Trends in Health Care: Artificial Intelligence and Tech

Webinar
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AMCP Foundation Research Mission
Facilitate innovative research about the evolving health care environment

Why?
To advance the collective knowledge about how managed care pharmacy impacts patient outcomes

Resources
“Trends in Health Care” Report
Archived Webinar with “Perspectives On the Changing Health Care Landscape: Realizing Comprehensive, Multidisciplinary, and Integrated Health and Medical Care.”
Summary Report of 2018 Research Symposium
Join the Conversation

#AMCPFdn

How to Ask a Question

Type your question in the ‘Questions’ area
Thank You

*The Trends in Health Care research series is developed in collaboration with Pfizer*

*We are also grateful to our research partner, Xcenda*
We’re at a time of incredible advancements while lacking fundamentals of delivering affordable and accessible care.

“We have Star Wars science and Flintstones delivery. Our opportunities are in the space age, but our ability to get people the care they need, it’s in the Stone Age.”
— Physician

Big data, healthcare IT, and healthcare AI are bridging the gap between “Star Wars” science and “Stone Age” access to care.
**Big data** synthesizes information from various sources (including wearable devices) to develop insights that improve health and reduce costs

Leveraging technology to drive value

“There is a very important link between big data and successful value-based contracts. You need the ability to track patient outcomes. That’s basically the company saying we’ll put our money where our mouth is.”

– Health policy advisor

**Healthcare IT** is the structure for transmitting what becomes big data—it opens up a new world of opportunities to learn about, track, discuss, and improve health

When health data is securely exchanged between patients, payers, and providers, we expect:

- **Reduced healthcare costs** for all parties
- **Reduced medical errors**
- **Improved care coordination**
- **Improved care transitions**
- **Increased administrative efficiency**
- **New understanding of disease processes**
- **More appropriate patient routing** to correct healthcare facilities (urgent care vs emergency department)
- **Improved access to care**
**Healthcare AI** is changing what we consider healthcare and how it’s delivered

- **Smart mirrors** detect subtle but clinically relevant changes in appearance.
- **Smart scales** track weight, BMI, and hydration, and can alert providers to sudden changes.
- **Fitbits** track physiological information such as heart rate, sleep habits, steps taken, and calories consumed.
- **Smart refrigerators** track food freshness and what food has been consumed.
- **Virtual assistants** in medical offices streamline care for patients and providers.

The FDA has much to consider regarding the incorporation of AI into the healthcare system.

Aidoc’s AI-based products help identify potential anomalies in CT scans.
AI Case Study: Assistance Publique—Hôpitaux de Paris

10 years’ worth of data on hospital admission rates

Web program that predicts visits and admission rates

High admissions anticipated
Increase staffing

Low admissions anticipated
Decrease staffing

Xcenda and AMCP Foundation conducted research to identify key healthcare trends and to understand how the global influencers affect these trends

Trends scan

30 healthcare trends

Thought leader working group

6 key healthcare + 3 global influencers trends

Desktop research
>170 sources identified

20 multi-stakeholder 1:1 interviews

Payer survey
N=70

Xcenda/AMCPF Data on file
The global influencers are expected to affect some of the most important trends in healthcare.

Global Influencers Ranked as Extremely/Very Valuable by Key Trends on the Future of Healthcare (Payer Perspective)

- Population Health Management: 46% Healthcare IT, 76% Big Data, 73% Healthcare AI
- Industry Consolidation: 40% Healthcare IT, 63% Big Data, 64% Healthcare AI
- Drug Affordability and Value: 30% Healthcare IT, 60% Big Data, 61% Healthcare AI
- Innovative and Curative Therapies: 36% Healthcare IT, 60% Big Data, 54% Healthcare AI
- Accelerated Drug Approvals: 29% Healthcare IT, 50% Big Data, 46% Healthcare AI

**Question:** How valuable are each of the following with regard to each trend? (N=70)

Xcenda/AMCPF Data on file

The ways in which global influencers are affecting the future of healthcare and managed care are infinite and only just starting to be imagined.

**Innovative and Curative Therapies**
- Healthcare IT promotes even low-income patients to manage their health with a smartphone and internet access
- Use of claims data streamlines assessment of clinical trial design feasibility
- Use of AI speeds up the discovery of biomarker and therapeutic targets

**Drug Affordability and Value**
- Integrating disparate and varied data sets informs legislation and manufacturer/payer policies
- Better use of data—predictive analytics, value-based, real-time, transparent

**Optimal Health Coverage**
- Integration of datasets to evaluate trends, assess benefit design, and outcomes
- Leverage healthcare IT to drive utilization of high-value products
The ways in which global influencers are affecting the future of healthcare and managed care are infinite and only just starting to be imagined (cont.)

Accelerated Drug Approvals
- Big data analyzes genetic data to better identify subpopulations who would best respond to drug candidates
- AI enhances physician-patient interactions and could match patients to drugs candidates that are new to the provider

Population Health Management
- Insights from big data and healthcare IT can reduce costs overall, making it possible to reallocate funding for population health campaigns
- Healthcare IT can prevent medical errors that are prevalent when treating large populations
- Healthcare AI can alert key factors to population-level health trends to facilitate large-scale solutions

Industry Consolidation
- Big data provides larger and more diverse, integrated data sets
- Big data and AI produce predictive analytics for identification of at-risk patients

There are many challenges facing the global influencers, but payers are optimistic that they will be addressed in the next 5 years

Likelihood of Addressing Population Health Challenges Within 5 Years

- Collection and analysis of population health data: Extremely/Very Likely 76%, Somewhat Likely 18%, Not Very/Not at All Likely 6%
- Quantitatively measuring impact of intervention models/programs: Extremely/Very Likely 70%, Somewhat Likely 19%, Not Very/Not at All Likely 11%
- Development and vetting of intervention models/programs: Extremely/Very Likely 60%, Somewhat Likely 31%, Not Very/Not at All Likely 9%
- Misaligned incentives: Extremely/Very Likely 48%, Somewhat Likely 36%, Not Very/Not at All Likely 16%
- Cultural and social barriers to change: Extremely/Very Likely 39%, Somewhat Likely 34%, Not Very/Not at All Likely 27%
- Intervention timeframe of impactful programs: Extremely/Very Likely 27%, Somewhat Likely 26%, Not Very/Not at All Likely 47%
- Other (please specify)*: Extremely/Very Likely 33%, Somewhat Likely 67%

*Other (3 respondents)
Base: Total respondents (70)
Question: How likely do you think it is that your organization will address the following population health management challenges within the next 5 years?
Xcenda/AMCPF Data on file
A more organized approach to data privacy is vital

**Data Privacy Initiative Areas**
- Promote affordability
- Data use
- End-user license agreements accessibility
- Technology design
- Privacy breaches
- Regulatory policies

"Can’t say. It’s private."

Improving patient access to healthcare IT and AI technology will accelerate the development of insights

**Improving patient inclusion:**
- Promote affordability
- Actively recruit
- Ensure ethical participation
- Promote technology literacy in general

Patient inclusion and feedback is a game-changer

"[Patients’] continuous presence has allowed the transformation of drug regulation into a patient-centered process, in which patients are experts on the disease and its management and bring the real-life experience perspective into the scientific discussion, thus contributing to a more comprehensive decision-making process."

– The Importance of Early Access to Medicines for Patients Suffering From Rare Diseases1

Thank You
Growing data volume and complexity

- Sensors & Devices
- Medical Images
- Images/Multimedia
- Natural Language
- Enterprise Data

2010 - 2020
By The Numbers

Every 73 days\(^1\)
The rate medical data is expected to double every by 2020

2 billion\(^2\)
The number of people over the age of 60 by 2050

$47$ trillion\(^3\)
Cumulative estimated global economic impact of chronic disease between 2011 and 2030

$12.9$ million\(^4\)
Global shortage of health-care workers by 2035

Challenges with delivering effective care

45% of medicine not evidence based\(^3\)

29 hours
Approximate amount of time Doctors would have to read each workday to keep up with new professional insights\(^2\)

4.25 billion
Estimated number of retail prescriptions that will be filled in the U.S. in 2019\(^3\)

Sources:
We must merge HEALTH + Healthcare data

Source: Adapted from Health Policy Brief, "The Relative Contribution of Multiple Determinants to Health Outcomes," Health Affairs, August 21, 2014.

Translating Big Data into Value
The AI Landscape

AI capabilities in combination are plentiful
Healthcare Opportunity: Knowledge + Data-Driven Insights

Knowledge-Driven Insights
- Scientific papers
- Evidence-Based Guidelines
- Reports, Books
- Articles, Publications

Closing the translational knowledge gap

Data-Driven Insights
- Electronic Medical Records
- Claims, Labs, Images
- Health risk assessments
- Internet of Things
- Social, environmental, behavioral

Delivering real-world evidence

A Prospective Blinded Study of 1000 Cases Analyzing Role of Artificial Intelligence. Watson for Oncology in Change of Decision Making of a Multidisciplinary Tumor Board (MDT) From a Tertiary Care Cancer Centre

| Somashekhar SP et al. ASCO 2019. |

The MDT changed their decision in 13.6% of the cases.

<table>
<thead>
<tr>
<th>Reason for Treatment Change</th>
<th>Percent</th>
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<tr>
<td>Evidence for newer treatment(s)</td>
<td>55%</td>
</tr>
<tr>
<td>More personalized treatment alternatives</td>
<td>30%</td>
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<tr>
<td>New genotypic, phenotypic and clinical insights</td>
<td>15%</td>
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"The study suggest[s] that cognitive computing decision support system[s] holds substantial promise to reduce cognitive burden on oncologist[s] by providing expert, updated, recent evidence-based [evidence-informed] insights for treatment-related decisions making."
Shared-decision Making in Prostate Cancer with Clinical Decision-support

Clinical decision-support systems may play a role in facilitating shared decision making when a single standard of care is lacking.

Watson for Oncology facilitated a shared decision-making process for 48 patients in Brazil.

- Concordant, 54%
- Partially concordant, 15%
- Discordant, 31%

53% of discordant cases due to patient preference for treatment versus active surveillance.

Concordance: WfO treatment option and chosen treatment.

“Variation in prostate cancer treatment exists. CDSS [clinical decisions-support systems] therapy options may be useful in quantifying and modifying unwarranted variations in prostate cancer treatment.”

* Excerpt from abstract

Artificial Intelligence-based Clinical Decision-support System Improves Cancer Treatment and Patient Satisfaction

| Zonghe ZW et al. ASCO 2019. |

Enhanced patient knowledge around disease and treatment options can increase confidence in achieving positive outcomes. A new model of cancer care consultation assisted by Watson for Oncology was evaluated.

New 7-step model assisted by Watson for Oncology compared to non-CDS system method (n = 70; new = 50; traditional = 20)

- Introduce WfO to patients
- Patients express desires
- Oncologist presents medical condition
- Discussion with team
- Input patient- and WfO-reviewed options
- Discuss/ finalize options with patients
- Patient feedback

Patients in 7-step process indicated higher satisfaction in treatment options, confidence in health care workers, and willingness to follow treatment regimen.

“…patients build stronger confidence with their health care team and are willing to believe they will benefit from the treatment plans.”

* Excerpt from abstract
Humans + Machine = “AI” or “Augmented Intelligence”

People excel at:
- Common sense
- Dilemmas
- Morals
- Compassion
- Imagination
- Dreaming
- Abstraction
- Generalization

AI systems excel at:
- Natural Language
- Pattern Identification
- Locating Knowledge
- Machine Learning
- Minimize Bias
- Endless Capacity

Thank You!

“Wherever the art of Medicine is loved, there is also a love of Humanity.”
~Hippocrates

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Q&A with Speakers

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