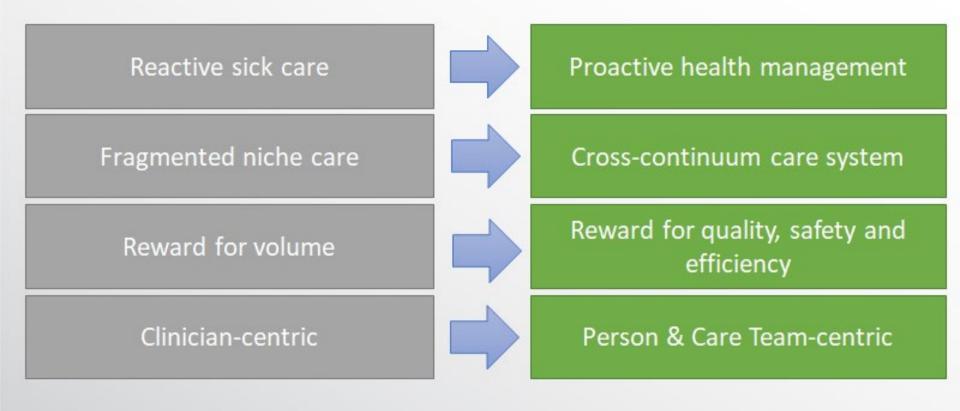
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"Any unit with a fully problem should have this solution," said steeling

Team afforts to optimize

The outor project, and by the Hossian Center for Innovation, Began with an introduction of the technology in 2015, Through a reported process of defining a fails not use uses. Missian Center for Innovative individual or In Hossian Projectal's followed and a section as author description and a section of the section of the section of the section of the section follows:

New demands on health care



ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

MATT KEATING

Principal, Booz Allen





@keatinme



in /keatinme

HYPE

AND REALITY...

nbc.com

A.I. could lead to a nuclear war by 2040, think tank warns

Apr. 25th, 2018

B bloomberg.com

Al Will Give Us Better French Fries

Apr. 26th, 2018

Ingenious Humans vs Intelligent Machines

Today, machines can outpace humans on some complex tasks, while a three-year old child can intuitively understand a scenario that even the most advanced AI cannot comprehend

Intelligent Machines Can...

- Respond to human commands
- Drive down a major highway
- Select the best treatments for disease
- Write poems, music, and artwork
- Learn human tastes, preferences
- · Outperform humans at strategy games
- Learn to perform narrow tasks better than humans

Cannot...

- Speak conversationally about any topic you choose
- Drive in dense cities or bad weather
- Create art that is better than humans'
- Understand human emotion, humor
- Invent new games to play
- Teach itself new skills independently

Machines can learn...

1. Fill in gaps in existing knowledge	Five approaches to structuring machine learning algorithms				
	The state of the s	"Tribe"	Origins	Motivation	Technical Approach
2. Emulate the human brain			Logic, Philosophy	Automate the scientific method	Inverse Deduction
		Connectionists	Neuroscience	Reverse engineer the human brain via math model of neurons	Backpropagation
3. Simulate evolution over generations		Evolutionaries	Evolutionary Biology	Replicate the evolution of the human brain over generations	Genetic Programming
Systematically reduce uncertainty		<u>Bayesians</u>	Statistics	Test hypotheses to determine the certainty of knowledge	Probabilistic Inference
5. Find similarities between old and		<u>Analogizers</u>	Psychology	Use previous problems / solutions and extrapolate into new context	Kernel Machines
new					

USE CASES

GENERAL

- o Detecting objects
- o Text spotting
- o Learning a new environment
- o Projection
- o Adversarial Machine Learning
- o Understanding human Behavior?

SPECIFIC

- o Image-based disease detection
- o Dictation Lens
- o Speech analysis
- o Predicting LOS and readmission
- o Propensity to pay
- o FWA

Boox Allen Hamilton Internal

PARTING THOUGHTS...

- o Machines lack Judgement -- raises the importance of wisdom and good human judgment
- o Context for machines is Mathematical humans have a broader experience set to draw upon (can be good and bad...bias)
- o No comprehensive, usable framework exists for ethics and privacy in using these technologies
- o If you don't have a strategic program to "label" your data-start now or get left behind
- o 'Open Data' is good ... But exclusive data is a must for superiority

As complex and challenging as TECHNOLOGY can be,

the hardest parts to get right are LEADERSHIP and STRATEGY "

Q&A



Lindsey Jarrett, PhD



Matthew Keating



David Cohen





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