

Envisioning the Learning Health System

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Disclosure

I serve on the Board of Directors of the Learning Health Community, a non-profit corporation promoting Learning Health Systems.

Main Menu

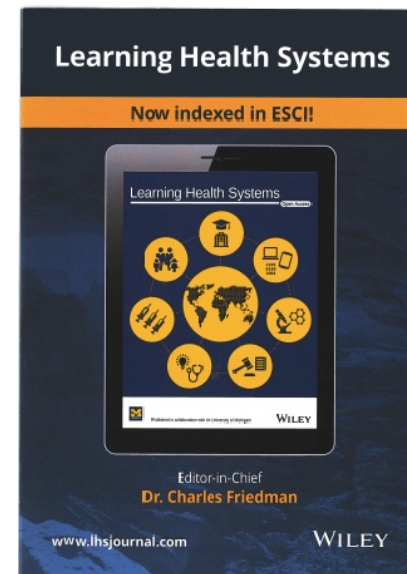
- What are Learning Health Systems (LHS)?
- What makes the LHS approach to health improvement different from other approaches?
 - Embraced uncertainty requiring **discovery**
 - Multi-stakeholder learning communities enabling **continuity**
 - Infrastructure: shared services enabling **scalability**

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**)
- ✓ Trusted 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



States/Provinces/Regions



Nation



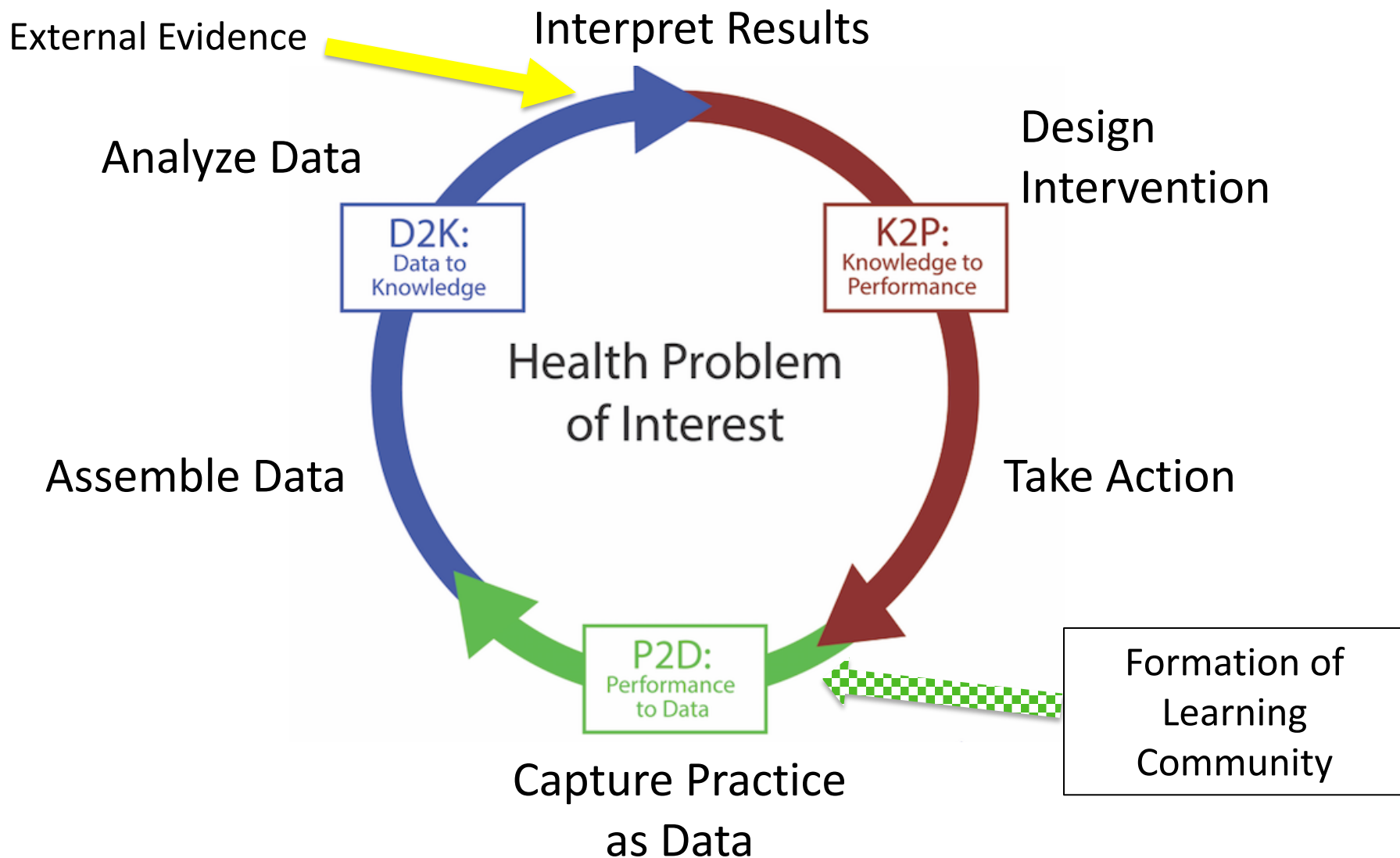
Network of Organizations



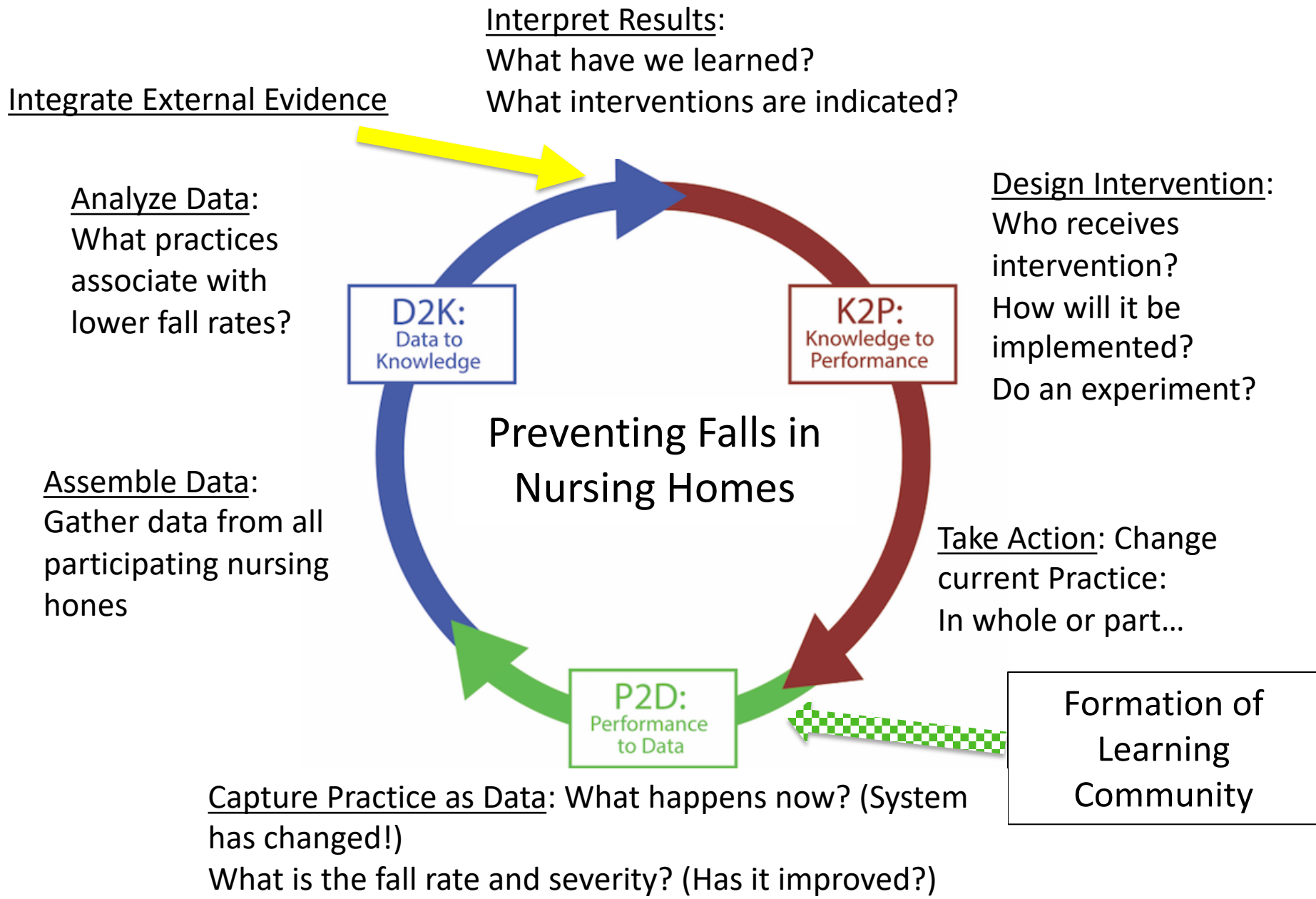
Planet



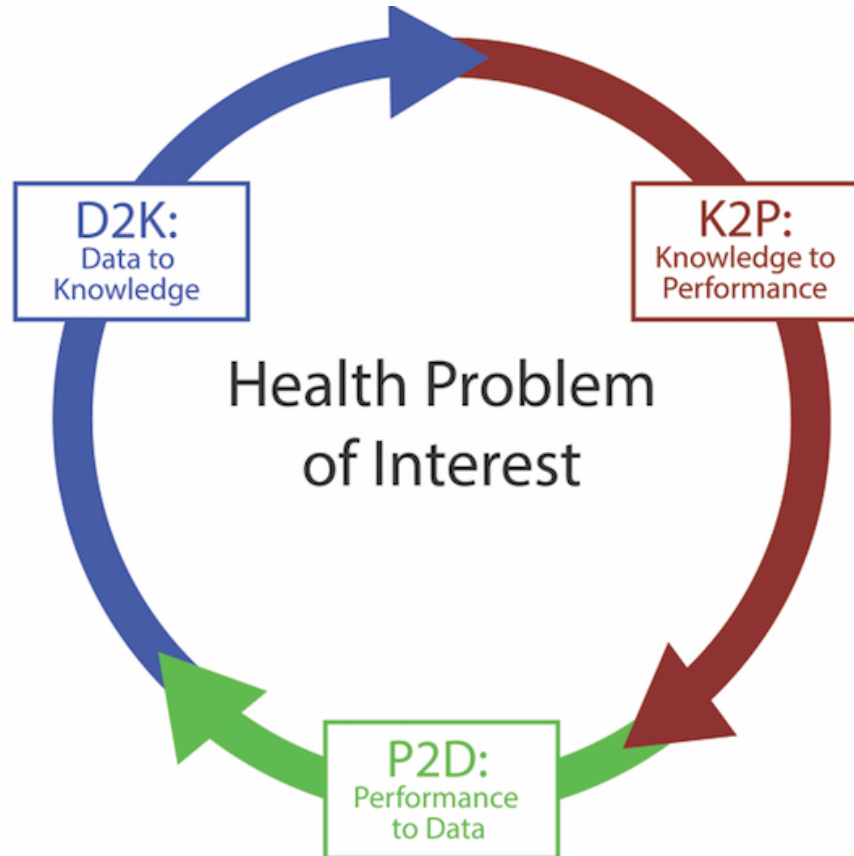
The Fundamental Activity: Community-Directed Cycles of Study and Change



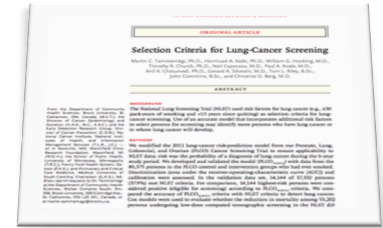
An Example...



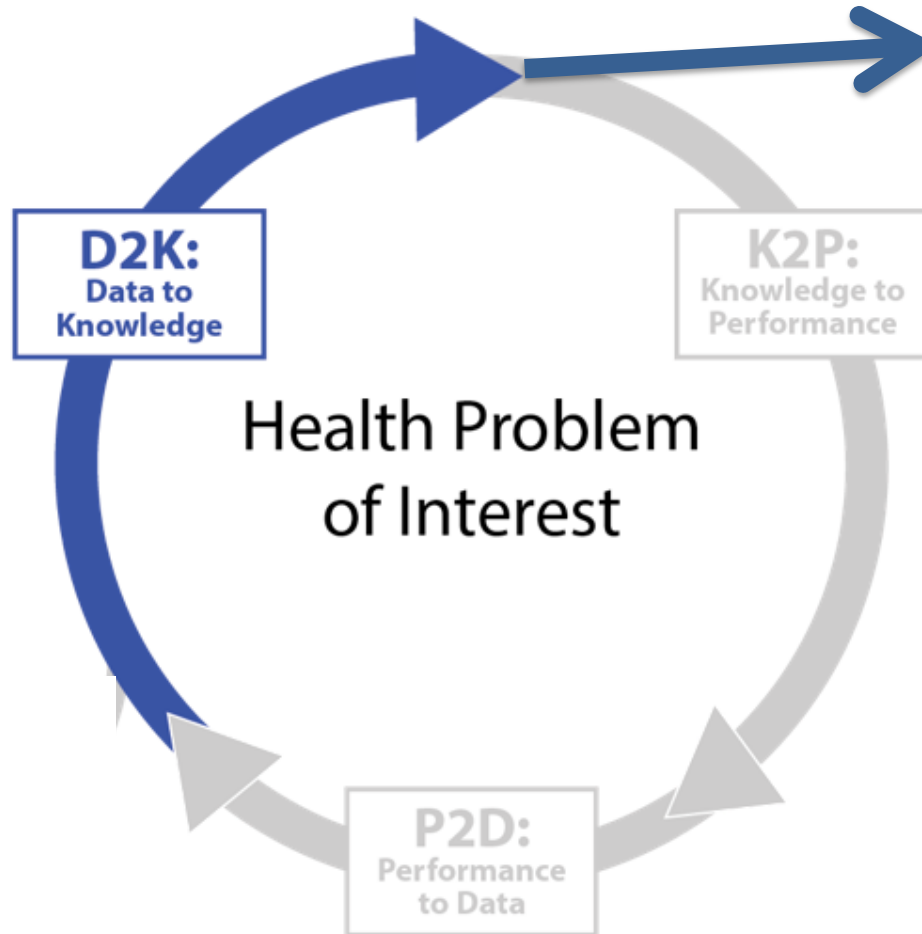
Better Health Requires This



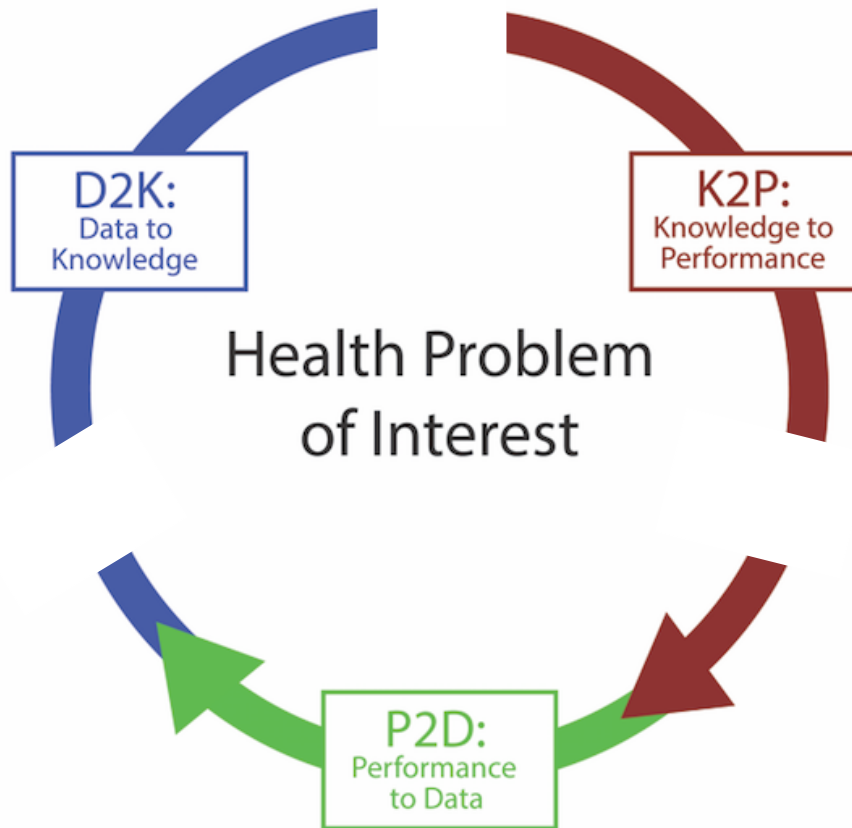
Not Just This



Journals



Or This



LHS Initiatives at all Scales!

Single Organizations



- Intermountain
- Geisinger
- Mayo
- Many through CTSIs

Learning Networks



- PCORI Networks (Improve Care Now et al.)
- PEDSNet
- CancerLINQ
- Epinet (NIH)
- AHRQ Initiatives

States/Provinces/Regions



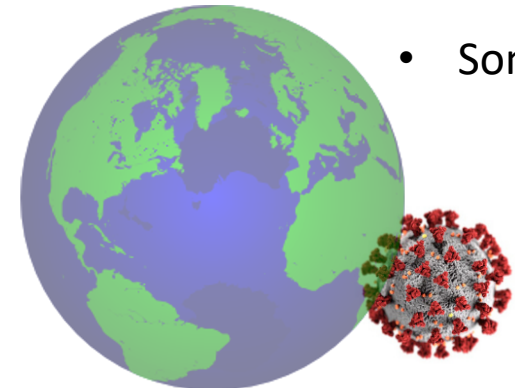
- Quebec & BC
- Michigan & Indiana

Nations



- Switzerland
- UK: Scotland, England
- Saudi Arabia
- U.S. (VHA)

Planet



- Someday

The UK Better Care Partnership

<https://www.hdruk.ac.uk/research/better-care/>

The **Better Care Partnership** will commence on 1 May 2020 and will be funded for an initial period of three years. It will develop solutions and methodologies to scale Better Care loops across multiple health and care settings and to transfer Better Care innovations across multiple health and care decisions. It is expected that the Partnership will become a key activity for HDR UK and will be an

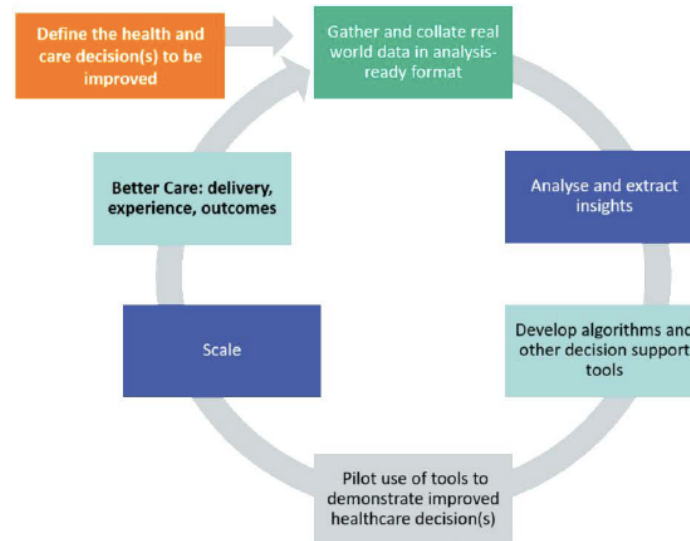


Figure 1- Better Care Loop

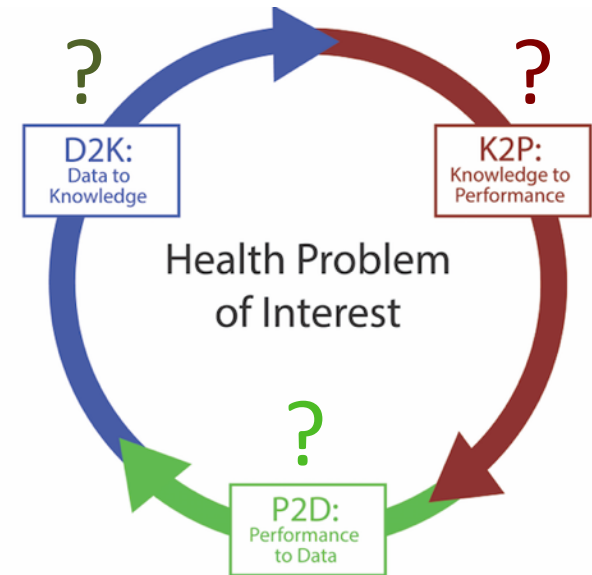
We are drawing on the conceptual framework of Learning Health and Care Systems and have developed a 'Better Care loop' to demonstrate continuous improvement for achieving better care for patients through data-driven health and care decisions.

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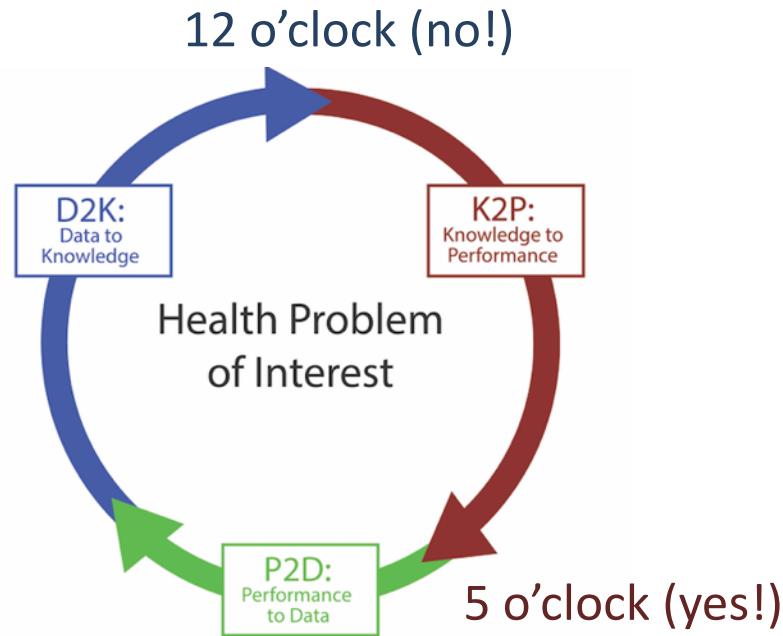
Embraced Uncertainty

- System problems are complex problems
- At the outset, the community is unsure of what it is going to do
- There are open questions at each stage of the learning cycle:
 - **P2D:** What's happening now?
 - **D2K:** How should we change?
 - **K2P:** How should these changes be implemented?



Where the Cycle Starts

- The learning cycle should start at 5 o'clock and not 12 o'clock.



- Starting at 12 o'clock (no!): the community has been told what to do or has made an "evidence-free" decision
- Starting at 5 o'clock (yes!): the community collaboratively discovers what to do

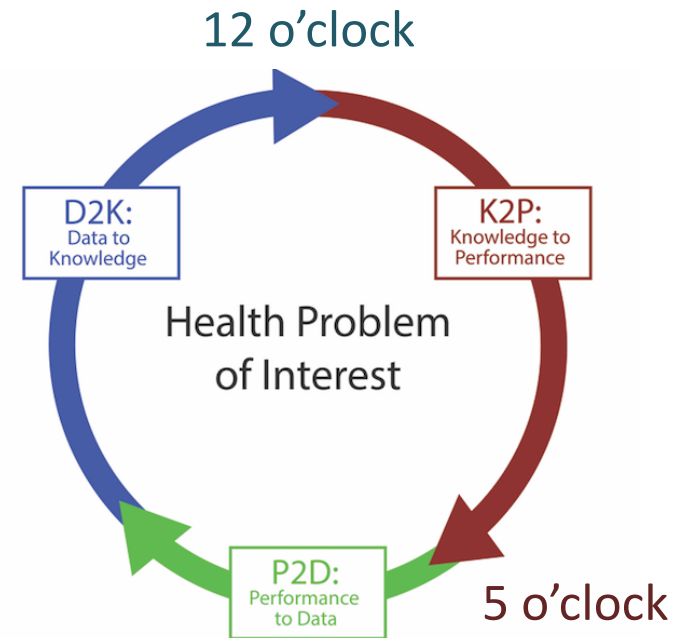
Nursing Home Example

- **Starting at 12 o'clock (anti-LHS)**

"Leadership has decided to hire Miracle Consultants and their program will be implemented to reduce falls: ..."

- **Starting at 5 o'clock (LHS)**

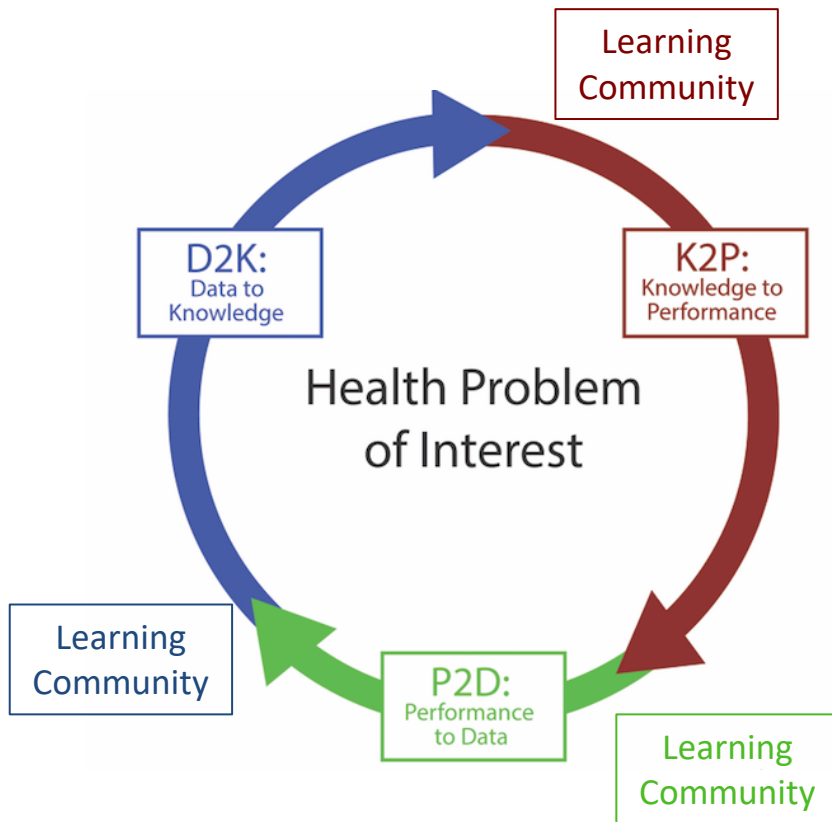
"Everyone is concerned about the the rate of falls. Based on our own studies and the literature, we will develop and implement a plan..."



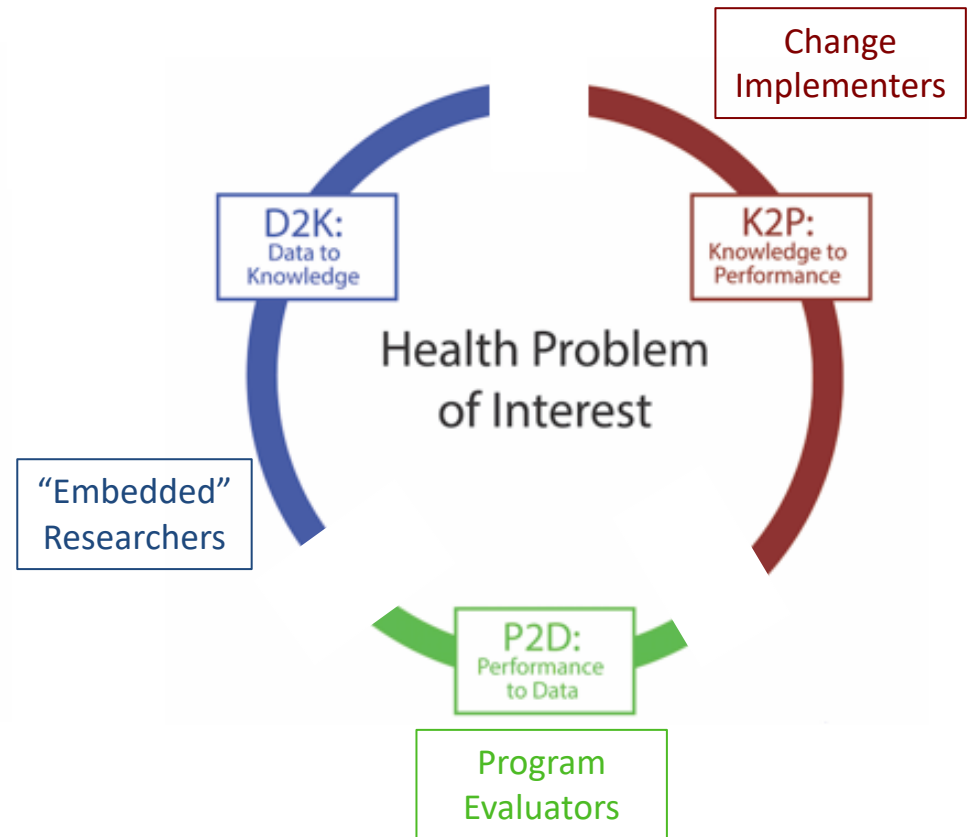
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Continuity: The Community that Discovers is also the Community that Implements



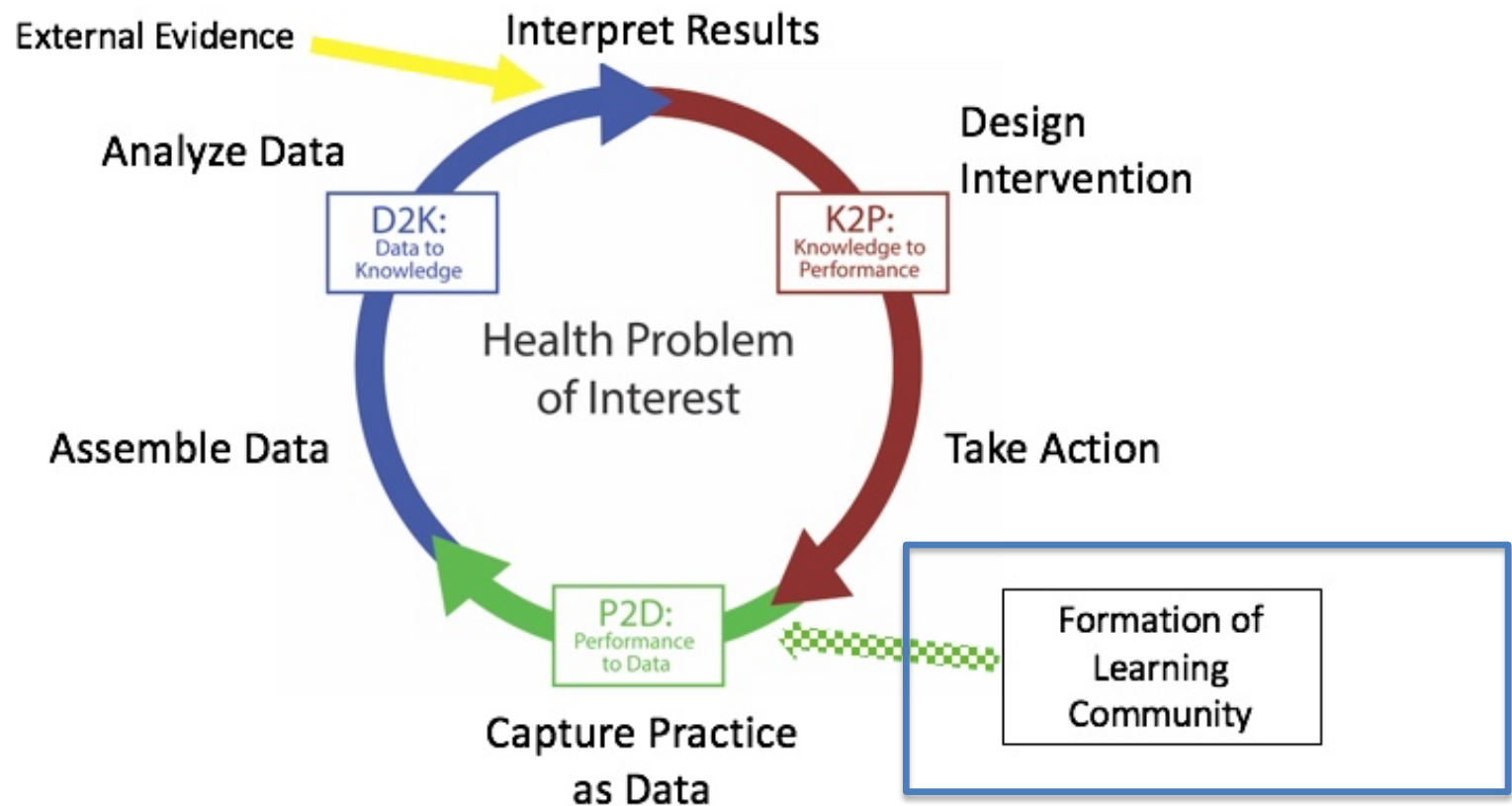
This



Not This

You Can't Skip this Step

(And Once Established, Learning Communities Are Active Across the Entire Cycle)



Learning Communities are Collaboratives

- Multi-stakeholder
- Pursuing a shared goal
- Fueled by “passion” to achieve the goal
- Strategies are “co-produced”
- Leader as facilitator
- No group dominates



Example: Improve Care Now

A group of healthcare professionals, including a man in a white lab coat, a woman in green scrubs, and a man in a suit with a stethoscope, are gathered around a table in a meeting. A Venn diagram with three overlapping circles in green, blue, and purple is overlaid on the image.

Improvers wanted.

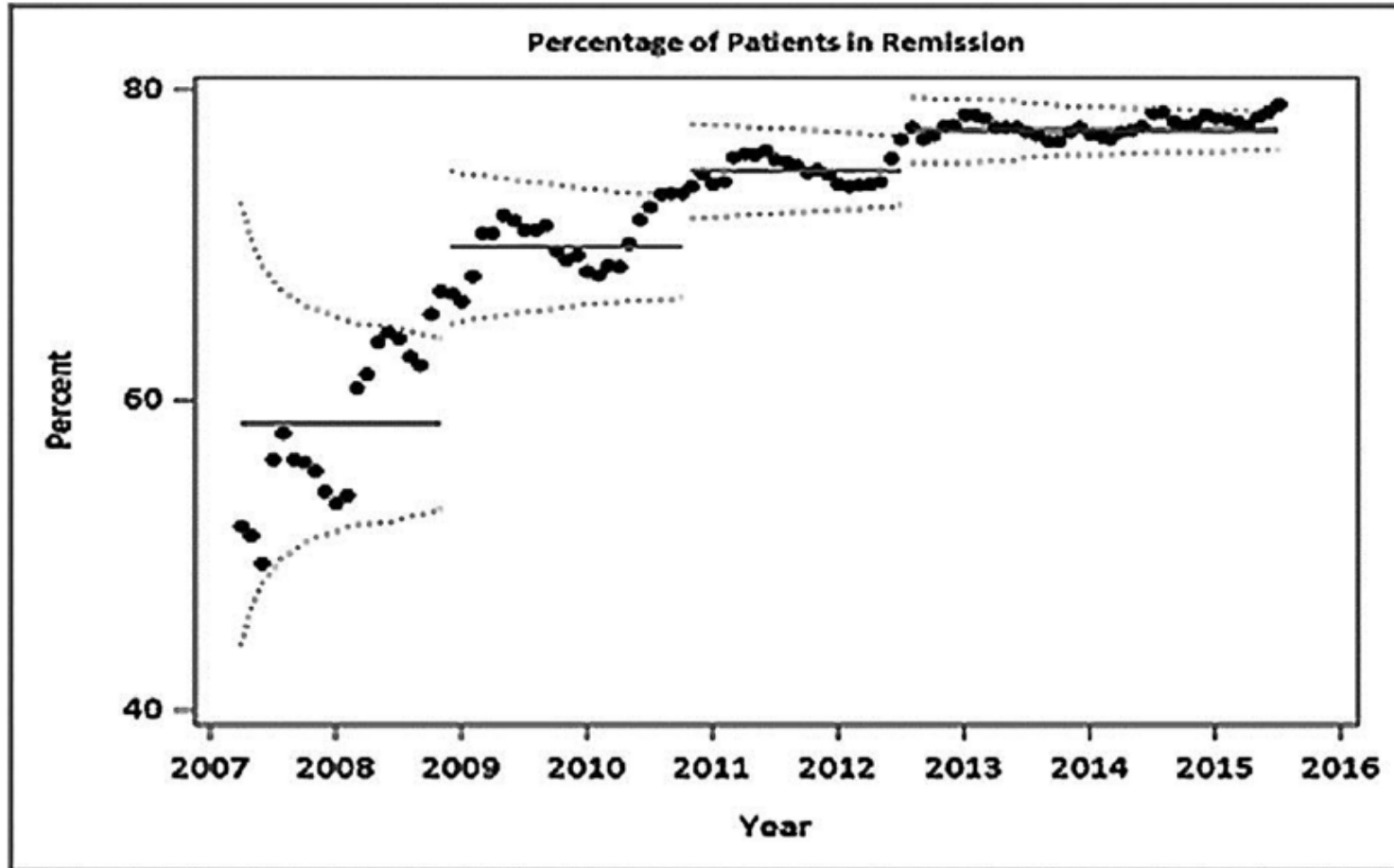
Together, we're collectively restoring the wellbeing of all kids with Crohn's disease and ulcerative colitis — changing the way medicine is practiced.

IMPROVECARENOW™

[WATCH OUR VIDEO](#)

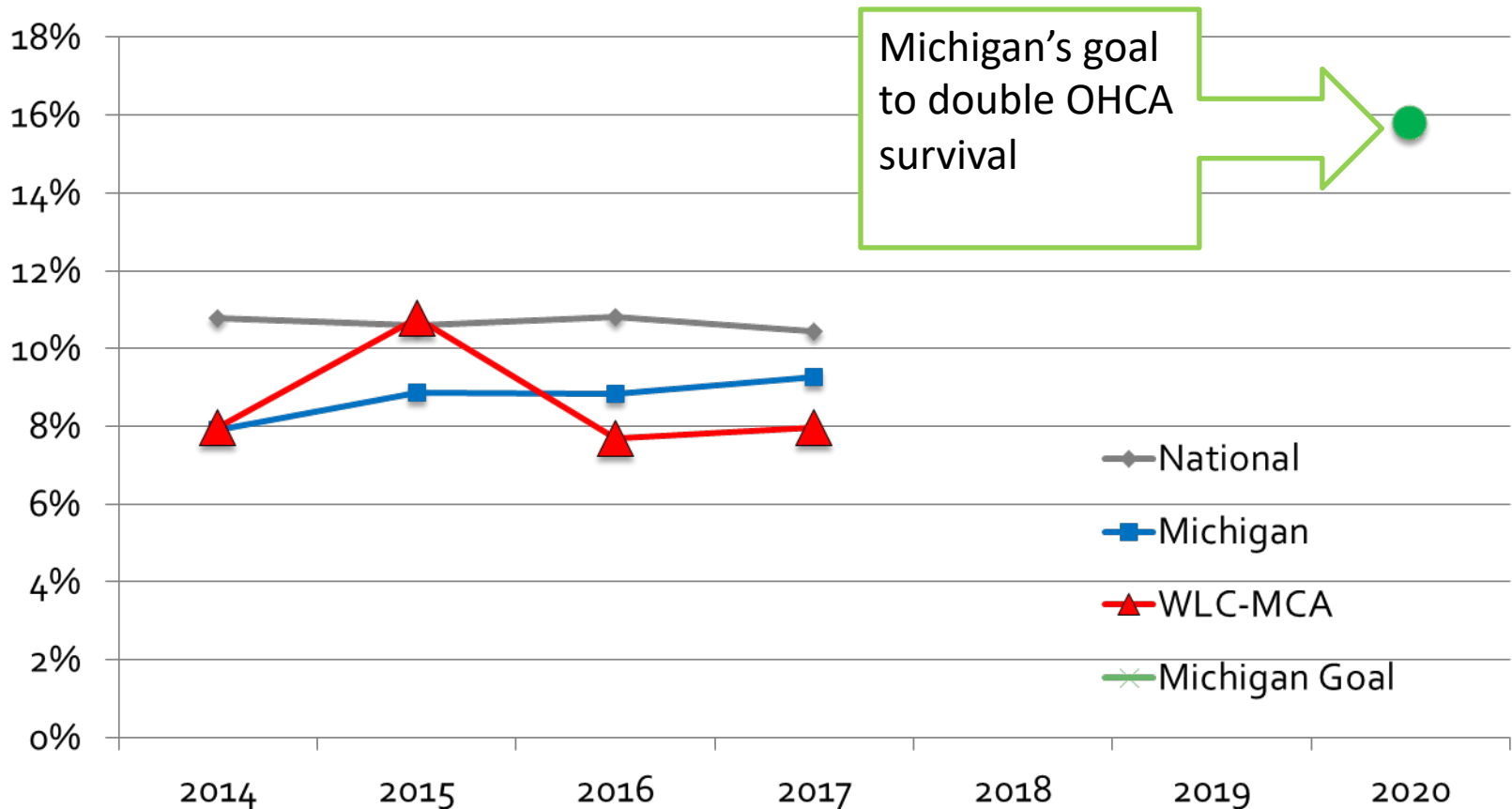
[JOIN OUR CIRCLE](#)

“Improve Care Now” IBD Remission Findings



Britto MT, Fuller SC, Kaplan HC, et al. Using a network organisational architecture to support the development of Learning Healthcare Systems. *BMJ Qual Saf*, 2018.

Michigan Example: Out of Hospital Cardiac Arrest (OHCA)



Red Line: Washtenaw-Livingston County Medical Control Authority (WLC-MCA)
Source: Cardiac Registry to Enhance Survival (CARES)

OHCA Learning Community

- Initial Scale: Two counties forming a medical control district
- Stakeholders across the whole chain of survival:



- Now funded by the American Heart Association

A Learning Community: Pictures Worth a Thousand Words



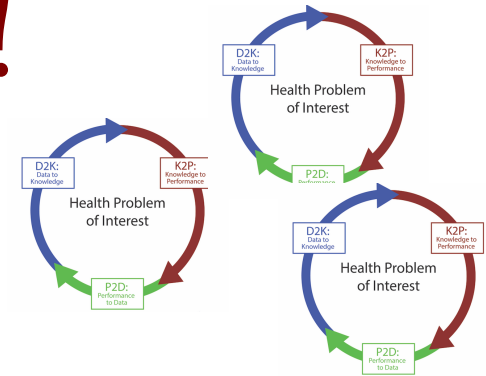
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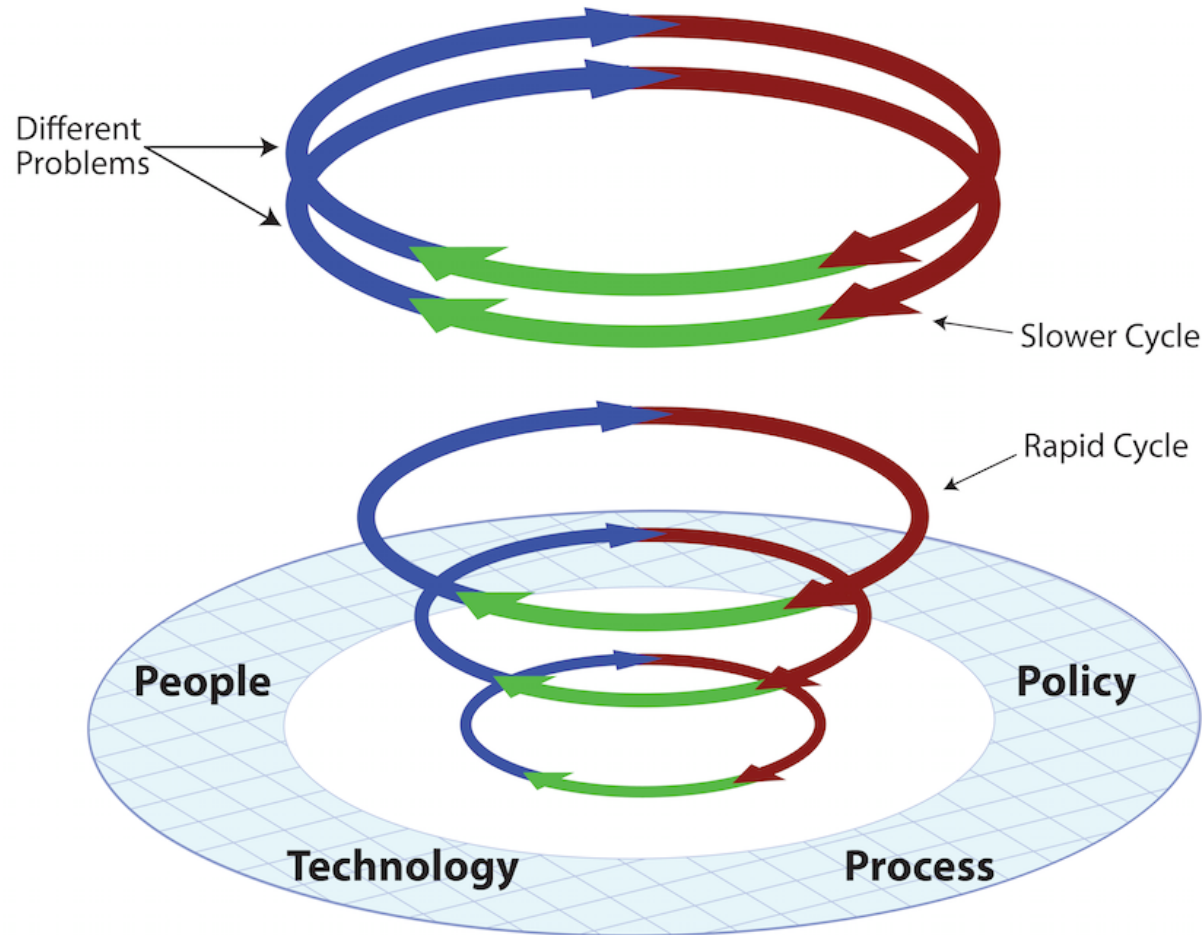
Infrastructure!

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:



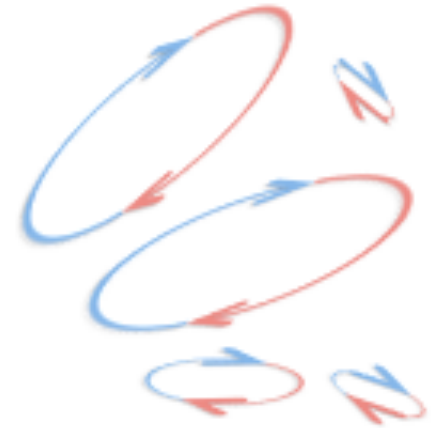
A Learning Health *System* is a Collection of Learning Cycles Supported by a Common Infrastructure



Why an Infrastructure?

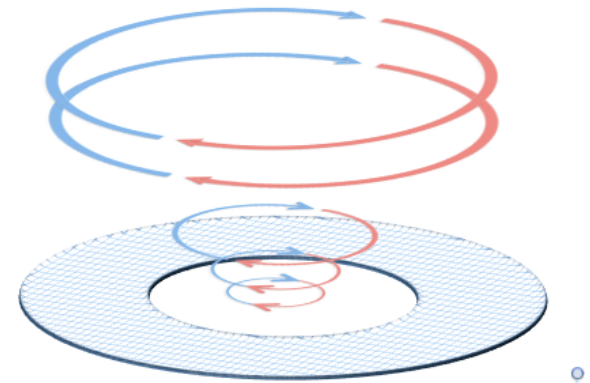
- Without an infrastructural “platform”:
 - Every cycle requires its own agreements, technology, staffing, analytics, dissemination mechanisms
 - No economy of scale

Cost of 10 cycles = 10 x
(Cost of one)



- With a “platform”:
 - All cycles are supported by the infrastructure
 - Big economy of scale

Cost of 10 cycles \ll 10 x
(Cost of one)



Emphasis on Infrastructure is a Differentiator

Differentiates the LHS from:

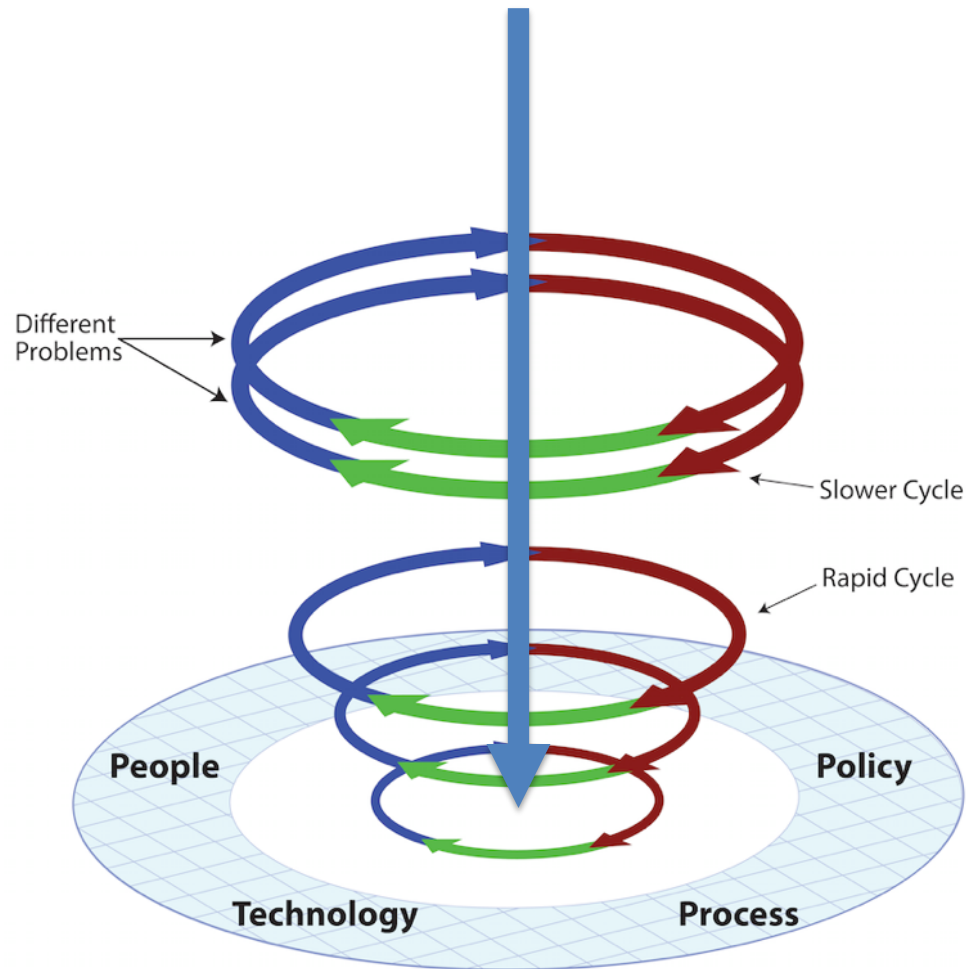
- Lean
- PDSA, PDCA cycles
- Proprietary approaches

Crudely:

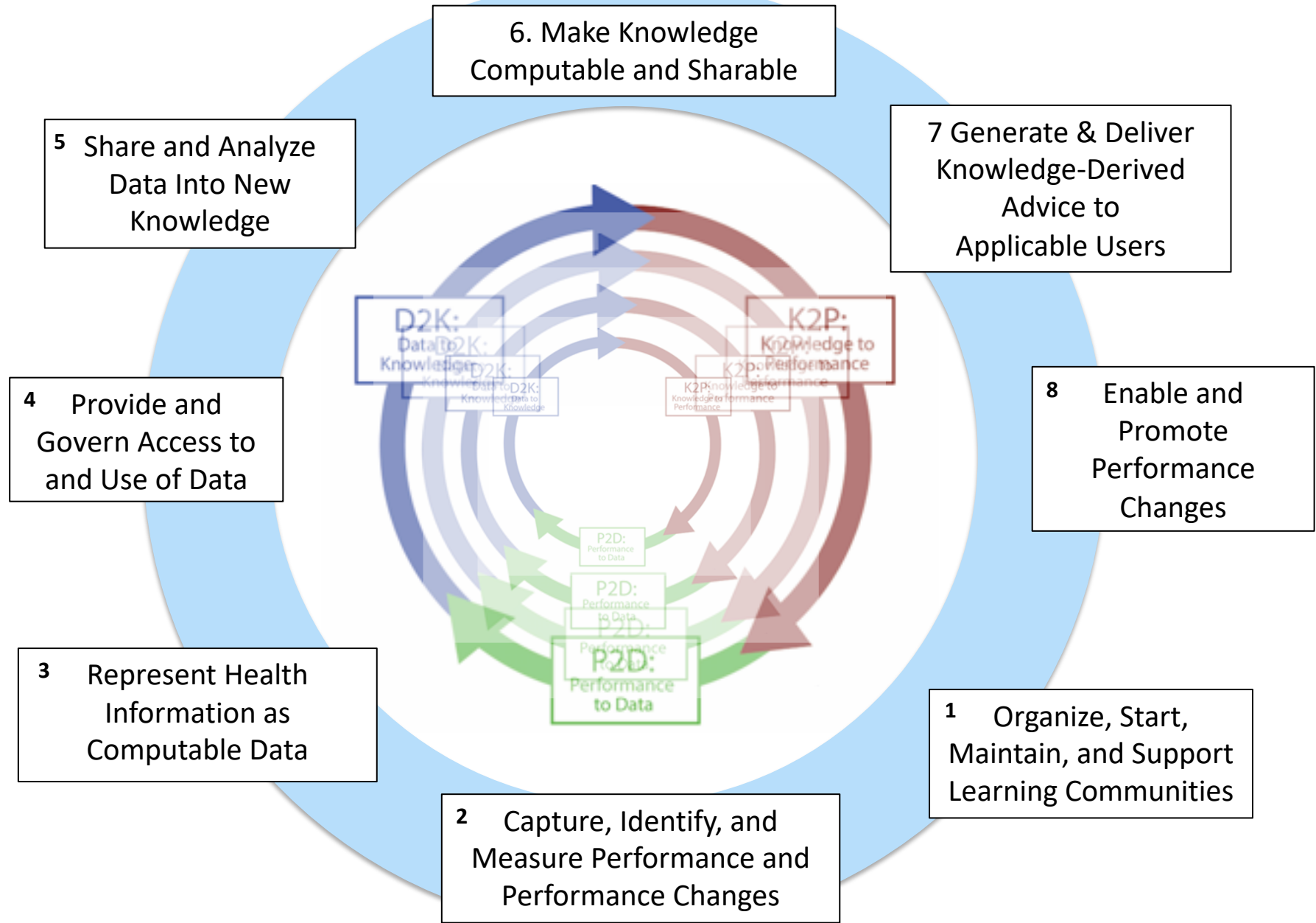
LHS = (Community-Driven Cycles) +
(Infrastructure)

Open infrastructure that can be shared
allows LHSs to “scale up”

We Can “Look Down” to See What the Infrastructure Consists Of



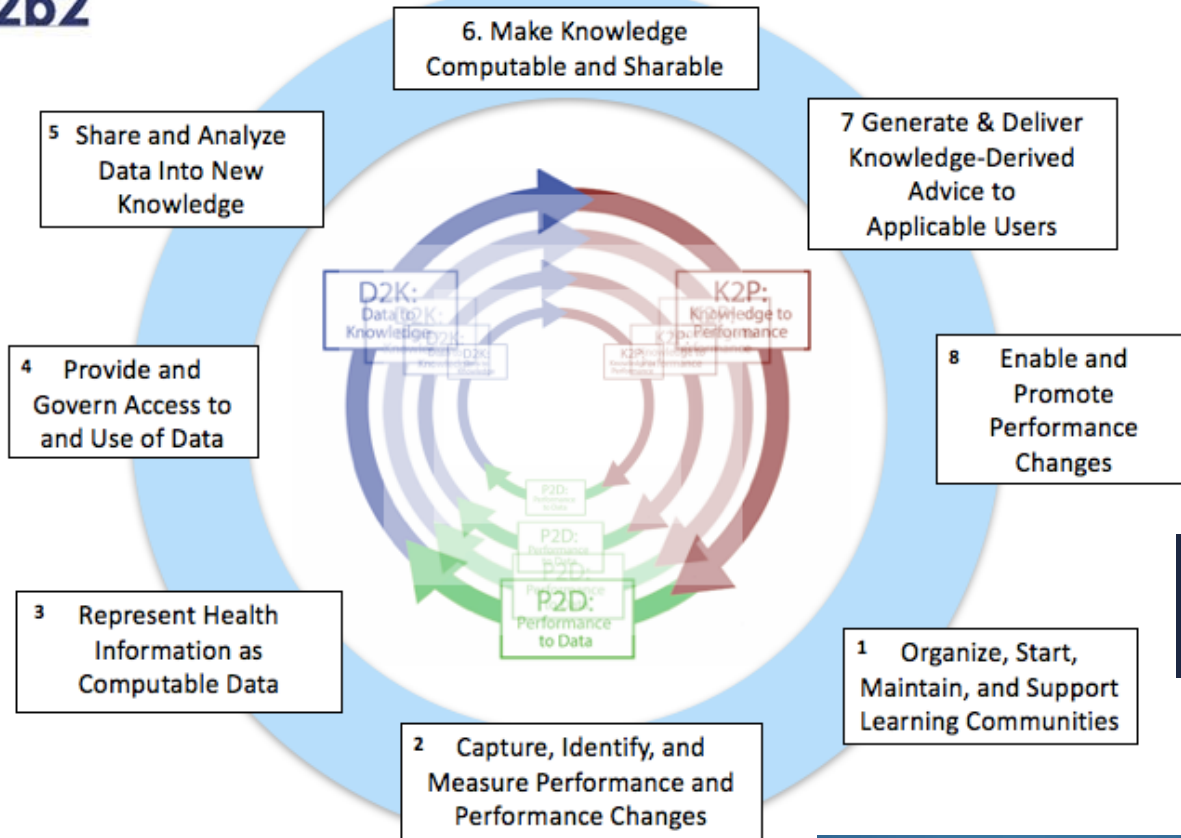
Infrastructure as Interconnected *Socio-Technical Services*



Many Open Infrastructure Components Already Exist: We Need More



TRANSFORM



OPERATIONALIZING A LEARNING COMMUNITY FOR A LEARNING HEALTH SYSTEM:
A Practical Guide

Deliberative Dialogue

In Closing...

- What are Learning Health Systems?
LHSs improve health by marrying discovery to implementation, which drives further discovery
- What makes the LHS approach to health improvement different from other approaches?
 - Embraced uncertainty requiring discovery
 - Multi-stakeholder learning communities enabling continuity
 - Infrastructure: shared services enabling scalability

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

<https://www.thieme-connect.com/products/ejournals/html/10.15265/IY-2017-004>

PERSPECTIVE

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

Jeanne-Marie Guise, MD, MPH^{1,2}, Lucy A. Savitz, PhD, MBA³, and Charles P. Friedman, PhD⁴

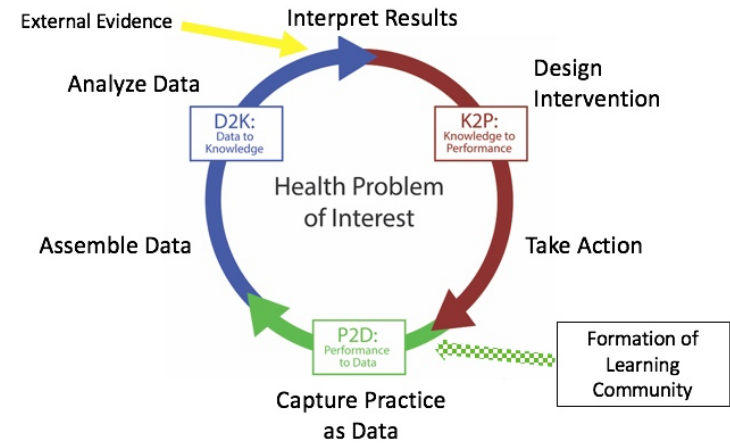
<https://link.springer.com/content/pdf/10.1007%2Fs11606-018-4633-1.pdf>

And everything in:

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