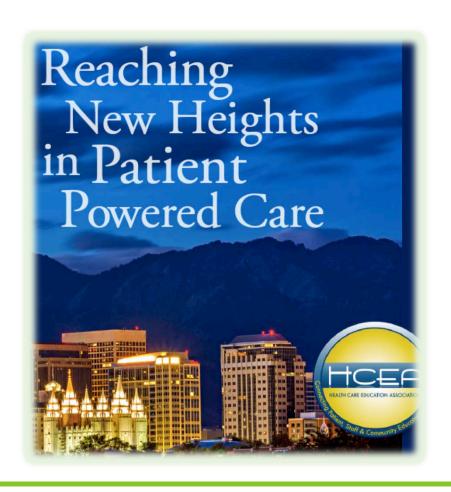
Following the Path of the Patient



Evaluating Technology-Enabled Patient Education

Susan C. Hull MSN, RN-BC, NEA-BC September 7, 2017

PART 1 slides

Objectives

- 1. Describe advances in e-health interactive technology/tools making the vision for connected health and connected care a reality.
- 2. Explore models of coproduction to bring the voice of patients and patient communities to the patient education table.
- 3. Identify five lenses for evaluating m-health patient education apps.
- 4. Share best practices in your settings to deepen partnership with others -- including patients, communities & HIT partners.
- 5. Anticipate future trends to guide capacity building in NEAC community.

Objective 1

Describe advances in e-health interactive technology/tools making the vision for connected health and connected care a reality.

From EHRs To Connected Health Ecosystems





80% Americans who have access to their health information in electronic health records use it3

internet have tracked

the following:6



weight

E-health tools and mobile devices can help you better manage your personal health and wellness.





indicators



routines



People who are more engaged in their health actually get better health care⁷





Where We Are Headed

Emerging technologies offer new ways for you and your doctor to monitor and manage chronic illnesses. You will be able to:



- Send vital health data from your home to physicians' offices
- Have virtual visits and receive health coaching from providers based on clinical data transmitted













THE VALUE OF CONSUMER ACCESS & USE OF ONLINE HEALTH RECORDS

Giving individuals easy and secure access to their health information increases patient engagement and advances person-centered health.



INDIVIDUALS NEED ACCESS TO THEIR FULL HEALTH RECORDS
TO ADDRESS INFORMATION GAPS

1 IN 3 INDIVIDUALS

who have seen a health care provider in the last year experienced at least one of the following gaps in information exchange.1



Had to bring an X-ray, MRI, or other type of test result with them to the appointment.



Had to wait for test results longer than they thought reasonable.



Had to redo a test or procedure because the earlier test results were not available



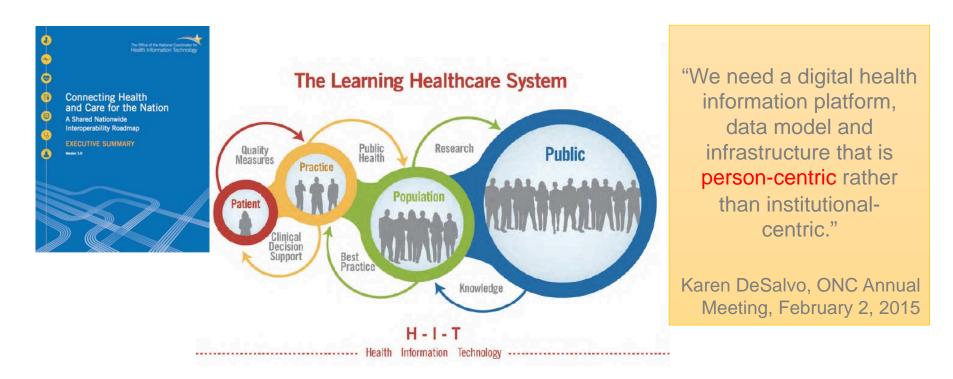
Had to provide their medical history again because their chart could not be found.



Had to tell a health care provider about their medical history because they had not gotten their records from another health care provider.

INDIVIDUALS CAN SERVE AS THE HUB OF INFORMATION EXCHANGE

Co-Creating Value with Patients, Carers and Communities



Shifting the culture, place and cost of care

Policy Advocacy: Person at the Center



onc BONC_HealthIT-14h
NEW ONLINE TOOL: Expanded #HealthIT
Playbook features tools, resources, best
practices to help healthcare providers.
healthit.gov/playbook





Author: Accenture Federal Services

Posted: January 10, 2017

Available at: https://www.healthit.gov/sites/default/files/Draft White Paper PGHD Policy Framework.pdf

Voices of Patients Gaining Strength

"Patients share responsibility for their own health care."

AMA Code of Medical Ethics





"Patients can help. We can be a second set of eyes on our medical record."

Dave DeBronkart (ePatient Dave





Consumers Harnessing Power of Open Data

TECHNOLOGY

The Healing Power of Your Own Medical Records

By STEVE LOHR MARCH 31, 2015



Steven Keating, a doctoral student at M.I.T.'s Media Lab, collected and researched his own patient data, which led to the discovery of a brain tumor. He is shown in front of an image of radiation backscatter from his brain during therapy. Erik Jacobs for The New York Times

https://www.youtube.com/watch?v=-L-WFukOARU



Mr. Keating with a 3-D-printed copy of his brain tumor. Erik Jacobs for The New York Times

fighting cancer through curiosity In August, 2014, I was diagnosed with a baseball-sized IDH1 tumor (astrocytoma), I was asymptomatic until then and given three weeks before a 10-hour awake brain surgery But the story dates back much further to 2007 when I was merely curious about viewing my own brain in a voluntary academic scan and had accidental findings. Science and curiosity have saved my life. I am writing this with a hole in my brain, roughly 12 trillion synapses! I want to enable other patients to collect. understand, and share their data. I am a strong privacy proponent - I believ patients should have the choice and control of their own data. For more infomation, to the right is a 10-minute recent talk I presented at the MIT Koch Institute (YouTube link click here to download my brain tumor and more!

> health data

future

health

"Click here to download my brain tumor"

"I want to open source my health data"

http://stevenkeating.info/main.html



Nightscout (CGM in the Cloud) is an open source, DIY project that allows real time access to a CGM data via personal website, smartwatch viewers, or apps and widgets available for smartphones.

How Do You Get Your CGM in the Cloud?

| Control | Contr



Dana Lewis and her husband Scott Leibrand invented the <u>Do It Yourself Artificial Pancreas System</u> (#DIYPS)

She then took it a step further, founding the #OpenAPS movement to make safe and effective basic Artificial Pancreas System technology more widely available (and sooner).



The Quantified Self community

Quantified Self is a collaboration of users and tool makers who share an interest in self knowledge through self-tracking.

We exchange information about our personal projects, the tools we use, tips we've gleaned, lessons we've learned. We blog, meet face to face, and collaborate online. There are three main "branches" to our work.

The Quantified Self blog and community site.

Show and Tell meetings (Meetup groups) - Melbourne

Quantified Self Conferences (US and Europe)

Groups 243, Members 72K, Cities 126, Countries 39

Developing Trust for eHealth Data



- A consumer-lead national campaign to help patients request their electronic health data and report on experiences in the real world
- Advocates for changes that enable consumer health data download and use become the norm
- Coordinated by the National Partnership for Women and Families
- in collaboration with health, consumer, technology groups and individual advocates and experts
- First year funded by Robert Wood Johnson Foundation and individual donors
- July 4, 2015 "Data Independence Day"











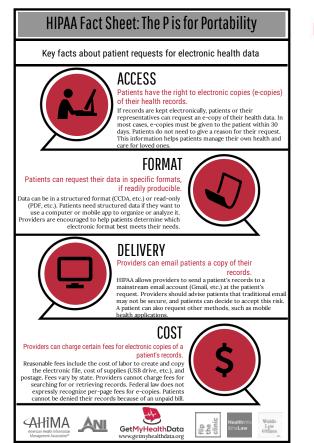








Resources and Toolkits



Resources

- GetMyHealthData Results and Lessons
- Right to Access Memo
- Learn More About Blue Button
- Direct Basics: Q&A for Providers
- Blue Button FAQs ^{©®}
- Learn More About Vocatus 📟
- · Permission to Email Records
- Personal Representatives
- Disclosures to Friends and Family
- · Communicating with Friends and Family
- Your Health Information Privacy Rights
- HIPAA Infographic
- · Health Info & the Law
- Provider Resources

Tracer Feedback Makes a Difference

- Sharing Tracer experiences with high-level policymakers resulted in better public policies and more informed national dialogue about patient data access
 - o HHS Office of the National Coordinator for Health IT
 - HHS Office for Civil Rights
 - U.S. Senate and House of Representatives
 - White House Office of Science and Technology Policy

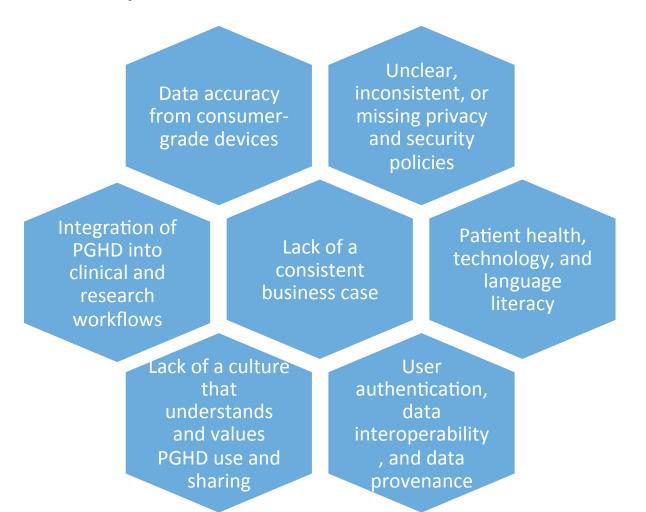








Adoption of PGHD For Research and Care



A complex web of technical and cultural challenges may impede successful capture, use, and sharing of PGHD in and across research and care delivery settings

ONC Consumer Health Data Aggregator Challenge Winners

Enable consumers to easily and electronically access and securely integrate their health data from different health care providers using a variety of different health IT systems

- First Place: Patient Link Enterprises, MyLinks (\$50K)
 - Cloud-based application using FHIR® and Direct messaging
 - Interactive platform that allows patients to download their medical records from all their health providers, transmit their records, plus link to researchers, pharmacists, care-givers, family and friends
- Second Place: Green Circle Health (\$25K)
 - Application uses FHIR® to import patient data into a platform
 - Integrating a comprehensive family health dashboard that includes personal and medical device data, remote monitoring, and reminders.
- Honorable Mention: 1upHealth











January 12, 2017











Users
Don't just see averages,
learn from patients who
have similar conditions
and treatments as you



Get help deciding 1upHealth calculates quality of life after medical decisions to help choose those with

Green Circle Health Family Health Dashboard



- Green Circle Health winner of ONC Phase 2 Consumer Health Data Aggregator Challenge
- Uses FHIR & APIs to import patient data into platform
- Family health dashboard: personal data, medical device data, remote monitoring, reminders
- Note use of "Dr. Mom will manage it now" recognizing role of family Chief Health Officer

Social Determinants of Health (SDOH)



Individual Factors Psychological Sociodemographic Health literacy Sexual orientation · Race/ethnicity Stress

- · Country of origin/U.S. born
 - Negative mood and affect: Depression and anxiety Psychological assets:
 - Conscientiousness, patient engagement/activation, optimism, and self efficacy

Behavioral

- · Dietary patterns
- · Physical activity
- Nicotine use and exposure
- Alcohol use



Individual-Level Social Relationships and **Living Conditions**

- · Social connections and social isolation
- Exposure to violence

or non-U.S. born

· Financial resource strain:

Food and housing insecurity

Education

Employment

Neighborhoods/Communities

 Geocodable domains: Socioeconomic and race/ethnic characteristics

About the Vital Directions for Health and Health Care Series



This publication is part of the National Academy of Medicine's Vital Directions for Health and Health Care Initiative, which called on more than 100 leading researchers, scientists, and policy makers from across the United States to assess and provide expert guidance on 19 priority focus areas for U.S. health policy. The views presented in this publication and others in the series are those of the authors and do not represent formal consensus positions of the NAM, the National Academies of Sciences, Engineering, and Medicine, or the authors' organizations. Learn more: nam.edu/VitalDirections.



Addressing Social Determinants of Health and Health Disparities: A Vital Direction for Health and Health Care

By Nancy E. Adler, David M. Cutler, Jonathan E. Fielding, Sandro Galea, M. Maria Glymour, Howard K. Koh, and David Satcher

September 19, 2016

To learn more visit iom.edu.ehrdomains2

Community Rx

Dr. Stacy Lindau's project, a University of Chicago grant funded 2012 CMMI Award





A Care Continuum Solution

NowPow is a cloud-based, mobile-enabled platform that can communicate seamlessly with Electronic Health Records (EHRs), care and case management systems, and CRMs. In addition to providing datadriven patient referrals, NowPow also tracks patient engagement and activation.



Personalizing Preference Sensitive Patient Education



- Can mobile technologies help?
- Personalization and mass customization
- Preferences, needs and values
 - Learning styles
 - Sharing preferences
 - Carer circle identification
 - Storage and devices
 - Privacy and security

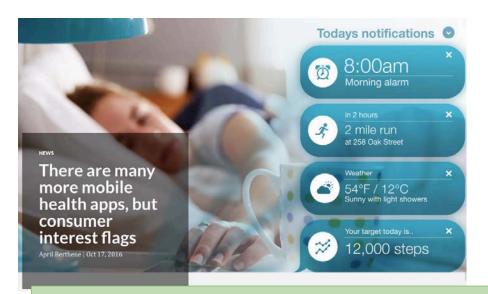
mHealth Apps Non-Adherence to Medication Treatment

A recent IMS Institute for Healthcare Informatics report on Patient Apps for Improved Healthcare (Aiken & Gauntlett, 2013) demonstrates that the following six disease areas account for \$105 billion dollars annually in avoidable cost from non-adherence to medication treatment:

- Hypercholesterolemia, \$44B
- Diabetes, \$24.6B
- Hypertension, \$18.6B
- Osteoporosis, \$15.5B
- HIV, \$1.8B
- Congestive heart failure, \$1B

50K apps reported 2013; 259K today IMS concludes that of the nearly 2,000 mHealth (apps) related to specific therapy areas, those dedicated to chronic conditions dominate.

However, according to the IMS study, the focus of these apps is not related to leading causes of mortality or non-adherence.



- 53% say their health apps generated fewer than 5,000 downloads
- 23% say their app generated between 5,000 and 50,000 downloads
- only 24% of health apps registered more than 50,000 downloads
- 56% developing apps aimed at chronically ill consumers
- 33% are aimed at consumers interested in health and fitness

100,000 new mobile health apps developed in 2016

57% increase over 2015.

259,000 health apps globally available to consumers

Study by Research to Guidance, health research group

58% of healthcare publisher use an application program interface (API)

- Apples HealthKit is the most popular API
- With the users permission, this API lets other parties feed information to Apples health app, which comes preloaded on iPhones.
- The Health apps allows consumers to look at their data from multiple health apps in one place.

Objective 2

Explore models of coproduction and design thinking to bring the voice of patients and patient communities to the patient education table.

Coproduction

Downloaded from http://qualitysafety.bmj.com/ on October 6, 2016 - Published by group.bmj.com

BMJ Quality & Safety Online First, published on 16 September 2015 as 10.1136/bmigs-2015-004315

ORIGINAL RESEARCH



Coproduction of healthcare service

Maren Batalden,¹ Paul Batalden,² Peter Margolis,³ Michael Seid,³ Gail Armstrong,⁴ Lisa Opipari-Arrigan,³ Hans Hartung⁵

- National Health Service (NHS) campaign, Co-Creating Health Initiative promoted selfmanagement
- Clinic's experience with shared medical appointments
- Co-creating health in facilitated learning network of patients with chronic disease



Sarah Myers @myers3411 · Sep 30

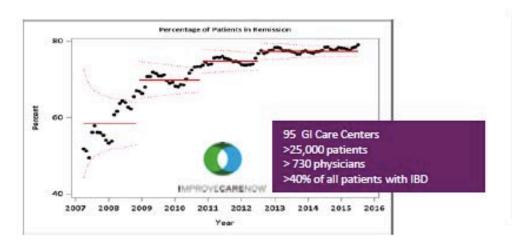
Bursting with pride for our community today. We have a large extended "family" & many wise muses who should be very proud of their role too.

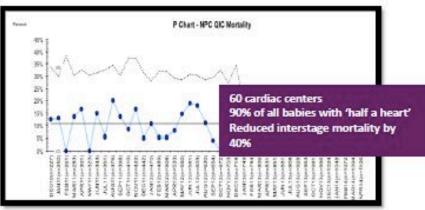


Drucker Institute @DruckerInst

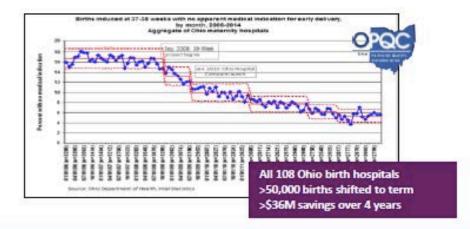
ANNOUNCING: The 2016 WINNER of #TheDruckerPrize is @ImproveCareNow. Our heartiest congratulations! bit.ly/2dwVdXv

The network model delivers results



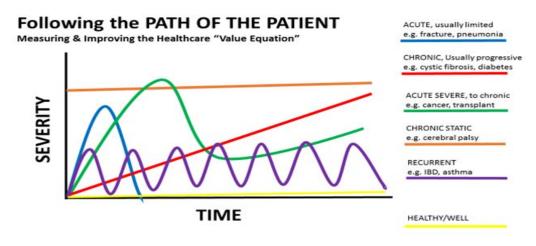






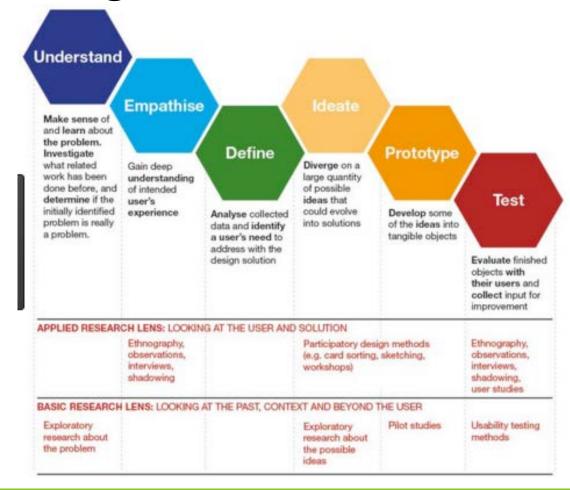


Coproducing Health 4XAim Challenges



- 1. Diversity among patients
- 2. Power and responsibility
- 3. Letting the pendulum swing too far
- 4. Contextualizing standardization
- 5. A resistant healthcare culture

Design Thinking

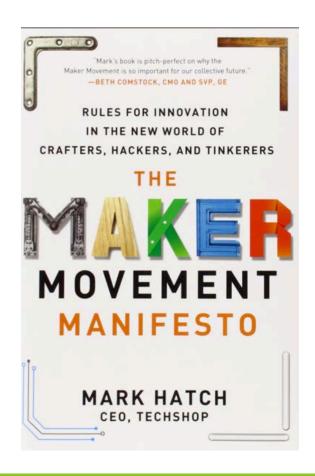


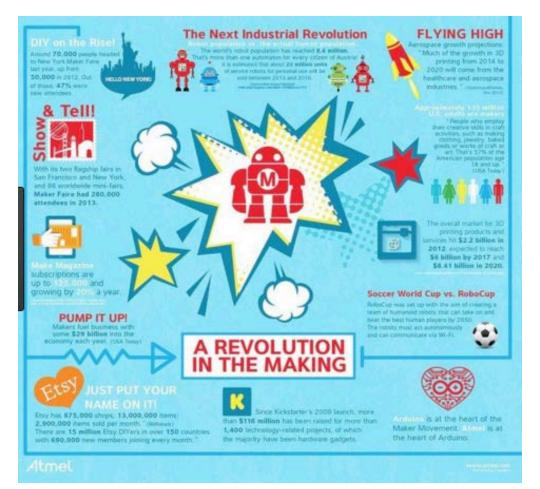
Phoenix Children's Journey Board

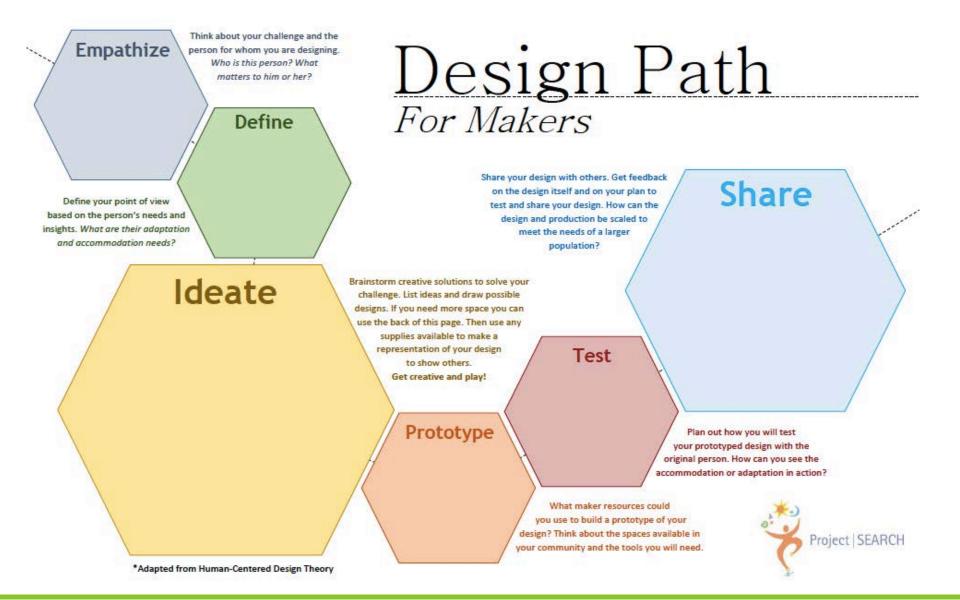


http://www.phoenixchildrens.org/patients-visitors/during-your-stay/journey-board

Maker Movement







Objective 3

Identify five lenses for evaluating m-health patient education apps.

Technology-enabled Patient Education Evaluation

Five Lenses

- 1. Traditional m-Health evaluation
- 2. Co-Production
- 3. Health Literacy
- 4. Interoperability and Usability
- 5. Connected Care Connected Health

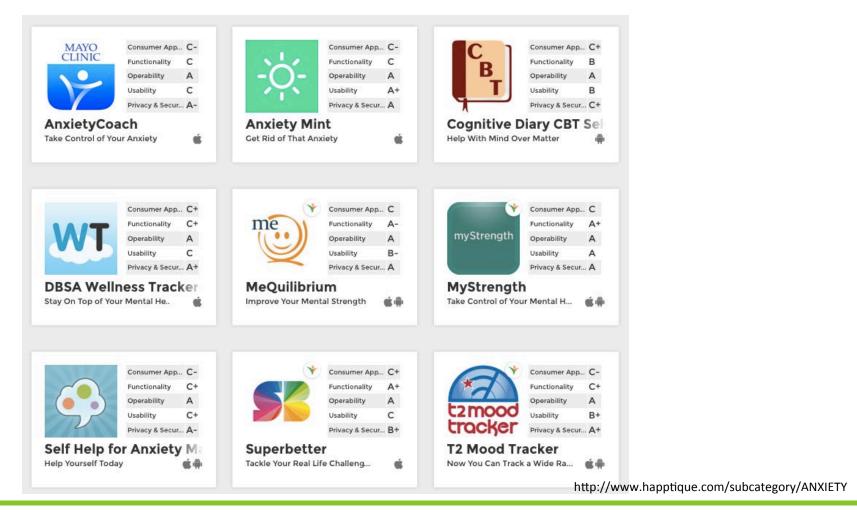
Others you have experience with?

Lens 1: Traditional mHealth Evaluation

Happtique is an intelligence driven curated app boutique that makes it easy for you to discover, download, and manage your apps for a balanced lifestyle. Happtique provides professional reviews and



Happtique – Curated Apps, Anxiety



App Evaluation – ACUT Scores, A, B, C

DIMENSIONS THAT MAKE THE CUT:

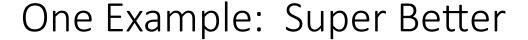
- **Operability** Ensures that the app downloads, installs, and runs appropriately and consistently, and connects with any and all peripheral devices, networks, and third party applications without error or failure.
- **Privacy & Security** Investigates over 124 app behaviors across five key areas of mobile app privacy and security: (a) Accesses hardware functions (i.e. Bluetooth, camera, etc.), (b) Accesses external storage or cloud servers, (c) Sends data to social networks, Accesses data functions from device (i.e. Address book, SMS messages, Calendar, Location, etc.), (d) Data Encryption/Sensitive Data (i.e. PII, sensitive data), (e) Uses Adware.

DIMENSIONS THAT MAKE THE GRADE:

- **Consumer Appeal** Examines the current user/consumer ratings based on experience with the app. We also examine and report any feedback regarding the app's appeal from other sources including professionals such as health coaches and physicians.
- **Functionality** Identifies and evaluates the basic functions of the app relative to its intended purpose including general design, onboarding, and relevance for a user in achieving app related goals.
- **Usability** Evaluates the user's overall interactive burden with the app, including the ease of use, how quickly the user can master the primary features of the app, as well as how well they can overcome errors.

The ACUT scores are represented by letters A, B, and C

- Dimensions with an A grade (A+, A, or A-) are considered "excellent" and rank in the top segment of our App scores;
- Dimensions represented by a B grade (B+, B, and B-) are considered "good" and rank in the upper-middle segment of our App scores;
- Dimensions that have scored a C grade (C+, C, or C-) are considered "fair" and rank in the lower-middle segment of our App scores;







Superbetter

SuperBetter, LLC Tackle Your Real Life Challenges

Categories:

CONDITION / Anxiety
CONDITION / Depression
LIFESTYLE / Energy & Productivity
LIFESTYLE / Happiness & Humor

App Overview

We believe SuperBetter can help you reach your goals and overcome your challenges, no matter what they might be, in a fun and gamified experience. Embark on daily quests that will put you one step closer to reaching your goals, and battle the bad guys along the way. Earn badges as you complete your daily tasks and level up. You can invite friends and families to be your allies to help you along your journey.

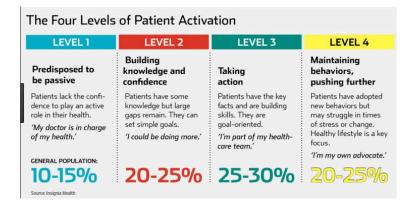
Privacy and Security, for example

Based on our APS scanning of the SuperBetter app for iOS:

- We observed several app behaviors of which the user should be aware.
- SuperBetter accesses several hardware and data functions on the device, such as the UDID, which can reveal personal information about the user.
- The app also connects to social media networks, which can allow it to pull personal data from your online profiles such as post information, phone numbers, or email addresses.
- It also sends data unencrypted, which can expose it to an attacker while the data is in transit.
- On a positive note, the app uses security frameworks in the design and coding of the app, which may help prevent common attacks and risks to the user's personal information.

Lens 2: CoProduction

- PAM Patient Activation Measure (10 item Scale)
- Self Efficacy –
 For Managing Chronic
 Disease (6 item Scale)
- CollaboRATE (3 item Scale)
- PCM 10Q
 Talking Mats
 (10 item scale)





Self-Efficacy for Managing Chronic Disease 6-Item Scale

We would like to know how confident you are in doing certain activities. For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

t.	How confident are you that you can lose the fatigue caused by your disease from interfering with the things you want to do?	not at all confident	1	1 2	- 77	14	1 5	1 1	17	8	1 9	10	totally confider
2.	How confident are you that you can keep the physical discombin or pain of your disease from interfering with the things you want to do?	not at all confident	Ī	į	1	-4	1	d	ļ	å	d	10	totally confiden
3.	How confident are you that you can keep the amotional distress caused by your disease from interfering with the things you want to do?	motal at confident	Ţ	1 2	1 3	1	T	a	7	a	1 9	10	totally confiden
4.	How confident are you that you can lead, any other symptoms or health problems you have from interfering with the things you want to do?	not at all confident	-	1	1	-4	1 5	B	1	B	d	10	totally confiden
5.	How confident are you that you can do the different tasks and activities needed to manage your health condition so as to neduce you need to see a doctor?	not at all confident	i	1 2	1 3	4	5	8	1	i	1 9	to	totally confiden
ä.	How confident are you that you can do things other than just taking medication to reduce how much you	not at all	Ţ	1	ļ	Ţ	Ţ	1	1	Ţ	1	1	totally

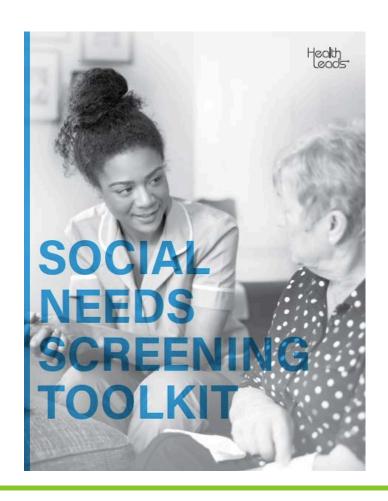
Scori

liness affects your everyday life?

The score for each farm is the number chiefed if the consecutive numbers are chiefed, code the lower number (less said-affects). When numbers are not consecutive, do not score the farm. The score for the active is the mean of the six farms. If many than belo items are missing, do not score the scale. Higher number indicate higher set #efficiesy.

PCM 10Q		Talking _{Mats}	SCOTLAND
	Please tick, circle o	r mark the scale.	
	How was the th	herapist at	
**	1 making you fe (being friendly and warm to poor fair		does not apply

SDOH key factor in capacity for CoProduction



Published first in July 2016, this toolkit will be updated annually. Social needs programs and research are constantly evolving, so we welcome your feedback, ideas, and suggestions of questions to add to our library – please email us at screening-toolkit@healthleadsusa.org.

Health Leads would like to thank our many healthcare partners and advisors who contributed to this toolkit, including: Massachusetts General Hospital, Kaiser Permanente, Boston Medical Center, Johns Hopkins, NYC Health + Hospitals Corporation, Contra Costa Regional Medical Center, Cottage Health, Children's National Medical Center, and our many Workshop and Collaborative participants.









SOCIAL NEEDS DOMAIN KEYS TO A GREAT SCREENING TOOL

RECOMMENDED SCREENING TOOL SCREENING QUESTIONS LIBRARY

Pages 3 - 4

Pages 5 - 6

Page 7

Pages 8 - 21

Sources & Additional Options

- University of Wisconsin County Health Rankings
- New England Healthcare Institute

Essential Social Need Domains

Representing the most common social needs impacting the health of patients today, these domains are based on findings from IOM, CMS, and Health Leads' two decades of experience implementing social needs programs. We recommend all healthcare systems include these domains in a screening tool for social determinants of health.

SOCIAL NEED DOMAIN	EXAMPLES
Food Insecurity	Limited or uncertain access to adequate & nutritious food
Housing Instability	Homelessness, unsafe housing quality, inability to pay mortgage/rent, frequent housing disruptions, eviction
Utility Needs	Difficulty paying utility bills, shut off notices, discounted phone
Financial Resource Strain ²	Public cash benefits, charity emergency funds, financial literacy, medication under- use due to cost, benefit denial
Transportation	Difficulty accessing/affording transportation (medical or public)
Exposure To Violence ³	Intimate partner violence, elder abuse, community violence
Socio-Demographic Information	Race & ethnicity, educational attainment, family income level, immigration status, languages spoken

Questions about financial resource strain often produce a high false positive rate; review these questions carefully.

These categories will likely require a more highly skilled workforce than other types of social needs.

Every Question rated on 3 dimensions

1. Clinically Validated:

Does the question come from a clinically validated instrument?

- Question comes from clinically validated instrument
- Question has not yet been clinically validated

3. Grade Level:

Is the question readable for low literacy populations?

- 5th Written at a fifth grade level, which most adult populations will understand
- 9th Written at a ninth grade level, some adults may not understand the question

2. Precision:

Are you looking to get a general understanding of social need prevalence in this domain, or a more specific focus?



Broad question, some patients may incorrectly be flagged as having social needs



Balanced question



Narrow question, some patients with social needs may be missed