WEBINAR SUMMARY

How AI Can Change the Future of Health Care

Featuring Kaveh Safavi and Brian Kalis

MARCH 7, 2019

SPONSORED BY Medtronic
WEBINAR SUMMARY

How AI Can Change the Future of Health Care

PRESENTER:
Kaveh Safavi, Health Practice Lead, Accenture
Brian Kalis, Digital Health Lead, Accenture

MODERATOR:
Gardiner Morse, Senior Editor, Harvard Business Review

Overview
There is tremendous excitement about how artificial intelligence (AI) can change health care. Accenture recently investigated the value of promising AI applications and found they could create up to $150 billion in annual savings for U.S. health care by 2026. AI has the potential to reduce costly back-office inefficiencies and support clinicians on the front lines. As health care organizations consider AI adoption, they must recognize that these technologies will change the nature of human work. New skills and approaches to structuring work will be needed.

Context
Kaveh Safavi and Brian Kalis shared findings from Accenture's investigation of AI applications in health care. They discussed where AI applications are likely to deliver the greatest value and how organizations can start the AI journey.

Key Takeaways

**AI offers new solutions to persistent health care challenges.**
The health care sector is struggling to simultaneously improve access, affordability, and effectiveness. AI offers the potential for new solutions to problems such as:

- **Rising costs.** A vexing problem globally is that health care costs are increasing faster than economic growth. The labor-intensive nature of health care means that costs grow faster than the economy. In all developed countries, health care costs are growing 1% to 3% faster than GDP. The fundamental problem is how to deliver more health care services without adding people in the same proportion. Automation of some tasks based on AI may be a solution.
• **Consumer expectations.** Consumers’ health care expectations are formed by perceptions and experiences outside of health care. People expect to receive care on their own terms. Today, health care is primarily a physical system. Looking ahead it must be both a physical and a digital system. The health care sector must have flexibility to provide services to people when and where they want it. This is not just a technology problem. Health care organizations need customer knowledge derived from interactions. AI enables organizations to learn from customer interactions without explicit human programming. Personalizing the health care experience is as much an AI challenge as a digital one.

**AI in combination with human talent can boost health care productivity.**

Since the 1980s, the U.S. economy has benefitted from automation. For three decades, employment based on routine cognitive and manual tasks has remained stable. Most new employment has come from non-routine manual and cognitive tasks.

---

**FIGURE 1: HEALTH CARE’S LABOR COSTS ARE UNSUSTAINABLE**

Without innovation, cost of unit of care growing faster than GDP due to its reliance on expert labor.


**FIGURE 2: AUTOMATION & PRODUCTIVITY**

Automation of routine vs. judgement tasks
U.S. employment by type of work

Source: Economist, March of the Machines, 2016
AI is just starting to address non-routine tasks. When industries shift tasks to machines, it improves economic productivity. Although some have envisioned a health care sector where doctors are replaced by AIs, that vision is unlikely to become reality. Health care requires significant clinical judgment which can only be delivered by humans. AI in health care will be humans working in conjunction with machines. That said, AI offers opportunities to scale the health care workforce in new ways.

“The tasks that are simply the application of protocols to problems or complex calculations are most easily shifted toward technology. The challenge in health care is that technology can’t make the final decisions. It can only identify risks. Ultimately, decisions or diagnoses live with a person.”

—Kaveh Safavi, Accenture

The World Health Organization has predicted a health care worker shortage of 15 million by 2030. This isn’t just a developing country problem. Accenture analyses suggest that even without major technology advancements, close to 30% of physician capacity today can be moved to patients, to a smart technology, or to a combination. That liberated physician capacity suggests that the gap between health care demand and health care resources can be closed.
AI has become viable thanks to the combinatorial effects of fast-moving technology trends. These include:

- **Better algorithms.** Over the past decade, advances in deep learning have generated better algorithms.

- **Better infrastructure.** AI applications can use virtually unlimited storage and processing power through low-cost cloud computing.

- **Faster processing.** With increased processing power, algorithms that took weeks or months now run in hours or days.

- **More data.** The digitization of health care information has increased the variety and volume of data that can power machine learning algorithms.

What we call AI today is mostly weak or non-AI uses. Strong AI is still a long way off.
AI technologies can improve multiple aspects of health care, while reducing costs.

Accenture investigated 10 promising AI applications and found they could create up to $150 billion in annual savings for U.S. health care by 2026.

<table>
<thead>
<tr>
<th>Application</th>
<th>Potential Annual Value by 2026</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robot-assisted surgery</td>
<td>$40B</td>
</tr>
<tr>
<td>Virtual nursing assistants</td>
<td>20</td>
</tr>
<tr>
<td>Administrative workflow</td>
<td>18</td>
</tr>
<tr>
<td>Fraud detection</td>
<td>17</td>
</tr>
<tr>
<td>Dosage Error Reduction</td>
<td>16</td>
</tr>
<tr>
<td>Connected machines</td>
<td>14</td>
</tr>
<tr>
<td>Clinical trial participation</td>
<td>13</td>
</tr>
<tr>
<td>Preliminary diagnosis</td>
<td>5</td>
</tr>
<tr>
<td>Automated image diagnosis</td>
<td>3</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Accenture Analysis, 2017

FIGURE 6: TEN AI APPLICATIONS THAT COULD CHANGE HEALTH CARE

AI currently creates the most value by helping front-line clinicians be more productive. AI can also benefit health care in other ways, such as:

- **Cost reduction.** Technology can optimize talent and streamline processes. Examples include operational efficiency, payer management, cybersecurity, fraud detection, and claims payment. In cybersecurity, Aetna is using continuous risk-based authentication with a behavioral-based fingerprint to determine if the right person is logging into Aetna’s mobile app. Fingerprinting is powered by machine learning and AI. It reduces customer calls for password resets.

  At large insurers, claims and payer management used to be a people-based job. When automation was introduced, it generated 20% to 25% excess capacity with the same labor. AI-based automation is expected to generate another 20% to 25% capacity. Employees can shift to higher value-added tasks, which increases output with no change in labor costs.

  Voice-to-text translation has improved efficiency. It reduces the time to chart notes and generate prescriptions. A result is a 20% savings of clinician time and 50% savings of nurse time.

- **Outcome improvement.** AI can accelerate disease discovery and increase the accuracy of diagnoses. Examples include robotic assisted surgery, automated image diagnosis, next-gen pathways, dosage error reduction, and clinical trial matching. Mazor Robotics uses a robot arm to guide surgeons for precision spinal surgery. This has resulted in a 21% reduction in length of stay compared to traditional practices.
• **Consumer experience.** Technology can increase personalization and convenience. Examples include virtual nurse assistants, provider and customer service, digital engagement, and connected machines. AIs are becoming the new user interface for patients, members, and back-office staff like contact center agents.

Sensely uses a virtual nurse avatar called Molly to answer patient questions and direct them to care locations. This gives patients 24/7 access to information and improves patient navigation. It has resulted in a 20% reduction in clinician time.

“AI currently creates the most value in health care by improving front-line clinicians’ productivity and making back-end processes more efficient. AI is not yet able to make clinical decisions.”

—Brian Kalis, Accenture

**To start the AI journey, health care organizations must begin with the business case.**

The first step in a health care AI journey is developing a strategy and a roadmap for leveraging AI across the enterprise. The strategy must encompass the reengineering of affected business processes, workforce strategies, and enterprise data management. In embarking on this journey:

1. **Start with the business case, not the technology.** Consider what business objectives you are trying to solve. Then figure out how achieve those objectives by applying technology.

2. **Find an executive leader to serve as the sponsor.** This is essential to promote adoption across the organization, because behavioral change is required. AI requires a fundamental rethinking about how processes work. Modifying processes to be adaptable requires leadership.

3. **Pick the right problem.** In many cases, it is helpful to start with automation and then advance to AI.

4. **Consider implementing a hub-and-spoke operating model.** The hub is a cross-disciplinary group that includes data scientists, engineers, and individuals with skills like creativity, psychology, and behavior change. The spokes connect through the enterprise. This model provides economies of scale when selecting technologies and tools, as well as for recruitment and talent development. It supports a cross-organization approach for building and maintaining the necessary data ecosystem.

**As humans and machines interact more closely, people will need new skills and ways of working.**

The future of AI requires collaboration between humans and machines. Machines will make humans better at what they do. At the same time, machines will take advantage of humans to create better results. Humans and machines combined are more powerful than each individually. Manufacturers use the term “cobots” to describe robots as co-workers on the shop floor.
When machines are co-workers, humans must learn to work differently. Changes include:

- **Humans must engage in intelligent interrogation.** To get the best results from technology, human workers must ask the right questions.

- **It will be necessary to “rehumanize time.”** When time is freed by technology, humans must rethink how they use that extra time. It makes sense to focus on tasks that can only be done by humans.

- **Employers must rethink the nature of work.** Automation and AI take easy work away from humans. People value some of those tasks, however, because they give their brains a rest. Humans can't operate at peak cognitive performance without breaks. Companies will need to reconsider human work, as they introduce technology into the workplace.

For example, simply putting an intelligent agent or chat bot in an existing health plan service center can lead to worse customer experiences and lower productivity. The human and machine relationship must be rethought to allow each participant to support how the service center operates. Virtual agents may be good for basic transactions, but must be connected to people to handle human-mediated online chats.

In some cases, more complicated inquiries will be escalated to a phone call. Technologies often aren't the first line of interaction for customers. Technologies may sit behind humans and make the human interaction better. In addition to rethinking the nature of work, the contact center workforce will need different skills. People will be needed who can train virtual agents and work well alongside technology.

![Figure 7: Fusion Skills for the Missing Middle](image)

Source: Paul Daugherty, H. James Wilson, "Human + Machines: Reimagining Work in the Age of AI," 2018
Kaveh Safavi, M.D., J.D. is the senior managing director for Accenture’s global healthcare business. Safavi is responsible for developing and driving a growth strategy that differentiates Accenture’s offerings for providers, health insurers and public and private health systems across the globe.

Safavi joined Accenture from Cisco, in 2011, where he led the global healthcare practice. Prior to that, he was Thompson Reuter’s chief medical officer of its health businesses and United Healthcare’s vice president of medical affairs. He also has served in leadership roles at HealthSpring and Humana.

As a seasoned executive, Safavi brings more than three decades of leadership experience to Accenture Health including such accomplishments as establishing one of the Midwest’s first electronic health record-enabled primary care practices. He has published numerous papers and is quoted on healthcare issues in various media publications, including the Wall Street Journal, BBC, New York Times, U.S. News and World Report, Harvard Business Review, and the Economist.

Safavi serves as a member of the board of directors for Xcertia, an organization that supports industry guidelines for safe and effective mobile health apps. He’s also serves on the advisory committee of the Buck Institute for Research on Aging.

Safavi has earned the distinction of both medical and law degrees, an M.D. from Loyola University School of Medicine and a J.D. from DePaul University College of Law. He is board-certified in internal medicine and pediatrics and completed his residency at the University of Michigan Medical Center.

Brian Kalis is a managing director of digital health and innovation for Accenture’s health business. He is a recognized digital health expert with significant experience combining business strategy and digital innovation—in ways that improve health experiences for consumers across the globe.

Brian is responsible for developing and driving Accenture’s Digital Consumer & Innovation offerings for healthcare. As a seasoned executive, Kalis works with health providers, payers, government organizations and technology companies worldwide as they design strategies, build capabilities and deploy digitally enabled models to support their objectives. Select areas of focus include digital health, consumer engagement, health innovation and consumer tools, such as wearables and mobile apps.

He began his Accenture career with helping healthcare payers design and implement digital experiences for members to manage benefits, wellness and chronic disease management. He began to take note of the way the complexity of the systems impacted the ability to reach and engage people through digital channels. He continues to see this as an opportunity to help health clients make consumer experiences more simple, intuitive and personal using digital technology and enriched human interactions. Brian has since continued to develop his focus on digital health as it relates to consumer experience, individual engagement, care distribution and collaboration.

He is a frequent speaker on the topics of digital health, healthcare innovation, healthcare transparency, healthcare privacy & security, generational uses of technology for health, and health information technology at leading graduate business schools, industry workshops and conference events. Brian also has published perspectives on these topics with Accenture, Forbes, New York Times, and various healthcare publications.

Brian is a graduate of the University of St. Thomas in St. Paul, Minnesota with Bachelor of Arts degrees in Entrepreneurship and Computer Science. He earned a Master of Business Administration degree from The Carlson School of Management at the University of Minnesota in Minneapolis, Minnesota.

Gardiner Morse is a senior editor at Harvard Business Review where he focuses on marketing, innovation, and technology. He has developed articles on a wide range of topics including marketing technologies, data privacy, health care management, and smart products strategy. Before coming to HBR, Morse served for 15 years in a range of editorial and business roles with the publishers of the New England Journal of Medicine. There he developed and launched numerous publications for physicians and the general public, and served as executive editor of Hippocrates, a journal for primary care physicians.