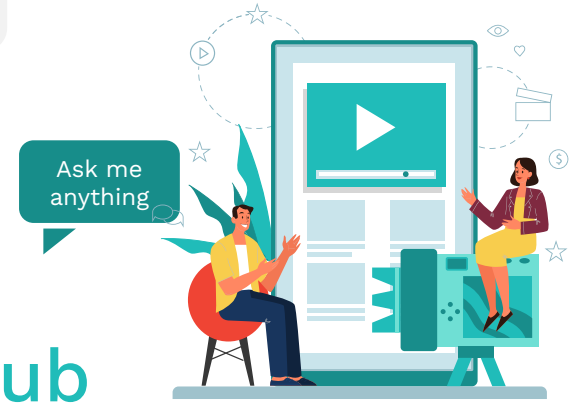
Virtual Journal club



Evidence DEFINED Framework – A Rigorous, Rapid Approach to Assess the Clinical Value of Digital Health Interventions | Public Launch Event

Thursday, July 20th, 2023 | 12pm ET

Jordan Silberman
Director of Clinical Analytics & Research
Elevance Health

Paul Wicks
Consultant
Wicks Digital Health

Tim Campellone
Vice President, Translational Science
Woebot Health

Jenna Carl
Chief Medical Officer
Big Health

Smit Patel
Associate Program Director
Digital Medicine Society (DiMe)
Moderator

But first, housekeeping

- Please note today's session is being recorded
- To ask a question for discussion during Q&A, please:
    - Either 'raise your hand' in the participant window and moderator will unmute you to ask your question live, or
    - Type your question into the chat box
- Slides and recording will be available after today's session

Agenda

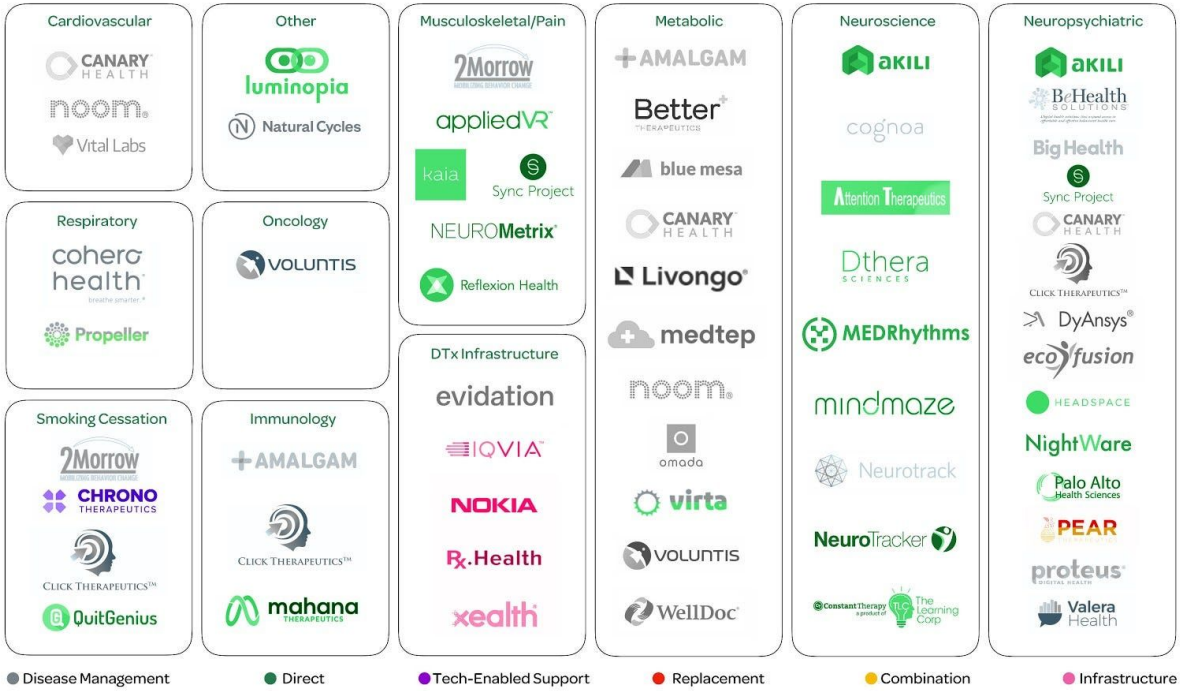
- Introductions
- Evidence DEFINED Overview
- Panel Discussion with experts
- Audience Q&A

Over 350k+ digital health products are available – and it keeps growing

The number of consumer digital health apps ballooned over the years, with more than 90,000 new ones introduced in 2020 alone, according to a report by the IQVIA Institute for Human Data Science on digital health trends.

The report found there are now **more than 350,000 digital health apps available** to consumers. While many are geared toward general wellness or fitness, and some are middling in quality, specific disease management apps are increasing in number.

Problem remains the same – how do we differentiate?



Source: https://medium.com/@stephstephliu/digital-therapeutics-the-emergence-of-a-patient-centric-asset-class-64e44051c635

The wild west of true clinical value and quality

The prevalence of digital health interventions in numbers, capabilities, and acceptance continues to offer promising solutions for improving health outcomes and changing behaviors. Yet, despite significant advances in recent years, the confidence of key decision-making stakeholders remains relatively low. Evidence is needed to determine the reliability and value of digital health products.

So how can we harmonize evidentiary practices to evaluate clinical value for effective translation rigorously?

FIRST OPINION

We need a way to tell useful mental health tech from digital snake oil

By Thomas R. Insel April 12, 2023

HEALTH TECH

STAT+

Nuance's mysterious pricing, speedier digital health evidence reviews, and new breakthrough devices

By Mario Aguilar June 1, 2023 Reprints

Source: Digital mental health needs a new federal regulatory agency, https://www.statnews.com/2023/06/01/digital-health-evidence-tech-devices/

Evidence DEFINED

Evidence in **D**igital Health for **EF**fectiveness of **IN**terventions with **E**valuative **D**epth (Evidence **DEFINED**)

The new standard of excellence framework for evaluating the clinical assessment of digital health products (DHPs).

Meet the experts who developed the Evidence DEFINED framework

A group of 17 experts with different disciplinary backgrounds collaborated to develop the Evidence DEFINED framework. This sprint team represented experts from a variety of different work settings and multiple regulatory and geographic regions.

Meet the team:

Jordan Silberman, Paul Wicks, Smit Patel, Siavash Sarlati, MD, Siyeon Park, Igor O. Korolev, Jenna R Carl, Jocelynn T. Owusu, Vimal Mishra, Manpreet Kaur, Vincent J. Willey, Madalina L. Sucala, Tim R. Campellone, Cindy Geoghegan, Isaac R. Rodriguez-Chavez, Benjamin Vandendriessche, and Jennifer C. Goldsack

- Offers payers, employers, health systems, and other stakeholders a rigorous, rapid approach to **assess the clinical value** of digital health interventions
- Act as a new standard of excellence framework to help decision makers access evidence for evaluating the clinical assessment of digital health products
- Helps DH **companies navigate their commercial strategy and demonstrate the value** of their product to stakeholders

Source: Silberman J, Wicks P, Patel S, Sarlati S, et al. Rigorous and rapid evidence assessment in digital health with the evidence DEFINED framework. NPJ Digit Med. 2023;6(1):101. doi:10.1038/s41746-023-00836-5

Scope of the Evidence DEFINED Framework

In Scope

- ✔ Generating defensible recommendations regarding adoption levels that may be appropriate for a DHP
- ✔ Assessing clinical evidence for digital health interventions through a rapid, rigorous, consistent process

Out of Scope

- ✖ Decisions for individual patients, caregivers, or clinicians
- ✖ Products that serve diagnostic functions exclusively
- ✖ Evaluation in critical domains other than clinical evidence (eg, patient experience, product design, data security, etc.)

Target Audience

Designed to support digital health evidence assessment within stakeholder organizations including:

Payers

Pharmacy Benefit Managers

Health Systems

Pharmaceutical Companies

Trade Organizations

Professional Medical Societies

Source: https://dimesociety.org/access-resources/evidence-defined/

Criteria defining digital health interventions (DHIs)

Building on prior work, we define digital health interventions (DHIs) as digital technologies intended to improve health outcomes and change health behaviors.

Following others, we define digital health interventions as **patient-facing products that meet the three criteria shown**. DHIs are often implemented using smartphone apps, web platforms, consumer-grade wearables, and other digital technologies.

Criterion		
1. The product falls into one of the three classes of digital health technologies that were defined in a collaboration[15] of stakeholders representing digital health trade organizations.	Product Class	Product Class Definition
	Digital Health	"Digital health includes technologies, platforms, and systems that engage consumers for lifestyle, wellness, and health-related purposes; capture, store or transmit health data; and/or support life science and clinical operations"[15].
	Digital Medicine	"Digital medicine includes evidence-based software and/or hardware products that measure and/or intervene in the service of human health"[15].
	Digital Therapeutics	"Digital therapeutic (DTx) products deliver evidence-based therapeutic intervention to prevent, manage, or treat a medical disorder or disease"[15].
2. The product is designed to change one or more health behaviors.		
3. The value of the product to the evaluator is contingent on the degree to which it improves one or more health outcomes. These can include clinical outcomes (e.g., incidence of diabetic retinopathy) or surrogate outcomes (e.g., HbA_{1C}).		

Source: Evidence DEFINED – Digital Medicine Society (DiMe) (dimesociety.org)

A tale of two standards

For Business Objectives

What evidence will drive adoption?

For Population Health

What evidence is needed to support the goal of improving population health?

Both objectives are valid.

Image source: Flaticon

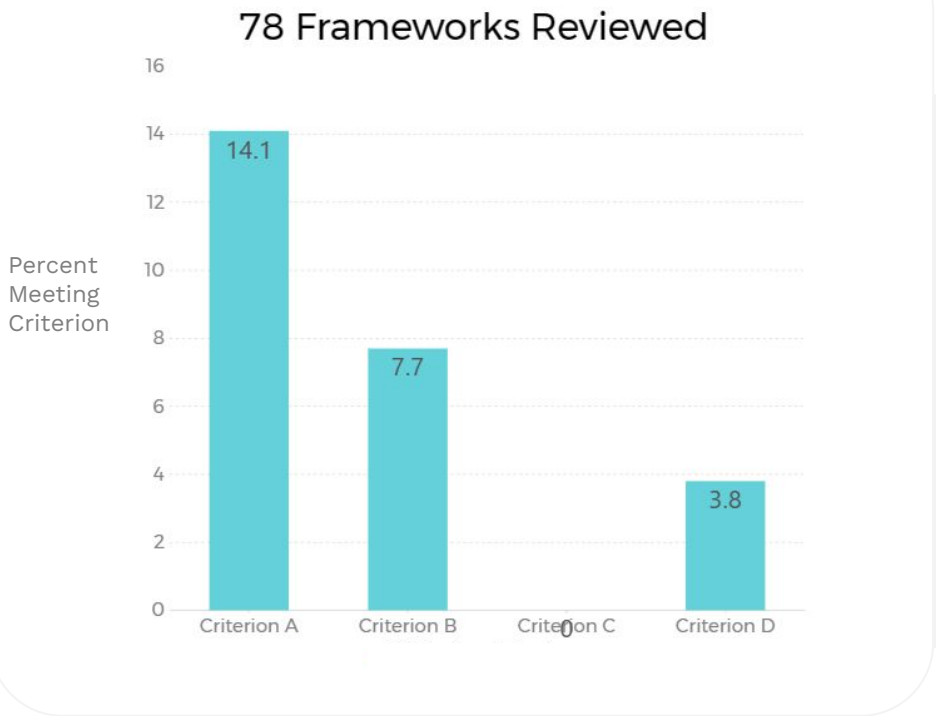
An analysis of 78 prior frameworks

Criterion A: **Builds on established best practices**
Leverages established evidence assessment methods that were developed for non-digital interventions (eg, GRADE).

Criterion B: **Adaptation (only) where appropriate**
Addresses evidence quality criteria that are unique to digital health.

Criterion C: **Vigilance increased where appropriate**
Specifies evidence quality criteria requiring increased vigilance in the current regulatory context.

Criterion D: **Evidence-to-recommendation guidelines** are provided.



Source: Silberman J, Wicks P, Patel S, Sarlati S, et al. Rigorous and rapid evidence assessment in digital health with the evidence DEFINED framework. NPJ Digit Med. 2023;6(1):101. doi:10.1038/s41746-023-00836-5

Key Strengths of Evidence DEFINED

Evidence DEFINED **leverages established, rigorous evidence assessment methods** that were developed for non-digital interventions (eg, GRADE).

Evidence DEFINED **supplements established methods** to address unique considerations in digital health evidence assessment.

Evidence DEFINED **applies increased vigilance were needed**, in the current regulatory context.

Evidence DEFINED provides **evidence-to-recommendations** guidelines, specifying what levels of adoption may be appropriate for each level of evidence quality.

Source: https://dimesociety.org/access-resources/evidence-defined/

Evidence-to-Recommendation Guidelines

ACTIONABILITY LEVEL	CRITERIA	ADOPTION LEVEL THAT MAY BE APPROPRIATE	APPROX. ENROLLMENT THAT MAY BE APPROPRIATE*
0	One or more of the following: • Clear evidence of harm or ineffectiveness for the current DHI version • The DHI is not clinically appropriate, per advice of clinical subject matter experts. • The risk balance is unfavorable due to safety concerns, per subject matter experts. • There are unaddressed concerns regarding misleading or false claims.	**Adoption not recommended.**	N/A
1	All of the following: • Very low or low-quality evidence (per GRADE definitions; “very low” includes no evidence) • Low clinical risk or well-managed risk with appropriate clinical rationale • Plausibility of clinically meaningful impact relative to usual care (or an alternate, relevant comparator) OR noninferior clinical outcomes with plausible improvement in a domain such as access, equity, user experience, or cost. Meaningful impact is defined by an effect size magnitude at or above minimal clinically important difference, per credible guidelines and/or peer-reviewed literature.	**Feasibility Pilot: Focus is enrollment, engagement, user experience, safety.**	N ≤ ~100
2	All of the following: • Meets or exceeds all criteria for Actionability Level 1 • Low-to-moderate quality evidence (per GRADE definitions). Real-world evidence may be included. • No or minimal uncertainty (per GRADE) around value to stakeholders (often patients and their families) • Acceptable or likely acceptable (per GRADE) to stakeholders	**Small Clinical Pilot: Primary outcomes are clinical.**	Up to several hundred.
3	All of the following: • Meets or exceeds all criteria for Actionability Levels 1-2 • Moderate-to-high quality evidence (per GRADE). Real-world evidence may be included.	**Large Clinical Pilot: Primary outcomes are clinical.**	~300 ≤ N ≤ ~3,000
4	All of the following: • Meets or exceeds all criteria for Actionability Levels 1-3 • Two or more high-quality RCTs support efficacy and safety • Preferred: One or more RCTs have 3rd-party data monitoring and analysis • Preferred: Real-world evidence of safety and effectiveness	**May be appropriate to scale.**	No limit for appropriate patients.

***Enrollment targets are guidelines and should have statistical justification**

Source: https://dimesociety.org/access-resources/evidence-defined/

Key Efficiencies in Evidence DEFINED

Evidence DEFINED **incorporates screening steps** to avoid investing effort where adoption is not possible.

Evidence DEFINED **minimizes gathering of information** that may have limited impact on adoption decisions.

Source: https://dimesociety.org/access-resources/evidence-defined/

Evidence DEFINED

Process

The Evidence DEFINED Framework is comprised of the following steps:

1

Step 1. Screening

Each organization defines and screens for absolute requirements (eg, compliance with data privacy standards, appropriate reading levels, absence of clinical red flags, etc.). This avoids investing effort in DHPs that are not candidates for adoption.

2

Step 2. Apply an established method designed for non-digital products

Apply an established evidence assessment framework that was developed for non-digital interventions (eg, GRADE). Many stakeholder organizations already use such frameworks routinely for evidence assessment in non-digital domains.

3

Step 3. Apply the Evidence DEFINED supplemental checklist

Apply the Evidence DEFINED supplemental checklist (Table 2) to address considerations unique to DHPs or requiring greater vigilance in digital health.

4

Step 4. Make actionable recommendations

Apply evidence-to-recommendation guidelines (Table 3) to generate a defensible recommendation regarding levels of adoption that may be appropriate for the relevant DHP.

Source: https://dimesociety.org/access-resources/evidence-defined/

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Source: https://dimesociety.org/access-resources/evidence-defined/

Examples of Evidence Quality Criteria

Evidence Assessment Criterion	Evidence Criterion Group	Rationale for Inclusion and Notes	Examples	Recommended Actionability Level Change	Importance
If the target population Includes underserved patients, then study samples should have included such patients.	Group 1. Adaptations recommended for DH.	DHIs often require adaptations for underserved patient populations. For example, adaptations may be needed to address varying levels of literacy, health literacy, numeracy, digital literacy, and broadband access.	✔ **Example meeting criterion** An organization is assessing a DHI for use in underserved patient communities. The DHI has shown effectiveness among racial minority subgroups as well as subgroups residing in low-SES zip codes. ✖ **Example not meeting criterion** An organization is assessing a DHI for use in underserved patient communities. Relevant studies investigated high-SES patients only.	Decrease rating by 1-2 levels.	Strongly Preferred
DHI modifications implemented during and after trials are documented.	Group 1. Adaptations recommended for DH.	DHIs are often improved iteratively, through software updates. Current versions may have clinically meaningful differences from trialed Versions. DHSPs should report a) the product version in use at the start of a trial, b) the dates of product updates, and c) the product changes implemented with each update.	✔ **Example meeting criterion** Software versions used during and after a trial are reported in a public website. A summary of each update is provided. ✖ **Example not meeting criterion** Software versioning information is not reported.	Evaluators should be aware of this criterion, though actionability level adjustment may not be needed.	Preferred

Source: https://dimesociety.org/access-resources/evidence-defined/

Examples of Evidence Quality Criteria

Evidence Assessment Criterion	Evidence Criterion Group	Rationale for Inclusion and Notes	Examples	Recommended Actionability Level Change	Importance
Patients who declined to participate are not used as comparators.	Group 2. Increased vigilance recommended for DH.	Patients who enroll in health management programs often differ meaningfully from those who decline to participate. For example, enrollees may have stronger motivation to self-manage chronic conditions. Matching on demographics does not resolve this.	✔ **Example meeting criterion** The rate of acute clinical events for DHI users is 15% lower than that of randomly assigned, waitlisted controls ✖ **Example not meeting criterion** The rate of acute clinical events for DHI users is 15% lower than that of demographics- matched adults who declined to participate.	Decrease rating by 1-2 levels.	Strongly Preferred
It is not assumed that numerous peer-reviewed publications indicate effectiveness or safety	Group 2. Increased vigilance recommended for DH.	Published editorials may be relevant, but are not a substitute for evidence. High numbers of published, low-quality studies should not be confused with high-quality evidence.	✔ **Example meeting criterion** High-quality, peer-reviewed evidence shows a mean A1c reduction of 0.7, relative to no change in controls. ✖ **Example not meeting criterion** A DHSP published editorials but not clinical evidence.	Peer-reviewed editorials should not impact evidence ratings. Low-quality evidence should not justify ALs greater than 2, even if multiple peer-reviewed articles are available	Essential

Source: https://dimesociety.org/access-resources/evidence-defined/

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***Enrollment targets are guidelines and should have statistical justification**

Source: https://dimesociety.org/access-resources/evidence-defined/

Panel discussion

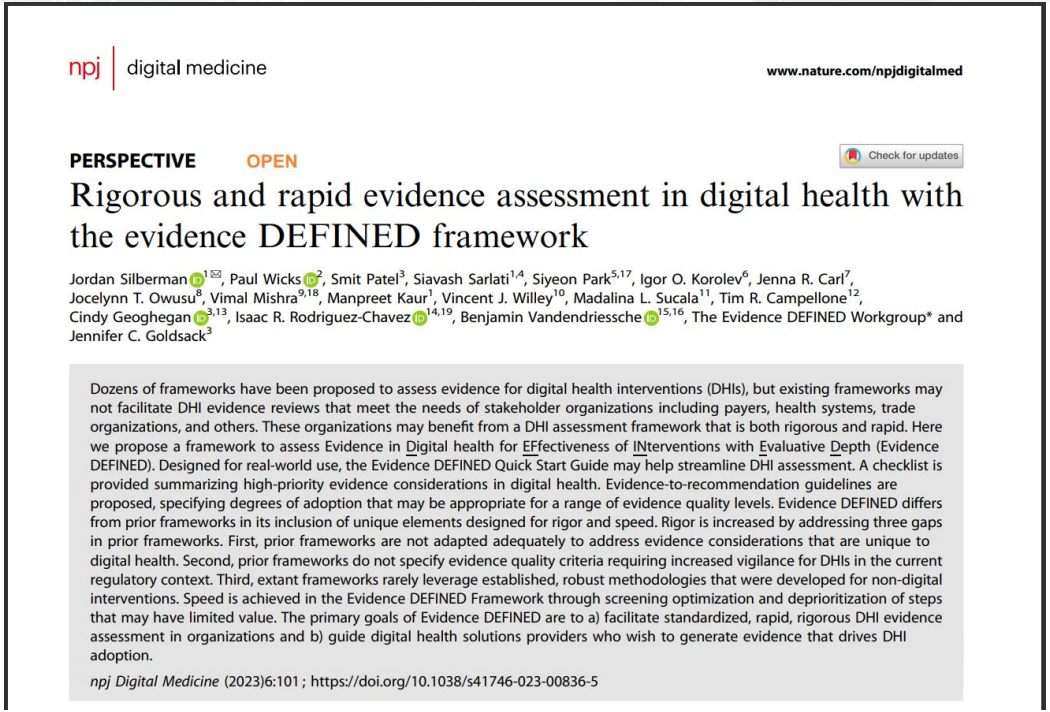
Source: Link here

Evidence DEFINED

Evidence in **D**igital Health for **EF**fectiveness of **IN**terventions with **E**valuative **D**epth (Evidence **DEFINED**)

The new standard of excellence framework for evaluating the clinical assessment of digital health products (DHPs).

1. Check out the Evidence DEFINED framework in **Nature Digital Medicine**
2. Access all resources on **DiMe's new webpage**
3. Let us know your thoughts and how you are using it (DiMe will showcase it via **Resource in action**)



npj | digital medicine

www.nature.com/npjdigitalmed

PERSPECTIVE OPEN

Check for updates

Rigorous and rapid evidence assessment in digital health with the evidence DEFINED framework

Jordan Silberman[1✉], Paul Wicks[2], Smit Patel[3], Siavash Sarlati[1,4], Siyeon Park[5,17], Igor O. Korolev[6], Jenna R. Carl[7], Jocelynn T. Owusu[8], Vimal Mishra[9,18], Manpreet Kaur[1], Vincent J. Willey[10], Madalina L. Sucala[11], Tim R. Campellone[12], Cindy Geoghegan[3,13], Isaac R. Rodriguez-Chavez[14,19], Benjamin Vandendriessche[15,16], The Evidence DEFINED Workgroup* and Jennifer C. Goldsack[3]

Dozens of frameworks have been proposed to assess evidence for digital health interventions (DHIs), but existing frameworks may not facilitate DHI evidence reviews that meet the needs of stakeholder organizations including payers, health systems, trade organizations, and others. These organizations may benefit from a DHI assessment framework that is both rigorous and rapid. Here we propose a framework to assess Evidence in Digital health for EFfectiveness of INterventions with Evaluative Depth (Evidence DEFINED). Designed for real-world use, the Evidence DEFINED Quick Start Guide may help streamline DHI assessment. A checklist is provided summarizing high-priority evidence considerations in digital health. Evidence-to-recommendation guidelines are proposed, specifying degrees of adoption that may be appropriate for a range of evidence quality levels. Evidence DEFINED differs from prior frameworks in its inclusion of unique elements designed for rigor and speed. Rigor is increased by addressing three gaps in prior frameworks. First, prior frameworks are not adapted adequately to address evidence considerations that are unique to digital health. Second, prior frameworks do not specify evidence quality criteria requiring increased vigilance for DHIs in the current regulatory context. Third, extant frameworks rarely leverage established, robust methodologies that were developed for non-digital interventions. Speed is achieved in the Evidence DEFINED Framework through screening optimization and deprioritization of steps that may have limited value. The primary goals of Evidence DEFINED are to a) facilitate standardized, rapid, rigorous DHI evidence assessment in organizations and b) guide digital health solutions providers who wish to generate evidence that drives DHI adoption.

npj Digital Medicine (2023)6:101 ; https://doi.org/10.1038/s41746-023-00836-5

Source: Evidence DEFINED – Digital Medicine Society (DiMe) (dimesociety.org), https://dimesociety.org/resources-in-action/

DIGITAL MEDICINE SOCIETY

Integrated Evidence Plans for Digital Health Products

Join Integrated Evidence Plans and help streamline the **path to regulatory and commercial success to** optimize health outcomes for the greatest number of patients

Share your interest in joining us:
Integrated Evidence Plans for Digital Health Products

Source: https://dimesociety.org/integrated-evidence-plans/?R6wF9AvbqY=F99BC7A994DE240C31EC5B853D5A28C5

DIGITAL MEDICINE SOCIETY

How to build a fit-for-purpose regulatory strategy to advance your business strategy

Tuesday, July 25, 2023 | 12 - 1pm ET

Troy Tazbaz
Director
Digital Health Center of Excellence, FDA

Marisa Cruz
Chief Medical Officer
Empatica

Arrash Yassaee
Global Clinical Director
Huma Therapeutics

Jen Goldsack
CEO
Digital Medicine Society (DiMe)
Moderator

IMPACT

Virtual First Care
V1C Initiative

Navigating Reimbursement for Virtual First Care (V1C)

Wednesday, August 2, 2023 | 12pm-1pm ET

ata™

DIGITAL MEDICINE SOCIETY

Abby Sugg | *Moderator*
Program Lead
Digital Medicine Society (DiMe)

Dr. Zeke Silva
Radiologist & Chair of the American Medical Association Speciality Relative Value Scale Update Committee (RUC)
American Medical Association

Lucia Savage
Chief Privacy and Regulatory Officer
Omada Health

Dr. Ryan Vega
Physician in Residence
Digital Medicine Society (DiMe)

Don Jones
IMPACT Co-founder & Chair of Cardiff Ocean Group
Digital Medicine Society (DiMe)

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