

Introduction to Learning Health Systems Science

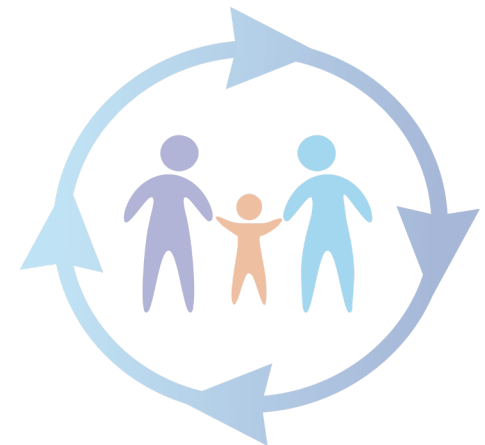
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Learning Session 2

February 1, 2021



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Complex

the relationship between cause and effect can only be perceived in retrospect

probe – sense - respond

emergent practice

Complicated

the relationship between cause and effect requires analysis or some other form of investigation and/or the application of expert knowledge

sense – analyze - respond

good practice

novel practice

no relationship between cause and effect at systems level

act – sense -respond

Chaotic

best practice

the relationship between cause and effect is obvious to all

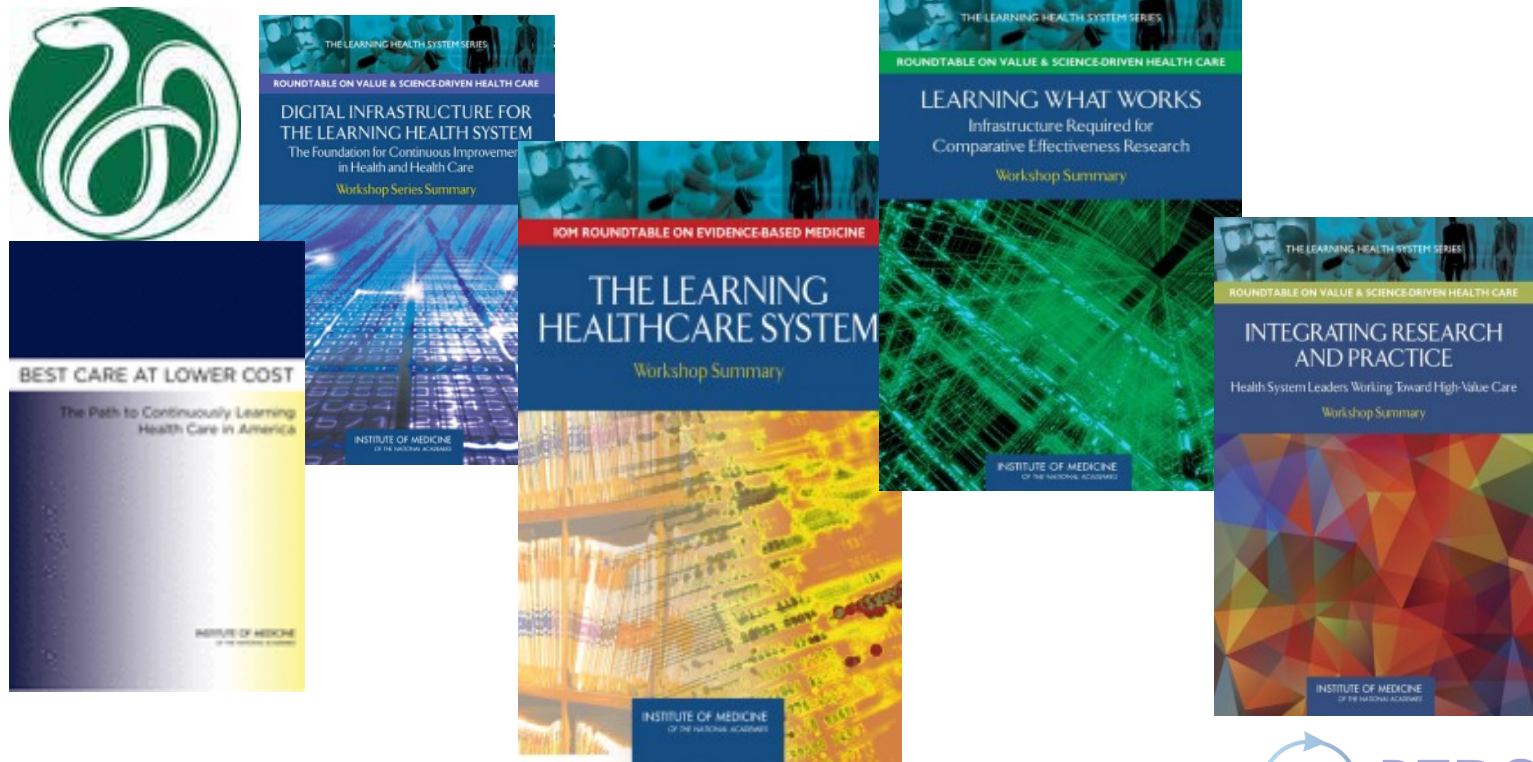
sense – categorize - respond

Simple / Obvious

Source: Snowden, David J.; Boone, Mary E. (2007). "[A Leader's Framework for Decision Making](#)". *Harvard Business Review*. 85 (11): 68–76. [PMID 18159787](#)

Learning Health Systems

Health systems--at any level of scale--become learning systems when they can, continuously and routinely, study and improve themselves



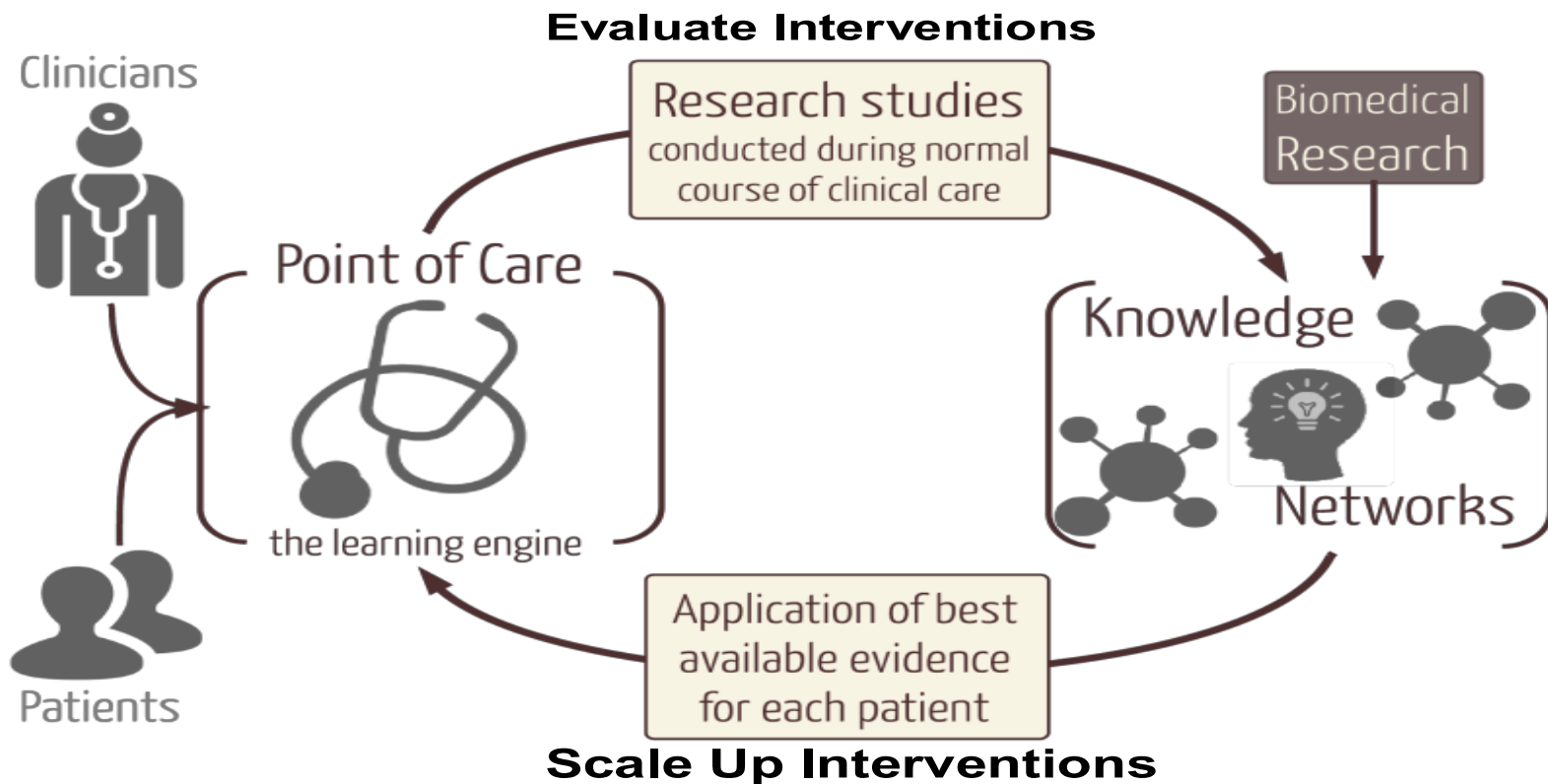


Figure 1. The Learning Cycle in Clinical Settings begins with generation of research questions culled from interactions between patients, clinicians, system leaders, and researchers. New knowledge is generated through LHS research, integrated into the biomedical knowledge network, then scaled to patients, taking into consideration the unique needs of each person and their local system and community contexts.

Learning Health Systems Science



Cross-cutting: systems, leadership/management, ethics, equity

Definition of a Learning Health System Scientist

“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 system performance.”

Embeddedness
Health not healthcare systems
Stakeholder collaboration
Evidence generation with potential for implementation
Focus on outcomes--people and systems

Source: Forrest et al.,
Development of the
Learning Health
System Researcher
Core Competencies,
*Health Services
Research*, 2017

What are the Unique Attributes of LHS Scientists?

- Ability to conduct applied science / pragmatic research
- Ability to conduct rapid-cycle investigation / learn rapidly
- Embedded within the health system (but with scientific independence)
- Ability to conduct team science and coordinate different expertise and resources/engage and collaborate
- Ability to disseminate and implement results
- Expertise in infrastructure – understanding the platform that underlies LHS science
- Expertise in gathering data from EHRs/informatics

Individual Development Plan (IDP)

- Competency evaluation (ongoing)
- Area of specialization: subject matter expertise
- Mentorship team and approach
- Passions and strengths; developmental areas
- Values
- Career vision
- Progress
- Use with all mentors; quarterly eval with PEDSnet mentor
- Complete in February; submit end of March and quarterly thereafter