Participatory System Dynamics: Partnering with Frontline Managers and Providers to Achieve Timely, High-quality Addiction Services

Team Participatory System Dynamics

Lindsey Zimmerman, PhD — National Center for PTSD, University of Washington
Smita Das, MD, PhD, MPH — Veterans Affairs Palo Alto, Stanford University
David Lounsbury, PhD — Albert Einstein College of Medicine
Craig Rosen, PhD — National Center for PTSD, Ci2i
Rachel Kimerling, PhD — National Center for PTSD, Ci2i
Jodie Trafton, PhD — Office of Mental Health and Suicide Prevention, Program Evaluation Resource Center, Stanford University
Cora Bernard, MS — Stanford University
Andrew Holbrook, BS — Veterans Engineering Resource Center
Steven Lindley, MD, PhD — Veterans Affairs Palo Alto Health Care System, Stanford University

Background of EBPharm in VA

- VA aims for system-wide reach of evidence-based pharmacology (EBPharm) for alcohol use disorders (AUD) and opioid use disorders (OUD).[9-18]
- EBPharm reduces alcohol or opiate use[71-95] and thereby, reduce risk of chronic impairment, relapse and overdose.[26-29]

VA Quality Improvement

Considerable resources have been dedicated to increasing EBP adoption among VA providers via national EBP training programs.[9-13]

VA innovates with…

1. National dissemination efforts to train providers in evidence-based mental health practices
2. Enterprise-wide quality measures
3. Clinical practice guidelines and mandates for evidence-based care
4. National electronic health information system
5. Mental health care coordinated in multidisciplinary teams.[14-18]

Limited EBP Reach

- More work is needed to increase EBP reach:
- **96% of AUD patients and 71% of OUD patients do not initiate EBPharm**
  (FY2017 VA National Median)

We define EBP *reach* as the proportion of patients with an AUD or OUD diagnosis who
a) *initiate*
b) *timely* EBP session
c) complete a therapeutic EBP *dose*.

Lindsey Zimmerman, PhD
lindsey.zimmerman@va.gov

Participatory System Dynamics (PSD)

- PSD has 60 years of scholarship and application,[1-20] and comprises the methodological basis for a "learning organization."[118-119]
- PSD *process* (planning, engaging, executing, evaluating) uses simulation to optimize local restructuring[35] – re-aligning roles, teams, procedures and data systems.[36,37]
- Frontline staff and leadership look at interdependence among clinic components and learn together.

PSD Theory

Why does 'Limited EBP Reach' Persist?

Theory of Change: Decision Science	Learning	Stakeholders cannot or do not learn and adapt to their situation.
	Coordination	Conflict or lack of stakeholder consensus.
Mechanisms of Change: Systems Theory	Analysis	Policies are inconsistent with the real system constraints.
	Restructuring	The underlying structure of the system prevents workable solutions.

Hovmand, 2013; Scaccia et al., 2015

Causality: General dynamics emerging from team capacities/constraints

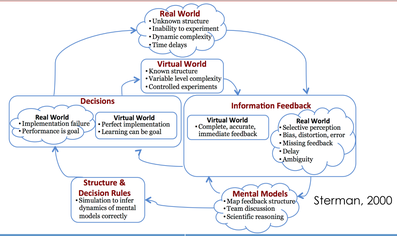
Location A Teams	Location B Team
3548 unique patients/year	2043 unique patients/year
Lower caseload per provider	Higher caseload per provider
Rare wait for initial appointment	Occasional waitlist to get into clinic
5.2 psychiatrists per 9 EBPsy providers	3.0 psychiatrists per 4 EBPsy providers
Higher EBPsy providers/MD ratio	Lower EBPsy provider/MD ratio
Higher EBPsy base rate	Higher EBPharm base rate
Providers often self refer for EBPs	Referrals to other providers by necessity
Multiple on-site specialty programs	Only telehealth specialty care
Training program site multiple disciplines	No trainees providing care
Most groups "open" (ongoing enrollment)	Most groups "closed" (infrequent opening)
Shorter time to next available appointment	Longer time to next available appointment

EBPharm = Evidence-based Pharmacotherapy
EBPsy = Evidence-based Psychotherapy

@LZPhD

PSD Implementation Strategy

Systems Theory + Simulation Learning



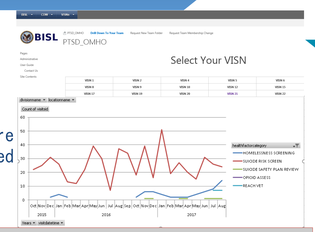
Sterman, 2000

Provide information about the local need for change	**Show the system behavior reference mode (quality gap)**
Identify demands/resources/ constraints driving quality gaps	Explore tradeoffs and mechanisms of system behaviors
Explore how changes will impact frontline staff and patients	Simulate quality improvement changes proposed by staff using local data
Use accessible tools for selecting and sharing the best changes	Interactive, online data visualization, simulation tools

Adapted from Morecroft & Sterman, Modeling for Learning Organizations, 1994; Vennix, Group Model Building, 1996; Langley G.J. et al., The Improvement Guide: A Practical Approach to Enhancing Organizational Performance. San Francisco: Jossey-Bass

PSD Data

- We developed a site for reviewing data used in team simulations.
- Data used in simulation models are graphically displayed as trends over time for the team.



PSD models use existing data common to all health systems.

VA Corporate Data Warehouse (CDW) Data Source
Patient cohorts
ICD diagnostic information from visits with providers.
Clinic capacity
Clinic/Scheduling hours and "no shows" from VA scheduling system
Provider capabilities
Provider disciplines with user input to dynamically select team data
Clinic utilization
Visits/common procedural terminology (CPT) encounters with providers
EBP reach
Defined by VA Quality measures known as SAIL SUD16 and ALC

PSD Resources

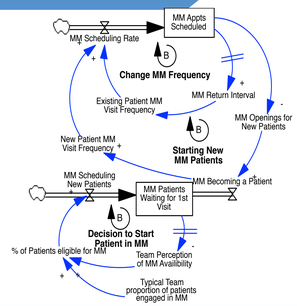
PSD Scripts, Models and Equations Online https://github/lzim/teampsd

PSD defines local EBP capacity with causal modeling equations of hypothesized system mechanisms driving EBP implementation.[96-99]

Four simulation models have been developed
Each with lessons that can be learned in 1 team meeting. Below we extract Medication Management (MM) & EBPharm examples.

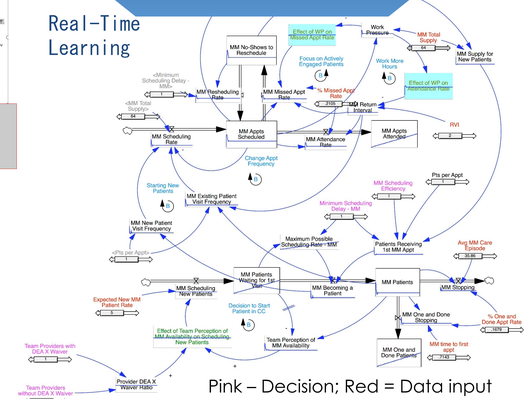
PSD Dynamics

Reach as a system behavior: the whole set of mechanisms by which the needs of the patient population are or are not addressed.



EBPharm Simulation

Real-Time Learning



Pink – Decision; Red = Data input

Supported by the National Center for PTSD and R21DA042198 (PI: Zimmerman)

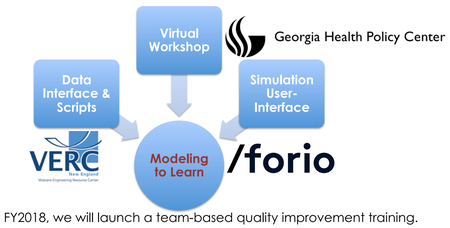
Discussion

PSD value proposition: Save time and effort with optimized local change plans.

- IOM (2015): PSD is promising for 1) aligning patient demand and resources, 2) improving processes, 3) providing integrated data tools, and 4) empowering local stakeholders to improve EBP implementation.[30]
- Other participatory strategies (e.g., external facilitation) [107-109] or systems strategies (e.g., lean) [110-112] involve more trial and error.

Next Steps

PSD resources to become a standard practice option for guiding local quality improvements.



In FY2018, we will launch a team-based quality improvement training. VA Employee Education Services (EES) to provide licensure accreditation.

Acknowledgements

Co-Investigators
David Lounsbury, PhD, Craig Rosen, PhD, Craig Rosen, PhD, Jodie Trafton, PhD, Seven Lindley, MD, PhD,

Project Support
Stacey Park, McKenzie Javorka, Dan Wang, PhD, Savet Hong, PhD, Kathryn Azevedo, PhD

Team PSD Mentees
Cora Bernard MS, Swap Mushiana MS, Alexandra Ballinger, Joyce Yang, PhD, Melissa London, PhD, Dominique Malebranche, PhD, Myra Altman, PhD

VA Partners
VA Palo Alto Mental Health Staff Ann LeFevre, LCSW Maya Kopell, MD Trisha Vinatieri, PsyD, Bruce Linenberg, PhD, Pompea Malekar, RN Rosemarie Geiser, RN, Sarah Walls, LCSW, Gigi Fernandez, LCSW Emily Hugo, PhD, Martha Losch, MD Jessica Cuellar, PhD, Erin Sakai, PhD, Kesha Diodato, LCSW, Nathaniel Mendelssohn, MD, Nina Yi, MD, Lisa Giovanetti, LMFT, Joan Smith, LCSW, Darryl Silva, LCSW and Smita Das, LCSW

Office of Mental Health and Suicide Prevention/Program Evaluation Resource Center (OMHSP/PERC)
Matthew Neuman, PhD, Matthew Boden, PhD, Hugo Solares, PhD, Shalini Gupta, PhD, David Wright, PhD, Susanna Martins, PhD, Eric Schmidt, PhD, Ilse Wiechers, PhD

Office of Strategic Integration/Veterans Engineering Resource Center (OSI/VERC)
Tom Rust, PhD, Andrew Holbrook, Liz May

Bibliography and references cited are available as a handout on GitHub