Launching Embedded Research in Primary Care: Insights from Implementation of a Learning Health System Training Program

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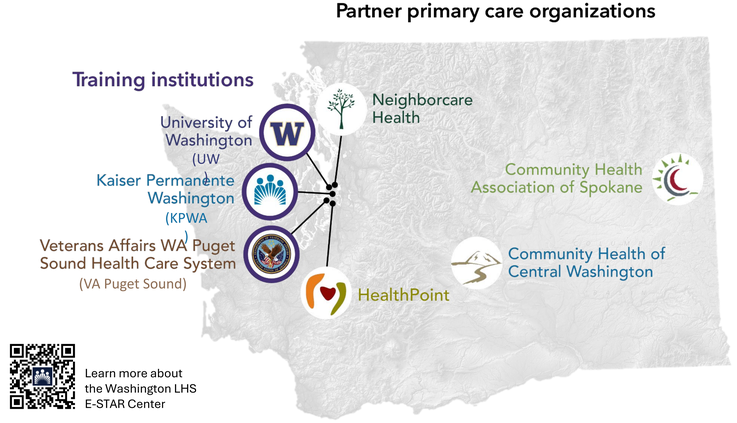
How does embedded research work in practice?

Little is known about how learning health system (LHS) and other embedded research models operate in real-world settings. Our objective was to **characterize the challenges and summarize lessons learned from conducting research projects in practice.** We assessed 5 LHS projects taking place in 2 federally qualified health centers (FQHCs) and 2 integrated health systems via the Washington LHS Embedded Scientist Training and Research (E-STAR) Center.

The Washington LHS E-STAR Center brings together research organizations, integrated health systems, and FQHCs to train early career scientists through LHS research projects prioritized by health system and embedded in primary care.



Learn more about the Washington LHS E-STAR Center

Cohort 1 scholars



Michelle Shin
Assistant Professor, UW Nursing
Childhood immunization



Logan Trenaman
Assistant Professor, UW Public Health
Colorectal cancer screening

Cohort 3 scholars were selected in April 2026 and will lead LHS projects at HealthPoint and Community Health Association of Spokane.

Cohort 2 scholars



Lily Shapiro
Collaborative Scientist, KPWA Research
Pediatric flu vaccination



Kaboni Gondwe
Assistant Professor, UW Nursing
Postnatal care attendance



Mayuree Rao
Physician & Affiliate Investigator, VA Puget Sound
Health-related social needs

METHODS

20 Interviews*

- **5** Scholars
- **3** Project managers
- **3** Collaborative scientists
- **5** Research leadership team members

Document review

Meeting minutes & notes from biweekly project management huddles

Directed & conventional content analysis to identify patterns in challenges and best practices

* 4 participants were interviewed twice because they worked on >1 project.

Results: Lessons learned from implementation of 5 research projects across diverse settings

Using the **8 LHS core competencies developed by the Agency for Healthcare Research & Quality**, we identified essential components of successful embedded research partnerships.

Systems science

Understand organizational charts and accountabilities and establish an executive sponsor to facilitate connections to "movers"

Research methods

Ensure LHS scholars have the methodological expertise required for the project and provide mentoring to address knowledge gaps

Ethics

Plan for variable IRB processes and administrative time to clarify institutional responsibilities and definitions of "engaged" research

Engagement & leadership

Facilitate project selection as health systems prioritize projects and focus meetings on decision-making over "updates" to boost engagement

Research questions

Define clear aims and scope in project charters and co-designed workplans to ensure strong alignment between research and care delivery

Informatics

Surface data access challenges early and discuss data needs and resource availability to inform feasibility and mitigate delays

Improvement science

Incorporate quality improvement language and methods to increase buy-in among clinicians and staff

Equity

Use data to identify priority populations and refine intervention targeting; collect data in multiple languages to ensure diverse perspectives

Conclusions & key takeaways for policy & practice

Sustained engagement, shared vision, and iterative methodological approaches strengthen collaborative partnerships. Embedded research projects benefit from:

- Understanding organizational structures
- Co-defining research questions & scope
- Investing early in data-sharing & ethics processes
- Strong executive sponsorship from the partner organization

To advance impactful embedded research, training programs should:

1. **Formalize** project governance and decision-making structures
2. **Streamline** data-sharing and IRB processes
3. **Standardize** startup tools like charters, needs assessments, and quality improvement methods familiar to health systems
4. **Provide** scholars with mentorship from health system operations and access to methods expertise

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Learn more: act-center.org/lhs-e-star

This work is funded by: AHRQ pcori Eos Foundation