

Sustainable Strategies & Digital Tools to Expand Implementation of PCOR Findings

Andrea K. Graham, PhD

Center for Behavioral Intervention Technologies (CBITs)

Center for Human-Computer Interaction + Design

Department of Medical Social Sciences

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[@andreakgraham](https://twitter.com/andreakgraham)

Northwestern

The disruptive innovation of digital interventions is extending treatment beyond in-person sessions into the **fabric of people's lives**



But:

If they are not engaging, people will **stop using** them



Implication:

Must be **engaging** to have clinical impact

Engagement is a Problem

- When digital interventions have moved from research settings to real-world settings, **implementation has frequently failed**
 - Low rates of use and retention among patients
 - Failed integration within their systems of care

What's the Disconnect?

Interventions are often not designed for the **users** and **contexts** in which they will be implemented

- We need **contextually-relevant care**
 - Better matched to patients' needs (personalization, precision)
 - Better matched to clinicians' workflows (pragmatic)
- Human-centered design can help

Graham, Wildes et al., 2019, User-centered design for technology-enabled services for eating disorders, *Int J Eat Disord*

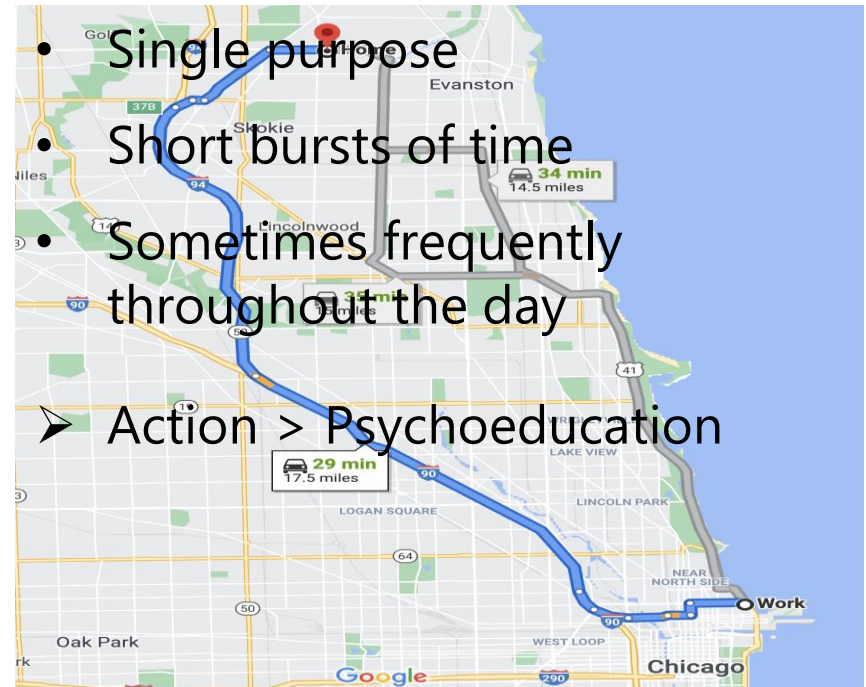
The Example of Mental Health Apps

Cannot simply translate a face-to-face treatment to a digital format

How DMHIs are Designed

- Rely heavily on psychoed
- Require 30-45 min use/week
- Typically for 6+ weeks
- Engagement is challenging

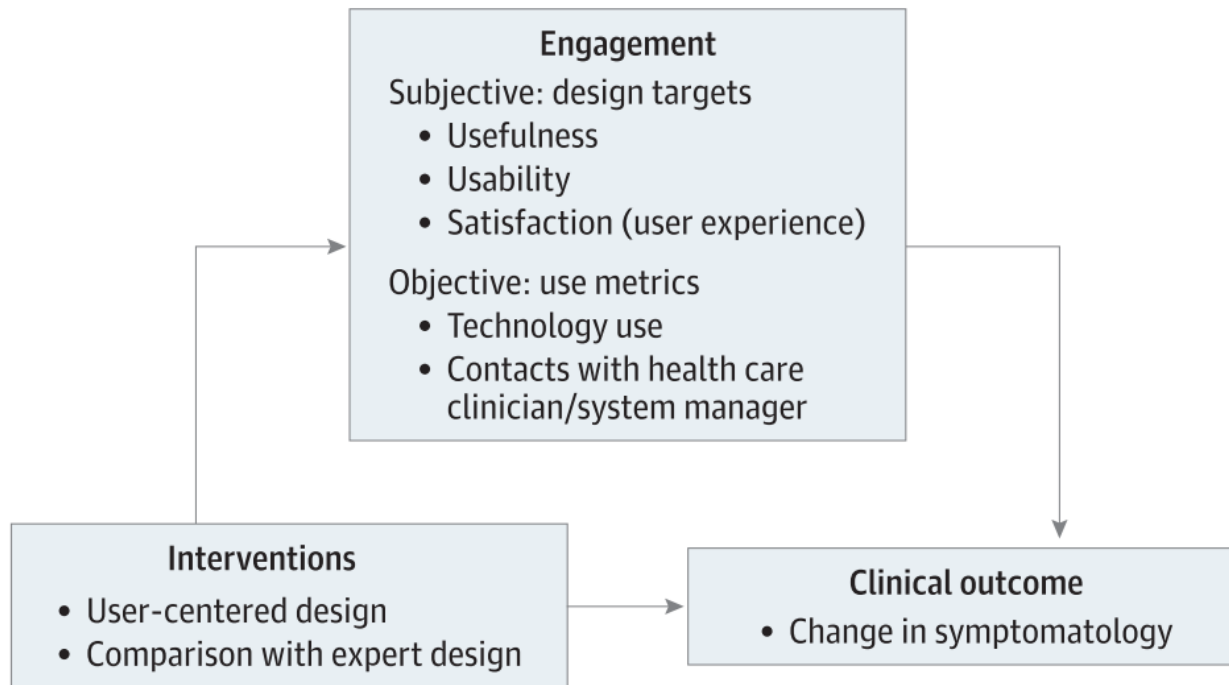
How People Use Apps



- Single purpose
- Short bursts of time
- Sometimes frequently throughout the day
- Action > Psychoeducation

The User Experience Matters

Figure. Conceptual Model for Experimental Therapeutics to Target Engagement as a Mediating Mechanism for Digital Mental Health



Graham, Lattie, & Mohr, 2019, Experimental therapeutics for digital mental health, *JAMA Psychiatry*

Designing for Implementation

- Integrating new interventions into existing workflows is challenging
 - Especially true for digital, whose delivery differs from in-person **by design**
- There is a gap in knowing “how” (the methods and techniques) to implement digital interventions in health care settings

Implementation Strategies for Digital Mental Health

Proposed Implementation Strategies across Phases of Implementation

Exploration Phase

- Conduct needs assessments (e.g., among practitioners, consumers)
- Review DMHI evidence and content
- Align practitioners on DMHI adoption (e.g., consensus discussions)
- Aim to ensure equity in who can access the DMHI

Preparation & Implementation Phases

- Create a business associate agreement to restrict data usage
- Adopt DMHIs with demonstrated effectiveness
- Determine who is appropriate for the DMHI, and create guidelines
- Design the referral process & inform referring practitioners
- Create and distribute educational materials about the DMHI
- Have “champions” inform consumers about the DMHI
- Be transparent about DMHI data security, privacy, & use
- Be transparent about DMHI requirements, promote autonomy
- Assist with onboarding (e.g., educational materials, point-person)
- Make technical assistance available
- Create and disseminate practice guidelines for delivering the DMHI
- Ensure practitioners are competent to deliver the DMHI
- Offer training & ongoing supervision in using the DMHI
- Monitor practitioners’ fidelity to the DMHI protocol
- Specify plans for monitoring & addressing safety concerns
- Make plans for safety monitoring transparent to consumers
- Change record systems (e.g., integrate DMHI with the health record; integrate communication portal with tools practitioners use)
- Conduct small tests of the new processes
- Appropriate sufficient funds (e.g., to license the DMHI, initiate a contract, workflow integration, programming, staff training)
- Track time & resources spent implementing the DMHI
- Build partnerships for priority setting & evaluation
- Create learning collaboratives to share resources & learnings

Sustainment Phase

- Optimize the technologies & implementation plans over time
- Assess changing needs & preferences over time

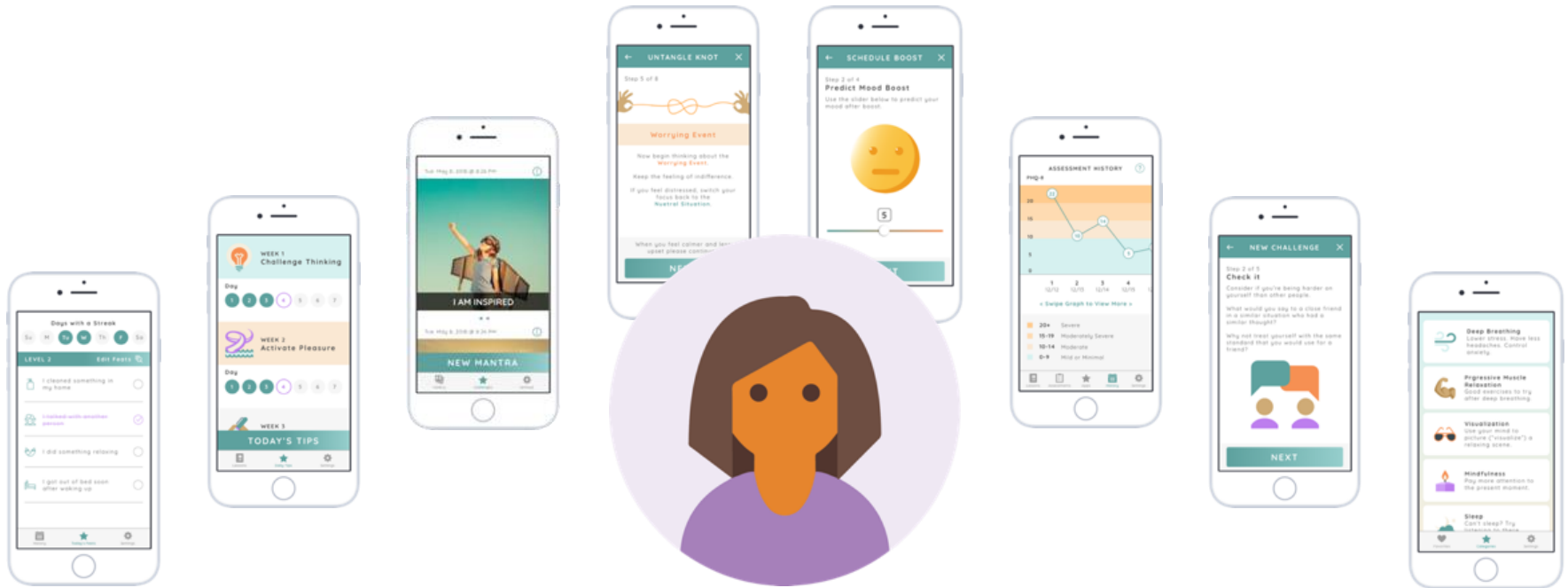
Graham, Lattie, Powell, Lyon, Smith, Schueller, Stadnick, Brown, & Mohr, 2020, Implementation strategies for digital mental health interventions in health care settings, *Am Psychol*

“...workflow considerations remain among the **least explored but most needed** factors towards facilitating implementation...”

Torous et al., 2021, *World Psychiatry*

Workflow Integration: An Example

IntelliCare

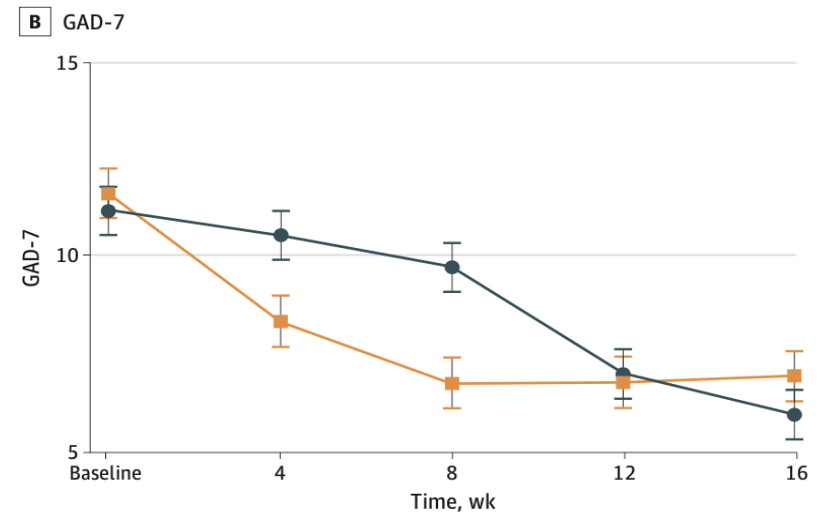
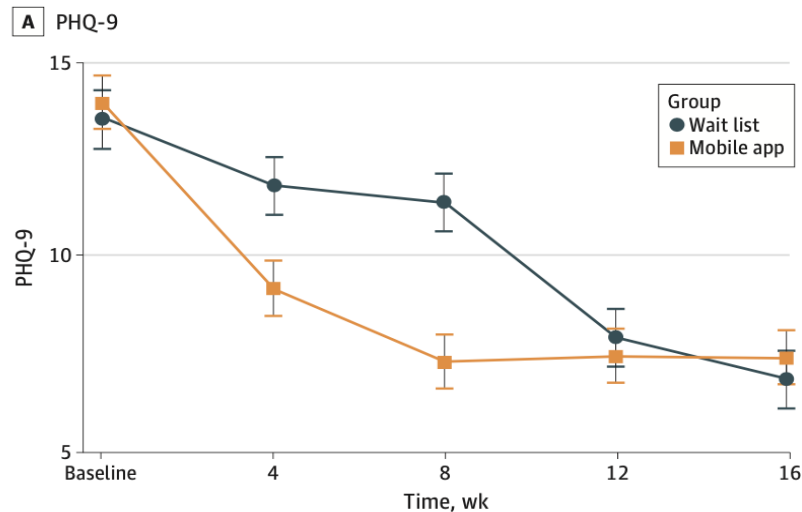


Mohr, et al., 2017, IntelliCare: An eclectic, skills-based app suite for the treatment of depression and anxiety, *JMIR*

“Implementing an Innovative Suite of Mobile Applications for Depression & Anxiety”

SBIR R44 MH114725 (PI: Naik)

- 1st trial of a mental health app with primary care patients



- Effect sizes of 0.78 and 0.64 for depression and anxiety

Graham, et al., 2020, Coached mobile app platform for the treatment of depression and anxiety among primary care patients: A randomized clinical trial, *JAMA Psychiatry*

Engagement

Table 3. App Use Metrics for the Full IntelliCare Platform and Each Individual App

Group	Mobile app ^a	Median (IQR) [range]		
		Sessions	Days used	Time to last use
Depression (n = 122)	Suite (all apps)	93 (51-133) [0-333]	27 (17-35) [0-50]	43 (32-48) [0-56]
	Hub	20 (11-30) [0-102]	12 (7-17) [0-39]	40 (28-45) [0-56]
	Daily Feats	26 (11-44) [0-94]	17 (8-26) [0-50]	36 (19-45) [0-53]
	Day-to-Day	16 (6-25) [0-90]	11 (5-16) [0-40]	29 (9-41) [0-52]
	MyMantra	9 (2-19) [0-59]	6 (2-10) [0-37]	15 (2-28) [0-50]
	Thought Challenger	8 (3-16) [0-74]	6 (3-12) [0-41]	16 (6-29) [0-51]
	WorryKnot	5 (0-11) [0-29]	4 (0-8) [0-23]	9 (0-19) [0-46]
Anxiety (n = 131)	Suite (all apps)	98 (46-146) [0-321]	27 (16-35) [0-50]	42 (32-48) [0-56]
	Hub	21 (11-30) [0-102]	11 (7-16) [0-39]	39 (28-45) [0-56]
	Daily Feats	25 (10-44) [0-94]	17 (6-26) [0-50]	36 (11-44) [0-53]
	Day-to-Day	17 (7-29) [0-90]	11 (5-18) [0-40]	29 (8-41) [0-52]
	MyMantra	10 (2-22) [0-59]	6 (1-11) [0-37]	15 (0-28) [0-50]
	Thought Challenger	8 (3-16) [0-53]	6 (3-12) [0-30]	16 (4-30) [0-50]
	WorryKnot	5 (0-10) [0-29]	4 (0-7) [0-23]	8 (0-17) [0-50]

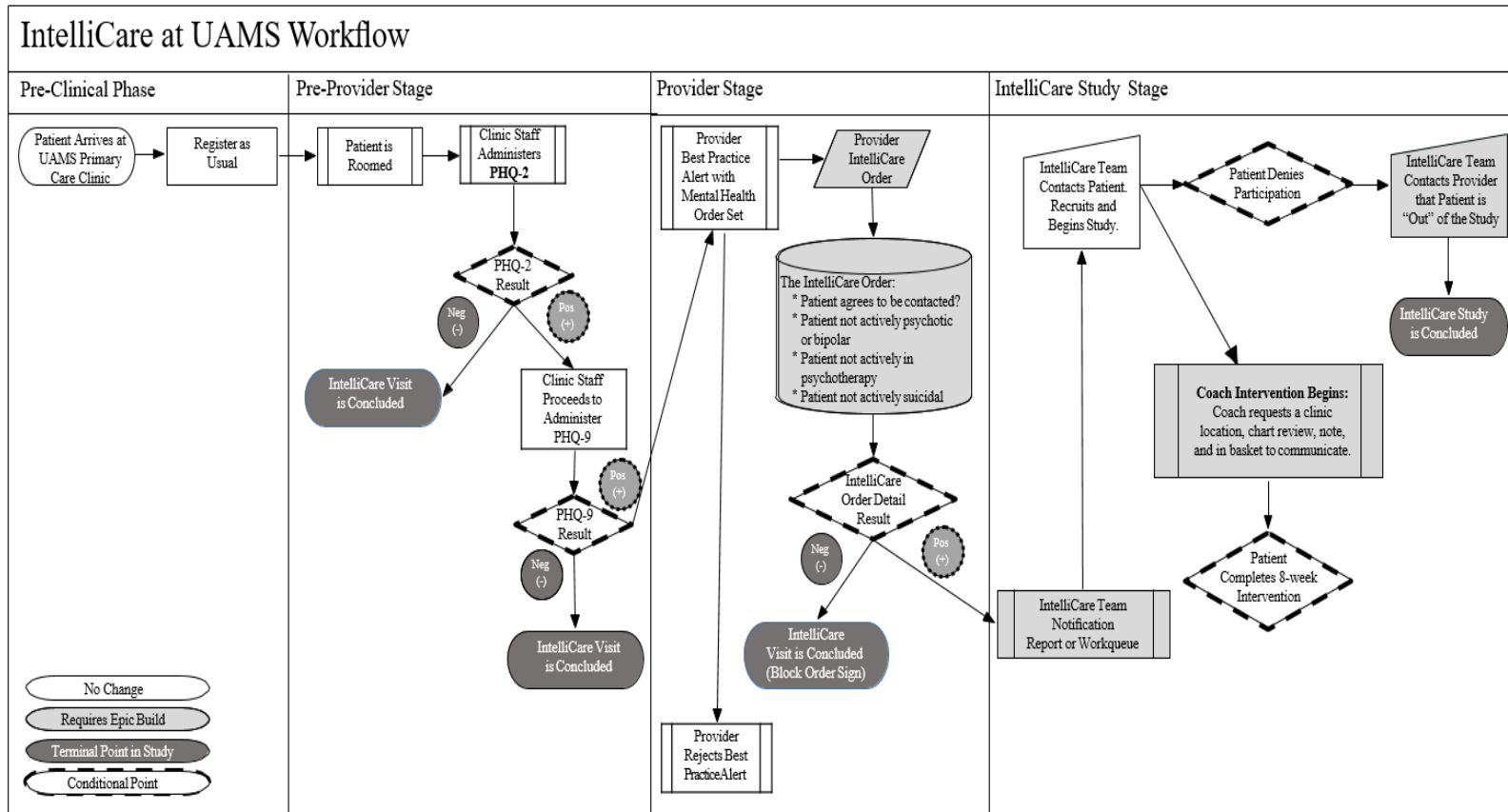
Graham, et al., 2020, Coached mobile app platform for the treatment of depression and anxiety among primary care patients: A randomized clinical trial, *JAMA Psychiatry*

Workflow Integration: Referral Management

Referral Strategies							
Direct to Consumer			Clinician Referral			Other & >1	
Digital	Research Registry	Print	Clinic	EHR alert + order	Recommend	Other	Campus Buzz

Graham, et al., 2020, Lessons learned from service design of a trial of a digital mental health service: Informing implementation in primary care clinics, *Transl Behav Med*

Workflow Integration



Graham, et al., 2020, Lessons learned from service design of a trial of a digital mental health service: Informing implementation in primary care clinics, *Transl Behav Med*

Interoperability with an EHR



<https://www.insider.com/nailed-it-netflix-baking-fails-photos-2018-3#the-judges-congratulated-this-contestant-for-completing-her-cake-in-a-short-period-of-time-4>

Workflow Integration

Referral Strategies							
Direct to Consumer				Clinician Referral		Other & >1	
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Yield: 82% (n=257)				4% (n=14)		14% (n=42)	

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Yield:				82% (n=257)		4% (n=14)		14% (n=42)	
Penetration:				4%		50%			

Graham, et al., 2020, Lessons learned from service design of a trial of a digital mental health service: Informing implementation in primary care clinics, *Transl Behav Med*

Penetration Rate

- Penetration = # enrolled / # clinic patients with positive depression screens in EHR
 - 146 enrolled
 - 1,135 patients potentially eligible
- **Penetration Rate = 13%**

Graham, et al., 2020, Lessons learned from service design of a trial of a digital mental health service: Informing implementation in primary care clinics, *Transl Behav Med*

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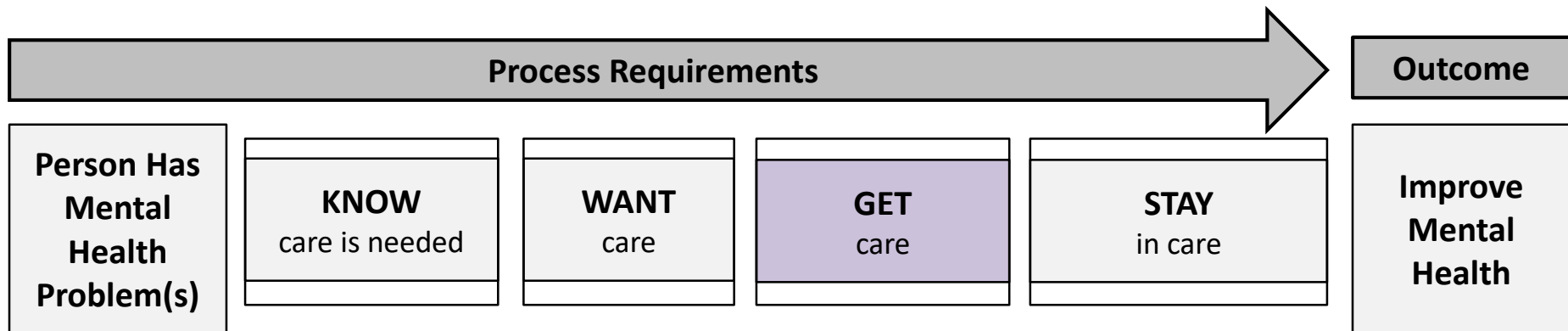
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Graham, Lattie, Powell, Lyon, Smith, Schueller, Stadnick, Brown, & Mohr, 2020, Implementation strategies for digital mental health interventions in health care settings, *Am Psychol*

Referral Management

- Pain-point in the “implementation cascade”



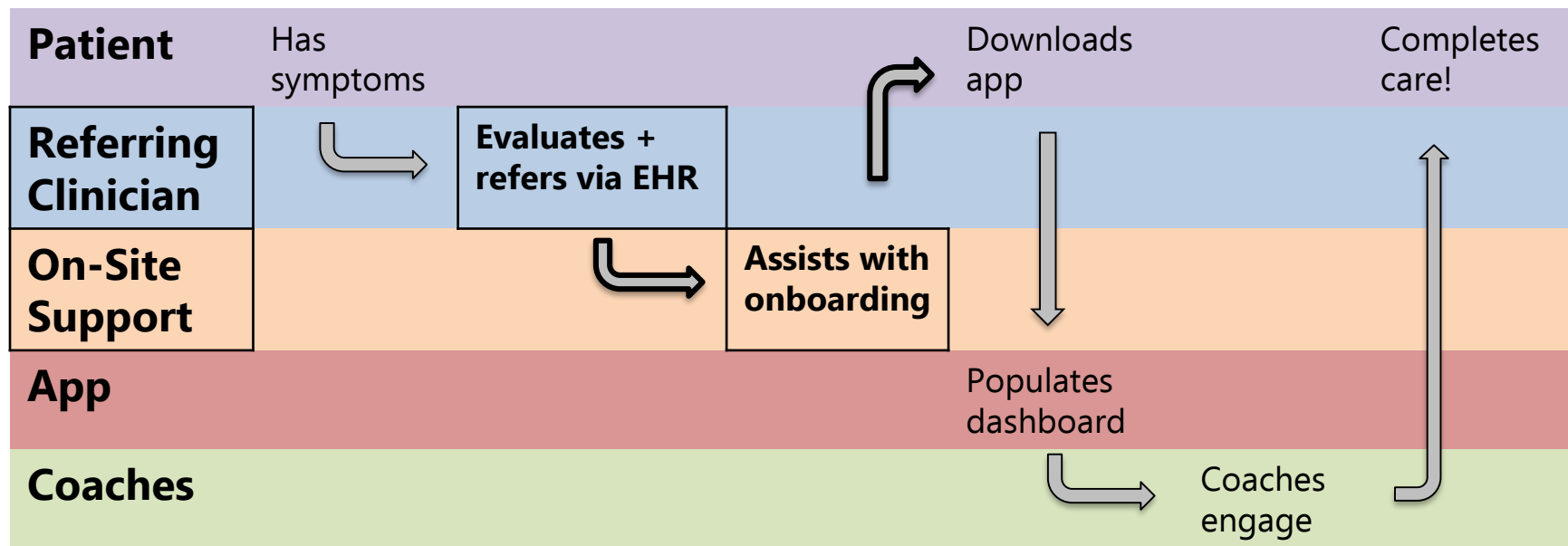
- Who’s responsible?
- Ethics and legalities (data sharing, endorsement)
- Software integration challenges

Kass, et al., 2017, The economic case for digital interventions for eating disorders among United States college students. *Int J Eat Disord*

“Integrating a Suite of Mental Health Apps for Depression in a Healthcare Setting”

SBIR R44 MH114725 (PI: MacIver)

- First referral to a digital solution
- Attention to process



Conclusions

- Design for Context
 - From the start!
 - Get things in front of end-users
 - Focus on **minimally-viable product(s)**
 - Iterate, iterate, iterate
 - “Real world” research comes with real-world challenges

Thank You!

andrea.graham@northwestern.edu

www.cbits.northwestern.edu

@andreakgraham

@cbitshealth



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