User-Centered Design and the Implementation of Evidence-Based Interventions

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- *School-based practitioners!*

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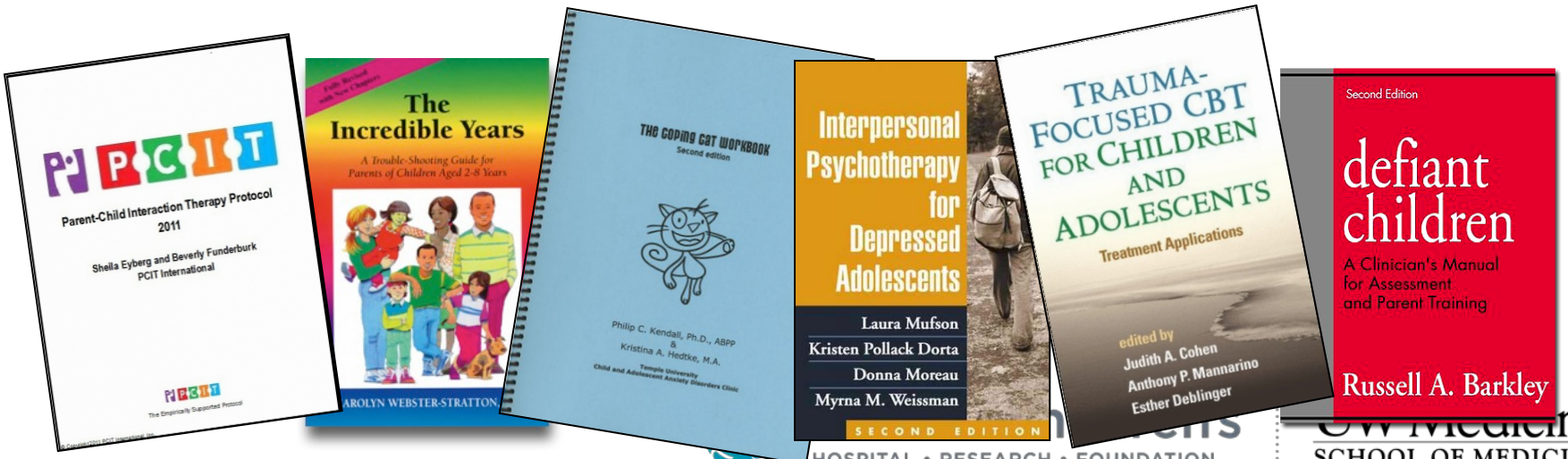
Overview

1. The **design** of evidence-based treatments

2. Feasible, contextually-appropriate quality improvement in school-based mental health (SBMH)

Evidence-Based Treatment / Practice

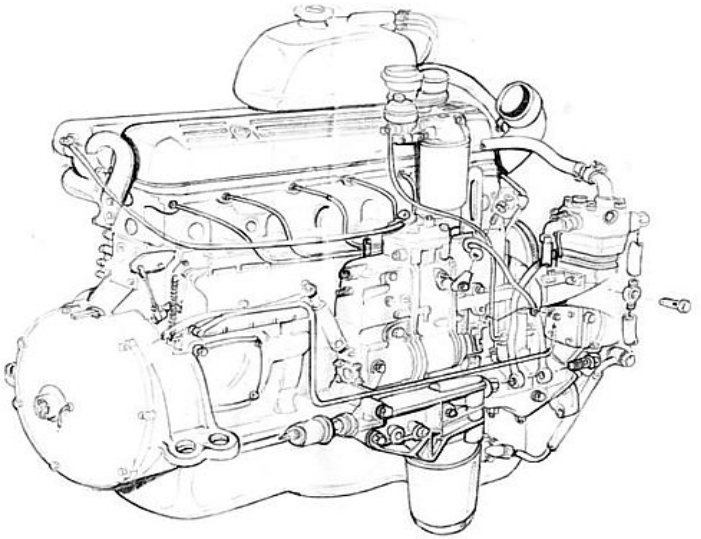
- Evidence-based practice (EBP): "The integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences" (APA, 2006)
- Most of the empirical literature exists at the level of individual evidence-based treatment (EBT) protocols (Chorpita et al., 2007)
  - Historically, EBT protocols have been the primary medium for the dissemination & implementation of effective practices



Engineering vs. Design

Engineering

- Frequently rule-bound
- Arriving at outcomes is often complicated, but formulaic
- Functional, yet inelegant solutions
- Exists independent of human response

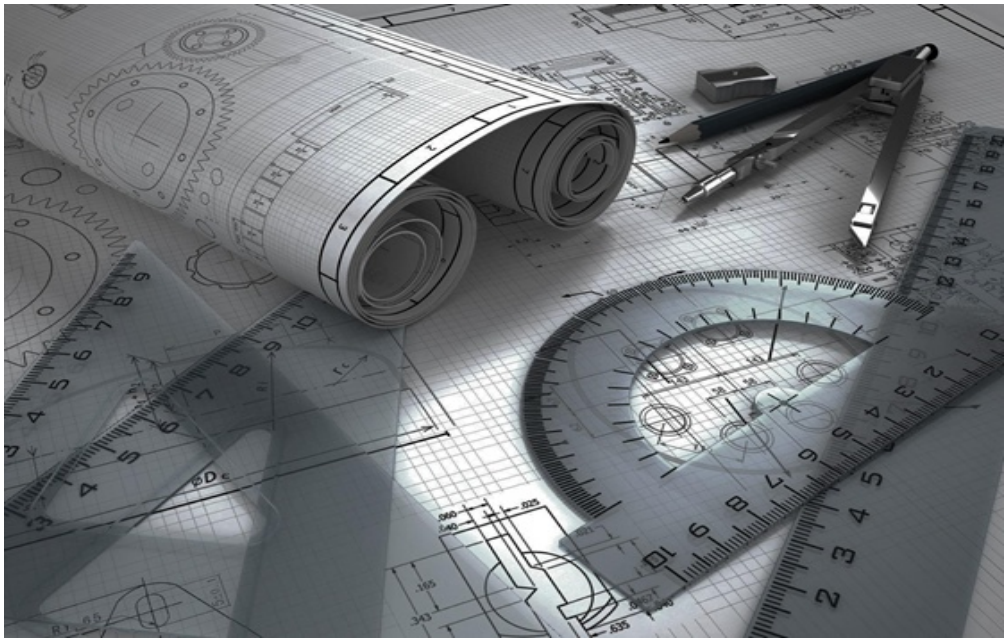


Design

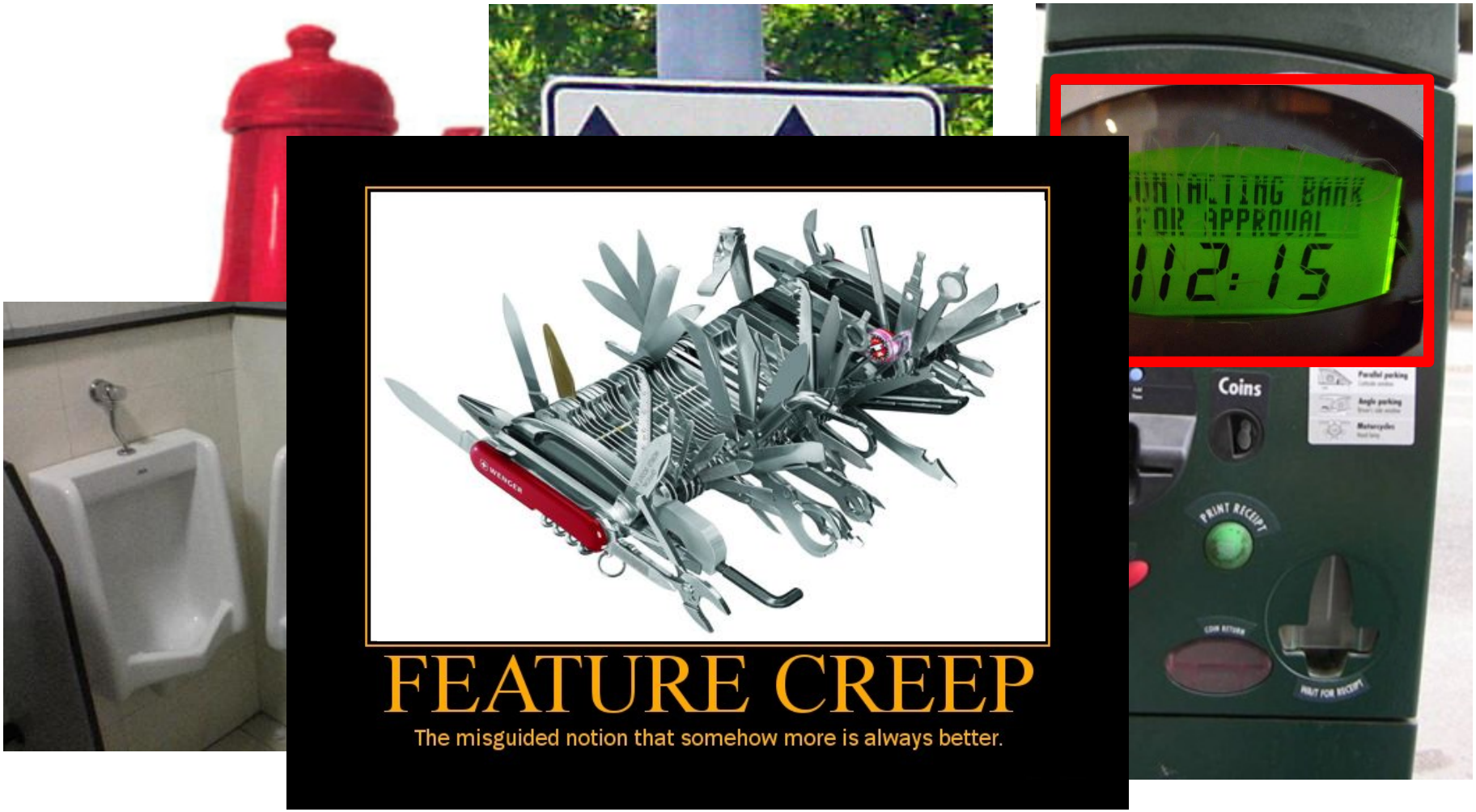
- Sometimes subjective
- Seeks parsimony
- Results in products that meet requirements well / in compelling ways
- HIGHLY dependent on human processes / human interactions

EBTs are Well Engineered

- Produce intended effect, using all means necessary
- Generally present a universal and robust “solution” to a single problem
- Emphasize technical “correctness” (e.g., fidelity)



EBTs are TERRIBLY Designed



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EBTs are TERRIBLY Designed

- Long (e.g., 12-16+ sessions), often with diminishing returns
- Generally inflexible (or perceived to be)
- Complicated / difficult to learn
  - Even harder to learn well (e.g., w/ fidelity)
  - Unclear what parts are important (unpacking studies)
- Prone to increasing complexity
  - Often w/o added benefit…

"Participants in the E-PCIT condition received the identical motivational enhancement and PCIT interventions as participants in the PCIT condition…[and] individualized enhanced services were added, with particular attention to services targeting parental depression, current substance abuse, and family, marital, or domestic violence problems…" (Chaffin et al., 2004)

Lyon & Koerner (in prep)

Some Design Principles…violated by most EBTs

- **Learnability** – When possible, increase the ease/speed of learning and mastery
- **Functional Minimalism** – Too many features, functions, or components will reduce usability
- **Cognitive Load** – Minimize the amount of thinking required to complete a task
- Exploit **Natural Constraints**

  → Especially when transported to new settings, EBTs are often fighting <u>against</u> local system constraints

Norman (2002); Tognazzini (2003)

Design is a Key Implementation Factor

- Implementation: *Active and planned efforts to mainstream an innovation within an organization (Greenhalgh, 2004)*
- EBT/EBP = products intended for users
  - Problematic design inhibits the uptake and sustained use of innovations by individuals and systems

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Designing EBP for Implementation

- Consider your users
  - *"The user is not like me."* (Norman)
- Carefully evaluate the context of use and user experiences
- Simplify!
- Iterate, iterate, iterate

GOOD DESIGN

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Standardized Assessment, Progress Monitoring, and the Adaptation of a Measurement Feedback System

Funding sources:
National Institute of Mental Health (K08 MH095939 – Lyon, PI)
The Bill and Melinda Gates Foundation (Community and School Collaborations Program)
Public Health of Seattle and King County

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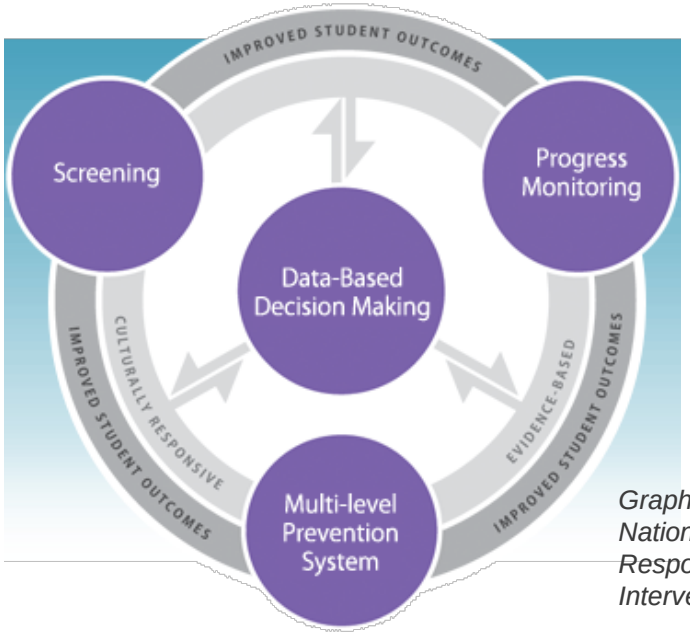
Emphasize low-cost, high-yield practice changes and methods to support them

Enhancing EBP Learnability

- Disseminate / Implement key competencies instead of full Tx packages (Beidas et al., 2011; Rotheram-borus et al., 2012)
  - **Simplified EBP Design → Enhanced Learnability**
- SA and progress monitoring may be the "low-hanging fruit" of EBP implementation
  - Effective use can result in improved outcomes (Bickman et al., 2011; Lambert et al., 2003)
  - Findings indicate good uptake of SA following training in SBMH (Lyon et al., 2011)

Contextual Appropriateness / Fit with Natural Constraints

- Assessment and Monitoring aligns with ***Response to Intervention (RtI)*** educational models of data-driven decision making



Graphic from the National Center on Response to Intervention

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How common is SA in Mental Health?

- SA tools are used infrequently by MH practitioners regardless of their discipline (Hatfield & Ogles, 2004; Gilbody et al., 2002)
- 40% use parent rating scales; 29% use child self-report rating scales (Palmiter, 2004)
- When provided with scored assessment profiles, SA information infrequently used for Tx planning/progress monitoring (Garland et al., 2003)

SA Use in Schools

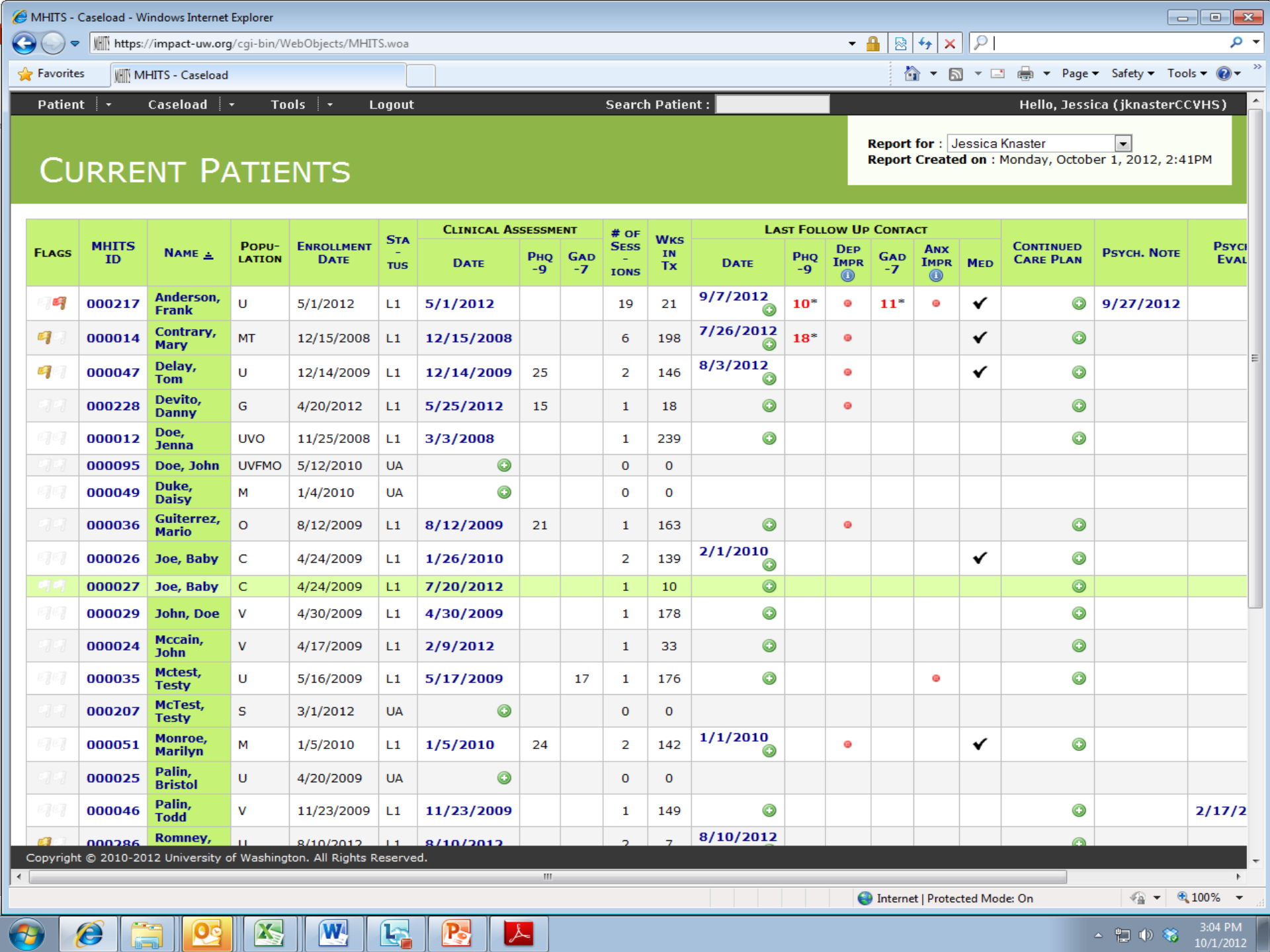
Survey responses from SBHC practitioners (*n* = 16)

Percent of Caseload:	0%	1-39%	40-60%	61-100%
Gave a SA measure in initial 1-2 meetings	47%	27%	27%	--
Gave a SA measure at termination	63%	36%	--	--
Gave a SA measure	38%	44%	19%	--
Gave a SA measure to a teacher	81%	19%	--	--
Gave feedback about a SA measure	50%	31%	13%	6%
Changed Tx plan based on SA data	69%	31%	--	--
Changed indiv. session plan based on SA	56%	38%	6%	--

Adapting a Measurement Feedback System (MFS) for School-Based Clinicians

- MFS provide computerized infrastructure to support assessment and monitoring of intervention targets (Bickman, 2008)
  - Also support communication among providers about treatment progress (for supervision, consultation)

- MFS selected: *Mental Health Integrated Tracking System* (MHITS; Unützer)
  - Previously used to support collaborative care for adult depression



MHITS - Caseload - Windows Internet Explorer

https://impact-uw.org/cgi-bin/WebObjects/MHITS.woa

Favorites | MHITS - Caseload | Page | Safety | Tools

Patient | Caseload | Tools | Logout | Search Patient : | Hello, Jessica (jknasterCCVHS)

CURRENT PATIENTS

Report for : Jessica Knaster
Report Created on : Monday, October 1, 2012, 2:41PM

FLAGS	MHITS ID	NAME	POPULATION	ENROLLMENT DATE	STATUS	CLINICAL ASSESSMENT			# OF SESSIONS	WKS IN TX	LAST FOLLOW UP CONTACT						CONTINUED CARE PLAN	PSYCH. NOTE	PSYCH EVAL
						DATE	PHQ-9	GAD-7			DATE	PHQ-9	DEP IMPR	GAD-7	ANX IMPR	MED			
	000217	Anderson, Frank	U	5/1/2012	L1	5/1/2012			19	21	9/7/2012	10*	●	11*	●	✓		9/27/2012	
	000014	Contrary, Mary	MT	12/15/2008	L1	12/15/2008			6	198	7/26/2012	18*	●			✓			
	000047	Delay, Tom	U	12/14/2009	L1	12/14/2009	25		2	146	8/3/2012		●			✓			
	000228	Devito, Danny	G	4/20/2012	L1	5/25/2012	15		1	18			●						
	000012	Doe, Jenna	UVO	11/25/2008	L1	3/3/2008			1	239									
	000095	Doe, John	UVFMO	5/12/2010	UA				0	0									
	000049	Duke, Daisy	M	1/4/2010	UA				0	0									
	000036	Guiterrez, Mario	O	8/12/2009	L1	8/12/2009	21		1	163			●						
	000026	Joe, Baby	C	4/24/2009	L1	1/26/2010			2	139	2/1/2010					✓			
	000027	Joe, Baby	C	4/24/2009	L1	7/20/2012			1	10									
	000029	John, Doe	V	4/30/2009	L1	4/30/2009			1	178									
	000024	Mccain, John	V	4/17/2009	L1	2/9/2012			1	33									
	000035	Mctest, Testy	U	5/16/2009	L1	5/17/2009		17	1	176					●				
	000207	McTest, Testy	S	3/1/2012	UA				0	0									
	000051	Monroe, Marilyn	M	1/5/2010	L1	1/5/2010	24		2	142	1/1/2010		●			✓			
	000025	Palin, Bristol	U	4/20/2009	UA				0	0									
	000046	Palin, Todd	V	11/23/2009	L1	11/23/2009			1	149									2/17/2
	000286	Romney,	U	8/10/2012	L1	8/10/2012			2	7	8/10/2012								

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10/1/2012

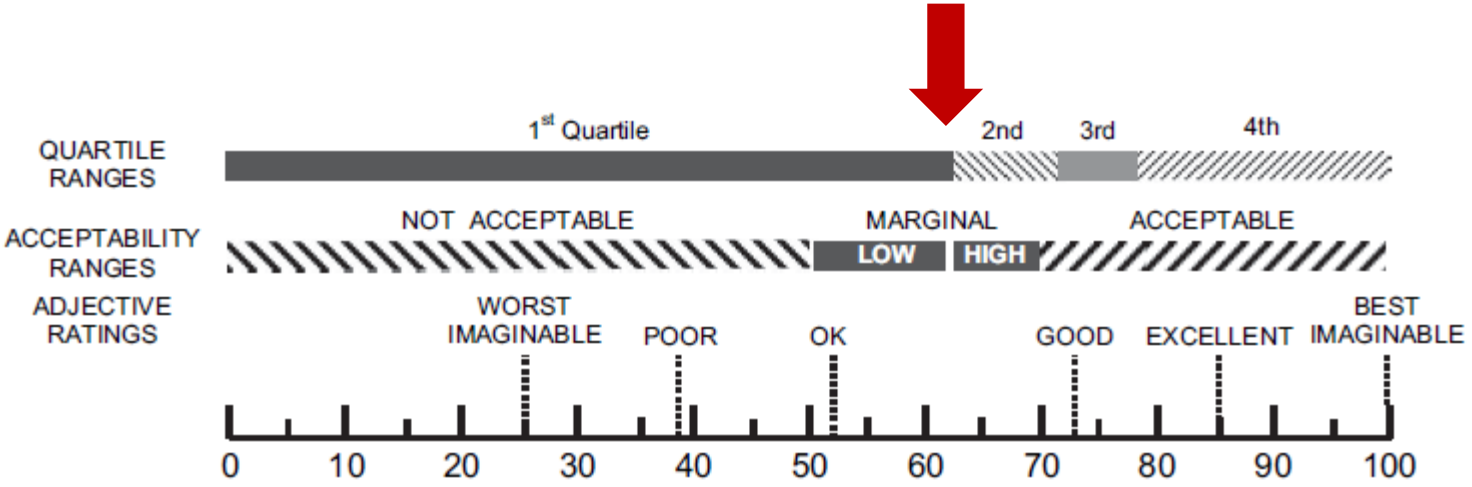
MFS Development Process

- *Iterative* adaptation of the system with regular user testing/input

- Recent MFS development efforts:
  1. Focus groups to evaluate provider workflow, usability of different MFS components, etc.
  2. Piloting and feedback with the un-adapted system
  3. Feedback from a year-long stakeholder committee,
  4. **Trial with clinicians (*n* = 14) randomized to adapted MFS or assessment as usual (AAU)**
     - Both received same SA/progress monitoring training

Preliminary Outcome: System Usability

- System Usability Scale (SUS; Brooke, 1996)
  - 10-item measure of overall usability; yields 0-100 score
  - Most sensitive and robust usability assessment tool (Bangor et al., 2008; Tullis & Stetson, 2004)
- Administered to MFS group after ~6 wks of use
  - **Mean SUS Total Score: 61.4** (marginally acceptable)



Bangor et al. (2008)

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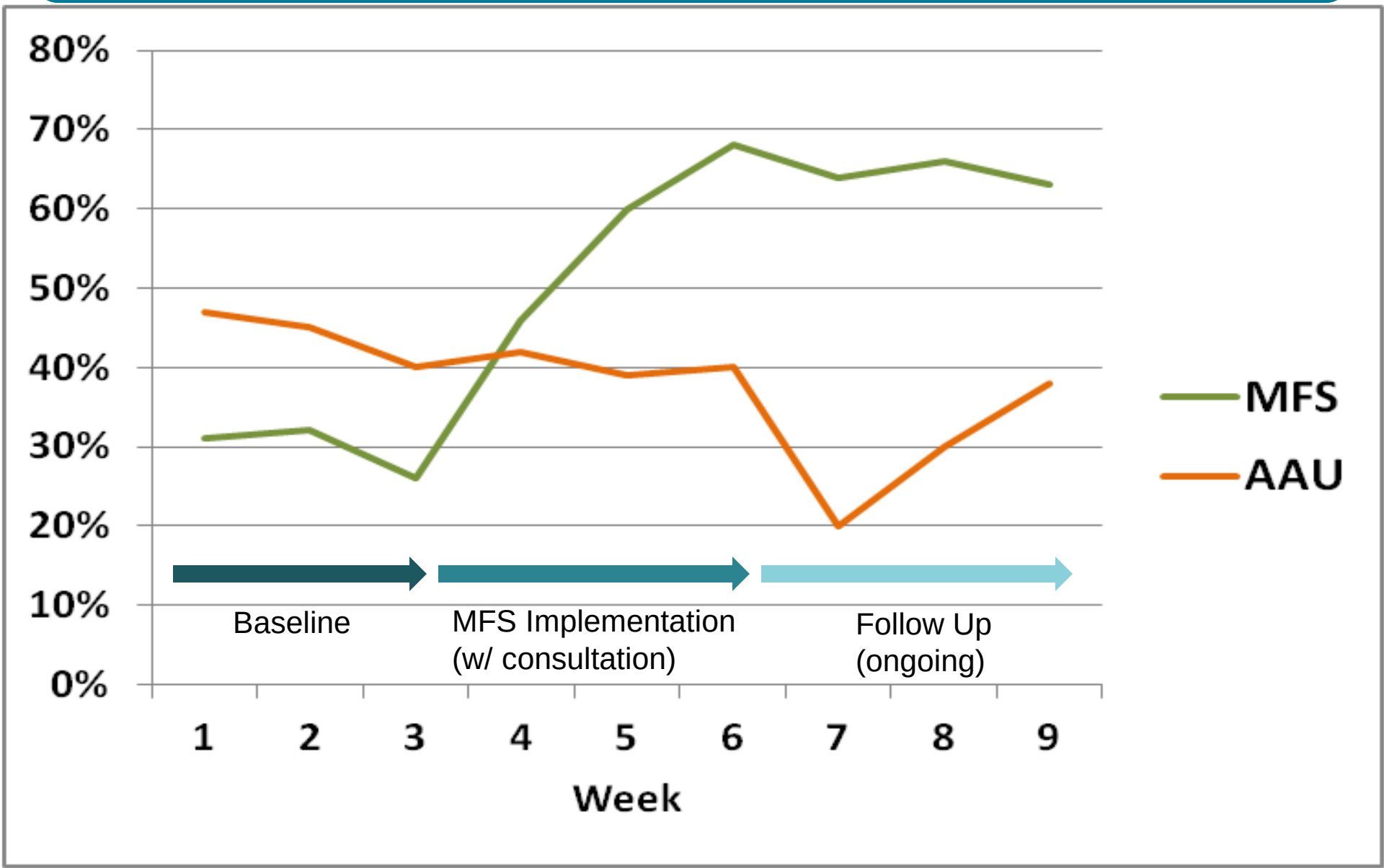
Preliminary Outcome: % of Caseload Receiving Data-Based Feedback for MFS vs. Assessment as Usual (AAU)



Questions and Discussion

Sometimes

beats