Making VA a Learning Healthcare System

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VA HEALTH CARE | Defining EXCELLENCE in the 21st Century

What Problem is a Learning Healthcare System Trying to Solve?

- Too much care is not based on latest evidence
  - Evidence takes too long to get into practice
- Too many important clinical questions haven't been answered by good evidence
- Too many research studies don't reflect real world patients and real world conditions

- **"If we want to get more evidence-based patient care, we need to produce more patient-based evidence"**

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."
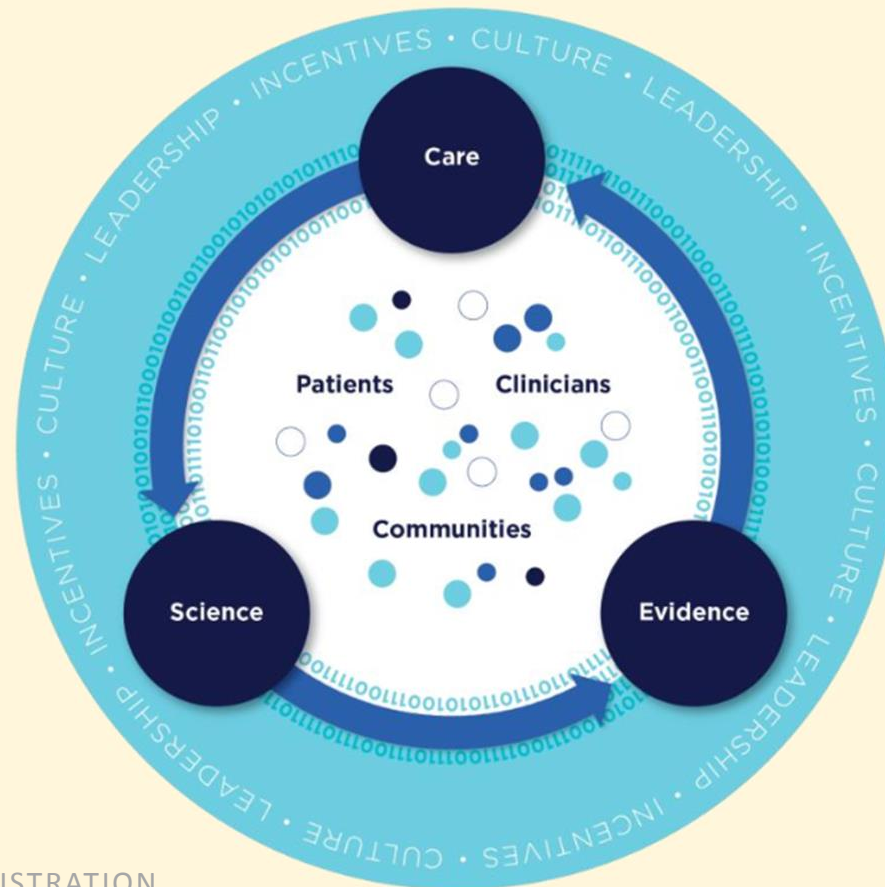
IOM Roundtable on Evidence-Based Medicine, 2008

A learning healthcare system means:

- All experience contributes to evidence

- Evidence is truly based in experience

- Learning happens continuously, in real time

How close are we to the model of a continuously learning healthcare system?

Continuous Learning, Best Care, Lower Cost

How close are we to the model of a continuously learning healthcare system?

- **10 Recommendations to improve care while decreasing cost**
  1. **Digital Infrastructure**
  2. Data Utility
  3. Clinical Decision Support
  4. Patient-Centered Care
  5. Community Links
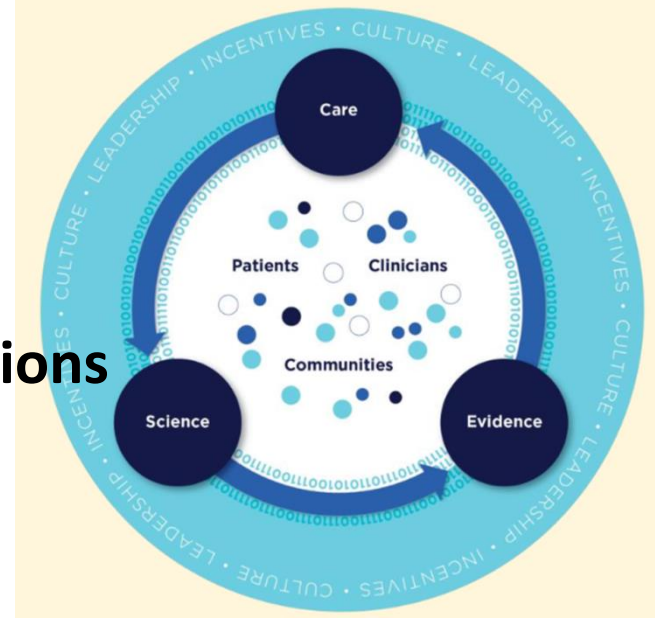 6. **Care Continuity**
  7. **Re-engineering to Optimize Operations**
  8. **Aligning Financial Incentives**
  9. **Performance Transparency**
  10. **Broad Leadership**

Continuous Learning, Best Care, Lower Cost

Example: Improving Care of Chronic Pain (from recent State of the Art Conference)

- Care of patients often fragmented between primary care and specialty care

- Pain often complicated by other problems (pain, depression, substance abuse, stress)
    - Research studies may not capture complexity of individual experience

- Patients may be seeking alternative care outside the system

- Poor data to track success of different treatments

- Treatment decisions may not match priorities of patients

What would move us to a Learning Healthcare System for Treating Pain

- Capture consistent measures of pain and function as part of clinical care, using practical and validated measures

- Offer consistent variety of treatment options in different domains (psychological, exercise/movement, manual rx)

- Help clinicians match treatments to patients goals

- Build registry of patients, treatment received, and response to treatments

- Create seamless coordination across different providers and community services

- Analyze evidence across thousands of patients to build better real world evidence

Four Innovations in Health Systems Research

- "Big Data" Research
  - Capturing data in large EHR datasets to improve prediction, allocate services, and identify variation in practice

- Point-of-Care Research
  - Large, simple clinical trials

- Precision Medicine
  - Using genomics to select best treatment for the individual

- Randomized Program Evaluations
 - Developing more rigorous evaluations for new programs

1. "Big Data" in Research and Care Delivery

- Growth of Electronic Health Records allows examination of rich data sets on millions of patients

- Combination of clinical, demographic and administrative data allow for strong predictive models to identify patients at high risk of:

  - Hospitalization or death – 40% one-year risk in top 10%

  - Suicide – 60 X risk in top 0.01% --

  - Adverse effects of prescription opiod use - STORM

- "Using ALL available data to provide the best care for the INDIVIDUAL"

"VeteransLikeMe" Research Study
Qing Zeng, PhD

- **73 yo. Male on dialysis suffered heart attack.**

- **Received drug eluting stent, placed on antithrombotics**

- **Suffered multiple bleeding complications, died**

1.6-2.2%   2.5-5.1%   **7.3-19.6%**
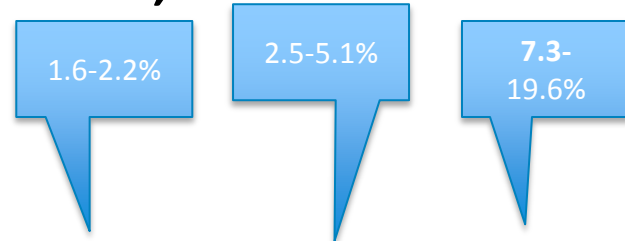
Query Criteria	Number of Deaths Within			Total Patients
	30 day	1 year	2 years	
1. Coronary Stent	1,235 (2%)	4,733 (8%)	7,334 (12%)	62,146
2. Coronary Stent + History of MI	920 (3%)	3,081 (11%)	4,508 (16%)	27,850
3. Coronary Stent + History of MI + dialysis	87 (7%)	301 (25%)	435 (36%)	1,200
4. Coronary Stent + History of MI + dialysis + 70-75 yo male Caucasian	8 (11%)	24 (34%)	34 (48%)	70

Treatment Choices in Atrial Fibrillation

2. Precision Medicine

- White House initiative to build cohort of 1 million patients with genomic and clinical data

- VA's Million Veterans Program has already enrolled over 510,000 Veterans with biologic samples

- Initiatives will unlock new information about role of genomics in development and progression of disease and response to treatment.

- Study of Gulf War Illness among first alpha studies

- VA developing new initiative to examine value of commercially available genomic tests used to select treatments to mental health conditions

Precision Mental Health – How Genomic Information Could Improve Outcomes

Provider, patient receive test results

e.g., systems factors

Treatment Change, Augmentation

e.g., provider behavior

Improved response (efficacy, adherence, side effects)
e.g., patient factors

Improved patient outcomes

e.g., other mediators
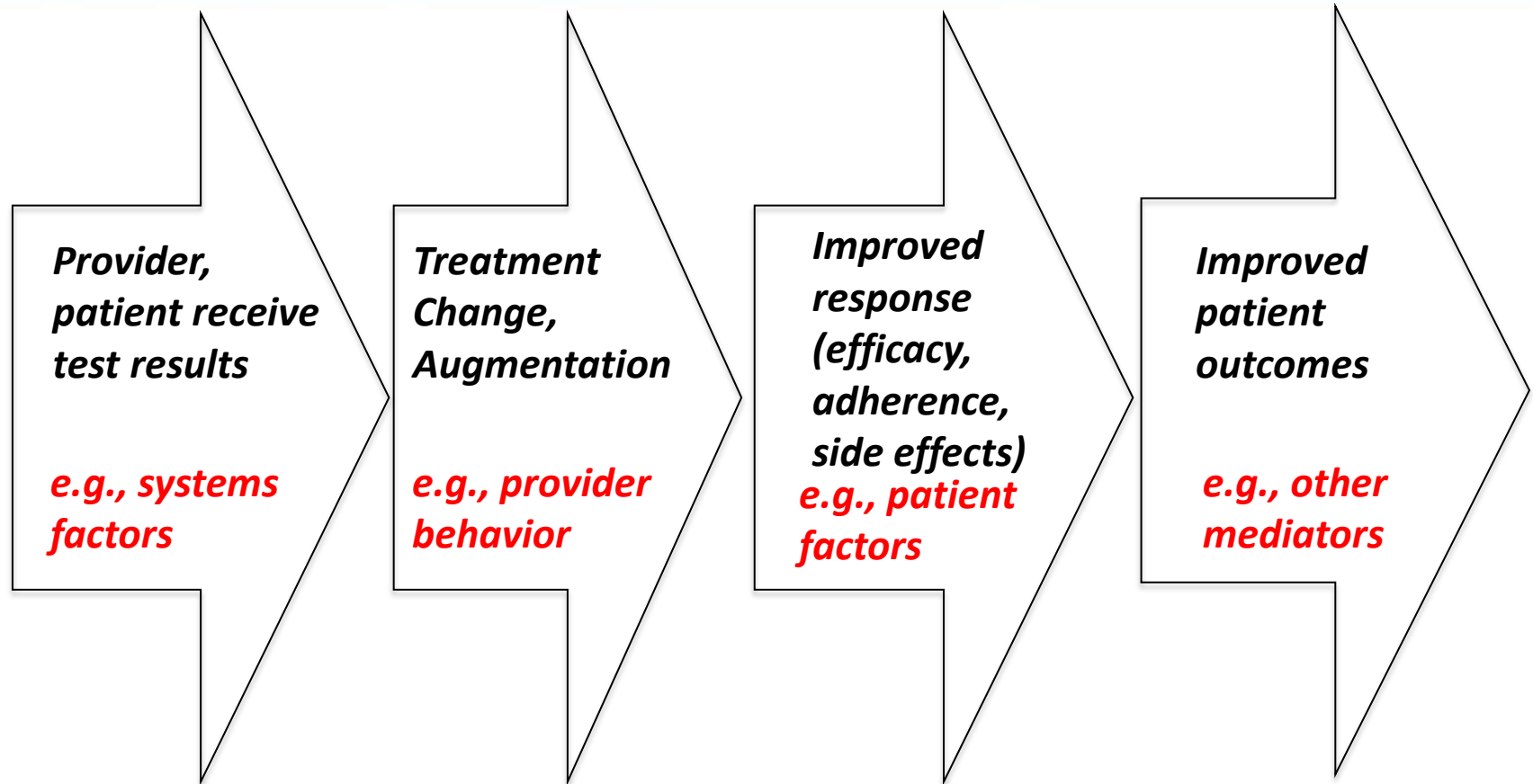
3. Point Of Care Research (POC-R)

- Large, simple randomized clinical trials to compare treatments already in use
- Unlike traditional trials, protocols embedded into clinical care:
  - Use routinely collected data from the EHR
  - Informed consent obtained by
- Reduced patient burden, reduced costs
- Larger trials can detect small but important differences
- **Diuretic Comparison Project (DCP),** comparing two drugs: Chlorthalidone (CTD) vs. Hydrochlorothiazide (HCTZ)
- 13,000 patients currently on HCTZ to be identified, permission obtained from PCP, then consented by phone

4. Randomized Program Evaluations

- **Problem:** New programs often implemented without strong evidence

  – Reducing suicide, Expanding access, Addressing opioid crisis

- Most evaluations limited in their rigor and depth
  – Don't determine what worked, where and why/why not

- In a randomized program evaluations, new programs are rolled out in a random, sequential process ("stepped-wedge" design) allowing stronger comparisons

- VA piloting 4 new programs with randomized roll-outs
  – Interventions 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

Implications for Gulf War Research

- Expand efforts to identify what approaches have worked for individual patients in real world

- Enhance patient-centered approaches based on individual priorities and circumstances

- Provide clinicians and patients with best evidence from real world experiences

- Advance genomic studies to explore other sources of individual risk and response