Implementation and Learning Healthcare System Research in the Era of Open Science

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The views expressed are those of the presenter and do not necessarily represent the views of the Department of Veterans Affairs.
Effective Practices are Not Routinely Implemented

80% of medical research dollars do not result in public health impact.


From Mark Bauer, MD, VA Boston HSR&D Center Harvard Medical School
The latest research shows that we really should do something with all this research.
Quality Enhancement Research Initiative (QUERI)

- Administered through VA’s Research & Development Program, the goal of QUERI is to improve Veteran health by helping providers adopt evidence-based practices in routine care
  - Established in 1998, QUERI is a national network of peer-reviewed, academically-affiliated field-based investigators funded by VA operational (medical) dollars
    - 15 Programs addressing cross-organizational VA priority goals
    - 20 Partnered Evaluations on specific programs/policies
    - 5 Evidence Synthesis Program (ESP) Centers
  - QUERI is a national resource for deployment and evaluation of implementation strategies (e.g., tools that providers, leaders can use to adopt, sustain best practices across different settings)
QUERI, Research, and the Diffusion of Innovations

Diffusion of Innovations, Everett Rogers

- Basic and clinical research
- Effectiveness Research (typical practice settings)
- Implementation Research (scale-up & spread)
- Further Implementation & Evaluation

Market share %

- Innovators 2.5%
- Early Adopters 13.5%
- Early Majority 34%
- Late Majority 34%
- Laggards 16%
**QUERI Implementation Roadmap**

*Strategies to Sustain Provider Uptake of Effective Practices*

**Pre-implementation**
1. Identify high-priority need from leadership/stakeholders
2. Identify players (implementer, end-users)
3. Identify effective practices, mechanisms (e.g., ESP, ORD)
4. Assess practice variation determinants, success stories (e.g., HSRD IIRs, CFIR)
5. Adapt effective practice based on stakeholder input

**Implementation**
- Select, apply, & tailor theory-based implementation strategies (e.g., ERIC):
  - **Performance-focused**
    - Provider training (practice core elements, adaptation options)
    - Audit & Feedback
    - Technical support, Incentives
  - **Motivation-focused**
    - e.g., Facilitation
    - Evidence-based Quality Improvement

**Sustainability**
- Ongoing monitoring (RE-AIM):
  - Reach
  - Effectiveness
  - Adoption
  - Implementation/Fidelity
  - Spread
- Return-on-investment of implementation strategies
- Maintenance: stakeholder ownership
Examples of Implementation Strategies Used by QUERI

**Evidence-based Quality Improvement/Lean**
A systematic approach to developing local research-clinical partnerships to produce tailored evidence-based care models or redesigns (Rubenstein et al, 2010)

**Replicating Effective Programs**
Intervention or clinical practice user-friendly manual allowing adaptation, provider training, ongoing technical assistance (Kilbourne et al, 2014; Kilbourne et al, 2015)

**Audit+Feedback**
Remote electronic extraction of local quality performance and provide feedback (Jamtvedt, 2006; Ivers, 2012)

**Facilitation**
Interpersonal process of diagnosing barriers to uptake, providing encouragement and advice in mitigating barriers, co-develop action plans to resolve barriers to implementation. Blended Facilitation uses Internal and External Facilitators (Kirchner et al, 2015)

**De-implementation**
Un-learning by engaging clinicians in rational choice to stop practice, substitution approach where an alternative practice is introduced (Prasad et al, 2014)

**Value-based incentives**
QUERI, Implementation Science, and the Learning Healthcare System

• National Academy of Medicine report on Learning Healthcare System
  • Leverage data to deploy, evaluate innovations and spread of effective practices
  • Align science with clinical priority goals
  • Conduct more rapid and efficient studies

• To date, many Learning Healthcare System initiatives have focused more on Big Data, less on studying implementation strategies for providers

• Randomized Program Evaluations

“Less than one dollar out of every $1,000 that the government spends on healthcare will go towards evaluating how well the other $999-plus actually works”- Bridgeland & Orszag, 2013
QUERI Learning Healthcare System Randomized Program Evaluations

- Goal: to rigorously evaluate impact of new VA programs or policies on Veteran outcomes, and inform VA return-on-investment
- Assess which implementation strategies work best to promote policy/program sustainability
- Topics solicited from VHA operations leaders: four selected in 2017 round:
  - Opioid Prescription Predictive Model-Based Targeted Risk Mitigation for Patients at High Risk Of Adverse Events (Mental Health Operations)
  - Suicide Risk Stratification Predictive Modeling for Veterans at high risk of suicide (Mental Health Operations)
  - Veteran Home & Community Based Services (Geriatrics & Extended Care)
  - Mobile Teledermatology- impact on care, outcomes (Connected Care)
QUERI and Open Science: Challenges & Opportunities

- Align incentives to share data with operational needs, publication
  - Policy briefs (intermediate outcomes)
  - Data management/stewardship support for operations partners
- Study rigor and dissemination
  - Clinicaltrials.gov registration and implementation
  - Federal employees and payment for open access journals
  - Shifting political priorities