Using Health System Operations Data to Assess Health Care System Complexity and Improve Implementation of Evidence-based Psychotherapy

Team Participatory System Dynamics

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Background of EBPsy in VA

- VA aims for system-wide reach of evidence-based psychotherapy (EBPsy) for PTSD.

- Meta-analyses of trials among thousands of patients indicate that the PTSD EBPsy selected for national implementation in VA cognitive processing therapy (CPT) and prolonged exposure therapy (PE), have positive effect sizes as compared to alternative treatments, usual care or waitlist-control, and lead to positive outcomes for patients. [25-26]

VA Quality Improvement

Considerable resources have been dedicated to increasing evidence-based practice (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:
- EBPsy providers face multiple competing demands in local settings (Chard et al., 2012; Cook et al., 2013; Finley et al., 2015).

- At the VA national median, among PTSD patients who start psychotherapy, only 30-44% are retained for at least 3 visits. Only 3-5% of depression and PTSD patients start EBPsy.

- One way to better understand and address the complexity of EBP implementation is to situate delivery within the clinical operations of the local mental health system

We define EBP _reach_ as the proportion of patients with an PTSD diagnosis who
a) _initiate_
b) _timely_ EBP session
c) complete a therapeutic EBP _dose_.

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Participatory System Dynamics (PSD)

- PSD has 60 years of scholarship and application, [120] 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

## PSD Implementation Strategy

Systems Theory + Simulation Learning

Sterman, 2000
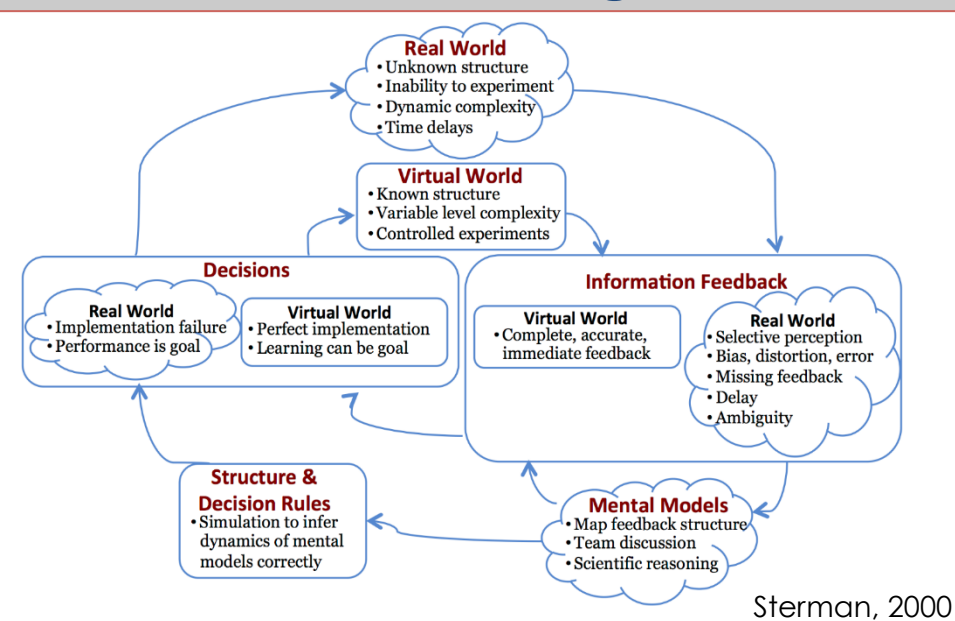
@LZPhD

PSD Implementation Strategy

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.
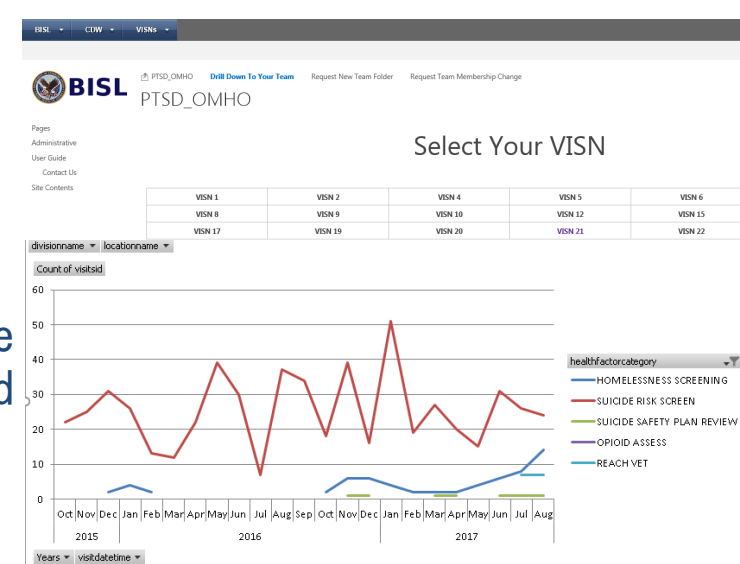
PSD models use existing data common to all health systems.

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

We identified 6 patterns of psychotherapy engagement in teams

1. One visit, never return
2. Initiators (2-7 sessions)
3. Completers (8-12 sessions)
4. One visit and return later
5. Initiators who return later
6. Completers who don't graduate

Example: 284 psychotherapy patients
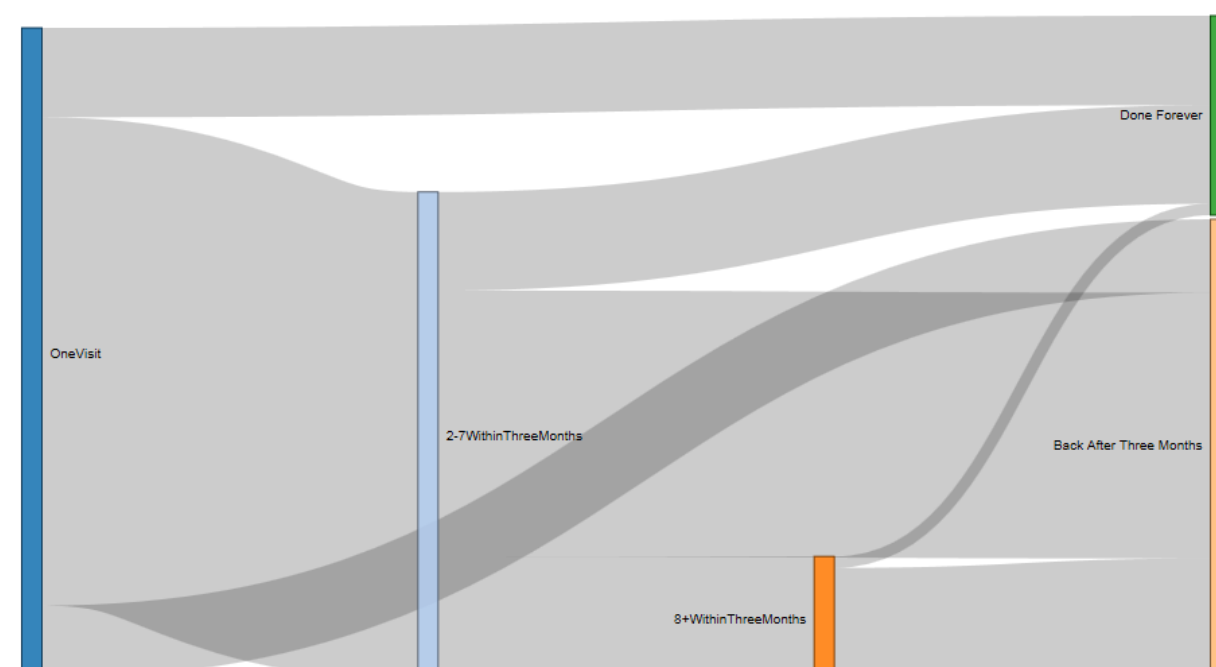
PSD Resources

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 psychotherapy and evidence-based psychotherapy examples from this training.
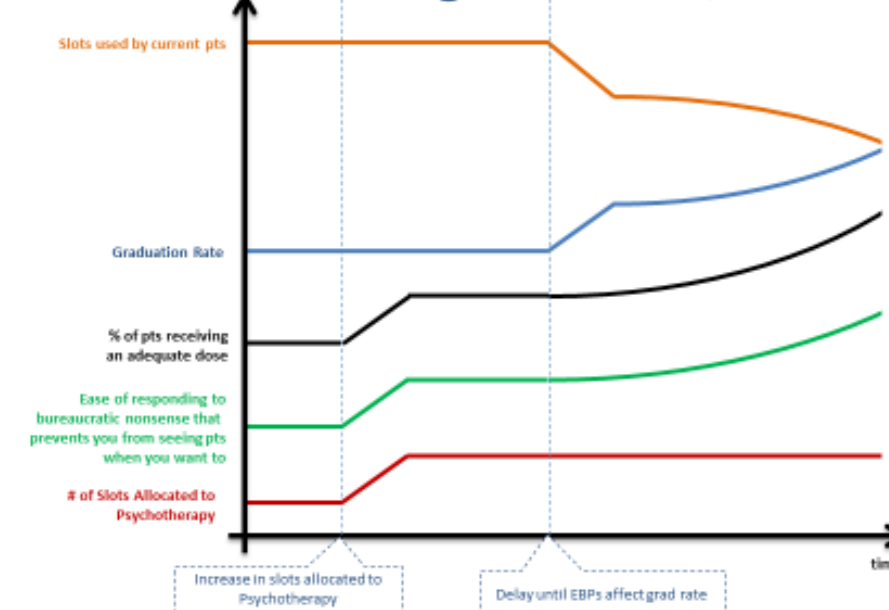
PSD Dynamics

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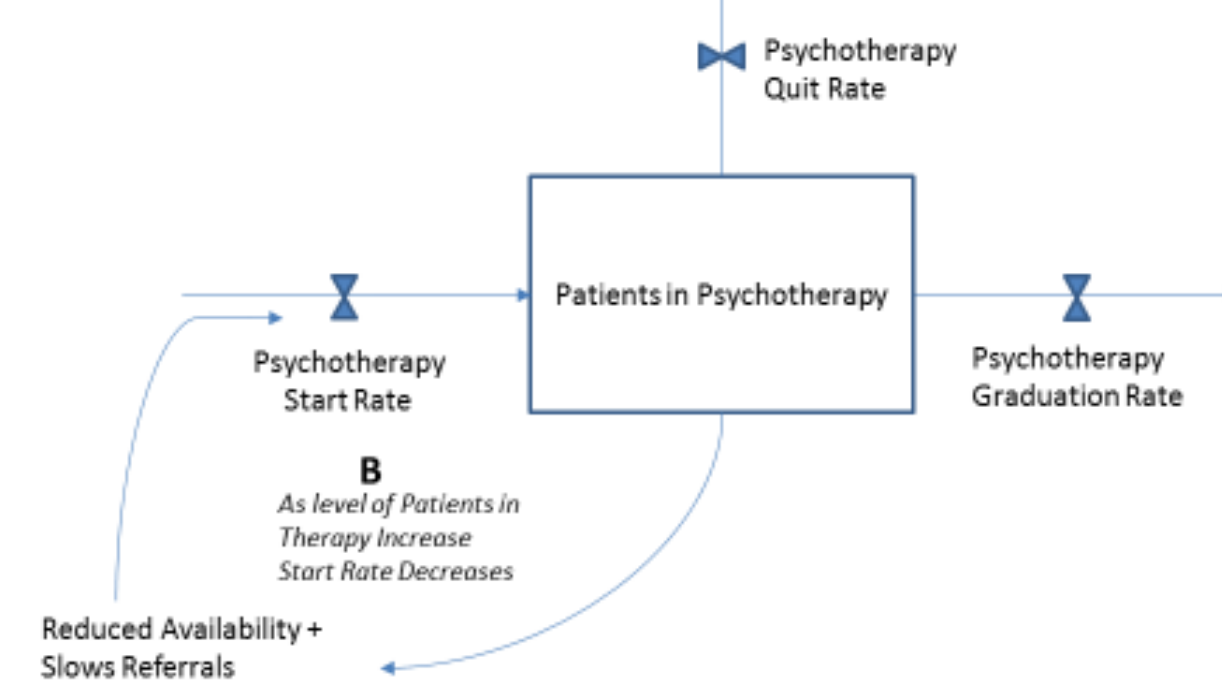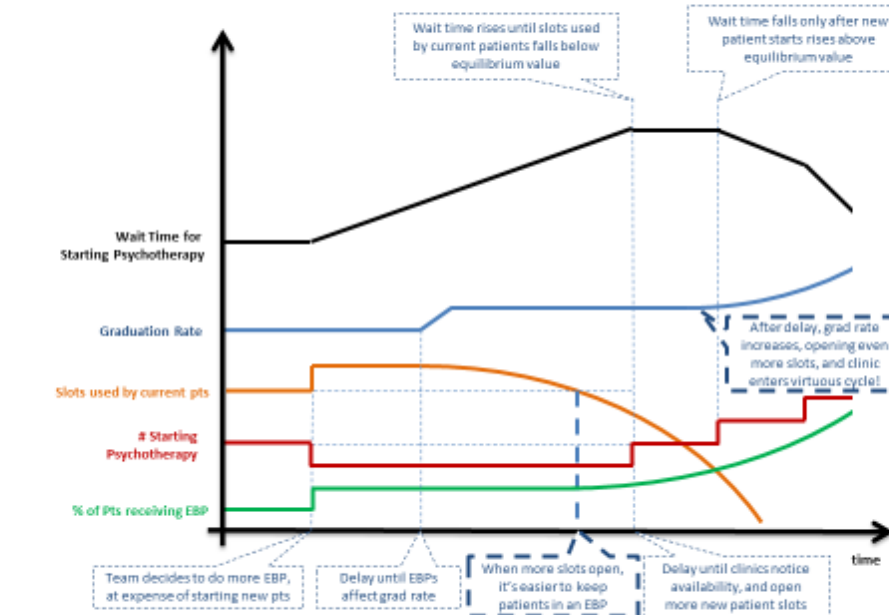

EBPsy Simulation

Dynamic Hypotheses about Psychotherapy Continuity of Care (Existing Patients)

Yes, way worse before better, but with increasing long term improvement


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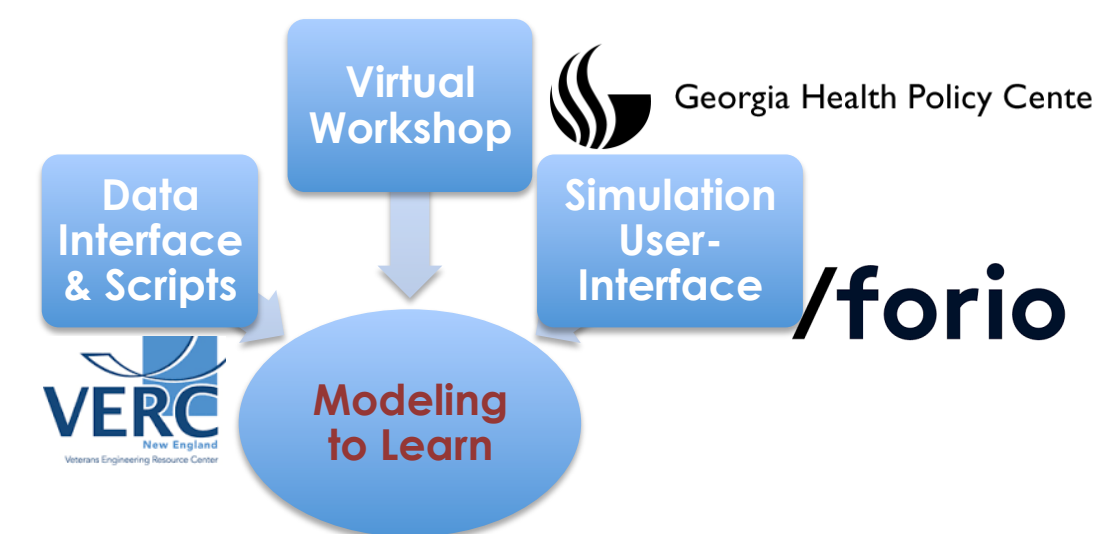
In FY2018, we will launch a team-based quality improvement training. VA Employee Education Services (EES) to provide licensure accreditation.

Acknowledgements

Bibliography and references cited are available as a handout on GitHub