Transforming Healthcare with Cognitive Computing

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Healthcare Industry Leader Europe, IBM

9 February 2017, Zurich
Garry Kasparov vs IBM Deep Blue
11 May 1997
Ken Jennings vs Watson vs Brad Rutter, Jeopardy, 13-14 February 2011
Addressing health challenges

86% of healthcare expenditures are attributed to people with chronic conditions

75% of patients expected to use digital health services in the future

50% of Medicare payments will be value-based payments by 2018

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1. The Centers for Disease Control and Prevention - Health Expenditures: [https://www.cdc.gov/nchs/data/series/sr_05/sr05_296.pdf](https://www.cdc.gov/nchs/data/series/sr_05/sr05_296.pdf)


There’s a gap in the accuracy of treatment decisions. As many as 44% of all initial cancer treatments are modified on the second course of treatment.  

Less than 50% of medicine is evidence based. An epidemiologist would have to read 167 hours a week to keep up with new professional insight. 

Aging populations can’t be served. 25% of Japan’s population is over 65, growing to 40% by 2060.

Sources:
1. Journal of Clinical Oncology; Talk about Health Blog, Sept 2011
Accessing a vast amount of untapped data could have a great impact on our health - yet it exists outside medical systems.

<table>
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<th>Social Context, Behaviors</th>
<th>75%</th>
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<tr>
<td>Medical Care</td>
<td>20%</td>
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<tr>
<td>Genetic</td>
<td>5%</td>
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75% Social Context, Behaviors Impact on population health status

1100 Terabytes
Generated per lifetime
Consumer-contributed data from non-medical sources: wearables, social media activity, public records

6 Terabytes
EMR, EHR, claim systems

0.4 Terabytes
Genetic research, personalized medicine, clinical trials

We, Watson Health, aspire to improve lives and give hope by delivering innovation to address the world’s most pressing health challenges through data and cognitive insights.

This is the mission of Watson Health.
Watson Health

• Advanced and comprehensive cognitive computing platform

• Expertise of 3,000+ projects: 92 of top 100 health systems

• HIPAA enabled and GxP enabled clouds house vast and diverse data sets.

• 5000+ professionals: A global team of accredited professionals, bringing decades of knowledge in healthcare, life sciences, social services, and health economics

• Industry-leading acquisitions and strategic partnerships

• The global capacity, scale, trustworthiness and commitment of IBM
It begins with the power of Watson:

- Understands, reasons, learns and interacts
- Extracts and derives meaning from structured and unstructured content – at scale
- Provides analyses across vast arrays of criteria to transform decision-making
- Dynamically updates hypotheses based on variable chains of evidence
- Harnesses entire bodies of knowledge
<table>
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<tr>
<th>Government</th>
<th>Value-Based Care</th>
<th>Life Sciences</th>
<th>Oncology &amp; Genomics</th>
<th>Imaging</th>
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<td>Provide longitudinal analysis of multivariate data sets to benefits and services organizations</td>
<td>Enhance the ability of providers to contract, organize for, and deliver personalized, quality care to individuals and populations</td>
<td>Spur the discovery of medicines by enabling researchers to uncover insights</td>
<td>Help oncologists more confidently plan treatment regimens, more efficiently match patients to clinical trials, and apply genomic insights to each patient’s cancer</td>
<td>Help radiologists improve productivity so that you can enable patient care with image analysis tools</td>
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<td>So that we can help...</td>
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<td>Improve the delivery of health and human services programs, while supporting efforts to better meet individual’s unique needs</td>
<td>Support the ability of providers to take on risk, while reducing costs and meeting evolving reimbursement models</td>
<td>Support commercial decisions using insights from real world outcomes, market knowledge, and product surveillance</td>
<td>Bring personalized, evidence-based care for more cancers to people around the globe</td>
<td>Enable better patient care by providing contextually relevant, probability-driven objective assistance</td>
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Humans excel at:

- Common Sense
- Dilemmas
- Morals
- Compassion
- Imagination
- Dreaming
- Abstraction
- Generalization

Cognitive systems excel at:

- Natural Language
- Pattern Identification
- Locating Knowledge
- Machine Learning
- Eliminate Bias
- Endless Capacity
Use Case: Patient Experience

- **Transform** patient experience for children and their parents/carers
- **Enhance Alder Hey patient interactions** from first referral to the completion of their care journey
- **Engaging** dialogue to familiarise, reward and educate
- Providing actionable **insights** for clinicians based on patient and parent tone and sentiment
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