Reframing the beyond

Five trends redefining the Health Sciences and Wellness operating model
Introduction
Four irrefutable facts are affecting the health care industry and triggering a shift in traditional industry models

**Socioeconomic forces**

Health care will cost the world **US$30t** by 2030. WEF.

Care will continue to take an ever larger share of GDP ... will require a greater proof of value.

**Required capital efficiency**

Waste in Health systems is **20-40%**. WHO.

Pressure moves from productivity and efficiency challenges, to more focused business models and modernized infrastructure ... will require constant productivity assessments.

**Technology forces**

There will be **41b** IoT devices by 2027. *Business Insider*. Sensors, IoT + AI will enable personalized and preventative care.

Conversion to virtual personalized and preventative models ... will require integration of new capabilities.

**Customer centricity**

Consumer acceptance of smart devices to receive care will reshape care delivery ... will require a change in business model.

*Post-COVID-19 we expect industry transition to be even faster*
The vision for health systems is not new...the ‘how’ and ‘when’ to invest and collaborate is the challenge.

Continue to optimize the business of today

- Tech-driven improvement in access, efficiency, equity, personalization and quality of care
- Data liquidity
- Seamless integration of physical and virtual
- Preventative and predictive care

- Hospital-centric, physical and remote care with connected digital systems
- Some technology enabled solutions, not fully integrated
- Paper processes, some standalone IT infrastructure

Duality of growth

Innovate and grow the business of tomorrow

Smart Health Systems
Integrated patient-centric care that breaks down silos between care settings

Connected hospital

Digitized hospital

Traditional hospital

Sources: Frost & Sullivan, Healthcare IT News, Mordor Intelligence.
Having had a taste of virtual care, consumers and physicians expect, and will demand more


1. “After COVID-19” is based upon current users who are likely to continue using the technology in the future.
2. “Future adoption” is based on adoption by current non-users who intend to use the technology in the future.
3. SMS: short message service; text messages.
Across industries, success is driven by platforms that share key characteristics to improve the user experience.

<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>
</tbody>
</table>
Leveraging these characteristics is key to building a better user experience in smart health systems.

**Characteristics of future care**

- **Convenience**
- **Seamless trading exchange**
- **Predictive and personalized**
- **High consumer choice**
- **Transparency**

### Smart Health System

Integrated patient-centric care that breaks down silos between care settings.

- **Predictive and personalized**: Preventative and predictive care
- **High consumer choice**: Tech-driven improvement in access, efficiency, equity, personalization and care quality
- **Convenience**: Seamless integration of physical and virtual
- **Seamless trading exchange**: Data liquidity
- **Transparency**: End-to-end visibility of supply chain
Five trends to assess strategic focus to deliver a better Health Experience (HEx)

Humans at the Center
Consumer acceptance of patient centered technology will reshape care delivery, and redefine health outcomes, value and service ... will require a change in business model.

Supply chain
Personalized products and services will increasingly command value ... will require investment in supply chain agility and transparency.

Outcomes
To outperform, companies need to pivot to value based reimbursement using clinical, societal and consumer-reported measures ... will require acceleration of innovative contracts.

Data
Companies need to connect and interrogate data to tailor products and services to improve healthcare ... will require access to others’ data.

Sustainability
Sustainable practices are critical to an organization's long term value and access to the capital markets ... will require measures to demonstrate environmental, economic and social contributions.
We explore these five trends in the context of four business models, which require different investment decisions to optimize performance.
Humans at the Center

Companies need to integrate patient-centered technologies in their business
Currently, patient-consumers must fit into a disparate and inconvenient health infrastructure siloed, provider-driven, and supply-oriented; in the future this infrastructure will be rebuilt around connected and personalized patient experiences.
Some are already going beyond selling ‘a product’ and delivering not just better care but a better care experience.

- Helping physicians manage chronic disease via the cloud
- Helping physicians track patients continuously after hospital discharge
- Simplifying clinical trials to improve patient and physician convenience
- Linking telehealth with personalized 24/7 coaching for better patient experience
- Digital therapeutics / smart pills to help patients manage their disease
- Scaling up agile infrastructure to improve patient access and physician convenience
Sensors, linked via 5G to AI-based algorithms, will create the rich, continuous data streams that put humans at the center of the care experience.

Source: EY
Different sensor technologies will power each business model’s shift toward putting the human experience at the center.
Companies must now rebuild their operating models to put humans at the center and offer a more connected, personalized Health Experience.

- Partner with or acquire companies to access new capabilities in user-centered design, behavioral science and services.

- Build or buy expertise in in, on and around the body sensors analytics, AI and machine learning algorithms and interoperable system integration.

- Target development of better health solutions that integrate drugs with convenient to use devices and diagnostics.
How will you utilize technologies to make health care even more human?

The better the question. The better the answer. The better the world works.
Supply chain

Companies must adapt their supply chains to deliver the personalized products and services that will command value.
Traditional supply chains deliver compliant products globally but with minimal risk and agility.

- Global distribution of sites but limited agility
- Limited investment in digital tech and limited focus on data integrity across the extended organization
- Lengthy planning cycles and throughput times
- Low transparency across the multiple entity value chain
- High finished goods inventory
- Linear, one way supply chains
- Low capabilities for delivering personalized products or services
To deliver personalized products and services, companies must sync their supply chains and data streams with a wider health ecosystem; integrated care solutions show how to do this.

- **Payer**: VBC/P
- **Third party data host**: Patient anonymized data – PROs
- **Manufacturer**: Patient data analytics, Service e.g., patient profiling
- **Integrated care solution**: Services to all patients, Patient raw data
- **HCPs**: Patient data analytics, Personalized HCPs services e.g., flare, Treatment care cooperation shared decision, All patient
- **Patient**: Patient raw data, Insights and personalized services e.g., tracking education
- **Value flow**
  - Product to relevant cohort (patients under treatment)
  - Data flow
  - Data flow Value flow

**Supply chain fully integrated with services**

**Real time (compliance) monitoring gives ability for tighter production and distribution planning**

**Enhanced positive customer experience**
Personalized care models require a different level of supply chain transparency and integration; success requires mastering specific skills based on the business model.

- **Breakthrough innovator**: Master complexity, master integration and partnership, master consumer centricity, master cost and efficiency.
- **Disease manager**: Master complexity, master integration and partnership, master consumer centricity, master cost and efficiency.
- **Efficient producer**: Master complexity, master integration and partnership, master consumer centricity, master cost and efficiency.
- **Lifestyle manager**: Master complexity, master integration and partnership, master consumer centricity, master cost and efficiency.

**Importance**:
- Lower: high product availability, channel flexibility, personalized two-way supply chains.
- Higher: fully predictable product replenishment for patients (DTP/ DTC).
- Fully predictable product replenishment for patients (DTP/ DTC).
- Proactively push supply, managing and influencing consumer demand.
Companies must now optimize supply chains to withstand globalized disruption and deliver the right personalized products and services.

- Prioritize technology to provide end-to-end supply chain visibility, from the patient all the way to the supplier networks, to strengthen risk management and resilience and allow real-time use of market signals and rapid decision making.

- Develop the ability to rapidly build and integrate new supply chains and entire manufacturing systems in parallel with clinical development of innovative products.

- Develop product and process-based partnerships that enable flexible, fast connections across supply chain networks.
How will your operating model adapt to deliver products and services anywhere?

The better the question. The better the answer. The better the world works.
Outcomes

Only companies that demonstrate better patient outcomes will outperform.
Better outcomes need to be demonstrated in the real world to accelerate the use of new products; innovative contracts can help achieve this.

**Commercial product lifecycle**

1. **Precommercial development**
   - Product enters commercialization lifecycle only after ~8 years preclinical/clinical R&D

2. **Reluctance**
   - Post-launch, uptake is constrained by payer and provider wish to see real-world evidence of product effectiveness

3. **Adoption**
   - As product validates its clinical trial outcomes, providers and payers increasingly buy in

4. **Peak**
   - Brand enjoys market position for remainder of commercial lifecycle

**Innovative contracting can accelerate uptake**

Innovative contracts that connect product reimbursement to real-world performance compress the period of payer and provider reluctance and:

- Share the risk between providers and pharmaceutical companies
- Enable faster market access.
- Allow patients to benefit from innovative products more quickly
Payers, providers, patients and life sciences companies must identify what they want from innovative contracts and how they can make these agreements work efficiently and at scale.

**Payers and providers**
- How do I mitigate the budgetary risk associated with new, unproven treatments and services?
- How do I improve patient access to innovative therapies?
- How do I capture and validate outcomes data cost-effectively?
- What infrastructure do I need to build to launch multiple innovative contracts in my organization?
- What products and services help me deliver better care faster and to more patients?
- How can remote monitoring technologies avoid costly hospital readmissions?

**Life sciences companies**
- Who should I partner with to access real world data that shows value?
- How do I use technologies to capture outcomes data during development so that proof of value data is available at launch?
- How do I use medical science liaisons to build stronger relationships with payers and health care providers?
- How can I scale innovative contracts from one payer to many payers?

**Patients**
- What personalized treatments reduce symptoms or provide cures?
- How can I be prescribed the right therapy as quickly as possible, so I don’t have to step through multiple ineffective therapies first?
- How easy is it to stay on the treatment regimen and maintain high quality of life?
Deciding which outcomes data to prioritize should be directly informed by a company’s given business model.

<table>
<thead>
<tr>
<th>Life sciences business model archetype</th>
<th>Personalized clinical data</th>
<th>Quality of life and behavioral data</th>
<th>Health care cost at population level data</th>
<th>Disease prevention and wellness data</th>
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</thead>
<tbody>
<tr>
<td>Breakthrough innovator</td>
<td><img src="Image" alt="Circle" /></td>
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</table>

Importance: lower ![Circle](Image) higher ![Circle](Image)

- Use economic data to demonstrate productivity gains.
- Use consumer-derived wellness data to maintain health.
- Use medical grade non-clinical data to drive behavior change.
- Use companion diagnostics and clinical data to develop and validate curative therapies.
Companies must redefine their business models to accelerate innovative outcomes-based contracts

- Proactively model how the use of products and services generate cost-savings for health systems and productivity gains for employers, individuals and pilot innovative contracts

- Collaborate with consumer, technology and other organizations to develop digital tools and services that are easy to use and increase adherence to treatment and validate its effectiveness

- Work with regulators to better use real-world data in product approvals and reimbursement decisions
How will you bridge trust gaps and build mutual value together?

The better the question. The better the answer. The better the world works.
Data

Companies must have access to others’ data to secure future value
There is an ongoing health data explosion ...

36% CAGR

1,218 exabytes

2,314 exabytes

10,481 exabytes

2018

2020(E)

2025(E)

1 exabyte (EB) = 10^{18} bytes or 1 billion gigabytes

... with data being generated ‘everywhere’

Lifestyle and consumer

Electronic medical record

Registry or clinical trial

Family history

Socio-economic

Genetic / other test

Demographic

Apps, wearables, implantables

Smart device and other digital health

Claims

Companies are already exploring several approaches to access rich, multidimensional patient data in secure, permissioned ways.

**Enhanced ability to access and integrate real-world data from digital devices**
- Digital health app data
- Fitness trackers
- Wearable data

**Trusted research environments and other licensing deals to access health system data**
- Clinical data
- EHR information
- Pathology, histology, radiology and other procedural notes
- Case history notes
- Medical claims data
- Medication orders, co-prescriptions and refills

**Better social listening**
- Online patient communities data

**Closer access to and relationships with patients, where regulatory systems allow**
- Patient reported outcomes
- Adverse event reporting
- Quality of life measures
- Diet and lifestyle diaries
- Family history

**Greater integration of diagnostic data**
- Biomarker panels
- Genomics/other omics data
- Consumer genetics and other consumer diagnostics

**How can organizations access the data they need but don’t own?**
A company’s business model will influence which data and insights should be prioritized to create future value.

- Traditional clinical data sources
- Real-world evidence
- Enterprise data on operations and processes
- Social listening and consumer choice data

### Breakthrough innovator
- Lower importance
- Identify the patients their products can address and validate effectiveness

### Disease manager
- Higher importance
- Identify changes in patient's health status and manage accordingly

### Efficient producer
- Lower importance
- Identify opportunities to cut marginal costs

### Lifestyle manager
- Higher importance
- Identify consumer preferences and predict demands

**Importance:** lower ○ higher ●
Accessing the right data from external organizations and linking it to your own will be critically important in the future. To achieve this goal, companies must:

- Work more closely with regulators and health stakeholders to establish data privacy and cybersecurity standards around securely accessing patient data
- Develop trusted research environments, third-party data brokerage relationships and other innovative solutions to access and use data
- Build secure, easy-to-use channels for collaboration with competitors and new entrants to enable participation in care platforms and development of cloud-based strategy for secure data sharing between parties
Who will you partner with to access the data you don’t own, but need?

The better the question. The better the answer. The better the world works.
Sustainability

Sustainable practices are critical to an organization's long-term value and access to the capital markets.
In 2021, consumers and investors are demanding that companies measure and report their sustainability practices, with access to capital increasingly linked to ESG goals.

- **45%** of consumers report sustainability is more important now than in 2020\(^1\)
- **72%** of consumers believe companies' behaviors are as important as the products they sell\(^2\)
- **96%** 2020 increase in investment in sustainable assets\(^3\)
- **$700b** Predicted amount of sustainable debt issuance in 2021\(^4\)

"The more your company can show its purpose in delivering value to its customers, its employees, and its communities, the better able you will be to compete and deliver long-term, durable profits for shareholders."

Larry Fink, CEO, BlackRock
2021 Letter to CEOs

As demands for transparency grow, companies must identify and consistently measure the sustainability metrics that describe their value proposition.

**Yesterday**
- An “alphabet soup” of standards
- No consistency in how metrics are reported
- No way to easily compare companies’ performance
- Sector-agnostic metrics fail to capture full value of sustainability
- Difficult to correlate sustainability with financial performance

**Today**
- Convergence among standard setters to work toward a joint vision
- Calls to companies to commit to consistent sustainability reporting
- Greater transparency will make cross comparisons easier
- Sector-specific standards become more important
- Access to capital linked to sustainability performance

**Progress relative to peers will become a differentiator**
Health companies’ products and services create social and environmental value in four specific ways

<table>
<thead>
<tr>
<th>Value driver</th>
<th>Why it creates value for health companies</th>
<th>Sample metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible innovation</td>
<td>New products address unmet disease needs and cure common and neglected health conditions</td>
<td>• Number of curative or disease modifying products and services</td>
</tr>
<tr>
<td>Access and affordability</td>
<td>Companies improve public health by making life saving therapies and services widely available and reasonably priced</td>
<td>• % of the portfolio that address unmet medical needs</td>
</tr>
<tr>
<td>Trust and quality</td>
<td>For the general public to have faith in therapies and services, companies must ensure their quality, safety and security</td>
<td>• Score on the Access to Medicines Index</td>
</tr>
<tr>
<td>Health impact of environmental management</td>
<td>There is a strong correlation between climate change and health, with poor air and water quality and rising temperatures increasing disease burden</td>
<td>• Number of products with equitable pricing policies</td>
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<td></td>
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<td>• Number of regulatory actions (e.g., OAI) cited on inspection</td>
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<td></td>
<td></td>
<td>• Number of warning letters for promotion non-compliance</td>
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<td></td>
<td></td>
<td>• Disability adjusted life years caused by carbon emissions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Revenue to water consumption ratio</td>
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<tr>
<td></td>
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<td>• Revenue to unit of waste generated</td>
</tr>
</tbody>
</table>
EY has identified eight metrics of biopharma sustainable value that are also recognized by standards organizations and investor indices

<table>
<thead>
<tr>
<th>Life sciences specific metric</th>
<th>UN SDGs</th>
<th>WEF - IBC</th>
<th>EPIC</th>
<th>SASB</th>
<th>GRI</th>
<th>CDSB</th>
<th>MSCI</th>
<th>DJSI</th>
<th>ISS Oekom</th>
<th>Sustainalytics</th>
<th>FTSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsible innovation (Fast Track Designations awarded, no. of curative therapies, emphasis on rare disease)*</td>
<td>✔️</td>
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<td>Score on Access to Medicines 2018 Index</td>
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<tr>
<td>OAIIs and VAIs issued since 2010 by the US FDA</td>
<td>✔️</td>
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<tr>
<td>FDA issued warning letters for drug promotion non-compliance (since 2010)</td>
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<td>Serious adverse events for the company’s top five drugs (through 12/19)</td>
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<tr>
<td>Disability adjusted life years resulting from greenhouse gas emissions released per US$ billion in 2018 revenue</td>
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</table>
As companies accelerate their sustainability efforts, they should prioritize sustainability metrics that align to their business models.

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<tbody>
<tr>
<td>Breakthrough innovator</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>... prioritize curative products, addressing biggest global health needs</td>
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<tr>
<td>Disease manager</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>... prioritize maximizing human capital by managing chronic conditions</td>
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<tr>
<td>Efficient producer</td>
<td>〇</td>
<td>〇</td>
<td>〇</td>
<td>... prioritize the health of individuals by ensuring the health of the planet</td>
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<tr>
<td>Lifestyle manager</td>
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<td>〇</td>
<td>... prioritize high quality and secure solutions that comply with current regulations</td>
</tr>
</tbody>
</table>

Importance: lower 〇  higher ●
Sustainable companies will build trust with policymakers, patient-consumers and other ecosystem partners and be favored by investors as sustainable practices begin to translate into higher financial returns.

- Establish a framework for measuring and communicating progress against sustainability goals, with board level responsibility for oversight.
- Collaborate with other companies to share manufacturing capacity to improve efficiency; limit unnecessary manufacturing/distribution.
- Prioritize innovation in the highest need areas, including curative treatments, and products to address future global infectious disease challenges.
How can long-term value be demonstrated from sustainable practices and give your business edge?

The better the question. The better the answer. The better the world works.
Conclusion
By connecting data sets, combining data sets together and sharing insights back to a wider network the *Power* within data can be unlocked.
Unlocking the Data power will fuel a better Health Experience and deliver superior returns.

\[ FV = (HEx) \]

**Future Value**  
**Health Experience**

[Outcomes x Personalization]

- Predictive and personalized
- Integration of physical and virtual
- High consumer choice
- Data liquidity
- Transparency of supply chain

**Data**  
(Connect + Combine + Share)

- Data streams
- Data sets
- Access & insights

Access data  
Interrogate data  
Drive insights  
Learn
When experience drives the new health economy, when, how and where do you fit?

The better the question. The better the answer. The better the world works.
EY | Building a better working world

EY exists to build a better working world, helping create long-term value for clients, people and society and build trust in the capital markets.

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