Essence of the Learning Health System

Charles P. Friedman, PhD
Josiah Macy, Jr. Professor of Medical Education
Chair, Department of Learning Health Sciences
Professor of Information and Public Health
University of Michigan
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Learning Health Systems

Health systems--at any level of scale--become learning systems when they can, continuously and routinely, improve health through discovery and implementation.

https://nam.edu/programs/value-science-driven-health-care/learning-health-system-series/

lhsjournal.com
Learning Health Systems

Not

Learning HealthCare Systems
LHS “Anthems”
(Reward Offered for Putting these to Music)

• Bring us the tough problems!

• A system problem needs a system solution!

• 17 years to 17 months!
  – to 17 weeks to 17 days (to 17 hours)!
The Goal: A System That Can Improve Health Through Discovery & Implementation

✓ Characteristics, events, and context are captured as data to learn from (Data to Knowledge)

✓ Best practice knowledge is rapidly available to support decisions (Knowledge to Performance)

✓ Improvement is continuous and enduring through ongoing cyclic activity

✓ An infrastructure enables this to happen routinely and with economy of scale

✓ All of this is part of the culture
Pulling Out the Keywords: Gestalt of the LHS

- Persons/People
- Learn
- Data
- Knowledge
- Rapidly Available
- Performance
- Continuous and Enduring
- Cyclic Activity
- Infrastructure
- Culture
Learning Systems Can Exist at Any Level of Scale

- Single Organization
- Network of Organizations
- States/Provinces/Regions
- Nation
- Planet
The Fundamental Activity: Community-Directed Cycles of Study and Change

- External Evidence
- Interpret Results
- Analyze Data
- Design Intervention
- Assemble Data
- Take Action
- Capture Practice as Data
- Formation of Learning Community
Better Health Requires This

Health Problem of Interest

D2K: Data to Knowledge

K2P: Knowledge to Performance

P2D: Performance to Data
Not Just This

Health Problem of Interest

D2K: Data to Knowledge

K2P: Knowledge to Performance

P2D: Performance to Data
LHS Initiatives at all Scales!

Single Organizations

In the US:
- Intermountain
- Geisinger
- Kaiser-Permanente
- Mayo
- Many CTSAs

Networks

In the US:
- Improve Care Now (PCORI)
- PEDSNet
- CancerLINQ
- Epinet (NIH)

States/Provinces/Regions

- Quebec & BC
- Michigan & Indiana

Nation

- Switzerland
- UK: Scotland, England
- US (VA)

Planet

- Someday
So What’s New Here?

• Continuity

• Embraced Uncertainty and Co-discovery

• Socio-technical Infrastructure
  – And preferably open infrastructure
Continuity: The Community that Discovers is also the Community that Implements

Health Problem of Interest

D2K: Data to Knowledge
K2P: Knowledge to Performance
P2D: Performance to Data
Learning Community

“Embedded” Researchers
Program Evaluators
Change Implementers

This
Not This
Embraced Uncertainty and Co-Discovery

• System problems are complex
• Throughout the cycle, the community is unsure of what it is going to do
• The community co-discovers
• Antithesis of top-down implementation
A Learning Health System is a Collaborative Socio-technical System

- All-inclusive
  - Patients and families!
- Trusted
- Decentralized
- Reciprocal
- Driven by shared passion and curiosity
Example: Improve Care Now

Improvers wanted.
Together, we're collectively restoring the wellbeing of all kids with Crohn's disease and ulcerative colitis — changing the way medicine is practiced.

IMPROVECARENOW™

WATCH OUR VIDEO
JOIN OUR CIRCLE
Infrastructure!

Cycles enable improvement but do not create a Learning System

• If you want to get 350,000 people per day across a river, does everyone build his/her own rowboat?

• No, you build a:
A Learning Health System is a Collection of Learning Cycles Supported by a Common Infrastructure (LHS = Cycles + Infrastructure)
We Can “Look Down” to See What the Infrastructure Consists Of
Infrastructure as Interconnected *Socio-Technical Services*

1. Organize, Start, Maintain, and Support Learning Communities
2. Capture, Identify, and Measure Performance and Performance Changes
3. Represent Health Information as Computable Data
4. Provide and Govern Access to and Use of Data
5. Share and Analyze Data Into New Knowledge
6. Make Knowledge Computable and Sharable
7. Generate & Deliver Knowledge-Derived Advice to Applicable Users
8. Enable and Promote Performance Changes
Many Open Infrastructure Components Already Exist: We Need More

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Deliberative Dialogue
Relevant Publications

**Toward an Information Infrastructure for Global Health Improvement**

C. P. Friedman¹, J. C. Rubin¹, K. J. Sullivan²

¹ University of Michigan
² University of Virginia


**Perspective**

**Mind the Gap: Putting Evidence into Practice in the Era of Learning Health Systems**

Jeanne-Marie Guise, MD, MPH¹,², Lucy A. Savitz, PhD, MBA³, and Charles P. Friedman, PhD⁴

https://link.springer.com/content/pdf/10.1007%2Fs11606-018-4633-1.pdf

And everything in:

**Learning Health Systems**

Ihsjournal.com
Thanks and Write to Me

cpfried@umich.edu

lhs.medicine.umich.edu