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?

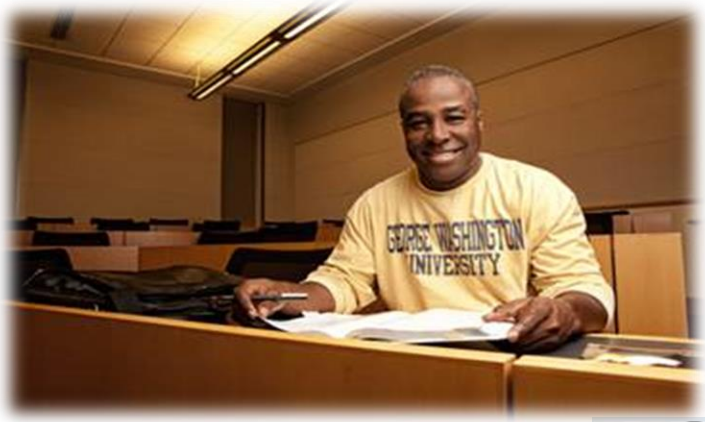
- A Bit of Context
- Current Conception of a Learning Healthcare System
- Challenges to our Current Research Model
- Possible Ways Forward

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

The Nation's Largest Integrated Health Care System

- 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



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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

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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

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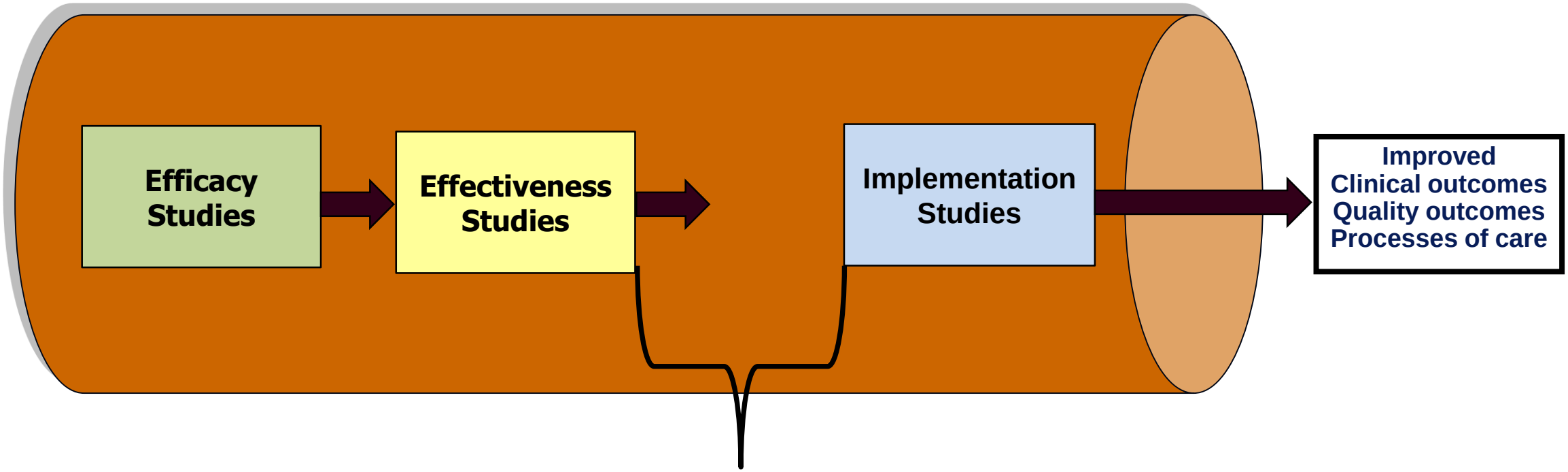
Traditional Research Pipeline



The Research to Practice Gap
(Years to decades)

From Geoff Curran

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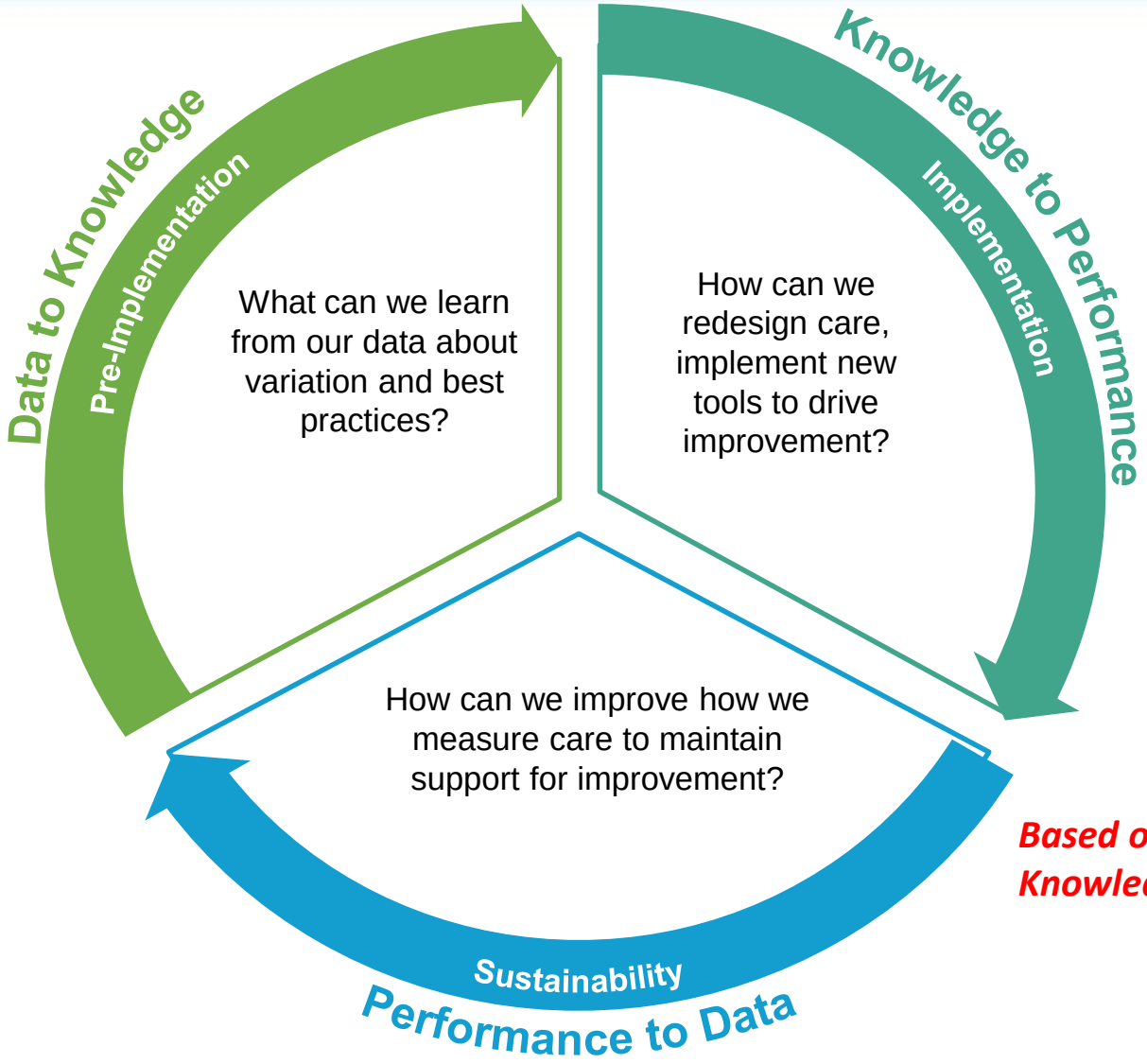
Lessons Learned: QUERI Updated Implementation Roadmap:

Informing a High-Reliability, Learning Health Care System



Based on the Learning Health Care System Knowledge to Action Framework

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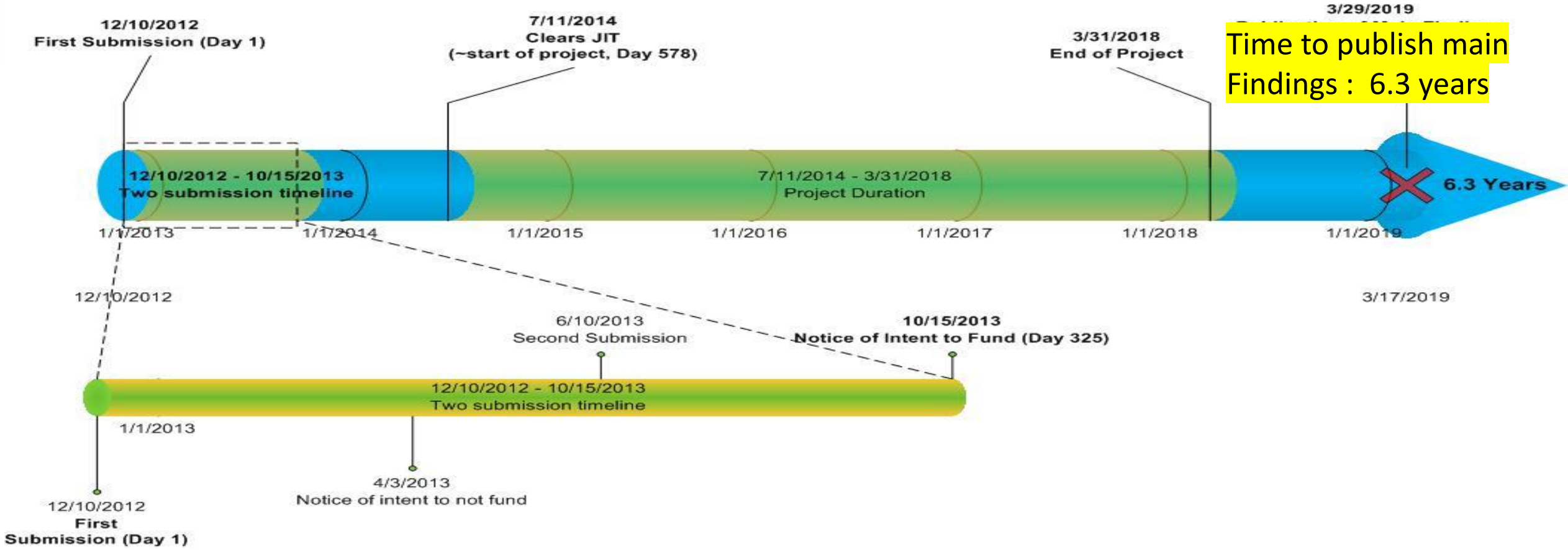
3 Barriers to LHS Research

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

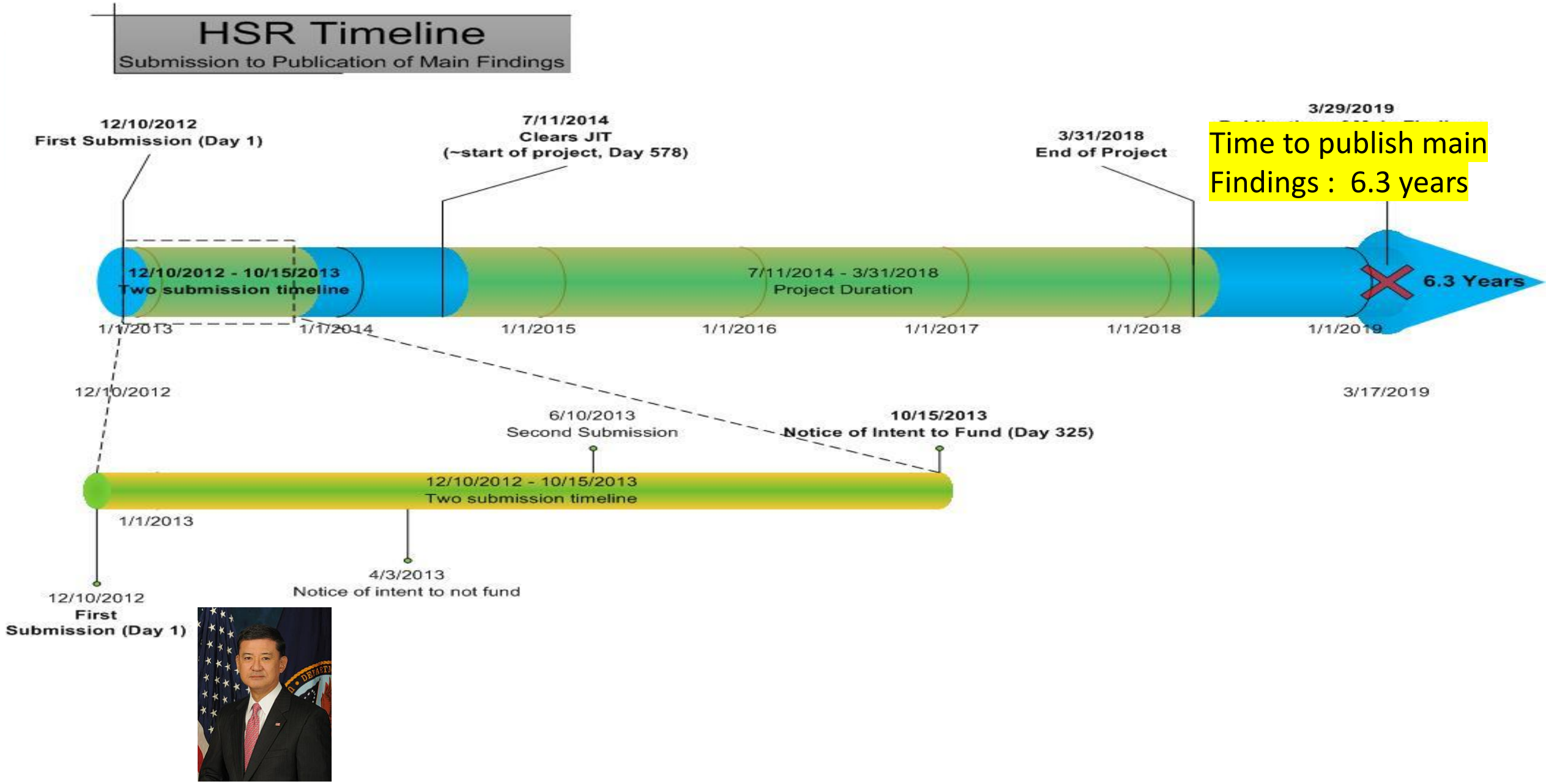
HSR Timeline

Submission to Publication of Main Findings



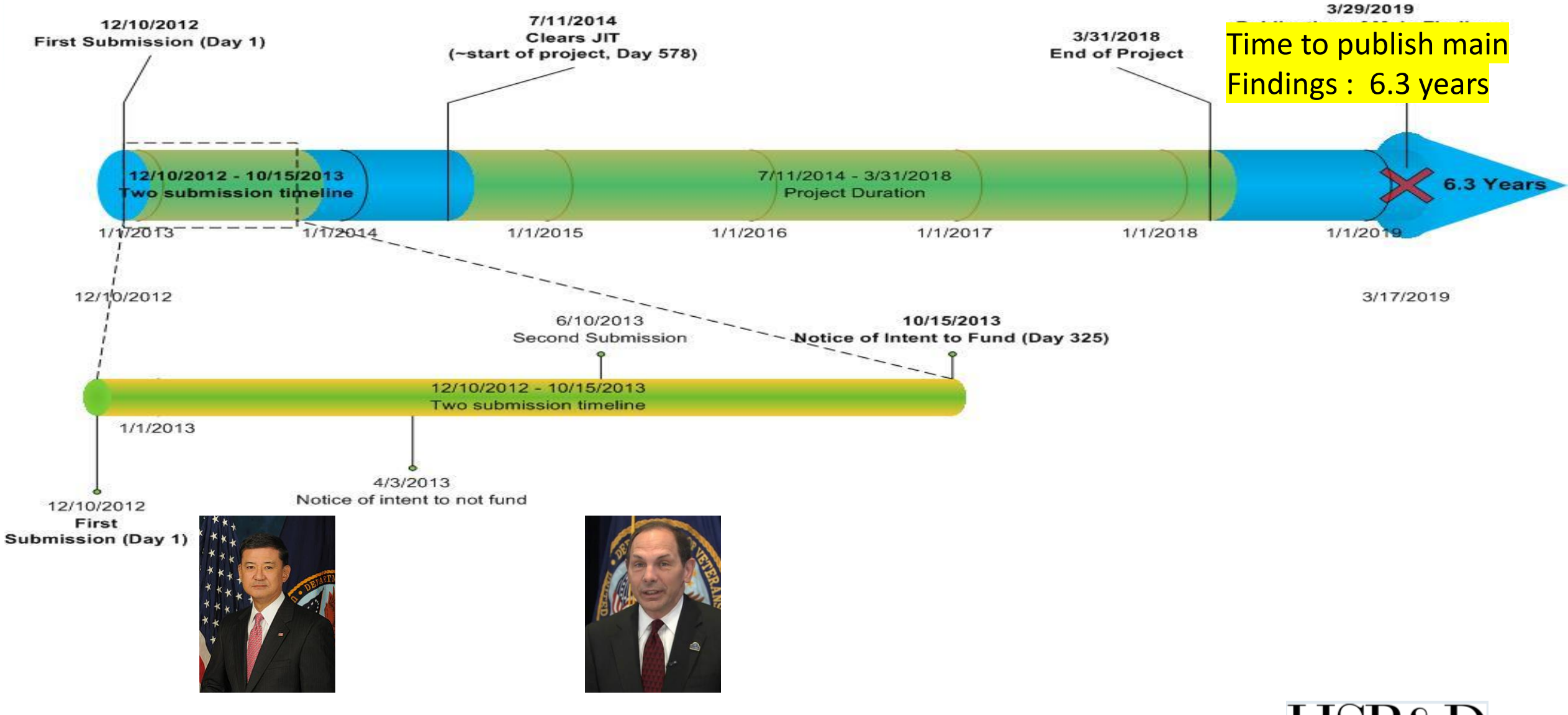
HSR Timeline

Submission to Publication of Main Findings



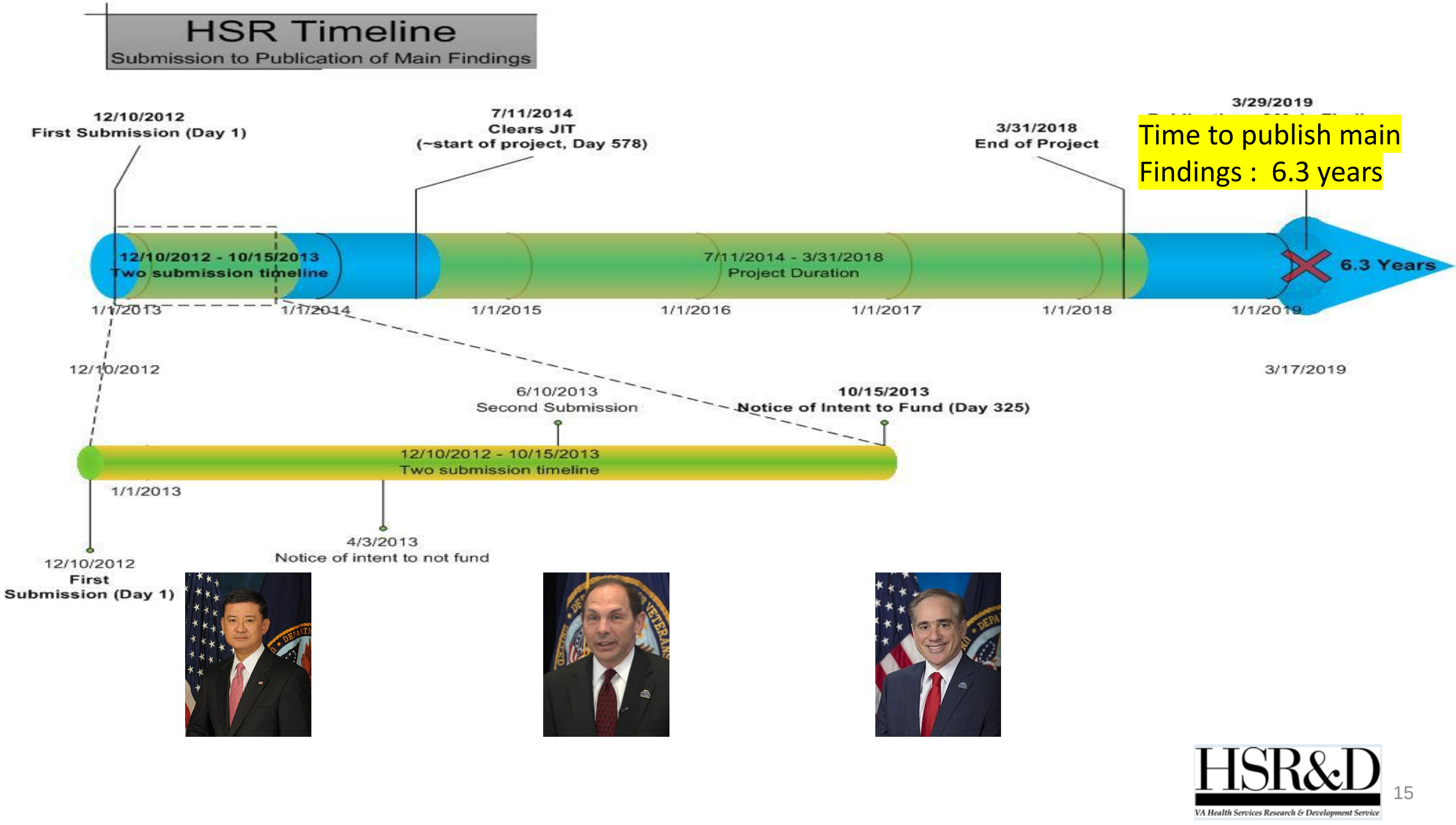
HSR Timeline

Submission to Publication of Main Findings



HSR Timeline

Submission to Publication of Main Findings



HSR Timeline

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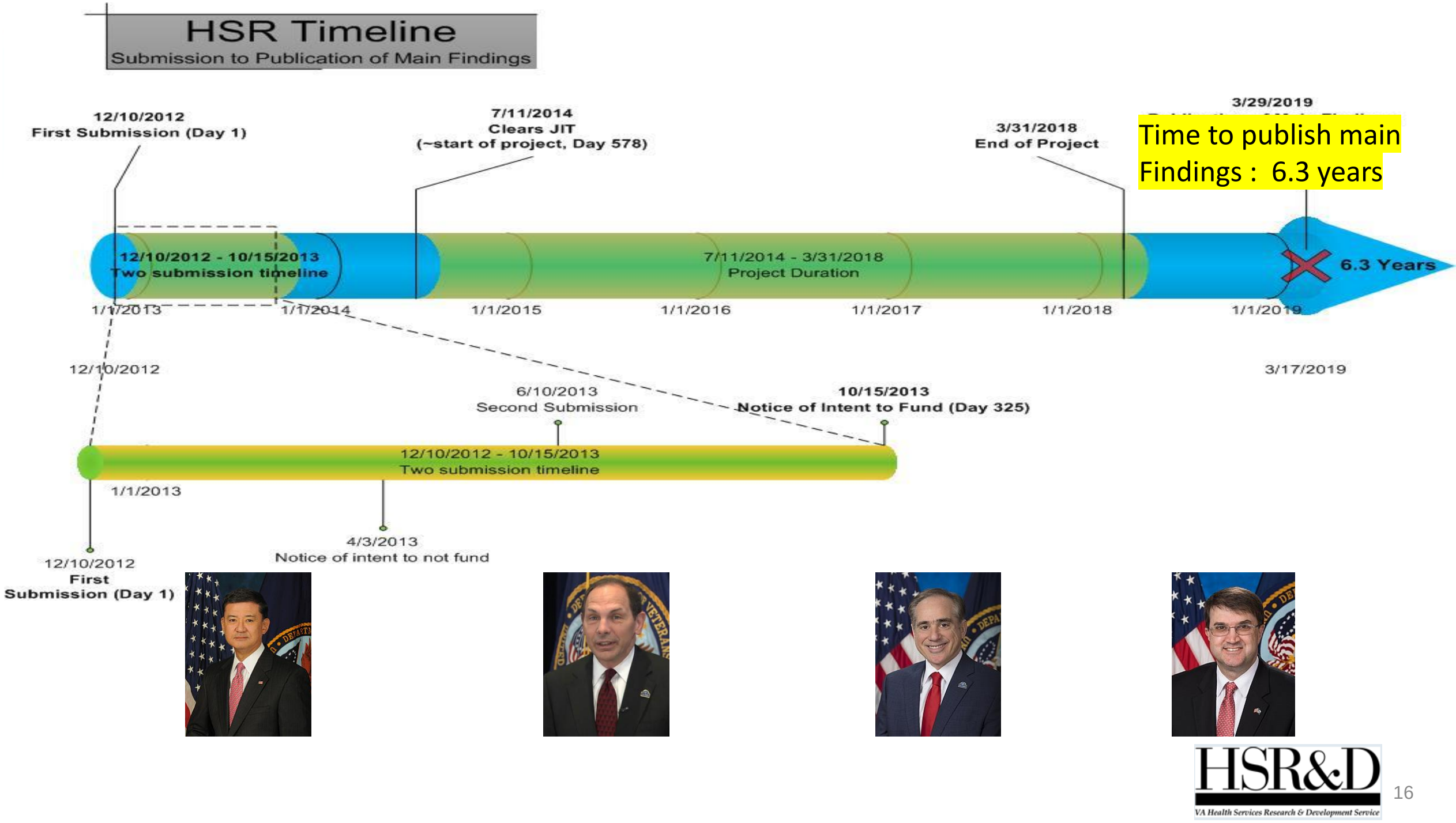

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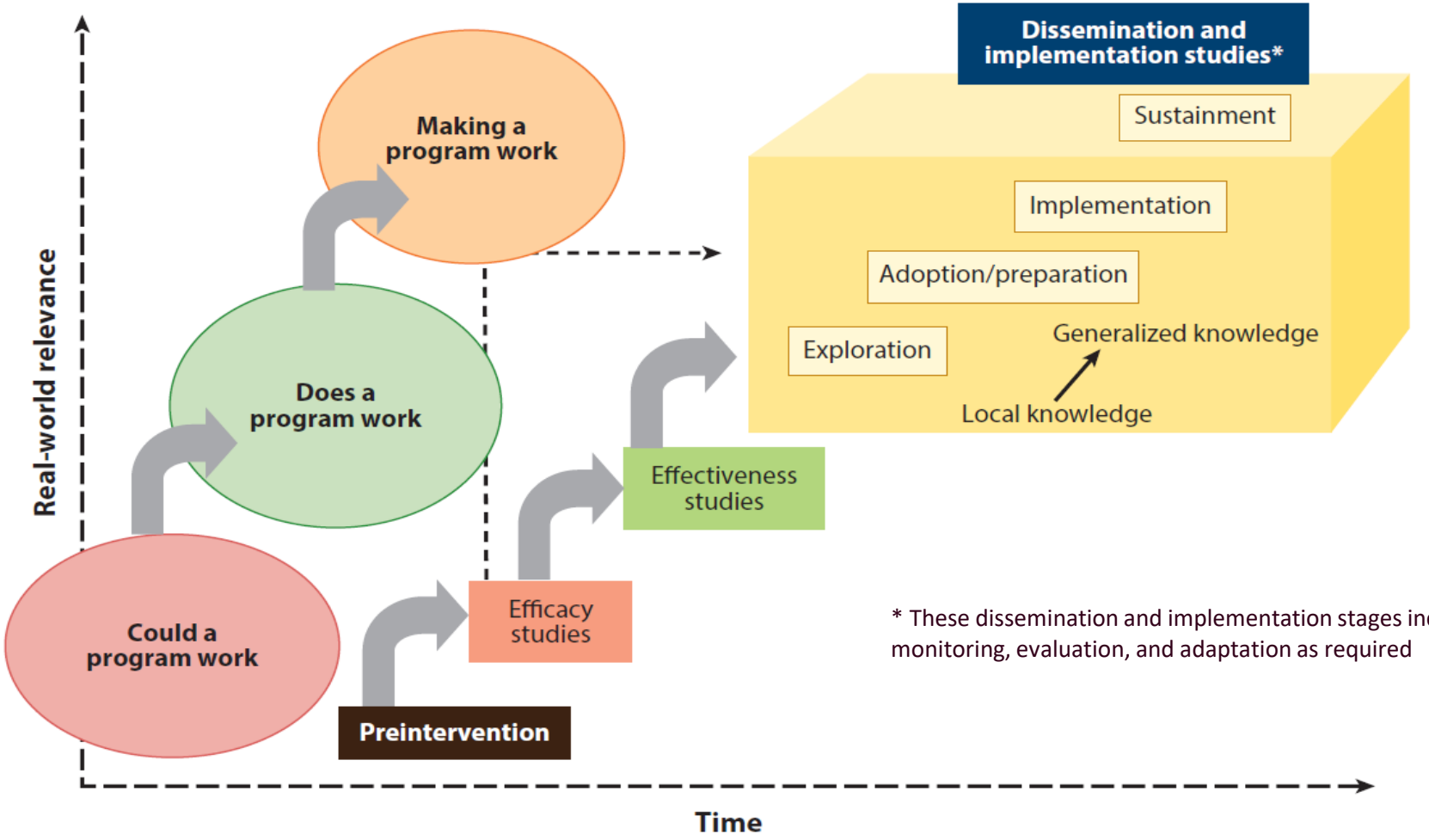
The Traditional Translational Research Pipeline
(Linear, sequential, but slow!)



* These dissemination and implementation stages include systematic monitoring, evaluation, and adaptation as required

Hendricks-Brown, Curran, Palinkas, et al. 2017. *Ann Rev Pub Health*; 38:1-22.

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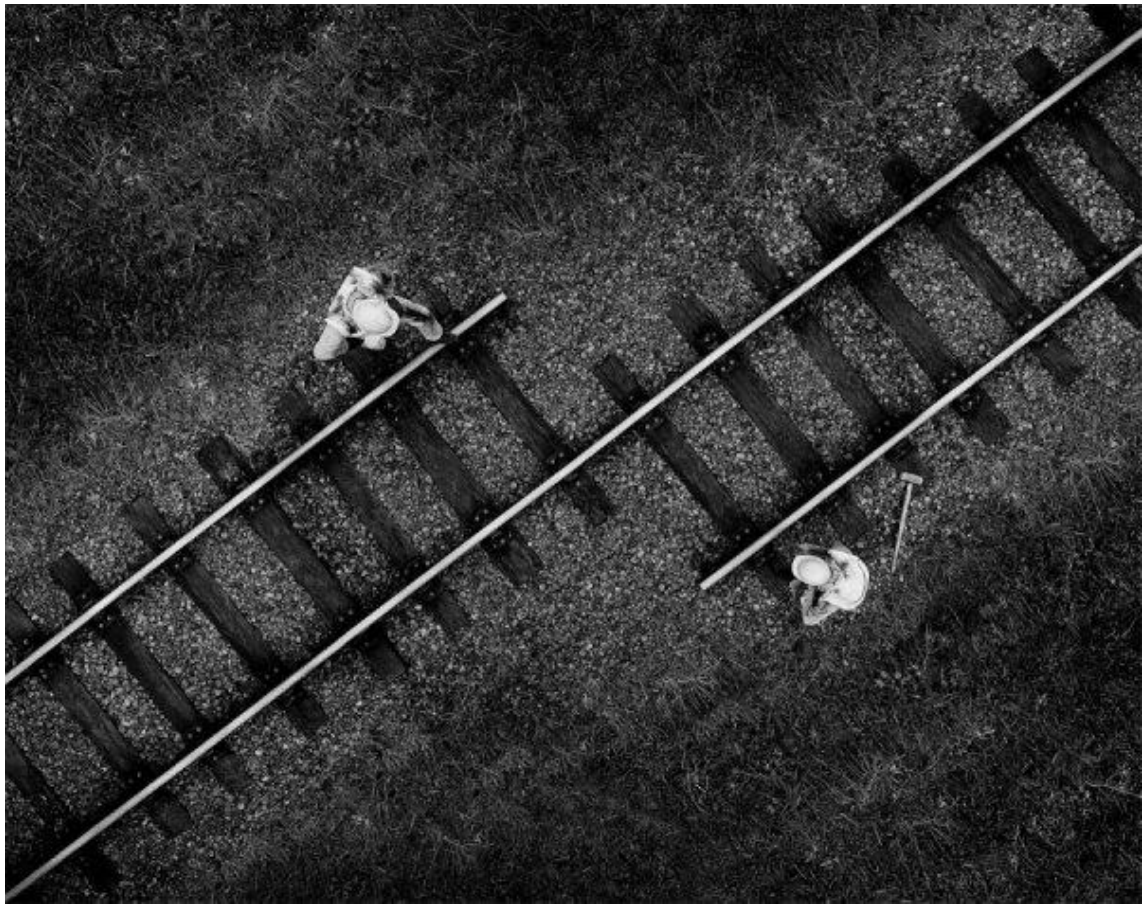
2. Mismatched Priorities and Incentives



- **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”

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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

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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:**
  - **I**mpact 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

Veterans Health Administration R&D www.research.va.gov

CONSORTIUM · PBRN VA WOMEN'S HEALTH RESEARCH NETWORK Supporting Practice and Research Collaboration

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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

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Veteran Directed Home and Community Based Services: Stepped Wedge Design

PEPReC
Partnered Evidence-based Policy Resource Center

Every eligible site will participate in VD-HCBS during the evaluation

VAMCs	3/2017	6/2017	9/2017	12/2017	3/2018	6/2018	9/2018	12/2018	3/2019	6/2019	9/2019	12/2019
1-7												
8-14												
15-21												
22-28												
29-35												
36-42												
43-49												
50-56												
57-63												
64-70												
71-77												

Start times and exact number of sites in each step subject to change

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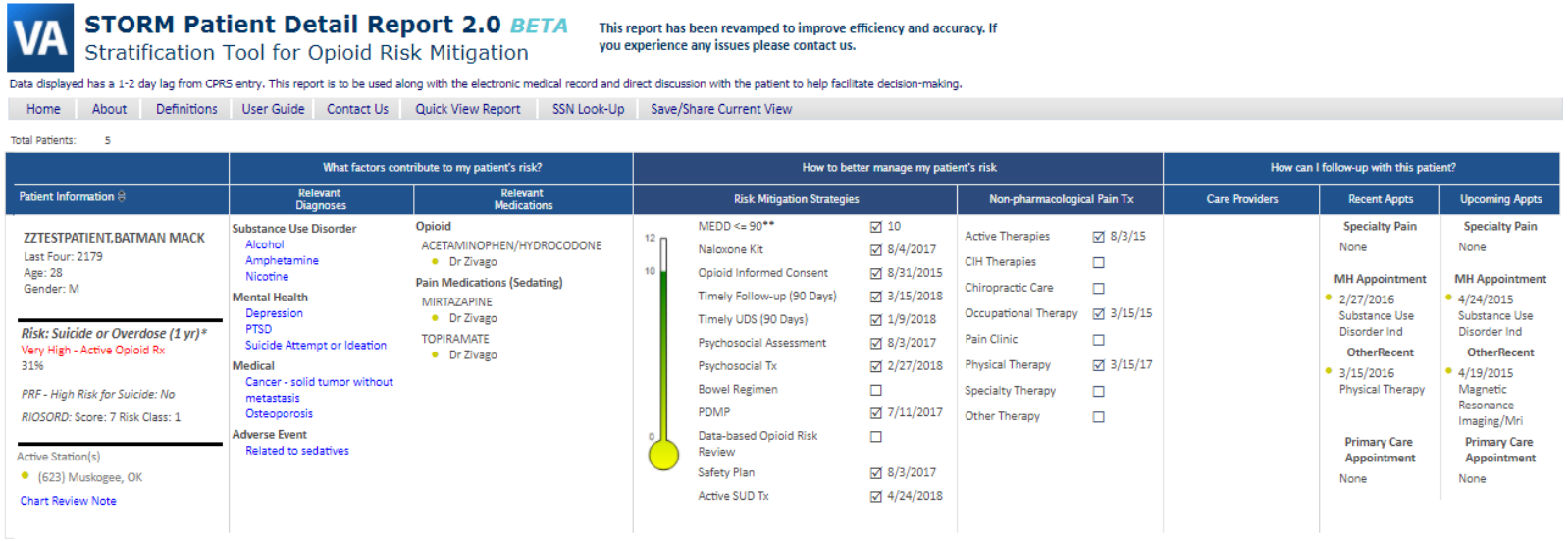
Six Randomized Program Evaluations (RPEs)

- 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**



STORM Patient Detail Report 2.0 *BETA*
Stratification Tool for Opioid Risk Mitigation

This report has been revamped to improve efficiency and accuracy. If you experience any issues please contact us.

Data displayed has a 1-2 day lag from CPRS entry. This report is to be used along with the electronic medical record and direct discussion with the patient to help facilitate decision-making.

Home | About | Definitions | User Guide | Contact Us | Quick View Report | SSN Look-Up | Save/Share Current View

Total Patients: 5

Patient Information	What factors contribute to my patient's risk?		How to better manage my patient's risk		How can I follow-up with this patient?		
	Relevant Diagnoses	Relevant Medications	Risk Mitigation Strategies	Non-pharmacological Pain Tx	Care Providers	Recent Appts	Upcoming Appts
ZZTESTPATIENT,BATMAN MACK Last Four: 2179 Age: 28 Gender: M *Risk: Suicide or Overdose (1 yr)** Very High - Active Opioid Rx 31% *PRF - High Risk for Suicide:* No *RIOSORD:* Score: 7 Risk Class: 1 Active Station(s) (623) Muskogee, OK Chart Review Note	**Substance Use Disorder** Alcohol Amphetamine Nicotine **Mental Health** Depression PTSD Suicide Attempt or Ideation **Medical** Cancer - solid tumor without metastasis Osteoporosis **Adverse Event** Related to sedatives	**Opioid** ACETAMINOPHEN/HYDROCODONE Dr Zivago **Pain Medications (Sedating)** MIRTAZAPINE Dr Zivago TOPIRAMATE Dr Zivago	MEDD <= 90** ☑ 10 Naloxone Kit ☑ 8/4/2017 Opioid Informed Consent ☑ 8/31/2015 Timely Follow-up (90 Days) ☑ 3/15/2018 Timely UDS (90 Days) ☑ 1/9/2018 Psychosocial Assessment ☑ 8/3/2017 Psychosocial Tx ☑ 2/27/2018 Bowel Regimen ☐ PDMP ☑ 7/11/2017 Data-based Opioid Risk Review ☐ Safety Plan ☑ 8/3/2017 Active SUD Tx ☑ 4/24/2018	Active Therapies ☑ 8/3/15 CIH Therapies ☐ Chiropractic Care ☐ Occupational Therapy ☑ 3/15/15 Pain Clinic ☐ Physical Therapy ☑ 3/15/17 Specialty Therapy ☐ Other Therapy ☐		**Specialty Pain** None **MH Appointment** 2/27/2016 Substance Use Disorder Ind **OtherRecent** 3/15/2016 Physical Therapy **Primary Care Appointment** None	**Specialty Pain** None **MH Appointment** 4/24/2015 Substance Use Disorder Ind **OtherRecent** 4/19/2015 Magnetic Resonance Imaging/Mri **Primary Care Appointment** None

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Randomized Program Evaluations (RPEs)

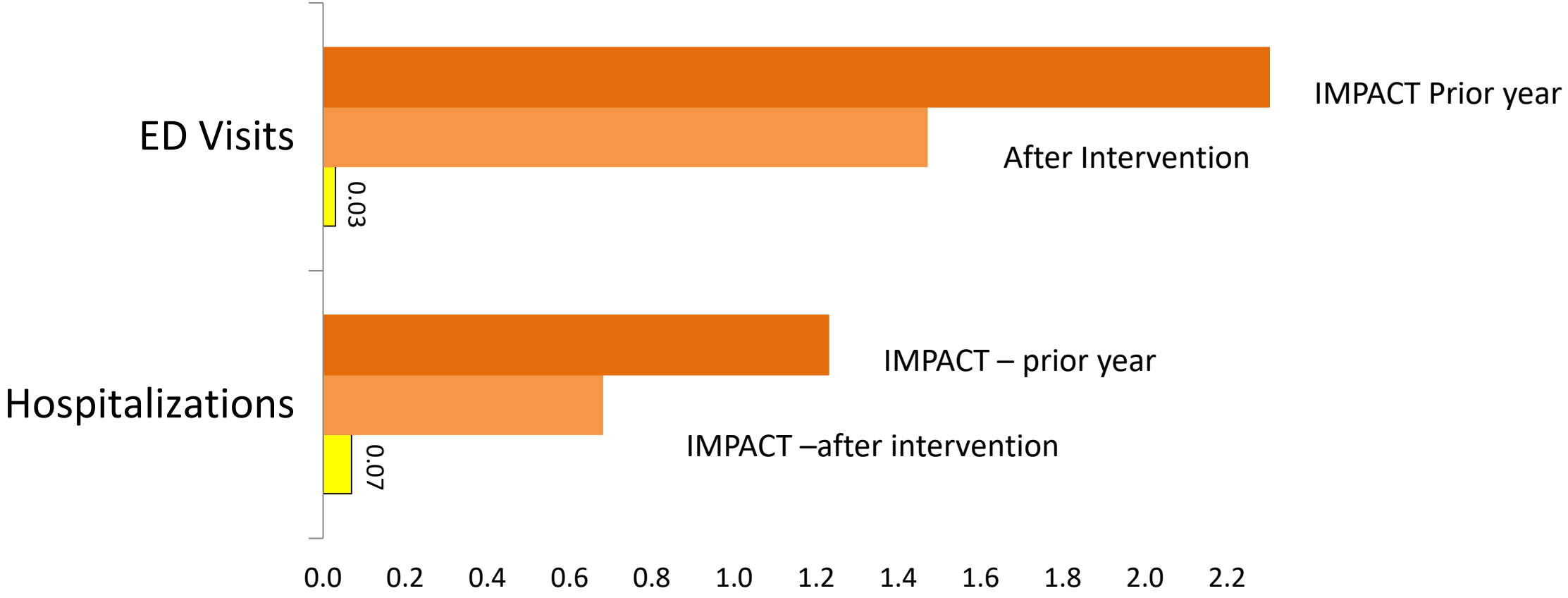
Lessons learned:

- 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

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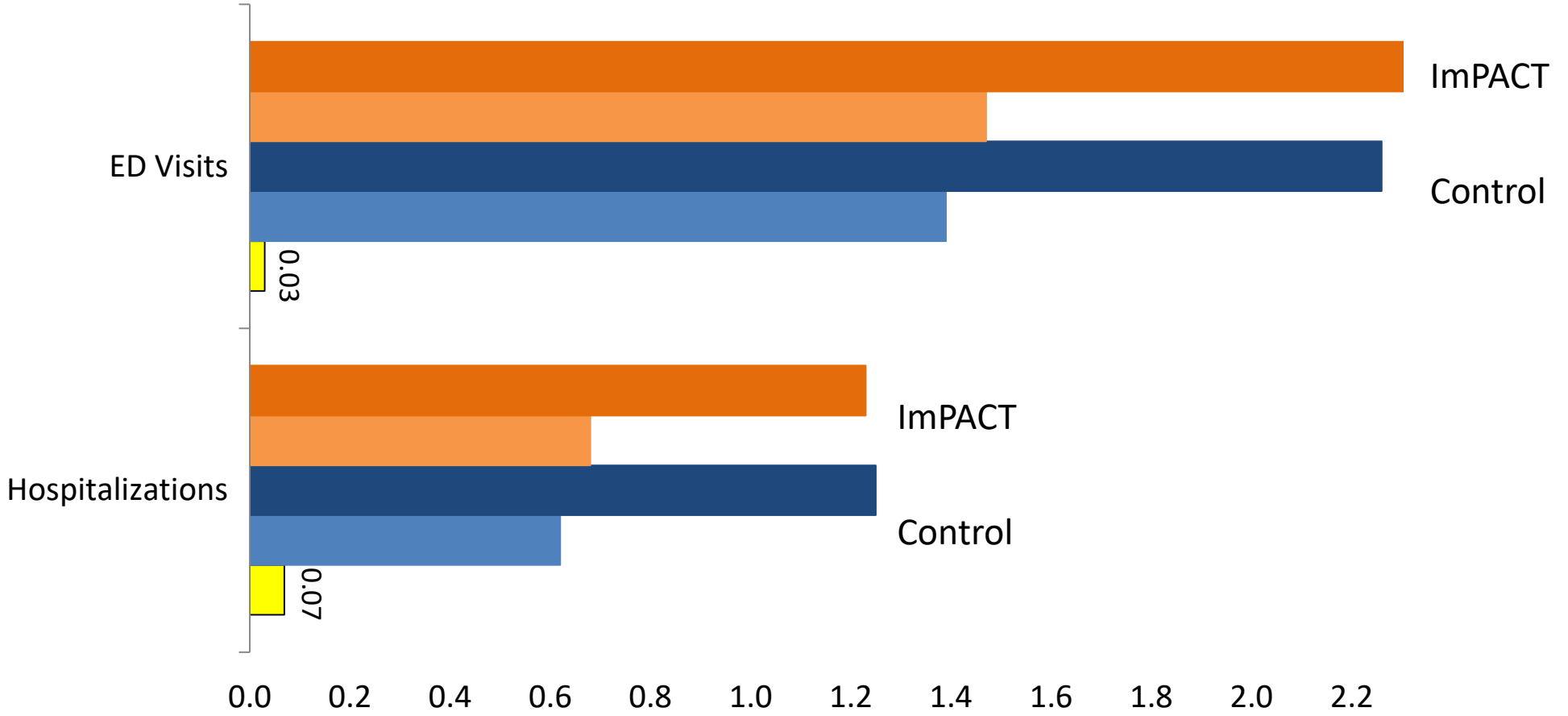
Control group showed identical before:after change w/usual care (i.e., regression to the mean)



Average 11-Month Utilization Rates

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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

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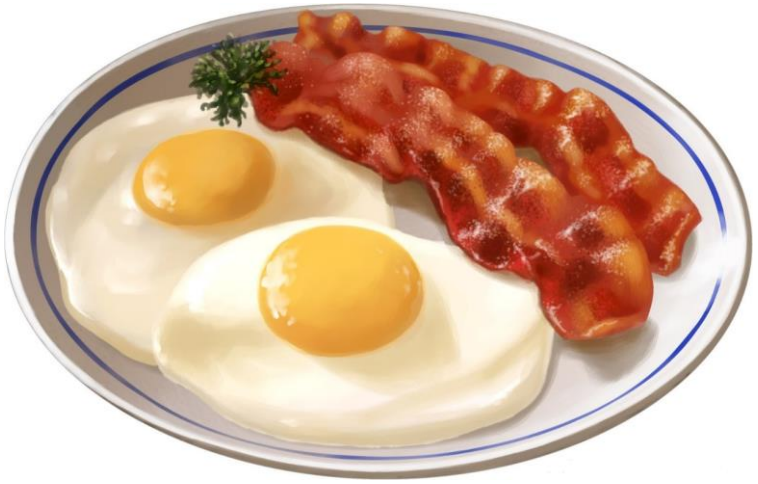
Innovation Awards (examples)

Title of Funded Projects
Can a Computed Algorithm Reduce the Amount of Postoperative opioids Prescribed to Surgical Patients?
Building a Model VA-State Partnership to Support Non-Institutional Long-Term Care for Veterans
Improving medication use for older adults: VIONE program
Mobile App for the Prevention of Suicide (MAPS)
Development peer-lead community partnerships to restrict firearm access to prevent suicides
Linking VA-commercial pharmacy data to improve Prescription Use
Targeting and Improving Long Term Care Services and Support for High Need Veterans
Remote and automated evaluation of skin disease
Patient incentives for reducing no-shows, accommodating walk-in visits, and improving primary care work flow
Can Changing Disability Policy Motivate Return to Work in Veterans with TBI and PTSD?

2. New Models for Research/Program Partnership



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**

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Research:Health System Collaborative Network
VA Women's Health Research Network

CONSORTIUM • PBRN
VA WOMEN'S HEALTH RESEARCH NETWORK
Supporting Practice and Research Collaboration

2010-present

VA policymakers, operations leaders, frontline staff, **women Veterans**

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Partner-Funded Analysis Teams of Researchers
Primary Care AnalyticsTeam

$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 manag

Electronic Tools

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

$20 million for Research-operated Demonstration Labs

Rosland, *Nelson, et al AJMC*, 2013

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How Can We Measure Implementation of PACT Model Research Created New Measure -- PI^2 Scores

8 Domains	Source of Data	# of Items
Access	Corporate Data	11
Continuity	Warehouse (CDW)	3
Coordination of care	n = >5.6 million	8
Team-based care	PACT PCP survey n = 5,404	18
Comprehensiveness	Patient surveys (CAHPS-PCMH) n = 75,101	3
Self-management support		2
Patient-centered care & communication		6
Shared decision making		2
Total		**53**

Consumer Assessment of Health Plans (CAHPS)

Source: Karin Nelson, PCAT, Puget Sound VAHCS

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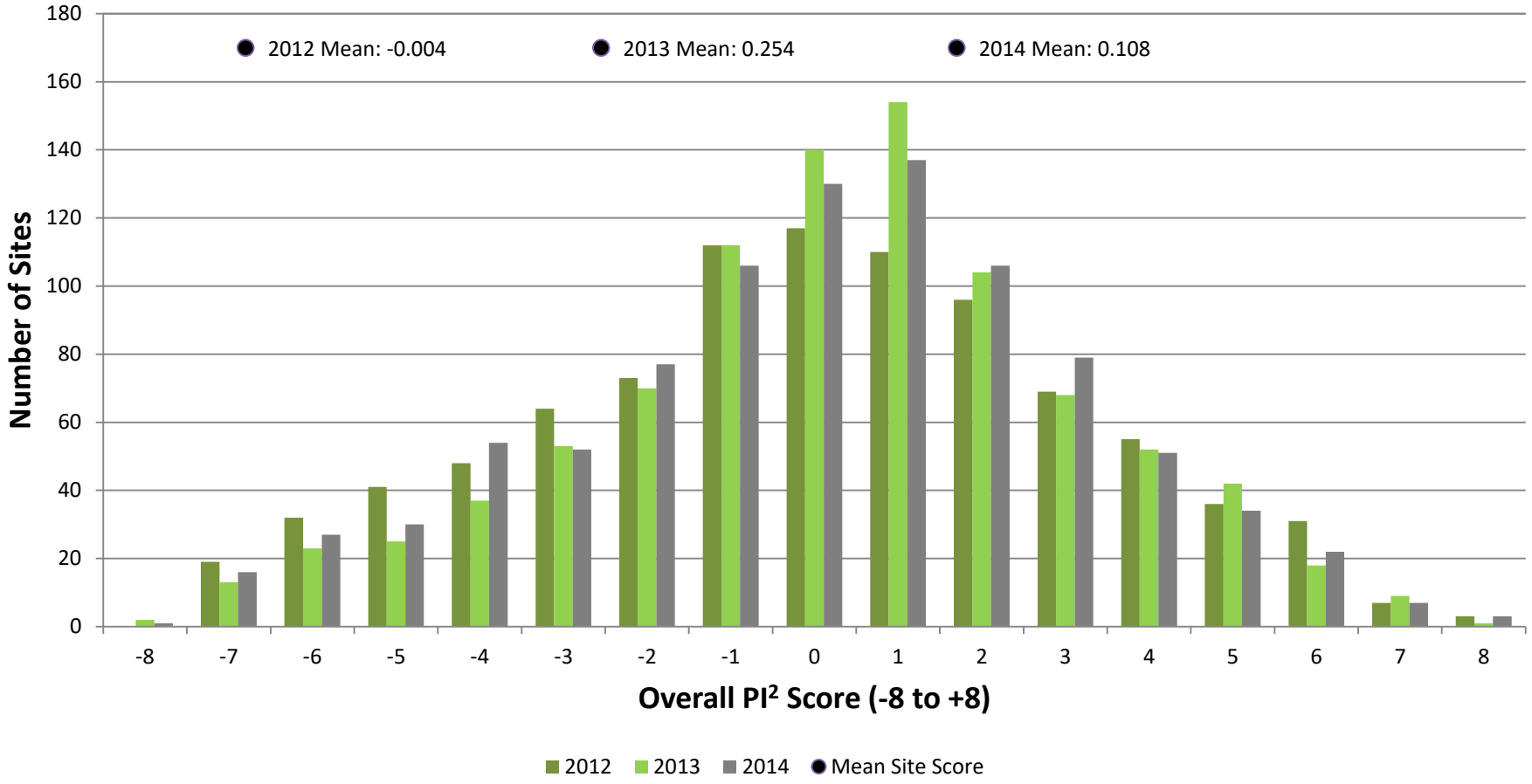
Distribution of PI² Scores (-8 to +8)



Source: Karin Nelson, PCAT, Puget Sound VAHCS

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Modest overall effect of PACT on health care utilization and costs

% Change in utilization due to PACT	
Utilization significantly affected by PACT	Total
Hospitalizations for ambulatory care-sensitive conditions	-1.7%
Outpatient primary care visits	1.0%
Outpatient mental health visits	-7.3%

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

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

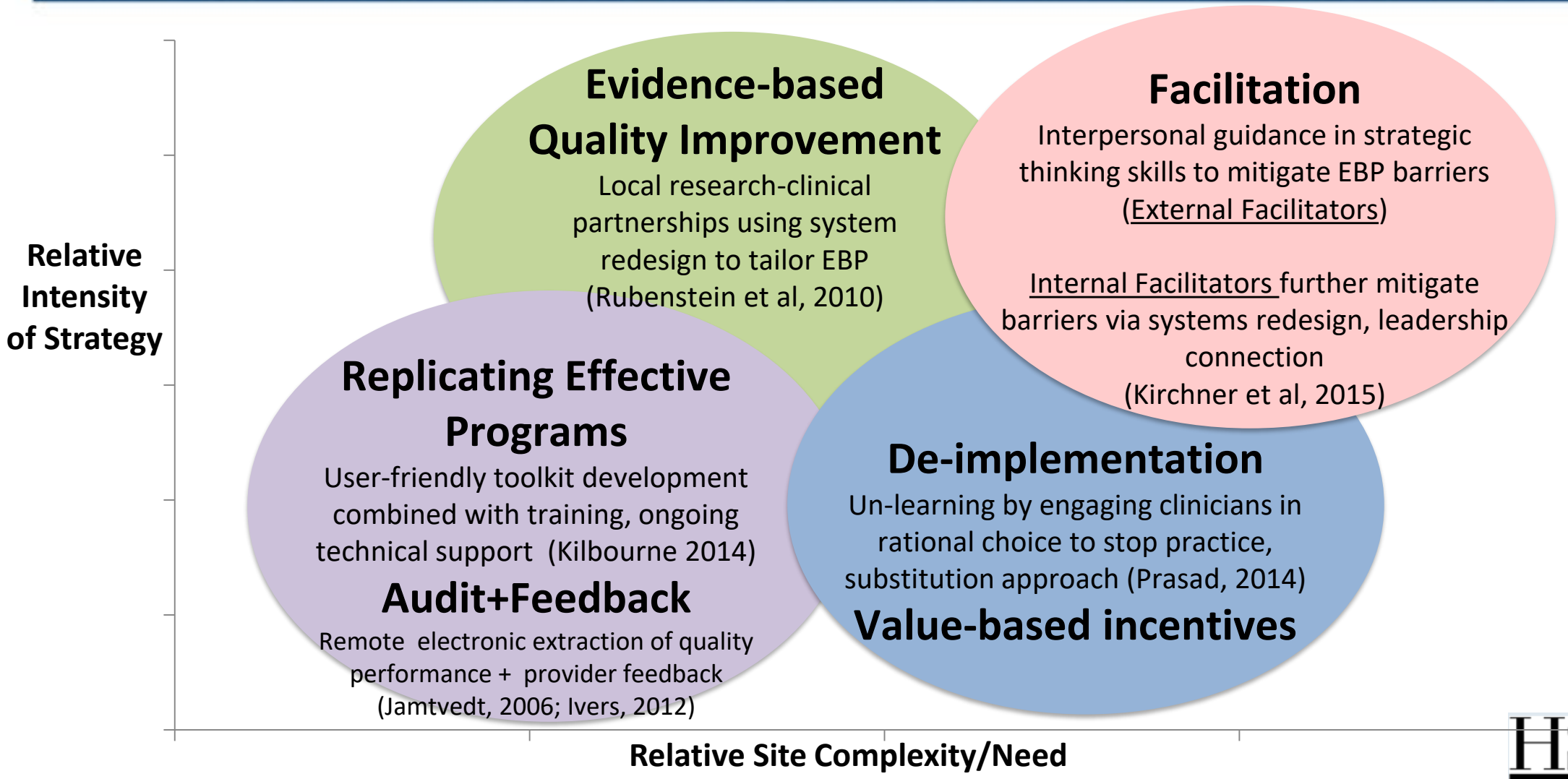
3. Incentivizing Real-World Impacts

- 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



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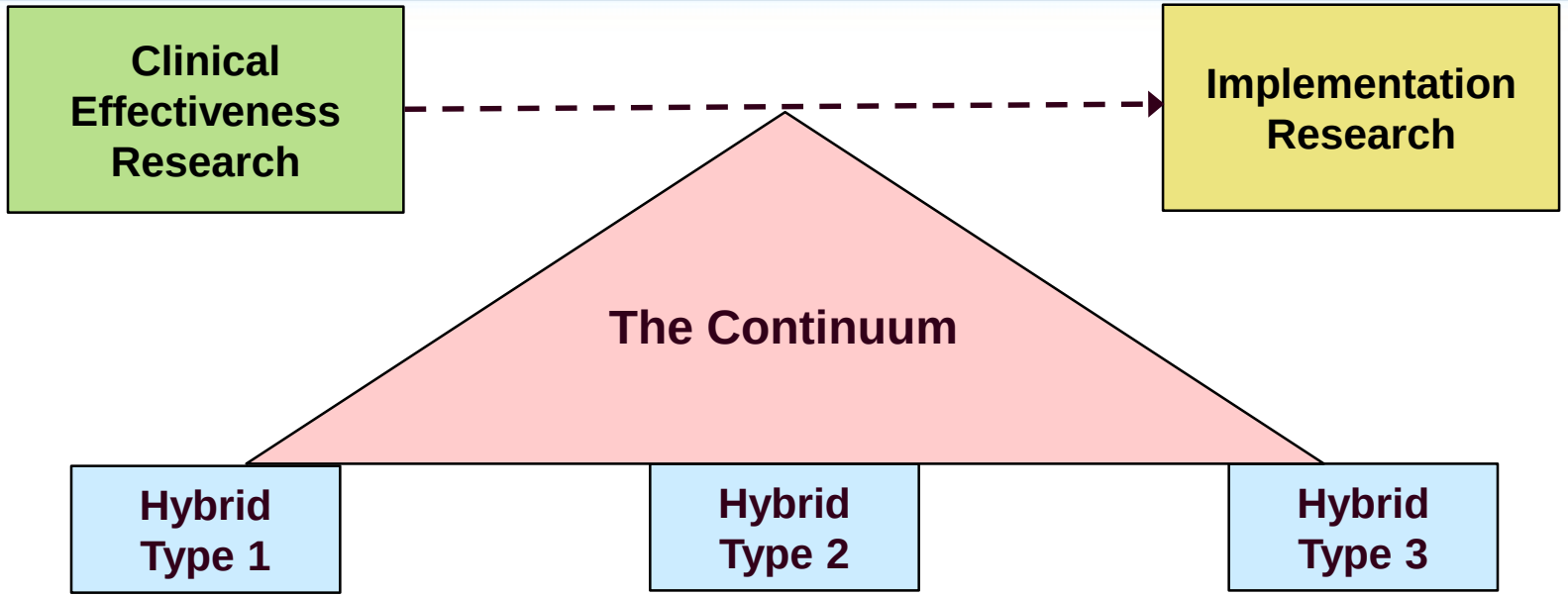
Hybrid Designs to Bridge Effectiveness and Implementation Research



Primary Aim: Determine effectiveness of a clinical intervention
Secondary Aim: Better understand the context for implementation

Primary Aim: Determine effectiveness of a clinical intervention
Co-Primary Aim: Determine feasibility and/or (potential) impact of an implementation strategy

Primary Aim: Determine impact of an implementation strategy
Secondary Aim: Assess clinical outcomes associated with implementation trial

Curran, Bauer, Mittman, et al. *Med Care*. 2012. 50(3):217-226.

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

Can it Work?

Will it Work?

Is it Worth It?

How can we sustain or improve it?

- Innovation Awards
- Investigator-initiated research
- Collaboratories
- Service-directed research
- Implementation Research
- Randomized program evals
- QUERI Programs
- Operations Funded work

Funding
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Researcher Initiated

Co-created

Partner Driven

Clinical partners

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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

Extra Slides

Health Services vs. Quality Improvement Research

Health Services Research	Quality Improvement
Often framed around clinical condition	Based on specific setting and need
Often work with early adopters, to achieve optimal performance	Work with identified problem areas to attain improvement
Design intervention for maximal effect	Design intervention to fit staff roles
Worried about generalizable knowledge, rigor of methods	Worried about local fit, feasibility of intervention and evaluation
Value = cost-effectiveness	Value = business case, improving performance without increased costs

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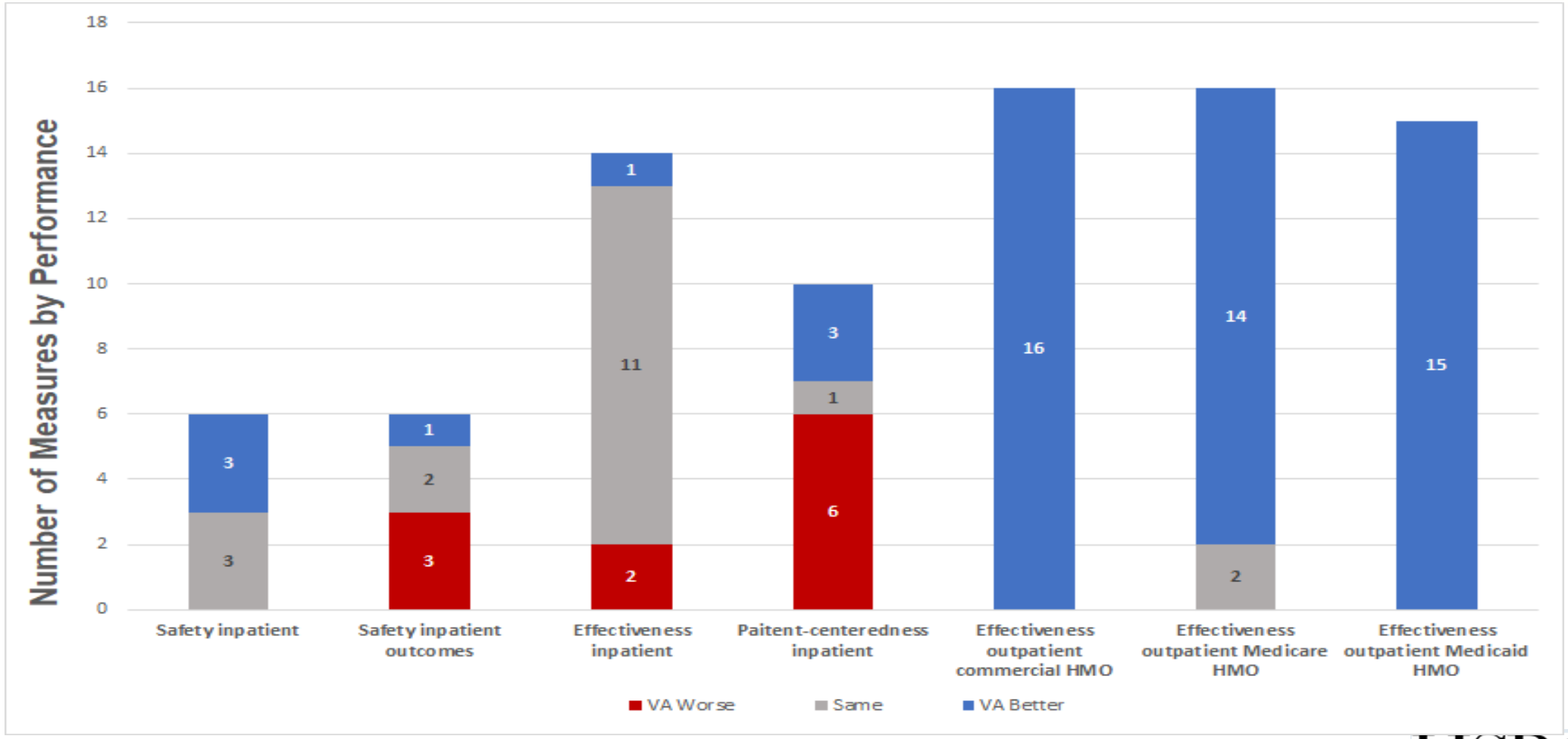
What Does VA's Access Crisis Tell Us About A Learning Healthcare System?

- 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

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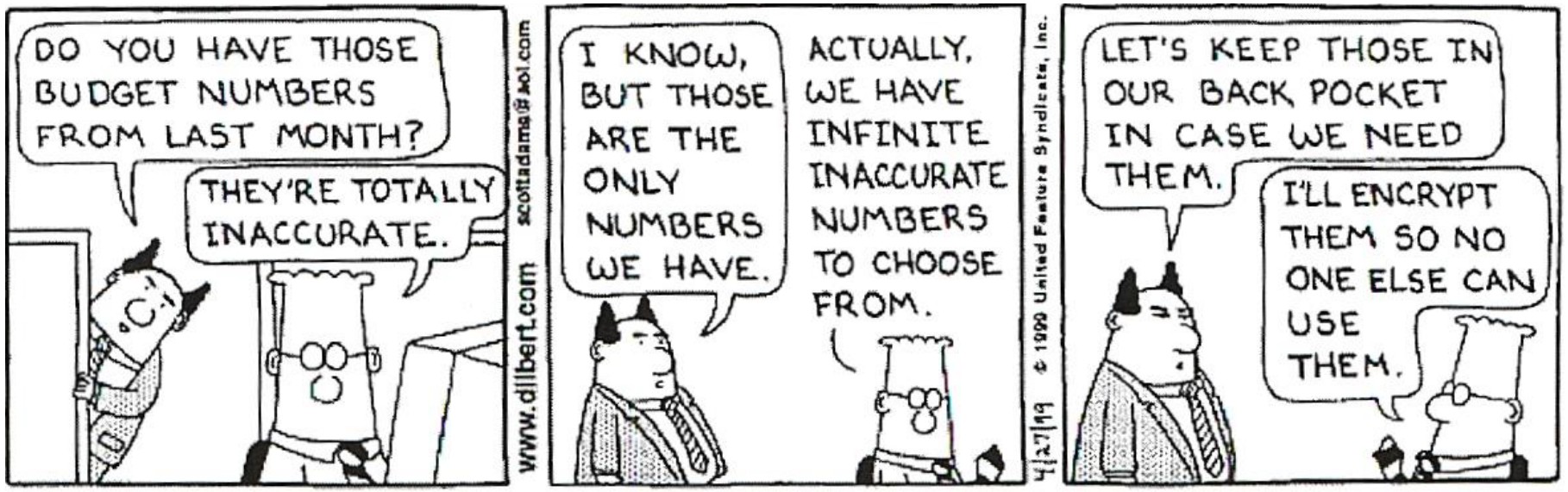
Using the Right Numbers: Diabetes Quality Measurement



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Are We Paying Attention to What is Really Important?

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