Do Our Current Models of Health Services Research Meet the Needs of a Learning Health Care System?

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Does our current research model fit the needs of a learning healthcare system?

- A Bit of Context
- Current Conception of a Learning Healthcare System
- Challenges to our Current Research Model
- Possible Ways Forward
Conclusions

• A learning healthcare system needs researchers
  – Learning occurs outside of research but researchers bring deeper knowledge of data, design, inference, and objectivity

• BUT… our current research structure isn’t well aligned to meet the needs of a learning healthcare system

• Problems of:
  – Timing
  – Framing
  – Incentives

• If we want different results, we need different models
In FY 2018, more than 9 million Veterans were enrolled in VHA.

VA provided care at 1,250 health care facilities, including:

- 172 VA medical centers
- 1,069 outpatient facilities of varying complexity
Unique Advantages of VA for HSR

- Dedicated research appropriation for research
  - $772 million in 2019; $100+ million for HSR; 250 active HSR projects
  - Can study T1-T4 translation
  - $20 million for QUERI program to implement research and improvement

- 20+ years of EHR data in national corporate data warehouse

- Integrated care system with social, educational, housing and disability services and benefits

- Strong and integrated primary and mental health care

- Leader in telehealth, homelessness prevention, CIH
Unique Challenges of Research in VA

• Publicly funded system in a polarized political environment
  – Pressure for fast results, reactive environment
• Leadership turnover
  – Changing priorities make it hard to align with operations
• Heterogeneous clinical environment
• Dispersed decision making
A Learning Healthcare System

“Each patient care experience naturally reflects the best available evidence, and, in turn, adds seamlessly to learning what works best in different circumstances.”

IOM Roundtable on Evidence-Based Medicine, 2008

What Is Different From Traditional Research Learning Model

- All experience contributes to evidence -- generalizable
- Evidence is truly based in experience – “real-world”
- Learning happens continuously, in real time
Traditional Research Pipeline

Efficacy Studies → Effectiveness Studies → Implementation Studies

The Research to Practice Gap
(Years to decades)

From Geoff Curran
Lessons Learned: QUERI Updated Implementation Roadmap:

Informing a High-Reliability, Learning Health Care System

Based on the Learning Health Care System Knowledge to Action Framework
3 Barriers to LHS Research
1. Research Timelines >>> Health System Needs

• Takes too long
  – Average time from first submission to publication > 6 years

• System makes decisions without good information

• World and clinical context has changed by time your trial is finished
Time to publish main findings: 6.3 years
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HSR Timeline
Submission to Publication of Main Findings

Time to publish main Findings: 6.3 years
Time to publish main findings: 6.3 years
The Traditional Translational Research Pipeline
(Linear, sequential, but slow!)

* These dissemination and implementation stages include systematic monitoring, evaluation, and adaptation as required.
2. Mismatched Priorities and Incentives

- **Researchers:**
  - Depend on funders priorities
  - Advance through publications and grants

- **Clinical Program Leaders:**
  - Focused on their immediate priorities
  - Want specific not generalizable answers
  - Want fast and “good enough”
3. Too Little of our Research Achieves “Liftoff” (Gets Into Widespread Practice)

- Majority of successful interventions never get adopted at new sites
  - Many don’t even get sustained at original site
- Not aligned with top system priorities
- Researchers often don’t understand “value proposition” of customer
4 Possible Solutions

- New funding mechanisms
- New models for research: health system partnerships
- New incentives for impact
- Enhanced attention to implementation
1. More Flexible Funding Mechanisms

- Program projects with multiple parallel studies
  - Collaborative Research for Evidence to Advance Treatment Effectiveness (CREATE)
  - NIH Collaboratories – programs of pragmatic trials
    - E.g. VA involvement in National Pain Collaboratory
- Research embedded into “natural experiments”
  - policy or clinical programs
- High risk: High reward pilots
1A. Women’s Health CREATE

- Attrition of Women Veterans New to VA Care:
  - Interviews and EHR data to explore which women leave VA care and why
- Impacts of VA Delivery of Comprehensive Women’s Health Care
  - Explores how variations in comprehensiveness of care affects outcomes.
- Implementation of VA Women’s Health Patient Aligned Care Teams
  - Group RCT in 12 VAs of Evidence-based quality improvement to adapt PACT
- Trial of Tele-Support and Education for Women’s Health Care in CBOCs:
  - Impact of WH preceptorship and e-consults with WH providers in CBOCs
- Quality and Coordination of Outsourced Care for Women Veterans:
  - Evaluation of care coordination/quality of outsourced care using qualitative interviews and chart reviews
1B. Randomized Program Evaluations (RPEs)

Problem: New programs often implemented without strong evidence
- Most evaluations limited to before:after comparison of delivery

Solution:
- Solicited program offices to help them evaluate new programs
- Program office:
  - Agrees to let HSRD plan sequence of roll-out
  - Offers access to sites and program data
- HSRD supports:
  - Planning of randomized roll-out sequence
  - Qualitative research at implementation sites
  - Evaluation using centrally collected data
Every eligible site will participate in VD-HCBS during the evaluation.

Start times and exact number of sites in each step subject to change.
Six Randomized Program Evaluations (RPEs)

- Identifying and intervening for Veterans at highest risk of suicide
- Flexible community benefits for high-risk older Veterans
- Risk tool + intervention for high-risk opioid use
- Tele-dermatology consults for remote Veterans
- Reducing unnecessary PPI use
- New screen for interpersonal violence
Randomized Program Evaluations (RPEs)

**Lessons learned:**
- Hard to randomly assign roll-out; people who have bought in want to start
- Need to be sure of program office commitment
- Don’t plan around new technology – too many delays
- Planning can get overtaken by events

**Considerations going forward**
- Is the extra rigor from randomization worth it?
- What question is the program office ACTUALLY interested in?
  - Does It Work? vs. WHERE Does it Work?
Why We Need Randomization – Before: After Results

Intensive Team Based Management (IMPACT)

**Average 11-Month Utilization Rates**
Control group showed identical before:after change w/usual care (i.e., regression to the mean)
1C. Innovation Planning Awards

**Problem:** Too much research tests safe, incremental improvements.

**Solution:** New mechanism to solicit riskier ideas, planning funds to “de-risk”, phased funding to support success

- 3-page applications: **122** submitted
- **10** awards for planning funds based on Innovation and Impact
- 18 months $200,000 to “de-risk”
- Apply for **2-4** awards at $500,000/year
## Title of Funded Projects

<table>
<thead>
<tr>
<th>Project Title</th>
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<tbody>
<tr>
<td>Can a Computed Algorithm Reduce the Amount of Postoperative opioids Prescribed to Surgical Patients?</td>
</tr>
<tr>
<td>Building a Model VA-State Partnership to Support Non-Institutional Long-Term Care for Veterans</td>
</tr>
<tr>
<td>Improving medication use for older adults: VIONE program</td>
</tr>
<tr>
<td>Mobile App for the Prevention of Suicide (MAPS)</td>
</tr>
<tr>
<td>Development peer-lead community partnerships to restrict firearm access to prevent suicides</td>
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<tr>
<td>Linking VA-commercial pharmacy data to improve Prescription Use</td>
</tr>
<tr>
<td>Targeting and Improving Long Term Care Services and Support for High Need Veterans</td>
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<tr>
<td>Remote and automated evaluation of skin disease</td>
</tr>
<tr>
<td>Patient incentives for reducing no-shows, accommodating walk-in visits, and improving primary care work flow</td>
</tr>
<tr>
<td>Can Changing Disability Policy Motivate Return to Work in Veterans with TBI and PTSD?</td>
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Facilitate research: health system partnership
• Foster bidirectional engagement
• Research responsive to system needs
• Improve chances that research will be relevant and actionable

Models
• Research funded: Research Consortia
• Partner funded: PACT Demonstration Labs
• Shared funding: QUERI Partnered evaluation centers
• Research-funded Researcher in Residence
Research: Health System Collaborative Network
VA Women’s Health Research Network

Women’s Health Research Consortium
- Training and education
- Methods support
- Research development
- Dissemination support

Women’s Health Practice Based Research Network
- ↑ recruitment of women
- ↑ multisite research
- Engage local clinicians, leaders
- ↑ implementation/impact

Multilevel Stakeholder Engagement
VA policymakers, operations leaders, frontline staff, women Veterans

2010-present
$2 BILLION IMPLEMENTATION OF MEDICAL HOME

• Team based care
• Expanded non face-to-face access (telephone clinics, secure messaging)
• Increased staffing ratios/ 1000 RN care managers

ELECTRONIC TOOLS

• Patient portal (Secure messaging)
• Referral management (specialty care); electronic consultation

$20 MILLION FOR RESEARCH-OPERATED DEMONSTRATION LABS

# How Can We Measure Implementation of PACT Model

Research created new measure -- PI² Scores

<table>
<thead>
<tr>
<th>8 Domains</th>
<th>Source of Data</th>
<th># of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>Corporate Data</td>
<td>11</td>
</tr>
<tr>
<td>Continuity</td>
<td>Warehouse (CDW)</td>
<td>3</td>
</tr>
<tr>
<td>Coordination of care</td>
<td>n = &gt;5.6 million</td>
<td>8</td>
</tr>
<tr>
<td>Team-based care</td>
<td>PACT PCP survey</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>n = 5,404</td>
<td></td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td>Patient surveys</td>
<td>3</td>
</tr>
<tr>
<td>Self-management support</td>
<td>(CAHPS-PCMH)</td>
<td>2</td>
</tr>
<tr>
<td>Patient-centered care &amp; communication</td>
<td>n = 75,101</td>
<td>6</td>
</tr>
<tr>
<td>Shared decision making</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>53</strong></td>
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Source: Karin Nelson, PCAT, Puget Sound VAHCS
Distribution of PI² Scores (-8 to +8)

Source: Karin Nelson, PCAT, Puget Sound VAHCS
Modest overall effect of PACT on health care utilization and costs

- Potential costs avoided from April 2010 to FY2012 about $600M
- Initial estimate of ROI as of FY12 was -$178M (considering PACT only investment)

<table>
<thead>
<tr>
<th>% Change in utilization due to PACT</th>
<th>Total</th>
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<tbody>
<tr>
<td>Hospitalizations for ambulatory care-sensitive conditions</td>
<td>-1.7%</td>
</tr>
<tr>
<td>Outpatient primary care visits</td>
<td>1.0%</td>
</tr>
<tr>
<td>Outpatient mental health visits</td>
<td>-7.3%</td>
</tr>
</tbody>
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Advancing “Embedded Research”

- Meeting funded by PCORI, AHRQ, VA in Los Angeles 2019
- McGinty and Salokangas:
  “those who work inside host organisations as members of staff, while also maintaining an affiliation with an academic institution. Their task is seen as collaborating with teams within the organisation to identify, design and conduct research studies and share findings which respond to the needs of the organisation, and accord with the organisation’s unique context and culture.”
Recommendations from Conference

- Strengthen bi-directional relationships between research and C suite
  - Clarify system priorities and find alignment with research
- Build portfolio of projects/funding aligned with system priorities with mix of timing and deliverables
- Shared governance and accountability between research and operations
- Expand toolbox of study designs to match system need
- Position research on continuum with QI
- Develop new career trajectories for embedded researchers
3. Incentivizing Real-World Impacts

- HSRD “Research Impact” Award
  - Awards research that has affected VA system
  - Reducing catheter associated infection

- QUERI Program
  - Focused on implementing (not generating) evidence
  - Need to include low-performing sites

- Implementation supplements – “harden” intervention in successful studies – develop toolkits, training
4. Increase Attention to Implementation

- Need to think about implementation at the beginning not end of study
- Adapt implementation strategy to complexity of intervention and resource needs
- Use hybrid designs to bridge Effectiveness -- Implementation gaps
QUERI Implementation Strategies to Support Scale-up and Spread of Effective Practices

**Evidence-based Quality Improvement**
- Local research-clinical partnerships using system redesign to tailor EBP (Rubenstein et al, 2010)

**Replicating Effective Programs**
- User-friendly toolkit development combined with training, ongoing technical support (Kilbourne 2014)

**Audit+Feedback**
- Remote electronic extraction of quality performance + provider feedback (Jamtvedt, 2006; Ivers, 2012)

**Facilitation**
- Interpersonal guidance in strategic thinking skills to mitigate EBP barriers (External Facilitators)
- Internal Facilitators further mitigate barriers via systems redesign, leadership connection (Kirchner et al, 2015)

**De-implementation**
- Un-learning by engaging clinicians in rational choice to stop practice, substitution approach (Prasad, 2014)

**Value-based incentives**
- Evidence-based Quality Improvement
- Relative Site Complexity/Need
- Relative Intensity of Strategy
Hybrid Designs to Bridge Effectiveness and Implementation Research

**Clinical Effectiveness Research**

**Hybrid Type 1**

**Primary Aim:** Determine effectiveness of a clinical intervention

**Secondary Aim:** Better understand the context for implementation

**Hybrid Type 2**

**Primary Aim:** Determine effectiveness of a clinical intervention

**Co-Primary Aim:** Determine feasibility and/or (potential) impact of an implementation strategy

**Hybrid Type 3**

**Primary Aim:** Determine impact of an implementation strategy

**Secondary Aim:** Assess clinical outcomes associated with implementation trial

The Continuum

Continuum of Partnered/Embedded Research: Partner Engaged vs. Partner Directed

Can it Work?
• Innovation Awards
• Investigator-initiated research

Will it Work?
• Collaboratories
• Service-directed research

Is it Worth It?
• Implementation Research
• Randomized program evals
• QUERI Programs
• Operations Funded work

How can we sustain or improve it?

Funding
HSRD

Researcher Initiated

Co-created

Clinical partners

Partner Driven
Conclusions

• A Learning Healthcare System needs skills of researchers
• “Embedded researchers” bring understanding of delivery system context, clinical priorities, implementation barriers.
• Relationships (bi-directional) are more important than evidence.
• Expanded portfolio of study designs and funding streams are needed to support:
  – More timely, system- targeted research
  – More rigorous, relevant, answers to long-term questions
Conclusions - 2

• Implementation needs to be built in at the beginning
• We need to develop new skills in researchers
  – Skills in partnership and communication – “bilinguality”
  – Flexibility and speed in methods
  – Understanding of varied approaches to “value proposition”.
• Improvement across a system requires a blend of top down and bottom up approaches
## Health Services vs. Quality Improvement Research

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<th>Quality Improvement</th>
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<tbody>
<tr>
<td>Often framed around clinical condition</td>
<td>Based on specific setting and need</td>
</tr>
<tr>
<td>Often work with early adopters, to achieve optimal performance</td>
<td>Work with identified problem areas to attain improvement</td>
</tr>
<tr>
<td>Design intervention for maximal effect</td>
<td>Design intervention to fit staff roles</td>
</tr>
<tr>
<td>Worried about generalizable knowledge, rigor of methods</td>
<td>Worried about local fit, feasibility of intervention and evaluation</td>
</tr>
<tr>
<td>Value = cost-effectiveness</td>
<td>Value = business case, improving performance without increased costs</td>
</tr>
</tbody>
</table>
What Does VA’s Access Crisis Tell Us About A Learning Healthcare System?

• Good performance *on average* is not a sufficient measure of a high-performing health system
  – Research hasn’t paid as much attention to “low performers”
• Having a lot of data ≠ having the right data
• Performance Measurement can be overused
• Improvement requires much more attention to implementation
VA vs. Private Care Comparisons – RAND Report

Price et al. JGIM 2018.
In a World of QI, Analytics and Lean, Research is Only One Source of Learning

- System wide analytics is central to learning healthcare system
  - Documenting variation is no longer responsibility of research
  - But we can drill down deeper to understand factors related to variation at different levels
    - mixed methods insights

- Systems re-engineering – “lean” – can address reliability of standardized healthcare processes
  - But may not identify when new approaches are needed

- Operations partners looking outside for innovation
  - SCAN- ECHO, Open Notes, Connected Health (“Annie”)
  - But research needs to test whether they really work in VA
What Does The VA Still Need from “Big R” Research?

• Improved Methods For Understanding Quality, Patient Experience
  – Improving how we measure quality, efficiency, patient experience
  – Strengthening causal inferences through conceptual models

• Deeper Insight into Organization and Culture
  – Understanding complex social organization of healthcare

• Understanding Human Interactions
  – With technology, information, patients, teams

• Apply careful, objective analysis to enthusiasm of the year
  – Personalized medicine, “Big Data” and Predictive Analytics, Telehealth
Using the Right Numbers: Diabetes Quality Measurement

DO YOU HAVE THOSE BUDGET NUMBERS FROM LAST MONTH?

I KNOW, BUT THOSE ARE THE ONLY NUMBERS WE HAVE.

ACTUALLY, WE HAVE INFINITE INACCURATE NUMBERS TO CHOOSE FROM.

LET'S KEEP THOSE IN OUR BACK POCKET IN CASE WE NEED THEM.

I'LL ENCRYPT THEM SO NO ONE ELSE CAN USE THEM.
Are We Paying Attention to What is Really Important?