How will you jumpstart innovation to unlock the power of data to deliver value-based care?

The better the question. The better the answer. The better the world works.
Five irrefutable facts are affecting the health care industry...

**Socioeconomic forces**
Care will continue to take an ever larger share of GDP as obesity, chronic disease, aging populations and health disparities increase ... products require a greater proof of value.

**Required capital efficiency**
Pressure moves from productivity and efficiency challenges to innovation with intelligent infrastructure ... all uses of capital will require constant ROI assessment.

**Technology integration**
Conversion to virtual personalized and preventive models ... will require integration of new capabilities.

**Customer engagement**
Consumer demand for experience not just a service to receive care will reshape care delivery ... will require change in business and clinical models.

**Workforce shortages**
18m predicted shortfall in global health care workforce by 2030 ... will need a shift toward virtualization, automation and AI.
A potential Intelligent Health Ecosystem of tomorrow will go beyond simply being “digitized” and “connected”, becoming a truly “smart” system.

**Forces**
- Productivity pressure
- Economic pressures
- Consumer demand
- Aging populations and chronic disease

**Forces**
- Technology modernization
- Interoperability
- Workforce shortages
- Empowered “super consumers”

**Forces**
- Technology advancement (AI)
- Ecosystem acceptance
- Risk sharing/reward
- Platform dominant business model

**Analog care**
- Productivity pressure
- Economic pressures
- Consumer demand
- Aging populations and chronic disease

**Digitized care**
- Technology modernization
- Interoperability
- Workforce shortages
- Empowered “super consumers”

**Connected care**
- Technology advancement (AI)
- Ecosystem acceptance
- Risk sharing/reward
- Platform dominant business model

**Smart health system**
- Integrated - Patient at the centre and controls their data
- Targeted therapy, proven efficacy and personalized care
- Continuously refined with ‘real time feedback loops (via sensors)
- Decisions optimized across patient ‘journey’
- Strategic sourcing: technology acquired adheres to interoperability standards to maintain data flow

**Digitized edge** - Data is pushed and pulled from the edge (vs. centralized)
- Virtual and physical care fully integrated
- Insights shared

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Exploring - Moving from paper-based to electronic records and developing data policies, principles and governance

Creating interoperability between systems allowing for linkage of dataset and comparing outcomes

Virtual models emerge 360° patient view AI-driven insights to inform real-time clinical and operational decision making and value-based/health outcomes models

Sources: Frost & Sullivan, Healthcare IT News, Mordor Intelligence
Such Smart Intelligent health systems will also depend on an inclusive operating model (ecosystem) where risk, reward, data models and insights are “shared”

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**Smart health system**

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The intelligent health ecosystem will:

- Drive innovation, collaboration and value sharing
- Deliver value for all stakeholders
- Be hyperconnected
- Have superfluid fast data flows and standards for interoperability
- Operate “human cognitive as well as computational AI
- Intelligently learn

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**Resulting benefits:**

- Accelerated access to new innovation
- Personalized and patient-centric health experiences
- Enhanced outcomes achieved
- Value based care the ‘norm’ collectively recognized and differentially reimbursed
- Optimized (augmented) technology assisted decision-making
In getting there, we are likely to **overestimate** the effect of a technology in the **short term** ... and **underestimate** its effect in the **long term**.
Innovations are emerging ... but not yet at the scale or interoperability to achieve real change.

<table>
<thead>
<tr>
<th>Digitized(^{(1)})</th>
<th>Connected care(^{(2)})</th>
<th>Smart(^{(3)})</th>
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</thead>
<tbody>
<tr>
<td><strong>Mature</strong> (embedded in multiple care settings at scale)</td>
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<td><strong>Deployed</strong> (gain in up to five geographies)</td>
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<tr>
<td><strong>Pilot</strong></td>
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</table>

(1) Digitization: mostly in traditional operating models and diagnostic in nature

(2) Integrated operation of discrete devices - emerging personalization and predictive in nature

(3) Intelligent intervention, highly personalized and interdependent on collaboration between organizations and prescriptive in nature

- Commercial
- Drug discovery
- Multiple
- Patient engagement
- R&D
- Regulatory
- Supply chain and operations
In more detail ... example 1: Can we smartly prevent respiratory disease vs. treating symptoms?

- **Digitized care**
  - Integrated sensors in device monitor use and can “report”

- **Connected care**
  - Bio-electronic implants
  - Detects neurological trigger in cell response
  - Prevents inflammation and thus an asthma attack

- **Smart health system**
  - Home sensor analyses air quality and weather data
  - Signals to use inhaler to “prevent” an asthma attack

- **Analog care**
  - Standalone - used on demand
In more detail ... example 2: How can we provide post operative personalized care anytime, anywhere?

**Analogue care**
- Self-help guide
- Sporadic outpatient hospital visit

**Digitised care**
- Sensor embedded in implant
- Streams diagnostic data (one way to care team)

**Connected care**
- Connected Digital twin driven rehab
- Personalized coaching
- Interactive prescriptive physical therapy based on patient performance
- Active monitoring of implant to prolong efficacy

**Smart health system**
- Home coaching and personal assistant to assist progress
In more detail ... example 3: How can effective virtual care be scaled to increase access and affordability?

- **Analog care**
  - Traditional hospital visits with long wait times

- **Digitized care**
  - Virtual consultation
  - Digital triage
  - Often diagnostic support

- **Connected care**
  - Comprehensive specialist support - virtually (and remote)
  - Personalized monitoring - some predictive in nature
  - Active interventions

- **Smart health system**
  - Large-scale specialized remote care
  - ‘Medical engineer’ managing large numbers of patients at a distance
  - Technology assisted prescriptive options: physician delivered

- **Traditional hospital visits with long wait times**

- **Virtual consultation**

- **Digital triage**

- **Often diagnostic support**
How can we better steer the utilization of health technology to deliver smart health in an intelligent ecosystem?
A major hurdle is a misalignment in what stakeholders’ value

As a patient
How can I be in control and get access to the right treatment quickly so I am healthy?

As a provider
How can I use data and evidence-based practices to diagnose faster and provide the most effective treatment?

As a payer
How can I keep our members well and provide the most cost-effective health solutions?

As a policy maker
How can I align incentives as well as manage risks to improve population health?

As a biopharma or med tech
How can I get approvals faster and be paid longer at a level to sustain innovation?
And thus a misalignment in what is prioritized as a primary need

As a patient
How can I be in control and get access to the right treatment quickly so I am healthy?
I need to be sure the diagnosis is right, treatments will work for me and my quality of life will be improved.

As a provider
How can I use data and evidence-based practices to diagnose faster and provide the most effective treatment?
I need a comprehensive understanding of my patients, use trusted algorithms to assist in delivering treatments.

As a payer
How can I provide the most cost-effective health solutions?
I need to be able to evidence value for money using economic models and pay only for treatments that work for my clients.

As a policy maker
How can I align incentives as well as manage risks to improve population health?
I need evidence of clinical safety and measure how Health can be valued as an population asset vs. a cost burden?

As a biopharma or med tech
How can I get approvals faster and be paid longer at a level to sustain innovation?
I need to identify patients for trials faster, evidence efficacy, safety and value to accelerate market access for my innovations.
Which drives different (expensive) investment priorities, often requiring access to other’s data

As a patient
How can I be in control and get access to the right treatment quickly so I am healthy?
Data relevant and specific to me
I need to be sure the diagnosis is right, treatments will work for me and my quality of life will be improved.

As a provider
How can I use data and evidence-based practices to diagnose faster and provide the Population models inclusive of SDoH to validate decisions
I need a comprehensive understanding of my patients, use trusted algorithms to assist in delivering treatments.

As a payer
How can I provide the most cost-effective health solutions?
Highest financial return models to pay against
I need to be able to evidence value for money using economic models and pay only for treatments that work for my clients.

As a policy maker
How can I align incentives as well as manage risks to improve population health?
Safe and effective evidence to improve population health
I need evidence of clinical safety and measure how Health can be valued as an population asset vs a cost burden?

As a biopharma or med tech
How can I get approvals faster and be paid longer at a level to sustain innovation?
Patients identified and sustained optimal price points
I need to identify patients for trials faster, evidence efficacy, safety and value to accelerate market access for my innovations.
Almost all business models (and life) follow a predictable pattern

1. **Delay** extinction: optimize/digitize existing and stretch the curve

2. **Avoid** extinction: unlock innovation transform operations and jump the curve

How to be sustainable:

- **Delay** extinction: optimize/digitize existing and stretch the curve
- **Avoid** extinction: unlock innovation transform operations and jump the curve

Technology gives more opportunity to jump the curve

Be confident to “jump the curve”: bridge the misalignment on “value” and undertake collaborative investments with shared data access.

Sensors and systems collect personalized data.

Informed clinical intervention.

Data capture and application of advanced analytics.

Continuous monitoring via sensors.

RWE and intelligence.

Informed clinical intervention.

Refine with stakeholders.

Evidence cost benefit.

Define.

Align and recognize ROI with stakeholders.

Ideate benefit and need.

Define.

Realize transformation and value.

Collaborate and invest.

“Smart” comparison to patients’ baseline and RWE comparable patient cohorts.

Optimization of personalized treatment.

Realize transformation and value.

Collaborate and invest.

“Smart” comparison to patients’ baseline and RWE comparable patient cohorts.

Optimization of personalized treatment.
And with increased alignment on value and thus value-based care we will progress more quickly from digitized to truly intelligent smart health systems.

Increasing alignment between stakeholders of value in specific data interrogation:

- Providers
- Payers
- Patients
- Policy makers
- BioPharma

Health value:

- Analog
- Digitized
- Connected
- Diagnostic (understand data)
- Predictive (use data)
- Prescriptive (provide value from data)

Health value:

- Access data
- Analyze data streams
- Connect data streams
- Combine data sets
- Analyze data sets
- Targeted analyses
- Analyze data insight
- Share access and insights
- Targeted therapy and personalized care
- Sharing insights and continuous learning

Data and technology continually learning, becoming more intelligent.
Having “an experience” and not just “use of” is becoming commonplace. In other industries, user experience market leaders have defined characteristics

<table>
<thead>
<tr>
<th>Winning characteristics</th>
<th>Amazon</th>
<th>AirBnB</th>
<th>Netflix</th>
<th>Uber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convenience</td>
<td>Easy ordering, cost-competitive, rapid delivery</td>
<td>Single interface for all activities</td>
<td>Easy selection/can view on any device</td>
<td>Simple mobile booking and payment</td>
</tr>
<tr>
<td>Seamless trading exchange</td>
<td>Wide range of suppliers in network</td>
<td>Network of available properties for rent</td>
<td>Single point to access content from different media producers</td>
<td>Anytime, anywhere access</td>
</tr>
<tr>
<td>Predictive and personalized</td>
<td>Recommendations based on user history</td>
<td>Search algorithm based on user profile</td>
<td>Recommendations based on past viewing</td>
<td>Recommendations to improve travel time</td>
</tr>
<tr>
<td>High consumer choice</td>
<td>Buying options (used vs. new)</td>
<td>Wide range of accommodations</td>
<td>Vast and expanding content library</td>
<td>Tiered options based on cost and service</td>
</tr>
<tr>
<td>Transparency</td>
<td>Responsive, accountable customer service</td>
<td>Customized interactions between parties</td>
<td>Flat-rate subscription model</td>
<td>Real-time tracking of mobility options</td>
</tr>
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</table>
How is the experience of the consumer changing in health?

Insights from the EY 2023 consumer value-based care global survey: The majority of consumers ...

1. Prioritize access to care as most valuable
2. Expect to use wearables and mobile apps and be treated ‘hospital in home’
3. Believe the health industry to be very tech-driven: more precision medicine and AI
4. Are willing to share health data if it is used for research / help with improved effectiveness
5. Are willing share other kinds of data with their clinician (diet, lifestyle, genetic, report outcomes)
Unlocking the power of data, aligning on value and collaborating on investments to deliver an intelligent health experience is the key to any sustainable strategy.

\[ FV = i(HEx) \]

**Future Value**

**intelligent Health Experience**

<table>
<thead>
<tr>
<th>Leading Experience characteristics</th>
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<tbody>
<tr>
<td>Convenient</td>
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<tr>
<td>Seamless exchange</td>
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<tr>
<td>Predictive and personalized</td>
</tr>
<tr>
<td>Wide choice</td>
</tr>
<tr>
<td>Transparent</td>
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</table>
In summary ...

Align on Value
Clinical / non-clinical measures

Collaborate
On investments and share returns

User experience
Is an integral part of value

Insights
Must be personalized

Fast feedback
To flex treatment options

Demonstrated Health outcomes
Are differentially reimbursed

Clinical decision support models
May be flexed (with more precise data) to expedite access
Tech disruptors have the firepower to help ... mutual value and trust must be on the table.

Disruptor’s firepower
Includes: global (US and Asia) big Tech

Life sciences industry firepower
Includes: big pharma, big biotech, specialty pharma and medtech

Tech market re-aligns

Sources: EY, Capital IQ. Firepower analysis calculated through 31 Dec 2022.
And even ChatGPT agrees ... !

Value-based healthcare (VBHC) is a healthcare delivery model that emphasizes the value of healthcare services over the volume of services provided. In this model, healthcare providers are incentivized to improve patient outcomes while reducing costs, rather than being paid for the number of procedures or tests performed.

Value-based healthcare takes a holistic approach to patient care, with a focus on improving the patient’s overall health outcomes, including their quality of life. The model requires healthcare providers to work together across different specialties and care settings, using evidence-based practices and data analytics to inform clinical decision-making.

The value-based healthcare model aims to improve patient outcomes by:

1. Focusing on prevention and early intervention to avoid costly hospitalizations and treatments.
2. Providing coordinated and integrated care to avoid duplication of services.
3. Encouraging patient engagement and education to empower patients to manage their own health.
4. Measuring and reporting outcomes to improve accountability and transparency.

The goal of value-based healthcare is to improve the quality and affordability of healthcare services, while enhancing patient experience and outcomes.

Q

What is value-based (health) care?

It is a shift away from the traditional fee-for-service model, which has been criticized for driving up costs and encouraging unnecessary procedures.
How will you jumpstart innovation to unlock the power of data to deliver value-based care?

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