

# Business Thinking & Organizational Structure

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## Outline

- Healthcare initiatives
- Triple Win & Aim framework
- Institutions, Org charts, and Processes
- Disruptive technologies in healthcare
- Examples of successful healthcare AI companies

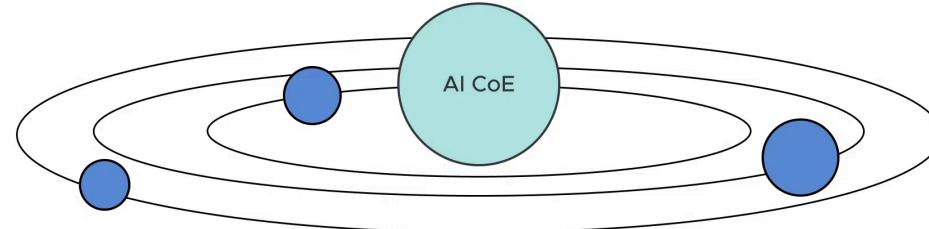
# Healthcare Initiatives

# Healthcare Initiatives

- Successful healthcare initiatives will take into account:
  - Key stakeholders (Patients & families, Healthcare providers, and other hospital staff)
  - Organization structure
  - Current incentives
- **Transformation** is much harder than **change**, and most healthcare transformations will be underwhelming
  - Adoption of data science initiatives requires a solid understanding of both the *institutional* and *technical* challenges with DS

# AI Center of Excellence

- A healthcare organization wishing to adopt a data science at scale will often face a key strategic question:
  - *To what extent should a central AI team coordinate and drive data science transformation?*
- A common approach is to develop an AI Center of Excellence
  - *A dedicated team or department that focuses on the strategic implementation of artificial intelligence technologies across the organization*



Source: AtScale

## AI Center of Excellence (benefits)

- Concentration of expertise
  - Recruiting and maintaining AI talent is very difficult!
- Economies of scale
  - By having larger pool of skilled data scientists, you can more smoothly distribute work
-

# AI Center of Excellence (benefits)



Source: Zinnov

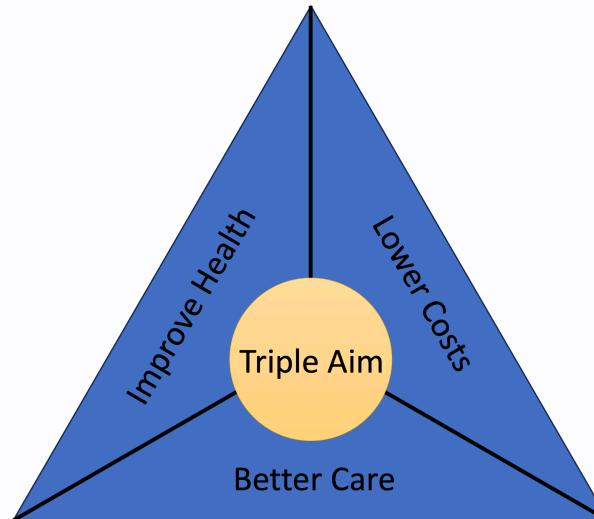
# Triple Aim Framework

## **Triple Aim Framework**

- Developed by Dr. Donald Berwick and colleagues at the Institute for Healthcare Improvement (IHI) in 2007.
- Three interconnected goals focus on enhancing healthcare systems and the overall health and well-being of populations.

# Triple Aim Framework

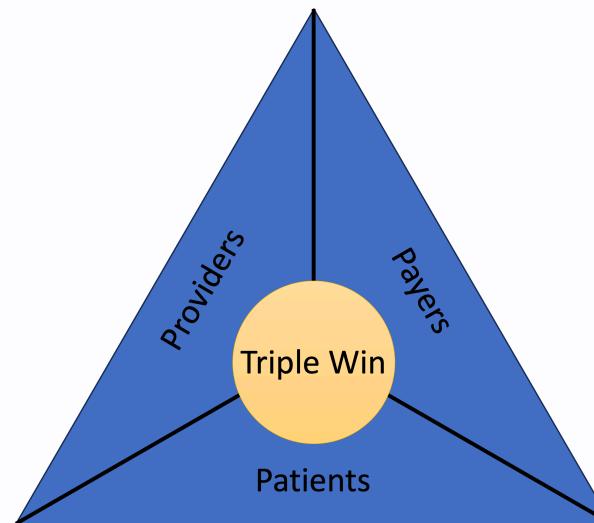
- 1. Improving Population Health:** Enhance the health of a defined population.
- 2. Enhancing Patient Experience of Care:** Improve the experience of care for individual patients.
- 3. Reducing the Per Capita Cost of Healthcare:** Reduce the overall cost of healthcare while maintaining or improving quality.



# Triple Win Framework

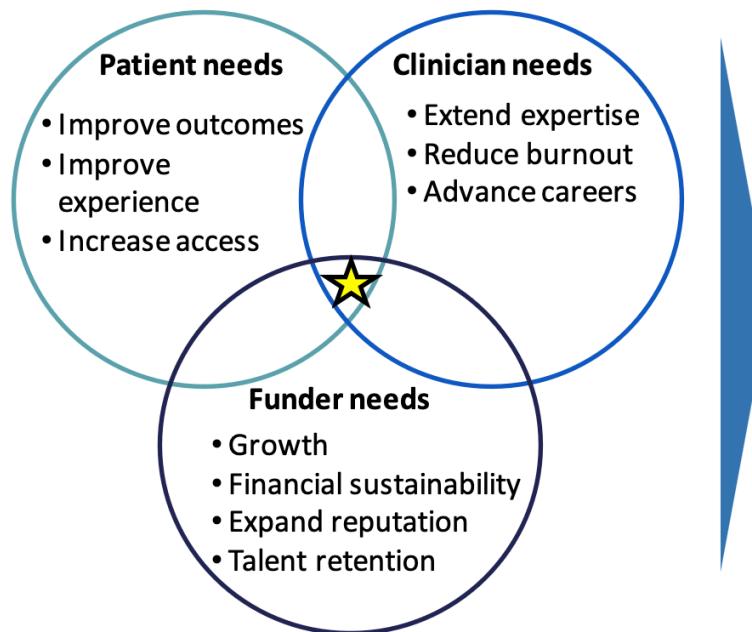
# Triple Win Framework

- When thinking about new ideas, try expanding "Triple Aim" to "Triple Win".
- You need to consider how your idea creates value for all three stakeholders: patients, clinicians, and funders.



## Translating the framework into practical value

### Triple win



How does the idea create value for all three stakeholders?

#### Patient needs

- What is the unmet need?
- How many patients does this idea reach?
- How does it change their lives (is the improvement in outcomes or experience a breakthrough or an incremental improvement)?
- What are current / future alternatives?

#### Clinician needs

- What team members will this idea impact?
- How will their daily work change?
- Will the idea increase efficiency and wellbeing?
- What opportunities does it create (e.g., publications, education, connection to colleagues)?

#### Funder needs

- How is financial value created (direct reimbursement, contractual fees, licensing revenue)?
- Who is the payor (patient, insurance, hospital, pharma, government)?
- How does this impact the brand?
- Will this create career opportunities?

## Patient

*Improve Outcomes, Improve Experience, Increase Access*

1. What specific need or problem has not been addressed yet?
2. How many patients can benefit from this idea?
3. Does this idea lead to a change in their lives? Is it large- or small-scale improvements in outcomes or experiences?
4. What are the alternatives that exist now or could exist in the future to address this need or problem?

## Clinician

*Extend Expertise, Reduce Burnout, Advance Careers*

- Which team members will be affected by this idea?
- How will their daily tasks and responsibilities be altered?
- Will the idea contribute to improved efficiency and the overall well-being of team members?
- What potential opportunities does it bring, such as the possibility of publications, educational benefits, or enhanced connections with colleagues?

## Funder

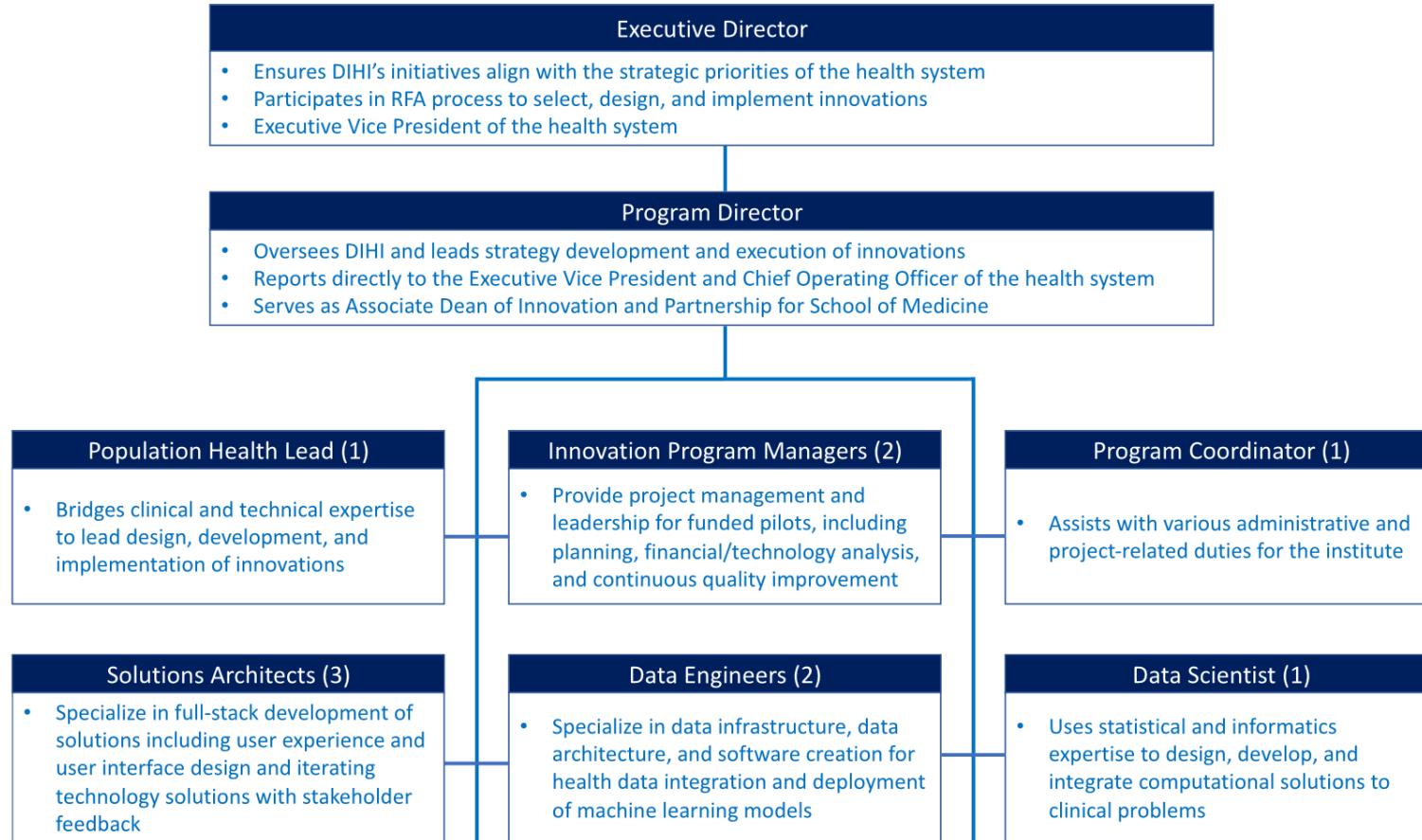
*Growth, Financial Stability, Expand Reputation, Talent Retention*

- How does this idea generate financial value, such as through direct reimbursement, contractual fees, or licensing revenue?
- Who pays for this, is it the patient, insurance providers, hospitals, pharmaceutical companies, or government entities?
- What is the effect of this idea on the brand or reputation of the entity involved?
- Will this idea lead to the creation of new career opportunities?

# Medicine happens in buildings (usually)

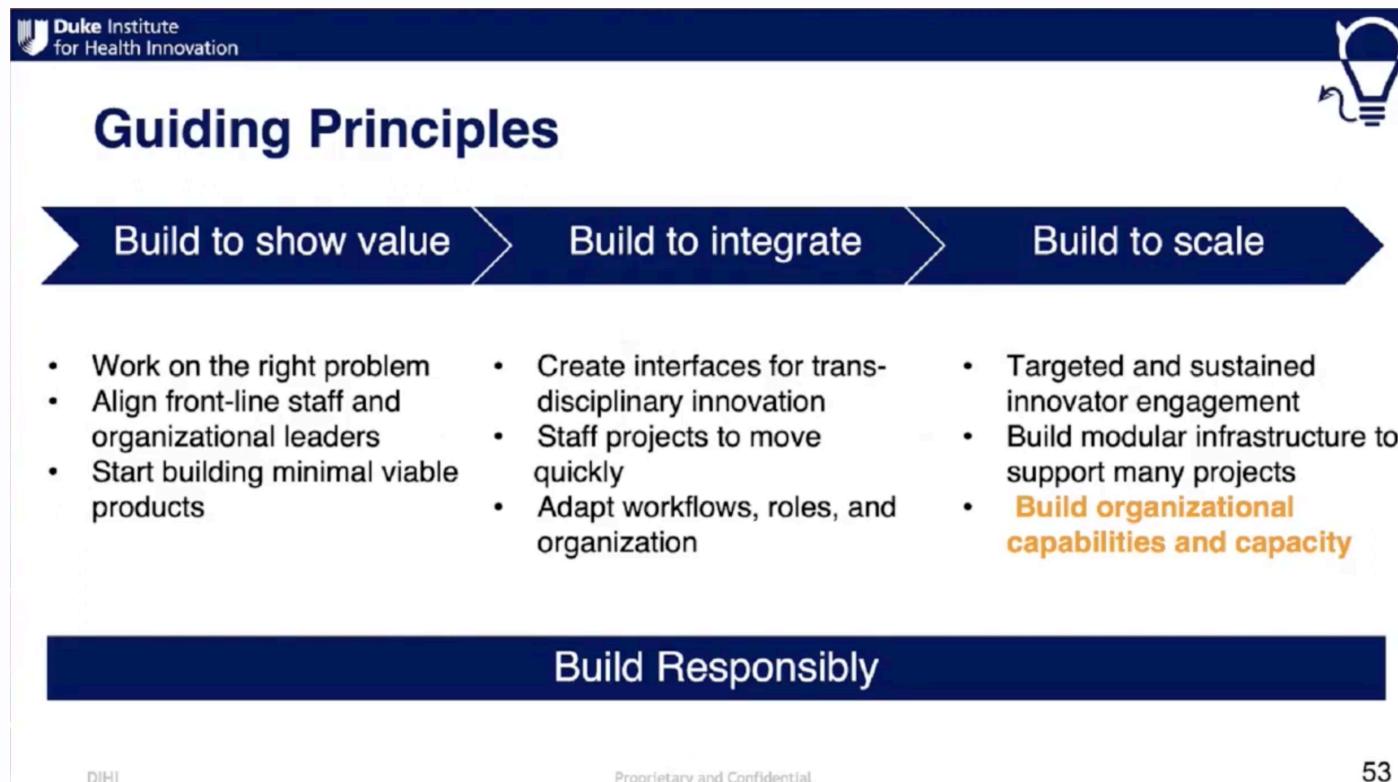


# Example Org Chart



Source: Sandhu et. al (2023)

# Create a sense of urgency



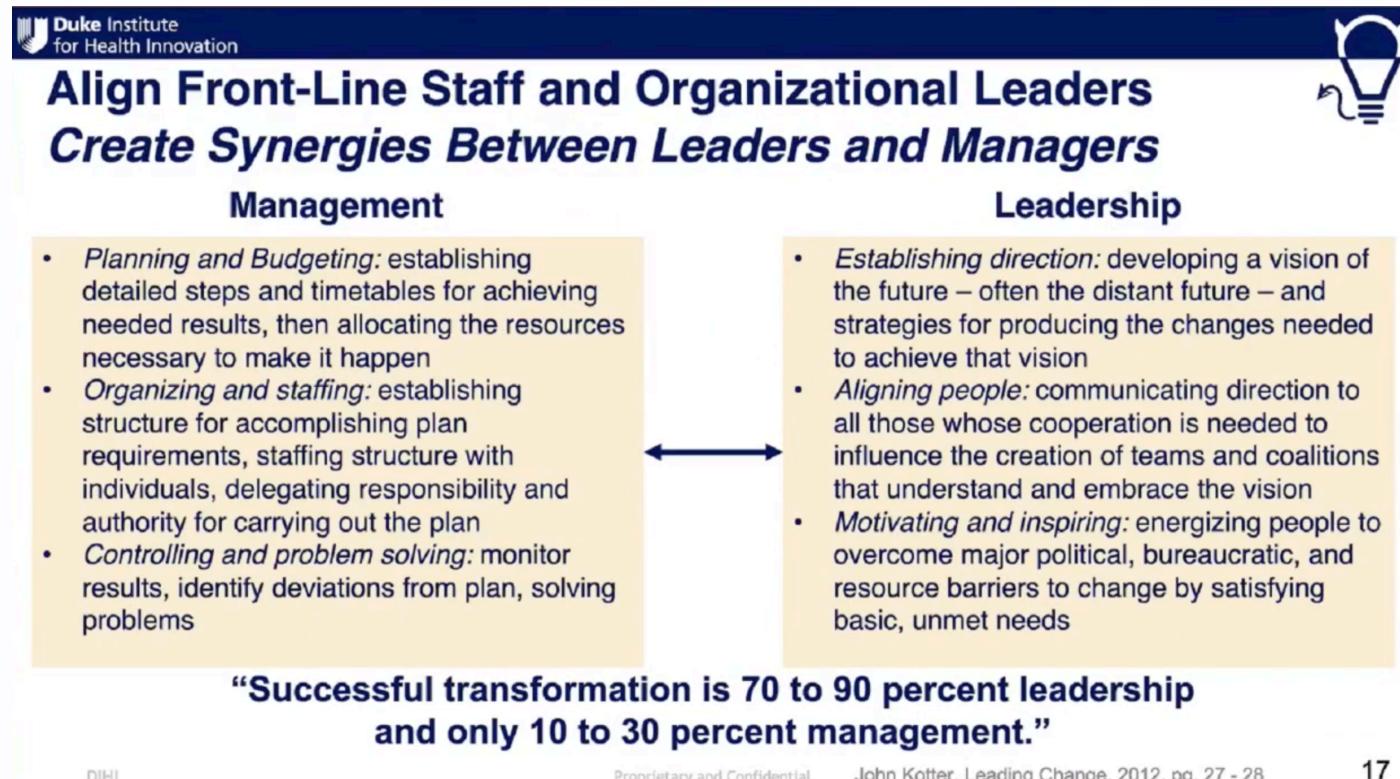
Source: AI in biomedical data analytics and population health

# Top to bottom



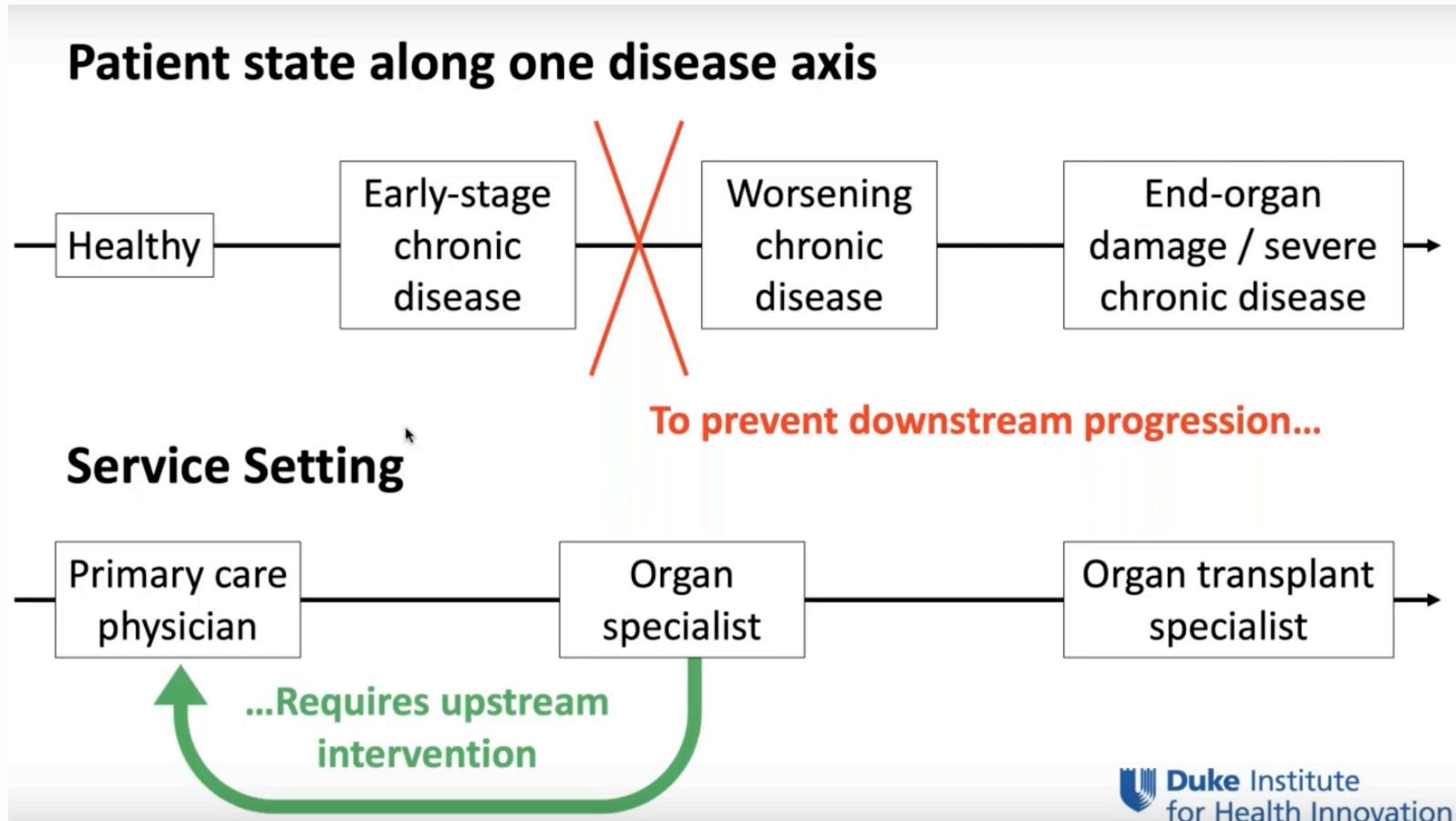
Source: AI in biomedical data analytics and population health

# At the top



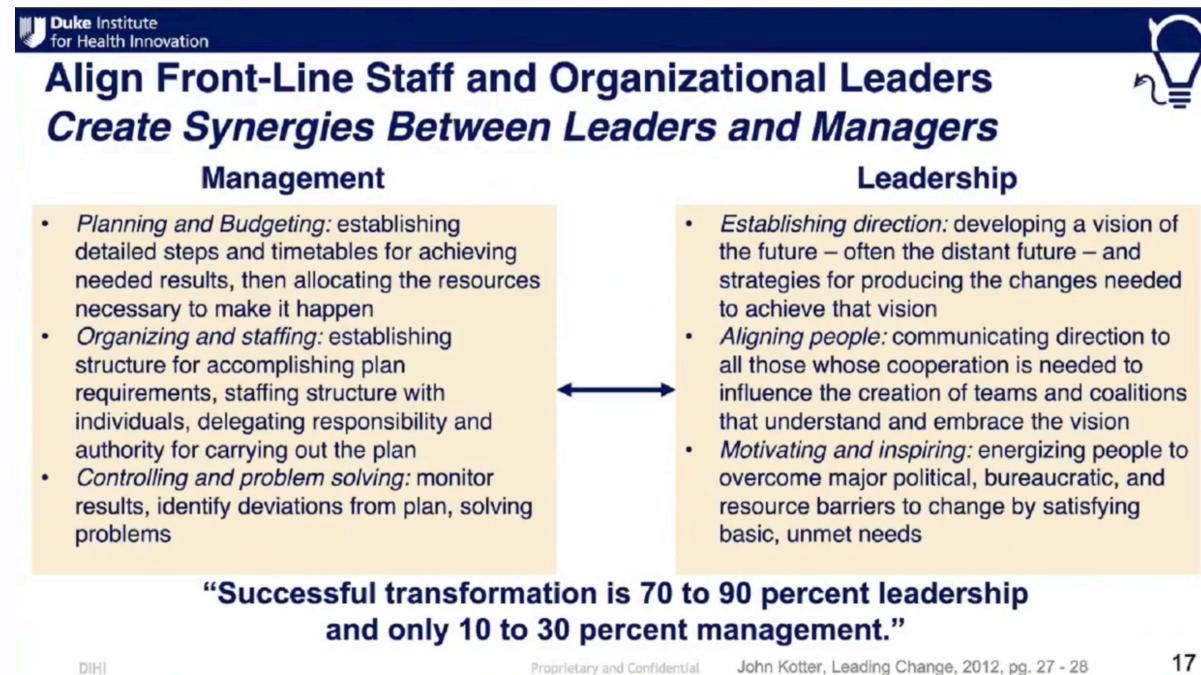
Source: AI in biomedical data analytics and population health

# Example of making the alignment



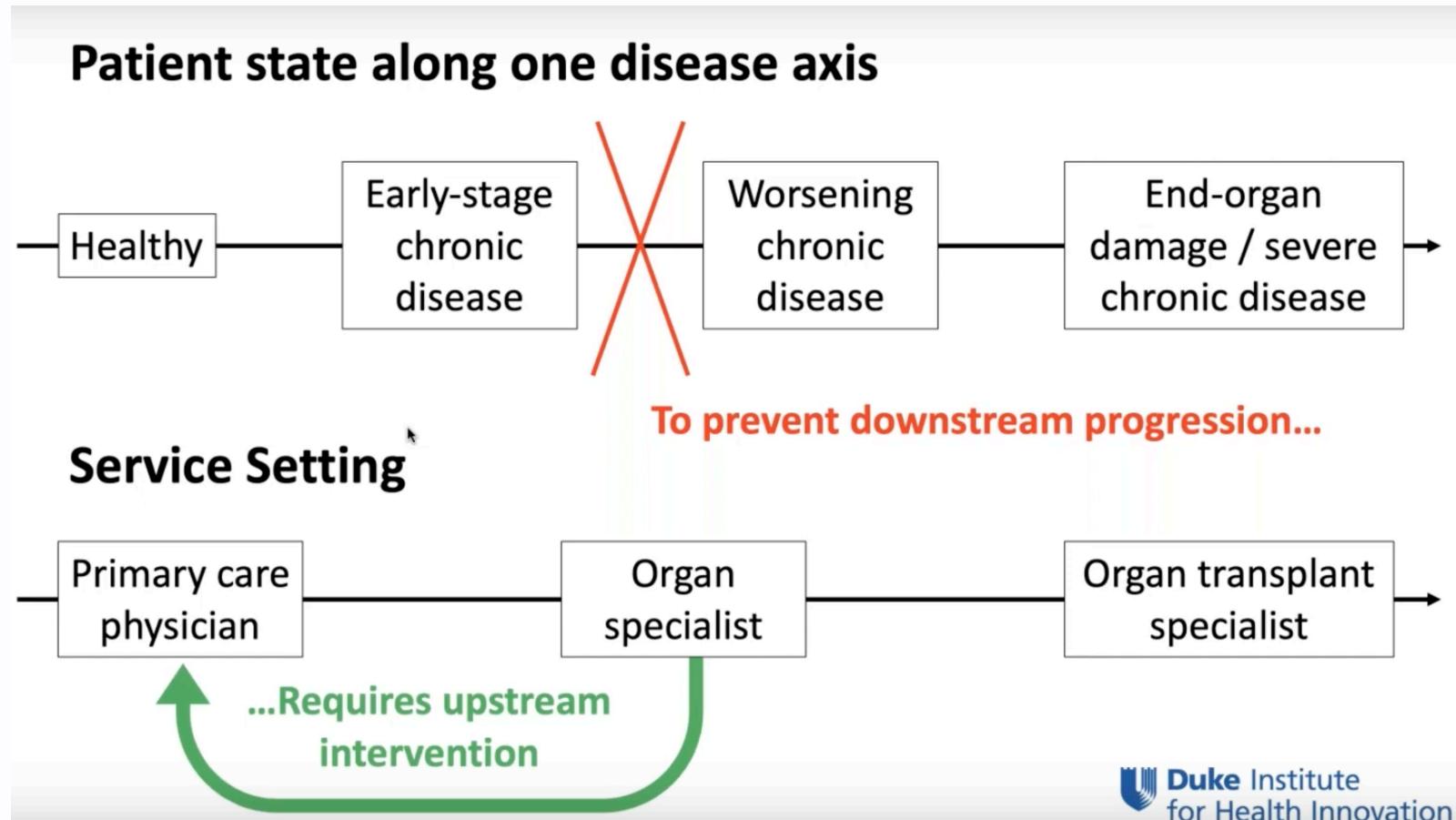
Source: Increasing AI Tool Adoption by Front-Line Workers

# At the top



Source: AI in biomedical data analytics and population health

# Example of making the alignment



Source: Increasing AI Tool Adoption by Front-Line Workers

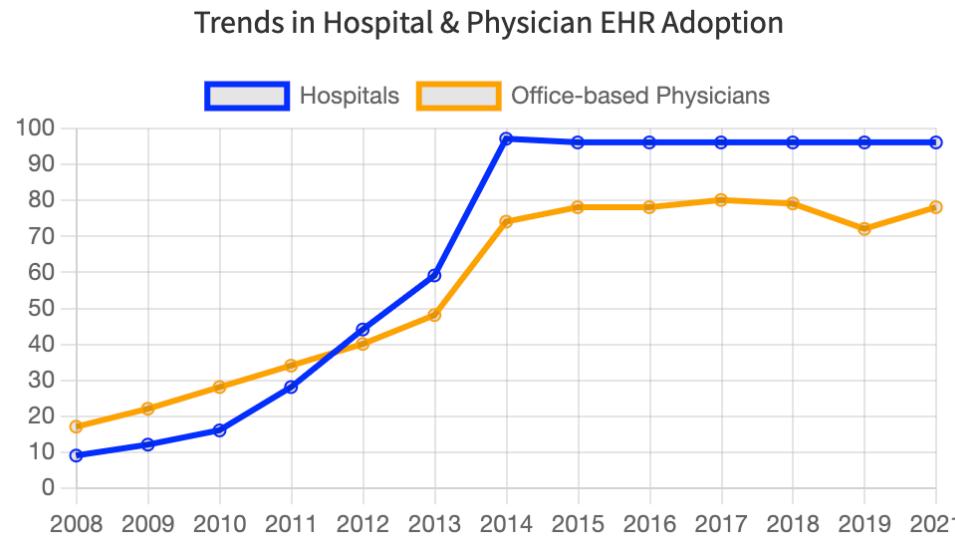
# **Disruptive technologies in healthcare**

# Disruptive technologies (overview)

- A disruptive technology refers to an innovation that significantly alters the way consumers, industries, or businesses operate
  - Classic examples include smartphones, streaming services, ride sharing, short-term rentals, and much more
- Disruptive technologies come about when a sufficient number of complementary technologies allow for an innovation to "break through" (think cell phones and ride sharing)
  - But many also capitalize on **regulatory arbitrage**
  - This will be important to understand many of the (currently early-stage) "disruptions" we are seeing in Canadian healthcare

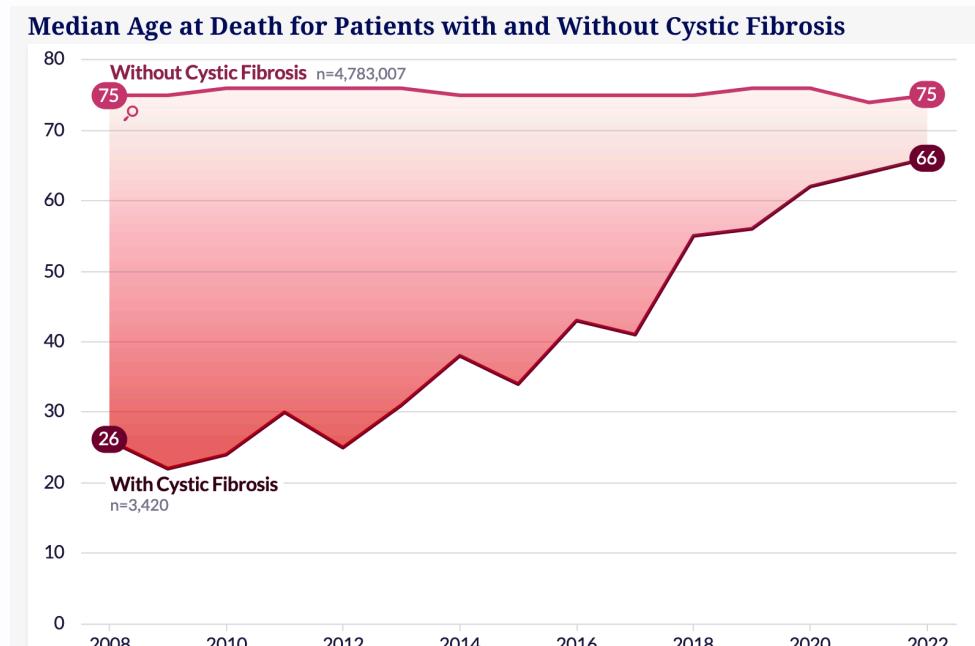
# Disruptive technologies (healthcare)

- Healthcare as an industry is a study of contrasts:
  - Foundational aspects of medical education and clinical practice have shown remarkable resilience to change
  - Whereas, the tools of medicine are constantly changing
- Besides pharma and medical devices, the main disruptive innovations have been: **EHRs, telemedicine, and new service models**



Source

- Breakthrough therapies will often disrupt how entire patient cohorts are treated, and rare-disease focused non-profits have driven this
- The case of Cystic Fibrosis (CF) is illustrative
  - Advances in nutrition, antibiotics, lung clearance, and finally modulator therapies have revolutionized care and life expectancies
  - These technological breakthroughs have made it a "new" disease



## Disruptive technologies (Medical devices)

- Countless imaging modalities, surgical instruments, and monitoring devices
- Laparoscopy (key-hole) surgery has enabled countless surgeries to be carried out at lower risk, lower cost, and faster recovery



First telesurgical laparoscopic surgery performed in 2001  
(source)

## Detour: Canada's healthcare system

- Canada has a universal healthcare model (like most rich countries)
- But the Canada Health Act (1985) has created a unique legal landscape for healthcare in the country
  - In exchange for \$\$\$ provinces agree to the five principals of the CHA: Universality, Portability, Comprehensiveness, Public Administration, Accessible
  - But healthcare is provincially managed
  - The federal government can fine provinces for being out of step with the CHA, but it is rare/difficult
- In theory, a physician cannot charge for any medical service that is covered by the provincial plan... (70% of HC is paid by government)
  - Question: Has anyone seen exceptions to this?



# Detour: Canada's healthcare system

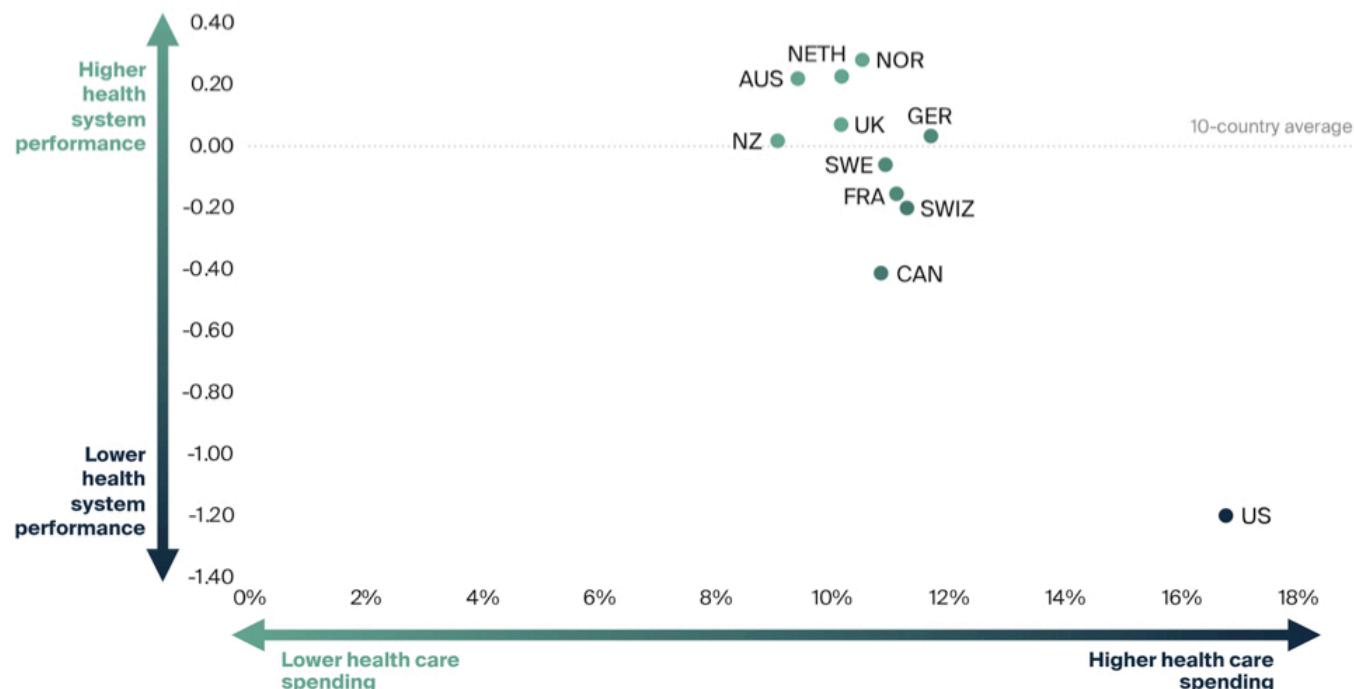
EXHIBIT 1

## Health Care System Performance Rankings

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
<b>OVERALL RANKING</b>	<b>3</b>	<b>10</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>7</b>	<b>9</b>	<b>4</b>	<b>11</b>
Access to Care	8	9	7	3	1	5	2	6	10	4	11
Care Process	6	4	10	9	3	1	8	11	7	5	2
Administrative Efficiency	2	7	6	9	8	3	1	5	10	4	11
Equity	1	10	7	2	5	9	8	6	3	4	11
Health Care Outcomes	1	10	6	7	4	8	2	5	3	9	11

EXHIBIT 4

## Health Care System Performance Compared to Spending



Source: Commonwealth Fund (2021)

# Disruptive technologies (new service models)

- There has been an explosion in new service models in Canadian healthcare that are taking advantage (regulatory arbitrary) of our "unique" system
  - Federal vs provincial
  - Medically necessary vs not
  - Publically funded in theory but not in practice



[CEO of Canadian virtual health-care company defends charging for services](#)

Health Minister Jean-Yves Duclos has raised the alarm about doctors charging for medically necessary services. Dr. Brett Belchetz, CEO of...

Mar 13, 2023



[Alberta clinic charging for access to doctors would break medicare laws, Health Canada says](#)

Health Canada says a Calgary medical clinic that soon plans to charge its patients a fee to gain faster access to a family doctor would be...

Jul 26, 2023



[Telus Health, Medical Services Commission reach settlement over fee program in B.C., says minister](#)

The injunction application alleged the LifePlus program included annual fees that could lead people to believe they would get preferential...

Apr 26, 2023



[Clinic under scrutiny for charging fee to see nurse practitioners](#)

Ontario's health ministry says it is reviewing an Ottawa walk-in clinic set to offer patients access to nurse practitioners for \$400 a year.

Oct 4, 2023



[Why more Quebec family doctors are leaving the public health system](#)

Because of a series of decades-old government decisions, Quebec has quietly developed a parallel, privately paid health care sector that...

Aug 8, 2023



## Disruptive technologies (new service models: telehealth)

The logo for Maple, featuring the word "maple" in a lowercase, bold, red sans-serif font.

“ Instead of connecting an Ontario patient with a doctor in Ontario – which would be covered under OHIP – Maple will set up an appointment with a nurse practitioner or a physician outside of the province. Those appointments aren't covered by OHIP. And before a patient speaks with a health worker, they go through a text-based chat, which is also uninsured by OHIP. Maple works the same way in other provinces. ”

Source

## Disruptive technologies (new service models: telehealth)

### Dialogue

“ Dialogue only works with organizations or insurance companies. It doesn't work with individuals... From a health care regulations point of view, that is the safest way to stay within the confines of the Canada Health Care Act... A patient never uses their credit card to pay for health care service.

Source

## **Breakout #X**

**How do you see the role of data science in Canada's healthcare system emerging with these disruptive trends?**

# **Successful AI-based HC companies**



<https://flatiron.com>

## Flatiron health

- Healthcare technology company specializing in cancer research and patient care.
- **Data Curation and Analysis:** Analyzes data, including EHRs, for real-world cancer care insights.
- **Software Solutions for Clinics:** Offers cloud-based oncology software to improve clinic operations and patient care.
- **Research Collaboration:** Collaborate with the life sciences sector for cancer research to accelerate therapy development.
- **Insights for Oncology Care:** Provides healthcare insights to enhance care quality, inform policy, and guide strategic planning.

**"TEMPUS**

<https://www.tempus.com>

## Tempus Labs

- Tech company focused on precision medicine, using artificial intelligence to analyze clinical and molecular data.
- **Genomic Sequencing:** Perform genomic sequencing for targeted disease treatments.
- **Data Analytics:** Analyze clinical and molecular data for treatment insights.
- **Clinical Data Structuring:** Structure unstructured medical data.
- **Collaboration with Healthcare Research:** Collaborate with healthcare and research entities to advance personalized medicine



**RECURSION**  
pharmaceuticals

<https://www.recursion.com>

## Recursion Pharmaceuticals

- Biotech company using AI and automation for drug discovery.
- **Drug Discovery:** Use AI to rapidly identify potential drugs for a wide range of diseases.
- **High-throughput Screening:** Employ automation and robotics to perform experiments at a large scale.
- **Data-driven Insights:** Data-driven insights from biological data and machine learning to speed up pharmaceutical research.