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Digital Health: Evolution and Evidence

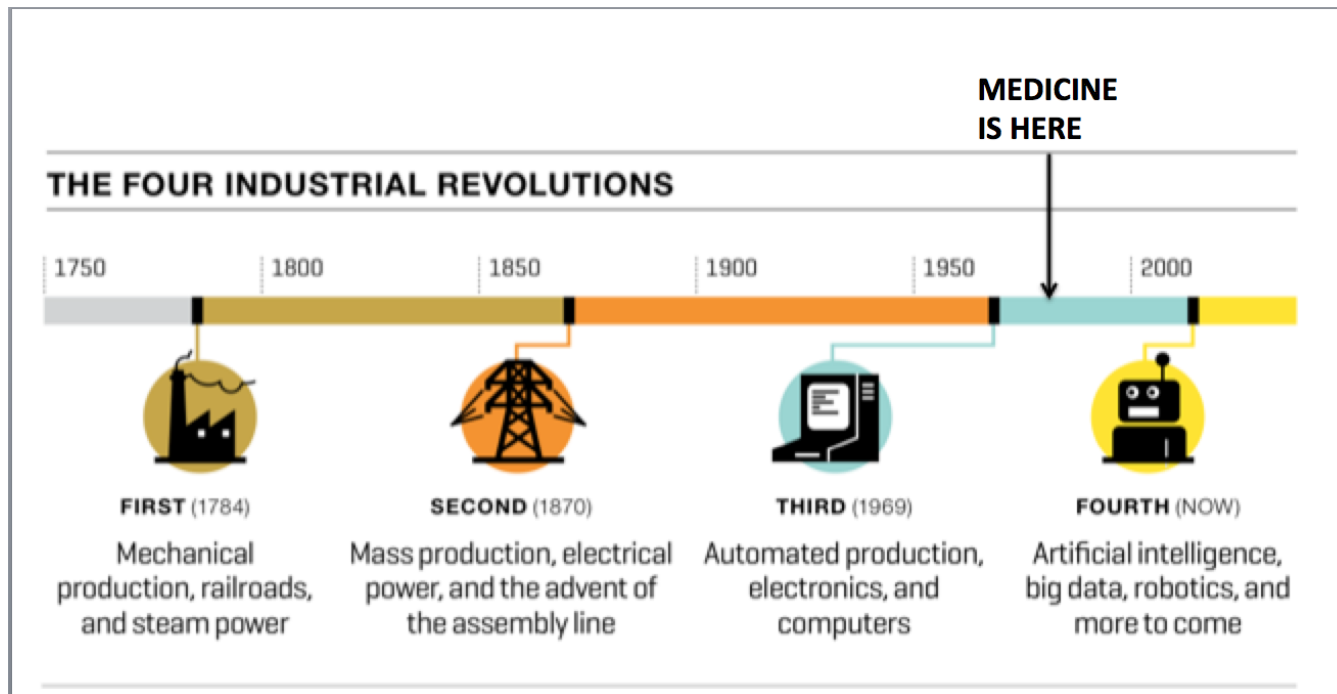


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The digital (r)evolution



Courtesy: Eric Topol

Social Media and SWOG

Our Definition

The SWOG digital engagement committee defines “digital tools” broadly, in an attempt to embrace any tool that involves web-or smartphone-based technologies that allow for two-way interaction.

These tools include:

- Web or smart phone apps
- Online videos
- Social media platforms, pages, and campaigns
- Interactive webpages that allow for comments, surveys, or other forms of information sharing
- Wearable devices, such as symptom trackers or fitness monitors, which allow for the transmission of clinical trial-related data from patient to doctor, or vice versa
- Web-based videoconferencing

The digital engagement committee does not consider standard email blasts or surveys, or simple static, web pages to be digital tools, as they do not promote two-way interaction.

When it
comes to
social media
and digital
therapeutics:



Distinguish between Support
and Intervention



Differentiate aims to improve
wellness versus *health*



Characterize the goals we have
as researchers and as clinicians

Social media: Community or Digital Tool

special article

Organizing Online Health Content: Developing Hashtag Collections for Healthier Internet-Based People and Communities

Matthew S. Katz, MD¹; Patricia F. Anderson, MILS²; Michael A. Thompson, MD, PhD³; Liz Salmi^{4,5}; Janet Freeman-Daily, MS⁶; Audun Utengen, MBA⁷; Don S. Dizon, MD⁸; Charlie Blotner, MSW⁹; David T. Cooke, MD¹⁰; Dee Sparacio, MS¹¹; Alicia C. Staley, MBA, MS¹²; Michael J. Fisch, MD, MPH¹³; Colleen Young¹⁴; and Deanna J. Attai, MD¹⁵

abstract

Twitter use has increased among patients with cancer, advocates, and oncology professionals. Hashtags, a form of metadata, can be used to share content, organize health information, and create virtual communities of interest. Cancer-specific hashtags modeled on a breast cancer community, #bcsm, led to the development of a structured set of hashtags called the cancer tag ontology. In this article, we review how these hashtags have worked with the aim of describing our experience from 2011 to 2017. We discuss useful guidelines for the development and maintenance of health-oriented communities on Twitter, including possible challenges to community sustainability and opportunities for future improvement and research.

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Original Investigation | Health Informatics

Physician Perceptions of the Use of Social Media for Recruitment of Patients in Cancer Clinical Trials

Mina S. Sedrak, MD, MS; Virginia Sun, RN, PhD; Jennifer Liu, BS; Kevin George, BS; Andrew R. Wong, BA; William Dale, MD, PhD; Don S. Dizon, MD

Abstract

IMPORTANCE Social media campaigns have been successfully implemented in nontherapeutic trials. However, evidence to support their utility in cancer therapeutic trials is limited.

OBJECTIVE To examine physician attitudes toward and perceptions of social media use for therapeutic trial recruitment of patients with cancer.

Key Points

Question What are physicians' attitudes toward and perceptions of using social media to recruit participants for cancer clinical trials?

Findings In this qualitative study of 44

Cancer Tag Ontology

- First published: 2016 (JAMA Oncology)

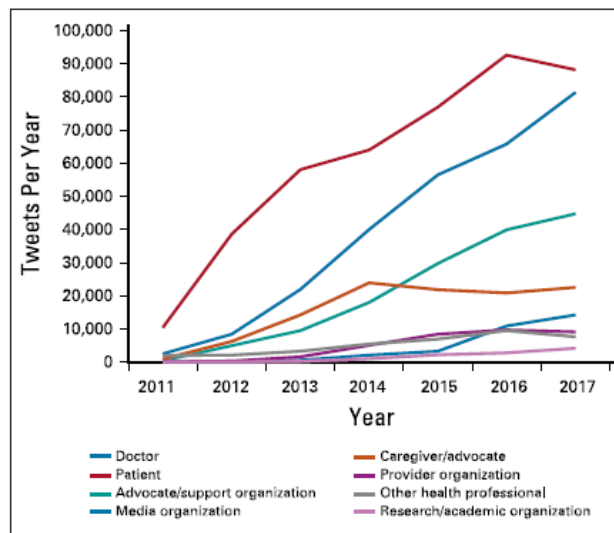
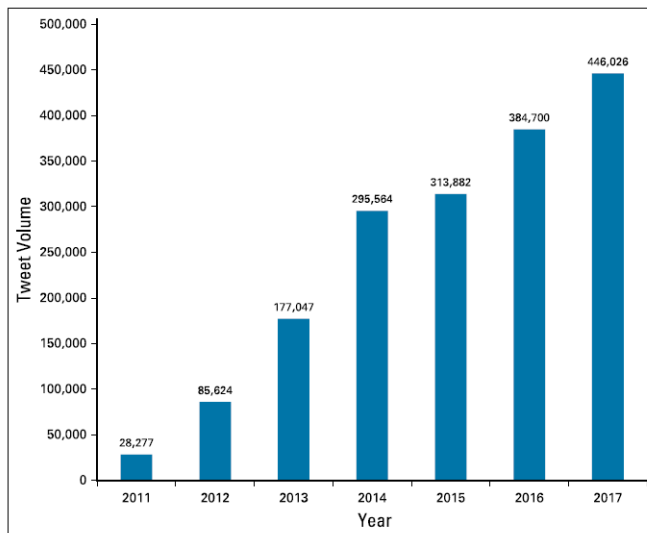


TABLE 1. Hashtags Included in the Cancer Tag Ontology

Hashtag	Disease	Regular Online Chat
#adccsm	Adrenal cancer	
#amsm	Advanced metastatic cancer	
#anccsm	Anal cancer	
#ayacsm	Adolescent and young adult cancer	Yes
#bccsm	Breast cancer	Yes
#blccsm	Bladder cancer	
#btccsm	Brain tumors	Yes
#ccrcsm	Colorectal cancer	
#esocsm	Esophageal cancer	
#gencsm	Genetic/hereditary cancer	
#gynccsm	Gynecologic cancers	Yes
#hnccsm	Head and neck cancers	
#hpbccsm	Hepatobiliary cancer	
#kccsm	Kidney cancer	
#lccsm	Lung cancer	Yes
#leucsm	Leukemia	
#lymccsm	Lymphoma	
#melccsm	Melanoma	
#mmccsm	Multiple myeloma	Yes
#mpncsm	Myeloproliferative neoplasms	
#panccsm	Pancreatic cancer	Yes
#pedccsm	Pediatric cancer	
#pcsm	Prostate cancer	
#scsm	Sarcomas	
#skccsm	Skin cancers (nonmelanoma)	
#stccsm	Stomach cancer	
#thmccsm	Thymoma and thymic cancer	
#thyccsm	Thyroid cancer	

Social media: Community or Digital Tool

special article

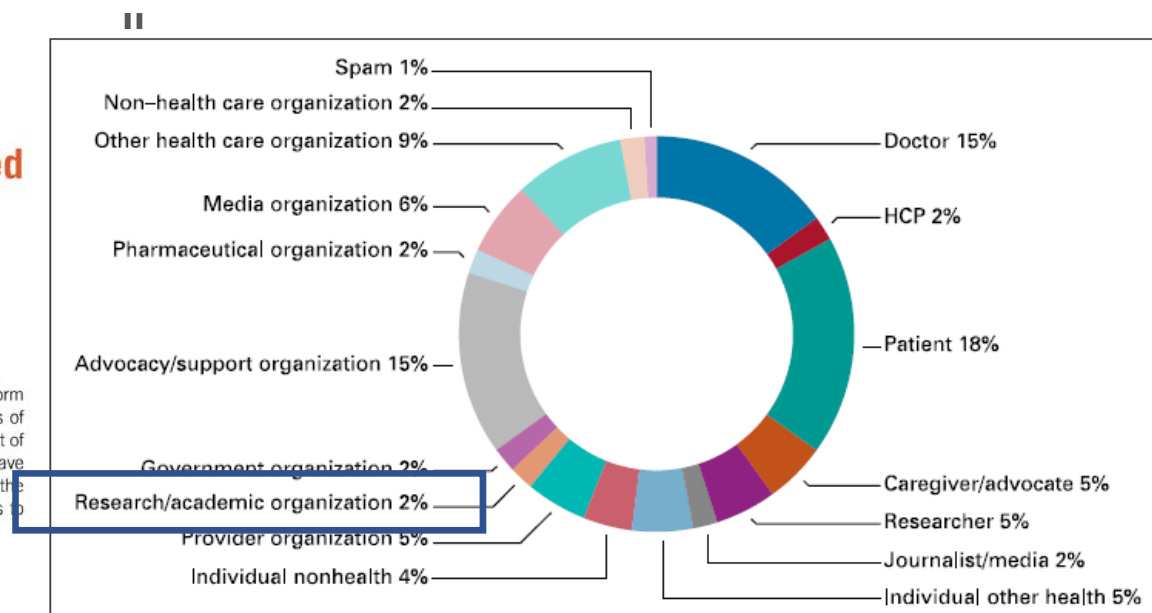
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Twitter as a Digital Tool

- Sedrak: Semistructured interviews (n=44)

- Private Practice: 45%
- City of Hope: 55%
- 68% >10y of practice
- Women comprised 36% of volunteers

Domain	Themes	Representative Quotes
Advantages, Disadvantages, and Strategies for Using Social Media in Clinical Trial Recruitment		
Advantages	Visibility and awareness	"Many people are online.... It's a good way to get access to multiple people out there and... get the message out there."
	Improved communication	"It could be a very promising vehicle, if patients start to know that [social media] can [be a source of] reliable information... about cancer research."
	Patient engagement	"The more engaged [patients] are, the more empowered they feel.... [Social media] improves decision making..., patient care..., [and] satisfaction."
Disadvantages	Increased administrative burden	"I don't have time for it. I have other things that are more important."
	Risk of misinformation	"A little bit of misinformation can go a long way.... Controlling the quality of conversation and information... [is] challenging."
	Lack of guidance	"We need legislation, good guidance, a good practice guideline to make sure we don't make a mistake."
	Limited outreach	"You're missing a lot of people who aren't on social media."
Strategies	Institutional support	"I would be very interested if it was through a site not linked directly to me—if it's through our cancer [center]..., if somebody else is doing it."
	Evidence	"I do want to see evidence of [social media's] value [in trial recruitment]."
	Training	"A teaching module: learn this, learn how to use this, do it this way.... I would be open to education."

Facilitators and Barriers for Professional Social Media Use		
Facilitators	Networking	"[Social media can] be a very helpful vehicle for talking with other people in their area and disseminating... research findings"
	Education	"I found [social media] to be a very good way to get information... about new thoughts or ideas or discussion from colleagues."
	Promotion	"To highlight my own research... to bolster interest and enthusiasm."
Barriers	Familiarity, time	"I'm not as adept at it... so it would take... training... and time."
	Uncertainty	"From a professional standpoint, I haven't seen evidence of benefit."
	Preference	"I would rather have [patients] hear [my advice] from me directly [in person or via telephone] than hearing it on social media."
	Blurred boundaries	"I don't want patients directly contacting me through social media.... There needs to be some fine line, and that gets crossed."

Second Coming of the Gutenberg Press: Digital Dissemination of Information to Patients and Physicians

Mark A. Lewis, MD

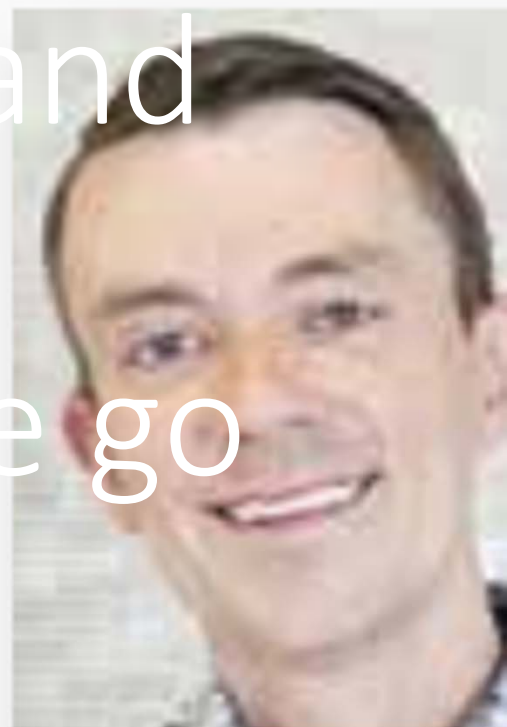
**Director of Gastrointestinal Oncology
Mountain Healthcare**

Member, Adolescent and Young Adult Committee

Member, Digital Engagement Committee

Member, G Cancer Research Network

Connection and
Knowledge:
Where do we go





What are Digital Therapeutics

Digital therapeutics (DTx) deliver evidence-based therapeutic interventions to patients that are driven by high quality software programs to prevent, manage, or treat a medical disorder or disease. They are used independently or in concert with medications, devices, or other therapies to optimize patient care and health outcomes.

DTx products incorporate advanced technology and best practices relating to design, clinical validation, usability, and data security. They are validated by regulatory bodies as required to support product claims regarding risk, efficacy, and intended use.

Digital therapeutics empower patients, healthcare providers, and payers with intelligent and accurate tools for addressing a wide range of conditions through high quality, safe, and effective interventions.

Digital therapeutics defined...

Interventions

Aims:

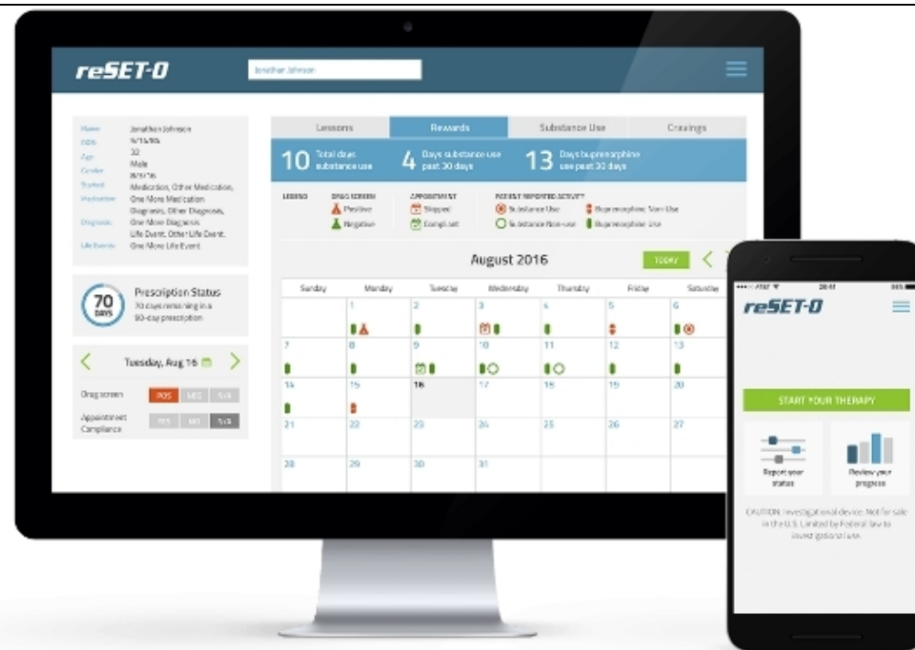
- Prevent
- Manage
- Treat

Advanced technology coupled with rigorous evidence-seeking evaluation:

- Clinical validation
- *Peer-reviewed research*
- Usability
- Data security

FDA Approvals are here:

reSET-O: Prescription cognitive behavioral therapy for patients with Opioid Use Disorder (OUD)



reSET-O: Where's the data

Open-label multi-site, unblinded,
controlled 12-week clinical trial:

- Volunteers in an OUD outpatient program
- Intervention: Buprenorphine + Behavioral therapy program + reSET-O (clinic desktop version)
- Control: Buprenorphine + Behavioral therapy program
- Outcomes:
 - Significant increase in program retention at 12 weeks (82 versus 68%)
 - No reduction in illicit drug use
 - No improvement in abstinence rates
 - No adverse events



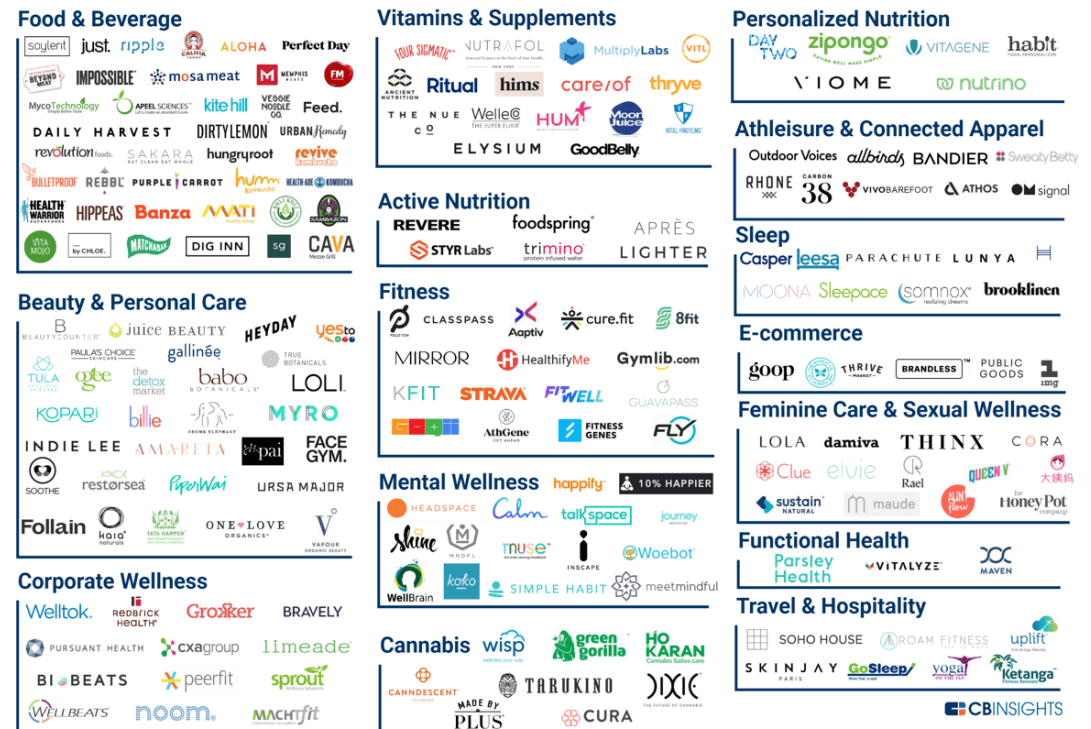
Proteus Digital Management Program

- Proteus: Wireless skin patch + Ingestible Event Marker (IEM)
- 1st FDA approval with Aripiprazole (AbilifyMyCite)
- **SWOG 1916 (PI, Sherry Shen)**

The Wellness Industry

All activities promoting physical and mental wellbeing:

- Yoga and Meditation
- Personal care and beauty
- Nutrition and weight-loss
- Spa retreats, Workplace wellness
- Wellness tourism



4.2 million dollar industry

Intersection or Parallel?

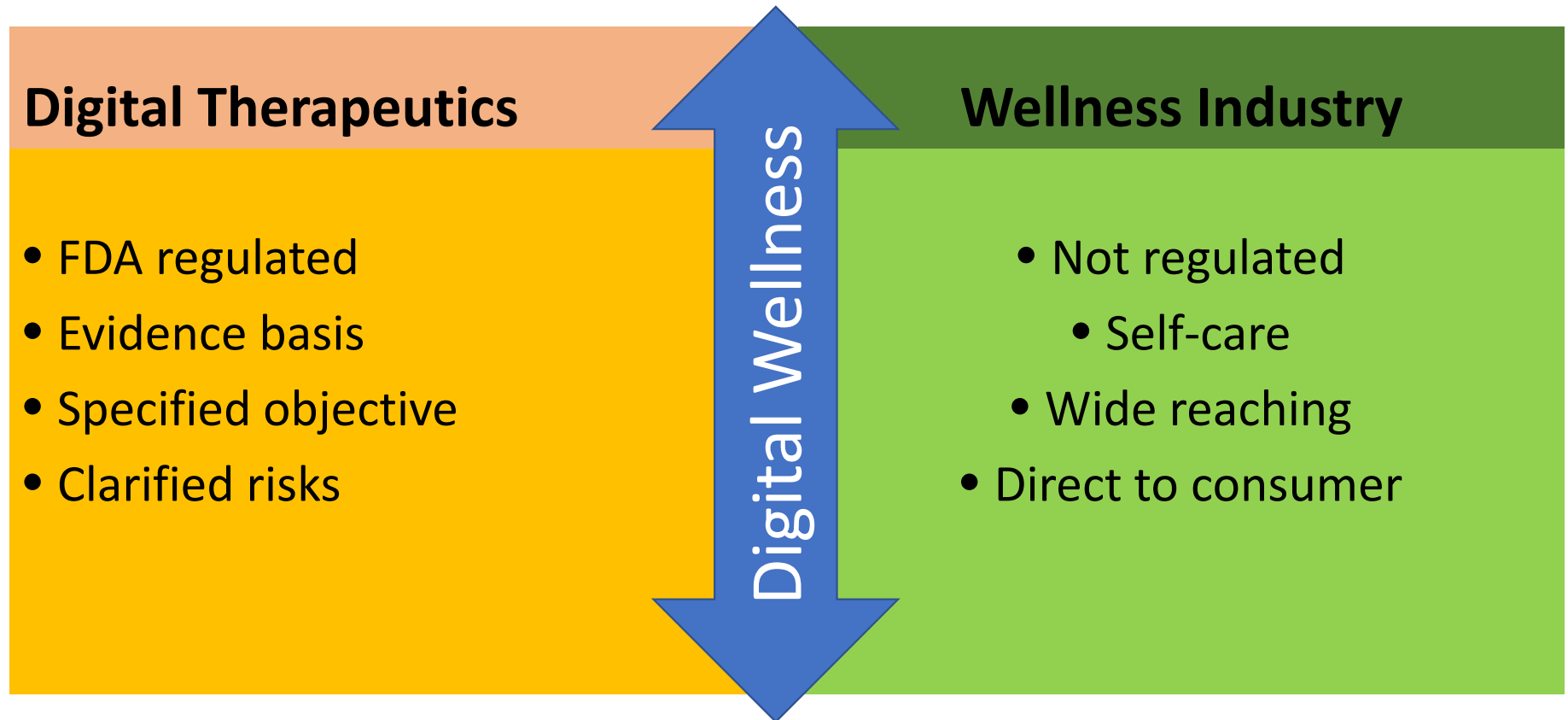
Digital Therapeutics

- FDA regulated
- Evidence basis
- Specified objective
- Clarified risks

Wellness Industry

- Not regulated
- Self-care
- Wide reaching
- Direct to consumer

Intersection or Parallel?



Digital wellness: Is there a role for data?

Pro (Investigator):

- Define benefits more clearly
- Delineate risks
- Back up claims

Cons (Industry)

- Not part of traditional business model
- Public not asking for it
- Requires market segmentation
- Requires capital

Exploration of Step Counts

37 ongoing studies with
FitBit in clinicaltrials.gov

As a measure of:

- Performance status
- Functional recovery
- Quality of life
- Coping

Moving ahead

- What can wellness data tell us that we do not already know → **Digital biomarkers**

Measurement	Novel	Sleep score predicts depression	Sleep score predicts Recurrence Risk
	Known	Oncotype DX predicts Recurrence Risk	Oncotype DX predicts depression
		Known	Novel
		Insight	

Moving ahead

- What can wellness data tell us that we do not already know → **Digital biomarkers**
- Can digital health **improve** endpoints that matter to patients?

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- What can wellness data tell us that we do not already know → **Digital biomarkers**
- Can digital health **improve** endpoints that matter to patients?
 - **Why do people engage with wellness products?**
 - **What wellness products do patients treated for cancer engage in?**

Moving ahead

- What can wellness data tell us that we do not already know → **Digital biomarkers**
- Can digital health **improve** endpoints that matter to patients?
- What is the role of the cooperative groups in **partnering** with **both** digital therapeutics developers and innovators in the wellness industry?

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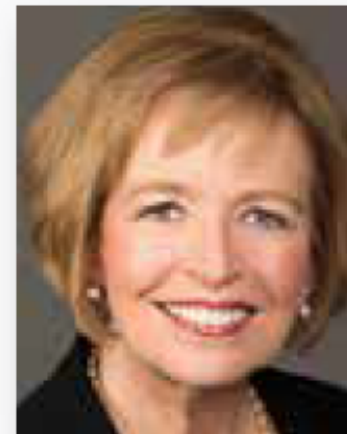


Welcome to SWOG!

Digital Transformation of Trials and Treatments:
It's Not (All) About the Technology

Bonnie J. Spring, PhD

Director, Institute for Public Health and Medicine
Chief of Behavioral Medicine,
Department of Preventive Medicine
Professor of Preventive Medicine,
Psychiatry and Behavioral Sciences
Northwestern University Feinberg School of Medicine

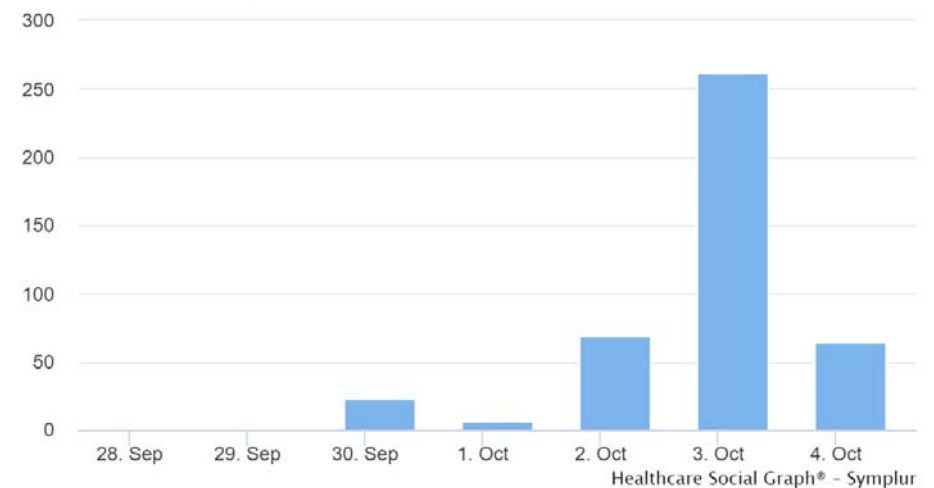


#SWOGonc is a hashtag

The influencers of #SWOGonc

	SWOG Cancer Research Network @SWOG	100
	Cristiane D Bergerot @crisbergerot	86
	Mark Lewis @marklewismd	86
	Krishna Soujanya Gunturu MD @kgunturuMD	79
	Michael Fisch MD MPH @fischmd	74
	Don S. Dizon MD @drdonsdizon	72
	The Hope Foundation for Cancer Research @SupportingSWOG	69
	Anne Marie Mercurio (formerly Ciccarella) @chemobrainfog	61
	Sumanta Pal @montypal	60
	Jun J. Mao @JunMaoMD	59

Tweet Activity of #SWOGonc



Announcements

The Hope Foundation has approved funding to help bring **tech and digital partners** to SWOG to explore collaborations.

For your reading pleasure:
A new column at The Oncologist:

Ann



Welcome to Discussions with Don S. Dizon

Don S. Dizon is the Director of Women's Cancers at Lifespan Cancer Institute, Founder of The Oncology Sexual Health First Responders Clinic at Lifespan Cancer Institute, and Director of Medical Oncology at Rhode Island Hospital. Dr. Dizon is a Professor of Medicine at the Warren Alpert Medical School of Brown University.

For Physicians, Is There Ever a Thing About Being *Too Social*?

Thursday, October 3, 2019

A Discussion with Dr. Charles Blanke

g
WOG

Brown University page: <https://vivo.brown.edu/display/dsdizon>

ASCO Connection <http://bit.ly/DizonACblog>

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 <https://www.facebook.com/people/Don-S-Dizon/100012638015136>

 https://www.doximity.com/pub/don-dizon-md?show_more=true

Thank you

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