



How embedded research can make an impact in a learning health system: Lessons from Kaiser Permanente Washington

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Learning Objectives:

1. Describe common barriers to the adoption of findings of embedded research.
2. Discuss activities that embedded researchers can engage in to promote the impact of their research in a learning health system.
3. Identify elements that are essential to become a learning health system.

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CRS and Social Health

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Advanced Analytics

Yates Coley
David Arterburn
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Tyler Ross
Sharon Fuller
Eric Johnson
Health system leaders

No conflicts of interest

Setting the stage:

A recap of LHS Series Seminar by Drs. Trinkley and Gilmartin, 9/13/21



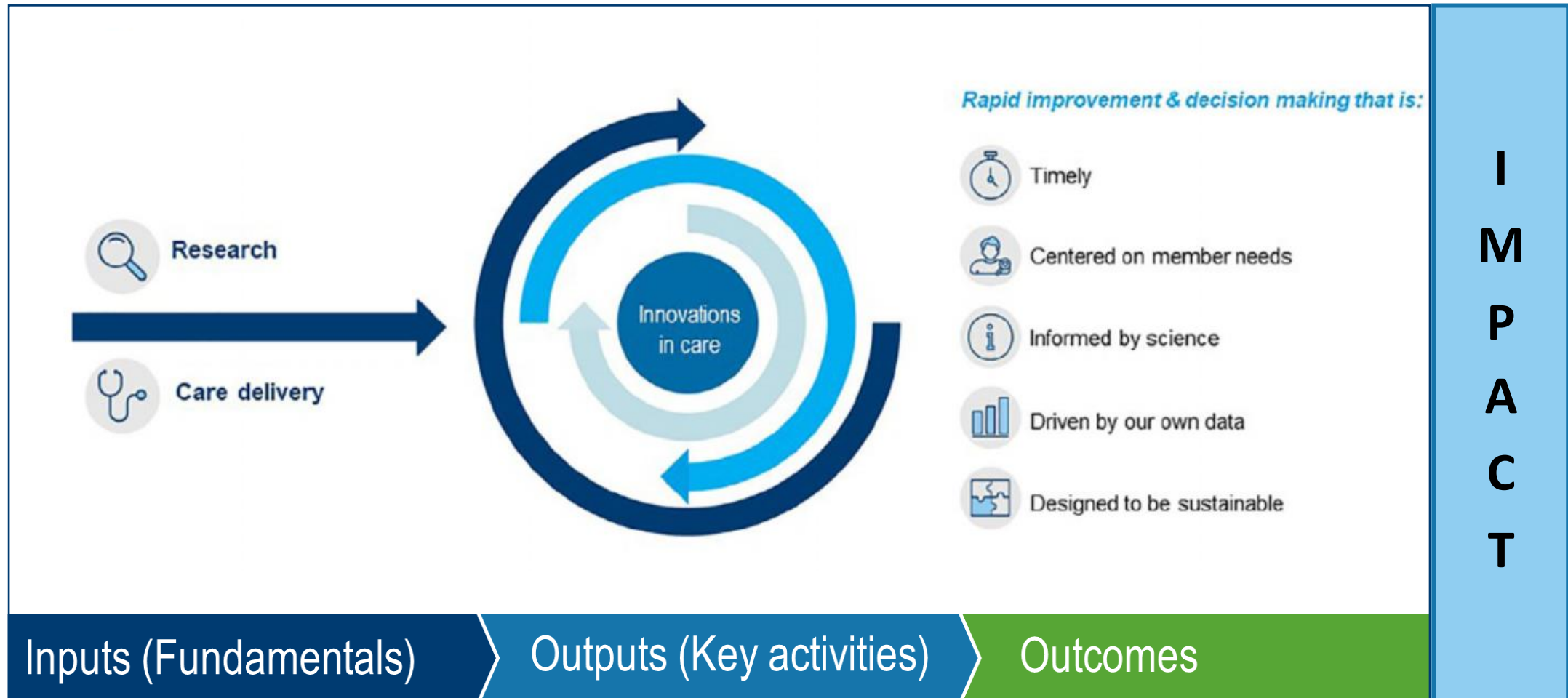
LHS = A system where science, informatics, incentives, and culture are aligned for continuous improvement and innovation, with ***best practices seamlessly embedded in the delivery process*** and new knowledge captured as an integral by product of the delivery experience.—IOM 2015

LHS researcher = An individual who is embedded within a health system and collaborates with its stakeholders to ***produce novel insights and evidence that can be rapidly implemented to improve the outcomes of individuals and populations and health systems performance.*** –AHRQ 2017

LHS models:

- There are health systems that have adopted LHS models...but there is ***no single standard*** LHS model.
- Diversity of models that operate at unit, organization, community and policy levels
- Varying emphasis on LHS components: Dissemination & Implementation Science, Informatics, Data and Analytics, Stakeholder Engagement, Quality Improvement, Precision Health
- Most LHSs are in developmental stages. The LHS remains an aspiration for most of us.

The Kaiser Permanente Washington Learning Health System Logic Model



Allen C, Coleman K, Mettert K, Lewis C, Westbrook E, Lozano P. A roadmap to operationalize and evaluate impact in a learning health system. *Learning Health Systems*. 2021 Jan 24;5(4):e10258. <https://pubmed.ncbi.nlm.nih.gov/34667878/>

Inputs (Fundamentals)

-  People & partnerships
-  Health information infrastructure
-  Prioritization
-  Funding
-  Improvement infrastructure
-  Ethics & oversight

Outputs (Key activities)

-  Environmental scanning
-  Evidence synthesis & translation
-  Data analytics
-  Design
-  Patient & family engagement
-  Implementation support
-  Evaluation
-  Dissemination
-  Consultation

Outcomes

-  Knowledge to action latency
-  Systematic adoption of EBPs
-  Elimination of wasteful practices
-  Population health
-  Experience of care
-  Costs of care
-  Work life for care teams
-  Equity
-  Programmatic return on investment

Origins of the Community Resource Specialist (CRS) role

Evolved from the LINCC study (2014-2016)

- Embedded research—pragmatic, flexible approach
- Funded by the Patient-Centered Outcomes Research Institute
- Partnered with patients and care teams in co-designing the study and the role
- CRS role =
 - ✓ Help patients with social needs—provide information and connect patients to community resources
 - ✓ Provide health coaching
- Findings from mixed-methods evaluation were promising.

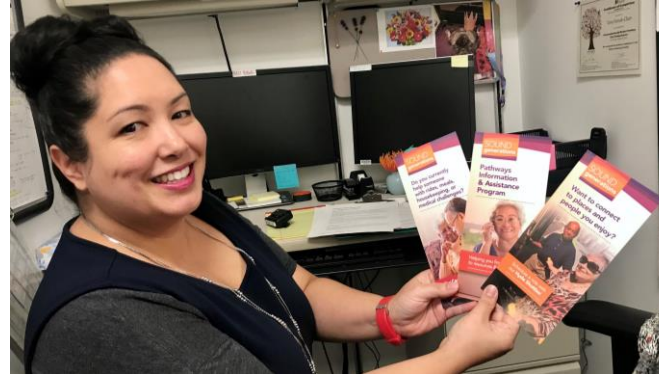


LINCC design event participants Amina Moalim, licensed practical nurse with Kaiser Permanente Washington (left) and Laura Malarcher, LINCC project patient partner (right)

Hsu C, Hertel E, Johnson E, Cahill C, Lozano P, Ross TR, Ehrlich K, Coleman K, BlueSpruce J, Cheadle A, Matthys J, Chapdelaine M, Gray M, Tufte J, Robbins M. Evaluation of the Learning to Integrate Neighborhoods and Clinical Care Project: Findings from Implementing a New Lay Role into Primary Care Teams to Address Social Determinants of Health. *Permanente Journal*. 2018;22:18-101. <https://pubmed.ncbi.nlm.nih.gov/32392126/>

Fast forward to 2021: CRSs are integrated systemwide





- CRSs in **all 30 medical centers**
- Essential member of the primary care team
- Stories of patients who benefitted from engaging with a CRS have become commonplace and visible.
- 2021 eValue8 Innovation award from National Alliance of Healthcare Purchaser Coalitions
- Starting point for designing universal social needs screening at KP Washington




...so, was this impact a triumph of embedded research?

What do you think this learning health system did to make this happen? Tell us in the chat.

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Advanced Analytics Team: Developing and deploying predictive models at KP Washington



Model that predicts risk of having **influenza-related complications** enabled **targeted phone outreach** to encourage vaccination (rolled out starting in the 2018-19 flu season).



Model that predicts risk of **missing a medical appointment** enabled additional text **reminders** that reduced no-shows (evaluated in RCT*).



Model that predicts risk of being **medically vulnerable** enabled phone outreach to Medicare (and later non-Medicare) members to **make sure their care needs were being addressed early in pandemic**.

Risk models under development:

- Preventable hospitalizations
- Harm from opioid use
- Suicide attempt
- Sepsis

*Ulloa-Pérez E, Blasi PR, Westbrook EO, Lozano P, Coleman KF, Coley RY. Pragmatic randomized study of targeted text message reminders to reduce missed clinic visits. *The Permanente Journal* In press.

Advanced Analytics Team: Impact and learnings



Validation: Testing risk models in our own population helps avoid implementing models that do not perform well, like models that perpetuate bias or health disparities.



Effectiveness: Deploying predictive models has allowed us to more effectively target intensive interventions.









Equipoise: Conducting rigorous randomized evaluations allows for assessment of interventions and reduces confounding.










Implementation: Risk model development and intervention design go hand-in-hand.

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Outputs (Key activities)

 Environmental scanning	Internal and external assessment of the current state of an issue or practice to identify gaps and recommend best practices
 Evidence synthesis & translation	Summarize the academic literature for a clinical or research question and explain the application of existing evidence to the issue at hand
 Data analytics	Inspect, clean, transform, visualize and model data to discover useful information, informing conclusions and supporting decision-making
 Design	Design care based on evidence generated locally or elsewhere using pragmatic, timely and flexible methods
 Patient & family engagement	Integrate stakeholder values, experiences and perspectives into LHS projects
 Implementation support	Facilitate the process of putting to use or integrating interventions in the care delivery setting
 Evaluation	Collect data and analyze results to show what does and doesn't work
 Dissemination	Share results to improve care
 Consultation	The provision of expert advice and counseling to inform decision-making and promote learning

Discussion:

- *Which of these activities does your organization use to accelerate learning and improve outcomes? **Tell us in the chat.***
- *In what ways are your research activities contributing to moving your organization toward being a learning health system? **Unmute and share.***

Inputs (Fundamentals)



People & partnerships

Personnel and relationships involved in establishing and maintaining learning activities with, and external to, the organization



Health information infrastructure

Integrated, interoperable system that supports data requirements of multiple stakeholders, digitally captures care experiences and allows real-time access to knowledge for clinical care and learning



Prioritization

Process in which learning activities and opportunities are aligned with strategic goals across different levels of the organization



Funding

Mechanisms to fund the operational effort needed to enhance learning capability, as well as strategies for sustained funding of learning efforts



Improvement infrastructure

Leadership, policies and procedures to organize and facilitate improvement work



Ethics & oversight

Institutional guidance to navigate the differences, overlap and similarities between quality improvement, clinical care and research.

Discussion:

- *In your health system, which of these inputs support organizational learning? **Tell us in the chat.***
- *How would investing in these inputs accelerate learning and improve outcomes in your health system? **Unmute and share.***

THANK YOU



Extra slide

Outcomes

 Knowledge to action latency	The average lag time for clinical practices to adopt research evidence to improve care for patients
 Systematic adoption of EBPs	Evidence of the actual performance of a practice in the system and target impacts of that performance in practice
 Elimination of wasteful practices	Reduction in clinical and operational practices that are cost-ineffective or detrimental to health
 Population health	Intermediate clinical health process and outcome measures for a population
 Experience of care	Patient satisfaction with care
 Costs of care	Utilization multiplied by the price of services, equipment, products and prescription drugs
 Work life for care teams	Clinical care and research team experience
 Equity	Fairness in processes, outcomes and relative costs
 Programmatic return on investment	Cost of LHS program investment over the outcomes achieved in learning, health, experience, equity, work life of teams and costs of care achieved across the projects the program supports,

Discussion:

- *On which of these outcomes is your organization most focused?*
- *Over the next 5 years, how could you envision making a meaningful impact on LHS outcomes in your health system?*