digital Physical Activity & Diet Collaborative

A Joint MD Anderson / UTHealth Core



2/3/2022

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The Digital Physical Activity and Diet (dPAD) Collaborative, a joint MD Anderson/UT Health Research Infrastructure Core

- Introduction to dPAD
 - Deanna M. Hoelscher, PhD, RDN
- Digital Health and Fitness Collaborative
 - Karen Basen-Engquist, PhD, MPH
 - MD Anderson Cancer Center
- Digital Tools for Diet and Physical Activity Interventions and Data Collection
 - Leah Whigham, PhD
 - UTHealth School of Public Health
- Digilego: a multimodal analytics and intervention framework for personalized digital therapeutics
 - Sahiti Myhneni, PhD
 - UTHealth School of Biomedical Informatics



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UTHealth/MDACC Population Health Initiative



- Funding to accelerate population health collaborations between the institutions
- Overall goal:
 - "achieve a measurable and meaningful reduction in the burden of chronic disease especially among the underserved in whom the impact of these illnesses and adverse outcomes are most consequential."
- 3 types of funding opportunities:
 - Quick Start,
 - Projects, and
 - an Impact Fund (dPAD)



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Rationale



- The prevalence of overweight and obesity in Texas is a significant public health issue
- Need to scalable solutions to help Texans manage their weight through modifiable determinants: eating behaviors & physical activity
- Digital health tools can provide solutions, but research is needed for effective content, usable interfaces, context-specific tailoring, and expanding use of these tools among low-resource populations
- Development and testing of digital tools needs a team science approach that lends itself to this initiative





Aims

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- To conduct a needs assessment to identify MD Anderson and UTHealth researchers with relevant interests and identify their needs for training, collaborators, and infrastructure
- To provide training and networking activities to support and connect digital health and obesity researchers
- To create core services based on investigator needs identified in Aim 1, such as:
 - An online resource clearinghouse and collaboration platform,
 - Consultation/navigation services, and
 - Technical services such as usability testing, measurement, accessing/pre-processing of digital device data.





Anticipated Outcomes

- Improve institutional ability to successfully compete for NIH and other funding, including partnerships with industry such as STTR/SBIR grants
- Enhance researchers' competitiveness for funding priorities identified in the 2020-2030 Strategic Plan for NIH Nutrition Research, which focuses on precision nutrition, implementation science, and individualized approaches to weight management
- Resulting research would lead to highly scalable and cost-effective interventions to decrease obesity and subsequent disease and disability in Texas
- dPAD will interface with the newly formed Texas Network of Obesity Research (TeNOR), involving institutions across the state



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digital PHYSICAL ACTIVITY & DIET COLLABORATIVE

Leadership

• MDACC

- Dr. Karen Basen-Engquist, Lead
- Dr. Susan Peterson
- Thuan Le
- <u>UTHealth</u>
 - Dr. Leah Whigham, Co-Lead
 - Dr. Sahiti Myneni, Co-Lead
 - Dr. Deanna Hoelscher





Scope of Work

- Needs assessment survey (February 2022)
- Webinar series
- Digital health training
- Symposia (one virtual, one in-person)
- Provide core services
 - Website, see http://go.uth.edu/dPAD
 - Clearinghouse of resources
 - Fee-for-service
 - Limited amount of supplemental funds for researchers





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Digital Health and Fitness Collaborative: A dPAD precursor

Karen Basen-Engquist, PhD, MPH Director, Center for Energy Balance in Cancer Prevention and Survivorship

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Digital Health and Fitness Collaborative



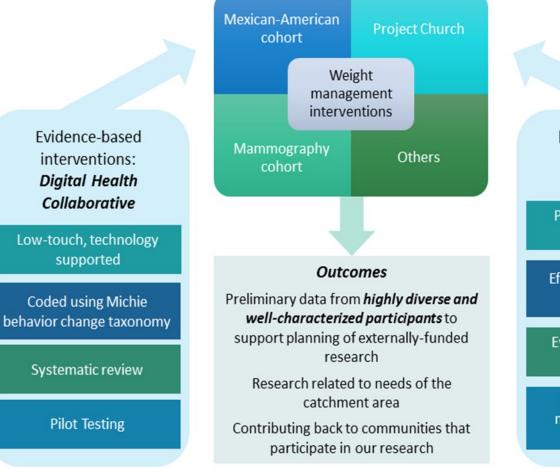
- Funded by the Duncan Family Institute, 2018 2022
- Aims:
 - 1. Develop innovative technology-based weight loss intervention strategies/products (can address eating behavior, nutrition, physical activity)
 - 2. Test strategies in the context of an evidence-based weight management program in MD Anderson cohorts
 - Create a data resource for investigators focused on effects of intervention components; predictors of project participation; and the relationship between nutrition, physical activity, fitness, body composition, and cancer risk.







Digital Health and Fitness Collaborative



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Data Resource: AIM Shared Resource Predictors of project participation Effects of intervention components

Evaluate intervention component cost

Data available for manuscripts & grant proposals

Enablingstructure



Health Science Center at Houston School of Public Health

Faculty



- Karen Basen-Engquist, Susan Peterson, Yue Liao, Susan Schembre
 - Behavioral Science
- Susan Gilchrist, Abenaa Brewster, Sam Hanash
 - Clinical Cancer Prevention
- Larkin Strong, Scherezade Mama, Lorna McNeill
 - Health Disparities Research
- Carrie Daniel-MacDougall
 - Epidemiology



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Development and Testing

- 1. Digital weight loss intervention
- 2. Brief DPP videos
- 3. My Snack Tracker
- 4. Cooking video evaluation
- 5. Telehealth best practices
- 6. Text message intervention to reduce sedentary behavior





Digital Weight Loss Program Pilot

Populations

- Mexican-American Cohort: Family and/or friendship dyads ٠
- Project CHURCH: Men from predominantly African-American churches ٠
- Mammography cohort: Women undergoing mammography screening ٠
- High-risk breast: Women at increase risk of breast cancer, high Gail score ٠ or pre-invasive lesion

Objectives

- Primary: Evaluate intervention feasibility. Feasibility will be assessed by participant retention (program will be considered feasible if 75% complete the program) and participant satisfaction.
- Secondary: Evaluate changes in weight, eating behavior, physical activity, ٠ quality of life, and behavioral determinants (e.g., motivation, selfefficacy, readiness) in participants in the digital health weight loss program.
- Exploratory: Through interviews with participants, identify additional ٠ intervention strategies and products that will be helpful for these populations.

Cohort	Target Enrollment	% Target Enrollment	% completed
Mexican- American Cohort	20, 10 dyads	80%	ongoing
Project CHURCH	10	100%	90%
Mammography	10	100%	90%
High-Risk Breast	10	100%	90%

88% agree/strongly agree they would recommend the program to a family member

Mean weight loss = 9.3 lbs (SD = 21.1)



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- 1-2 minute videos related to weight management
- Can be provided with intervention materials, used in social media interventions
- Developed in collaboration with MD Anderson's Community Alliances Department





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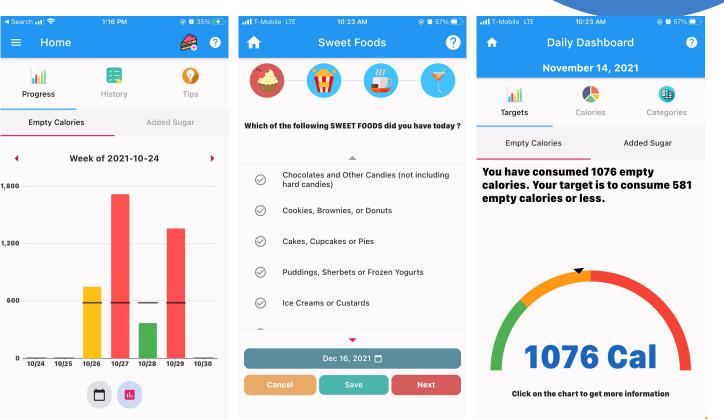
My Snack Tracker

- App for dietary selfmonitoring, alternative to full diet tracking
- User records only energy dense, nutrient poor foods, receives feedback on sugar and "empty calorie" limits
- App development: AIM Shared Resource

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My Snack Tracker

- Usability testing with 15 people who've participated in a weight loss program, 9 people who have not
- Provided feedback on clarity of information, appearance, usefulness
- Many comments indicated better orientation to the purpose needed, as well as directions for navigating

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Comments on logging screens:

- I know we're talking about empty calories so...maybe add cheeses. Maybe for other packaged snacks specify more if you mean trail mix or something like that. [not finding a food they eat] (4)
- I like the scrolling scale. (2)
- The sliding, I'm more of a drop-down person. (4)
- There were some foods that I eat that are ethnic and I wouldn't know how to classify here so I just stuffed them under a category. [ethnic or customized snacks] (3)
- I would make the serving thing more noticeable because I didn't realize that said 2 cup handfuls. The need for a bigger font a different color because I just gazed over it.
- It wasn't instinct to click on one (the illustrations up top) than the other I thought it was a pretty border). Maybe a way to gray it out or animation to indicate next one next one. (3)
- The colors are fine but maybe if the previous and next were arrows that would be more aligned
- Maybe adding a scanning feature
- I'm confused it says 12 oz cup but if it was less than that like 8 oz what do I do, does it go to 8? So how would I measure an 8 oz cup?
- Is there a way to search a name brand food?



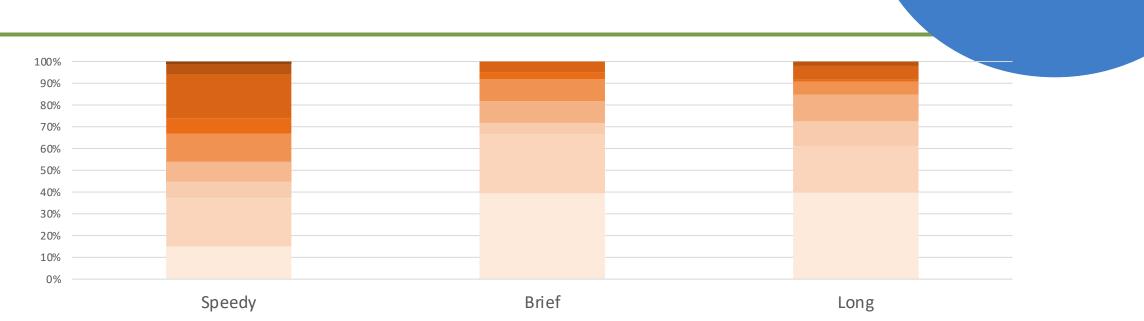
Cooking Video Evaluation



- <u>Objective</u>: identify preferences for different types of cooking videos
- Three video types:
 - "Speedy" 1 min, cooking sped up, no talking, ingredients pre-prepped
 - "Brief" 2-3 min, hosted, cooking in real time, discussed health benefits, ingredients pre-prepped
 - "Long" 4-8 min, hosted, prep and cooking in real time, discusses prep techniques







<u>Likes</u>: recipe looks good, step by step instructions, seems simple, presentation appealing <u>Dislikes</u>: too fast, didn't like some ingredients, no recipe

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A+ A A- B+ B B- C ■ D ■

Favorability of 3 types of cooking videos

<u>Likes</u>: health benefit info, easy recipe, good length, easy to follow, good visuals, presenter a dietitian, short <u>Dislikes</u>: food not appealing, didn't like the visuals, boring, unnecessary (simple recipe) <u>Likes</u>: salad dressing ideas, lots of options, advice/guidance/info, entertaining host <u>Dislikes</u>: too many options, host issues (licked fingers, tossed salad with hands, difficult to understand), too long and boring



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Health Science Center at Houston School of Public Health

New Projects



Telehealth best practices

- Interviewing participants in Zoomdelivered interventions about advantages and barriers
- Will be used to develop best practices guide

Text 2 Move

- Text messaging intervention to reduce sedentary behavior
- 3 arms:
 - Fitbit + activity responsive messages
 - Fitbit + generic messages
 - Fitbit alone
- Recruitment of participants through Community Alliances programs



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Future Directions



Digital Tools for Diet and Physical Activity Interventions and Data Collection

Leah D. Whigham, PhD, FTOS

Associate Professor, Department of Health Promotion & Behavioral Science

Director, UTHealth Center for Community Health Impact

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Center for Community Health Impact





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Center for Community Health Impact

Mission: To impact health through creation of community-driven solutions informed by science in support of healthy eating, active living, and decreased obesity.

Strategy:

- Align with the needs of region use Collective Impact Model
- All levels of the social ecological environment
- Functional cores of expertise



CCHI Functional Cores

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CCHI Partnership Areas





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Food Systems

Metabolic Health in Primary Care Workplace Wellness School Wellness



Built Environment





Scalable Interventions



- Nutrition Therapy for Weight Loss
- Primary Care Obesity Management



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SMALLCHANGES



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Center for Community Health Impact

With funding from: **HEAL**

PASO DEL NORTE HEALTH FOUNDATION HEALTHY EATING & ACTIVE LIVING

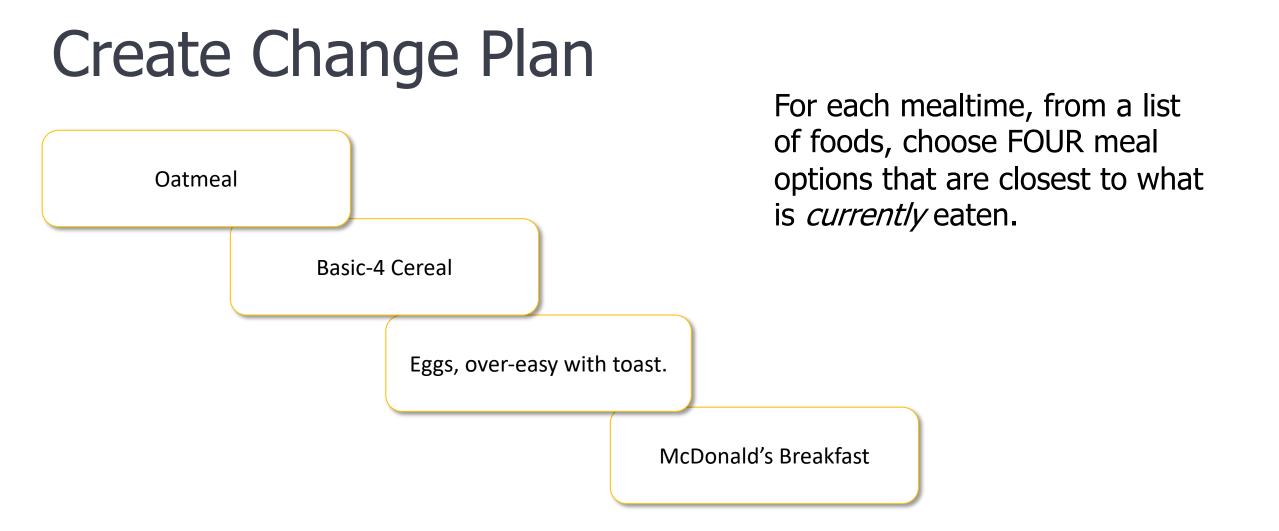


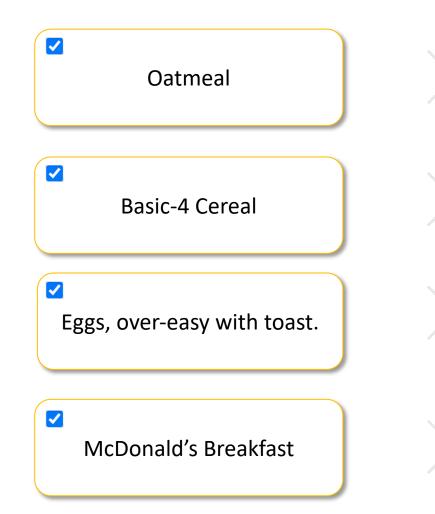
Sign Up: Current Weight and Measurements

Enter current weight and measurements, for calculation of daily calorie requirements.

The recipes in the Change Plan are unique to person's calorie requirements.









OLD FASHIONED OATMEAL

oatmeal 3/4 cup raw cooked with 1 1/2 cups 1% milk

Home-Made



KELLOGG'S ORIGINAL CORN FLAKES

corn flakes 1 1/4 cup, milk 1% 2 1/4 cup

Home-Made



HUEVOS A LA MEXICANA

corn tortilla 1 (6-inch), 2 eggs cooked, 1/4 onion, 1/4 tomato, 1 tbs cilantro and jalapeno mix, 1 tbs mozzarella cheese



MCDONALD'S HAM, EGG, AND CHEESE MCMUFFIN

egg McMuffin (ham, cheese, egg) with 1 hashbrown

Follow the Plan:



HUEVOS A LA MEXICANA

 \sim

- Get a Flexcipe for each meal option.
- The ingredient amounts in the Flexcipe are specific to the calorie level, and they change as the person loses weight.
- Follow the "Flexcipe" as closely as possible.

INGREDIENTS

TO MAKE 2 WEIGHT-LOSS PORTIONS :

Change Number of Portions:

- 4 eggs
- 1/2 onion
- 1/2 fresh tomato
- 1/4 jalapeño
- 4 tsp canola oil
- 4 tsp oregano (dry)
- 1/4 cup chopped cilantro
- 2 tsp salt
- 2 tbs mozzarella cheese

DIRECTIONS:

- 1. Saute onions, oregano, and jalapeno for 1-2 minutes
- 2. Add chopped tomatoes and cook for 2 minutes
- 3. Add in eggs and scramble them into the sauce

Each day, for each meal, choose any one option from the Change Plan.

BREAKFAST









Old Fashioned Oatmeal

McDonald's Ham, Eqq. and Cheese McMuffin

Kellogg's Original Corn <u>Flakes</u>

Huevos a la Mexicana

LUNCH



Ramen Noodles with Chicken and Vegetables

Hot Pocket (Chicken and Cheese) with Knorr Sopa De Fideos Con Pollo





Beef Burrito with Fruit and <u>Corn Salad</u>



AFTERNOON SNACKS







Chicken Salad



Cheese-Only Quesadilla

2% Fat Cottage Cheese <u>with Fruit</u>

DINNER









Chicken Flautas

Milanesa

Little Caesars Pizza

Chile Relleno

<u>Fideo</u>

Enter weight every week to track progress and enable Small Changes to automatically adjust Flexcipes.



MEASUREMENTS

Weight

o pounds

○ kilograms

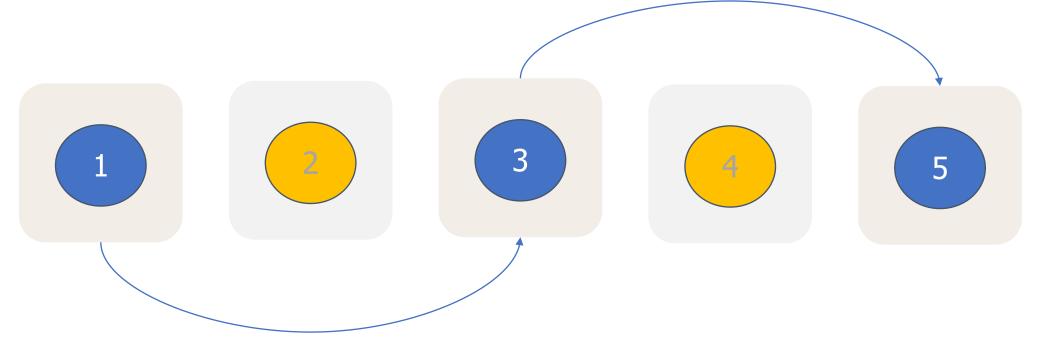
Weight in pounds *

enter weight

pounds

Choose new options and get a fresh Change Plan every 2 weeks.

Choose new options and get a fresh Change Plan every 2 weeks.



Small Changes lead to Get Big Results

Scalable Interventions



- Nutrition Therapy for Weight Loss
- Primary Care Obesity Management



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Primary Care Obesity Management

- Clinical decision support system (CDSS)
- EHR integration
- Features include:
 - dialog boxes
 - info boxes
 - physical exam adaptations
 - diagnostics reference



Sample Dialogue

"Your body mass index, is a number calculated from weight and height. It indicates health risk. Your BMI of 41.15 is in the range that is in the high risk category.

This health risk can be reduced by losing weight. If you are interested in considering this, we can talk about it."







- Clinical decision support system (CDSS)
- EHR integration
- Features include:
 - dialog boxes
 - info boxes
 - physical exam adaptations
 - diagnostics reference



Weight History Questions

It is important to understand the onset, duration, and progress of obesity. Questions about weight history reveal if the patient is gaining weight or losing weight over the years. If they are losing weight, acknowledge their success and enquire about what has contributed to their success so you can support that success moving forward. Also be aware that their future weight loss success may be slower. If they are gaining weight, support their willingness to have this conversation and work with you.



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- Clinical decision support system (CDSS)
- EHR integration
- Features include:
 - dialog boxes
 - info boxes
 - physical exam adaptations
 - diagnostics reference

	obesity are available in drop- down menus
Physical Exam Adaptations	Diagnostic Reference
Vital Signs Adaptations	*
Most scales have a weight limit scale with adequate weight ca	
Patients are more likely to be d dyspnea on exertion. Wait while 15 min before checking vital sig	e patient is seated quietly for
Cuffs that are too tight produce that are falsely elevated. Ensure bladder should encircle 80% of	e proper cuff size (inflatable

Physical Exam Adaptations for



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- Clinical decision support system (CDSS)
- EHR integration
- Features include:
 - dialog boxes
 - info boxes
 - physical exam adaptations
 - diagnostics reference

y H & P Exam	Medication Review	down monus	formation for ilable in drop-
Physical Exam Ac	laptations D	iagnostic Refere	nce
Diabetes mellit	us (Type 2)		^
history Physical	polydipsia, blurry visi Exam: Acantosisnegri Itigations: Fastinggluo	cans Skin tags	mily







- Lifestyle
- Weight History
- Family History
- History and Physical Exam
- Medication Review
- Pharmacotherapy Guidance
- Diet therapy



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Data Collection in the Community

- Fruit and Vegetable Intake
- Energy Balance

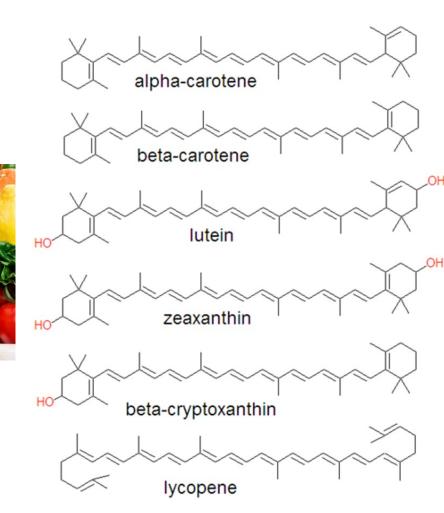


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Carotenoids - Biomarker F&V intake



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- Found primarily in fruits and vegetables
- Function as efficient antioxidants/optical filters
- Dietary intake not synthesized in the body
- Long chain-like molecules with π-electron conjugated carbon backbone (conjugated dienes)
- Protect cellular DNA
- Biomarker of total fruit and vegetable intake



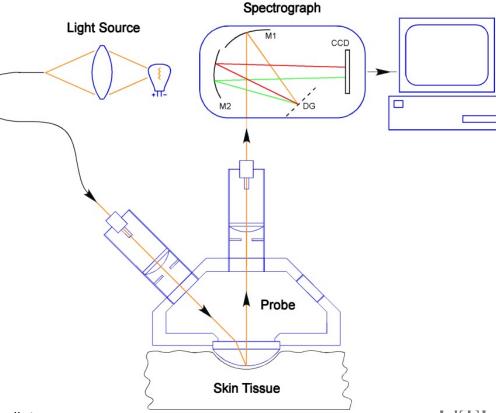
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Reflectance Spectroscopy



- Non-invasive
- Self-calibrating
- 2 minutes





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Skin and plasma carotenoid response to a provided intervention diet high in vegetables and fruit: uptake and depletion kinetics^{1–5}

Lisa Jahns, LuAnn K Johnson, Susan T Mayne, Brenda Cartmel, Matthew J Picklo Sr, Igor V Ermakov, Werner Gellermann, and Leah D Whigham

Am J Clin Nutr 2014;100:930–7.





Putting Research into Practice

- Clean finger
- Avoid staining
- Use same finger across time
- Use non-dominant hand



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Data Collection in the Community

- Fruit and Vegetable Intake
- Energy Balance



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Proof of Concept Study

Can breath carbon stable isotope ratios be used to track energy balance?



International Journal of Obesity (2014) **38,** 1248–1250 © 2014 Macmillan Publishers Limited All rights reserved 0307-0565/14

www.nature.com/ijo

SHORT COMMUNICATION

Breath carbon stable isotope ratios identify changes in energy balance and substrate utilization in humans

LD Whigham¹, DE Butz², LK Johnson³, DA Schoeller⁴, DH Abbott⁵, WP Porter⁶ and ME Cook²







Where to find us



The University of Texas Health Science Center at Houston

School of Public Health El Paso

Center for Community Health Impact



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Digilego: a multimodal analytics and intervention framework for personalized digital therapeutics



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UTHealth School of Biomedical Informatics Center for Digital Health and Analytics

	utions – Personal cted Health	Ŭ	ence – Decision Id Analytics		e – Patient Safety Quality
Mobile Health	Devices, Sensors and IoT	Clinical Applications (FHIR Apps)	Cognitive Support Services (Situation Awareness)	Medical Errors	Quality Measures and Analytics
Telehealth and Al Agents (virtual assistants)	Patient Portals	Visual Analytics and Dashboards	Clinical System Analysis (Usability, Workflows)	Medication Safety	Predictive and Causative Analytics for Patient Safety
Personal Health	Social Networks and Health management	Knowledge Management (Decision Rules)	Process Automation and AI Integration	Diagnostic Safety	Error Management



Faculty

Sahiti Myneni

Digital health, social analytics

Amy Franklin

Human factors, cognitive psychology

Deevakar Rogith

FHIR integration, clinical analytics

Meera Subhash

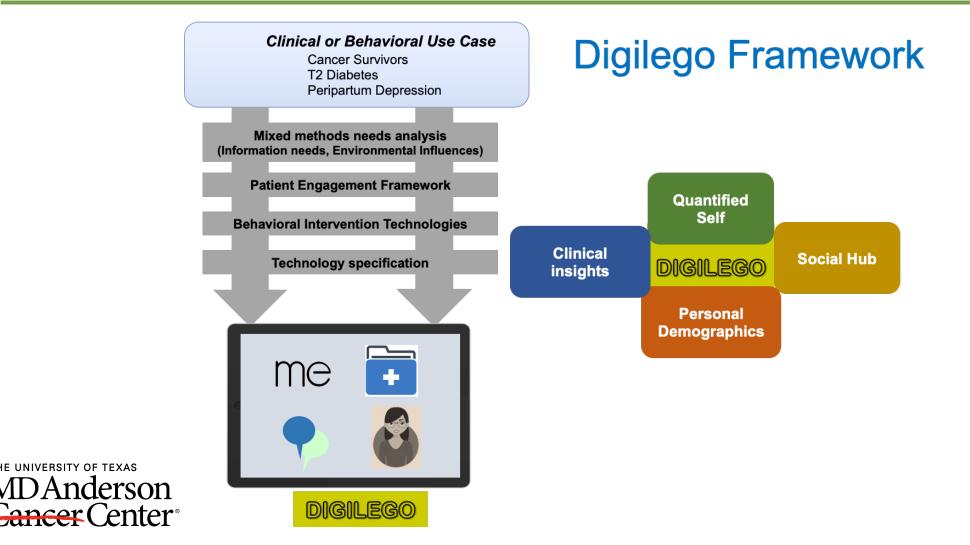
Clinician, EHR implementation



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Towards modular digital solutions



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Social media as a research resource

- Data harvesting
 - Nutrition
 - Dietary supplements
 - Type 2 Diabetes
 - High risk pregnancy management
 - Other risky health behaviors
- Areas of interest
 - Engagement predictors
 - What? How? Who?
 - Spread of information
 - Network silos

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Methodological underpinnings

- Theory integration
 - Speech Act Theory
 - Social Cognitive Theory
 - Taxonomy of Behavior Change Techniques
- Computational methods
 - Transformer models
 - Temporal random indexing
 - Active learning
- Network Science
 - Network exposure
 - Ideology diffusion
 - Influence and impact measure

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In the context of cancer survivorship

Agile, Adaptive, Integrative



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Step 1: Social media analysis

- 24,723 publicly available deidentified survivor interactions
- Semi-automated methods to extract content areas and need specifications
 - 1000 messages manually coded
 - Semantic vectors
 - Traditional Machine Learning
 - Deep learning variations
- Misinformation topics



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Step 2: Engagement elements

Himss	Nation eHealt Collabo	nal th	PATIENT	ENGAGE	ME	ENT FRAM	IEWORK			©2014 Healthcare nt Engagement Framework i n-NonCommercial-NoDerivs	is licens	sed under a Creative (commons
FOUNDATION Inform Me	Collabo	orativi	Engage M	e+💕		Empower	Me + 🕏 + 🗩		Partner	Nith Me + 🕏 + ● + ♀		Suppo e-Com	rt My nunity + 🗊 + 🗩 + ♀ +
Information and W	/ay-Finding	E	Information and V	Vay-Finding	H	Information, Wa	y-Finding, and Quality	\succ	Information, Way-Find	ing, and Analytics/Quality	Ξ	Information, Way-Fi	nding, and Analytics/Qual
Maps and directions Services directory Physician directory		INFORM AND ATTRACT	 Mobile Nearest healthcare s Symptom checker 	ervices	INTERACT	and healthcare of	providers, hospitals and	PARTNER EFFICIENTLY	 Patient-specific pre Patient-specific qu Patient accountable 	ality indicators	EXTEND REACH	 Care compariso treatments, and Costs Quality 	
e-Tools		AN	e-Tools		AND		e-Tools	8	e-	Tools	Ę	e-Visi	ts and e-Tools
Health encyclopedia Wellness guidance Prevention		IFORM	 Pregnancy tracking Fitness tracking Healthy eating tracking 	 Option to share progress and health milestones on social media 	RETAIN #	 Care plan management Virtual coaching 	 Online nurse Secure messaging 	ARTNE	 Wellness plan Advance care plan Coordination of care 			 e-Visits as part of 	of ongoing care
Forms: Print	able	≤	Interactive Form		~	Integrat	ed Forms: EHR	-	Integrated	d Forms: EHR	ß	Integra	ted Forms: EHR
	ance directives ormed consent		 Patient profile Register or pay a bill Email customer service 			 Record correctio Advance directiv 			 Clinical trial record Immunization (put) 		SYNERGY AND	(replaced by inter collaborative care	
Patient-Specific E	Education		Patient-Specific	Education		Patient-Sp	ecific Education		Patient-Spe	cific Education	ATE	Patient-S	pecific Education
	cribed medication cedure/treatment		 Care Instructions Reminders Medication 	 Preventive services Follow-up appointments 		 Materials in Span Guides to unders accountable care 	standing		 Materials in Spanish and the top 5 national languages 	 Condition-specific self-management tools 	CREATE	 Care planning Chronic care sel Reminders for content 	
			Patient Access:			Patient /	Access: Records		Patier	nt Access		Patient	Access and Use
			 View electronic health Download electronic h 			 Copy the patient 	haring electronic record		 Publish and subscr Summary of care 				e for complete record ecord among care team permissions acy controls
						Patient-0	Generated Data		Patient-Ge	nerated Data		Care Tear	n-Generated Data
						 Care experience Symptom assess Self-managemer Patient-generate Questionnaire Pre-visit Health history Demographice 	nents It diaries Id data in EHR s		 Shared decision making Preference- sensitive care Informed choice/consent Adherence reporting Medications Self-care Wellness 	 Advance 		 Shared care pla Episodic Chronic End of life 	Team outcome: Adherence Costs Quality
						Interop	erable Records		Interopera	able Records		Interop	erable Records
						exchange (HIE)	health information nation between providers hospital records		 Integrated with cli Integrated with pu Integrated with cla administrative dat 	blic health reporting aims and		 Integrated with care records 	long-term post-acute
						 Images and vide 			Collabo	rative Care		Colla	borative Care
						Commercial labs	, radiology, medications		 Acute Long-term post-acute care 	Primary careSpecialty		ChiropracticDentistry	 Alternative medicin Home
\bigcirc									-				unity Support
													ity support forums and l care team members
Aligned: Emerging Me	eaningful Use		Aligned: Meaning	qful Use 1		Aligned: M	eaningful Use 2		Aligned: Mea	ningful Use 3		Aligned: M	eaningful Use 4+

5 cumulative phases, 9 features Several technology components

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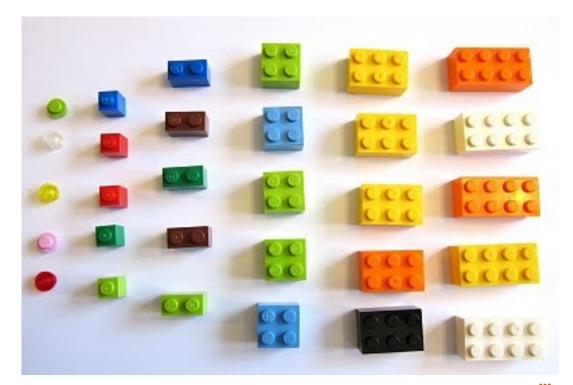
- Access to EHRs
- Trackers for self-monitoring
- Collaborative care
- Community support (Online social networks)
- Mapping to ontology
 - Implementable features
 - Characterize system granularity



Health Science Center at Houston

Step 3: Suvivor Digilego: Methods

- Our definition of digilego block: individual and reusable connected health components
- Behavioral Intervention Technology (BIT) model
 - Operational aim of each *digilego block*
 - Integration with behavior change strategies
 - Define user interactions
 - Workflow alignment
 - Interfacing among *digiliego blocks*
- Implemented using FHIR





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Results: Areas of interest



- Communication Topics
 - Treatment plan
 - Healthy living
 - Social engagement
 - Late effects, Remission
 - Medications
 - Alternative medicine
- Insurance, Family, Medical will MDAnderson Cancer Center

10	
Survivor Digilegos	Content specialty
+	Insurance information
Ř	Health behavioral trackers
ō	Treatment summary
LE	Personalized late effects summarization
	Follow-up care scheduling
1 -	Personal profile
Patienti- specific Education	Targeted health tips, education
⊳ ₩	Transition assistance
HORK LIFE	Lifestyle tips; Care reminders
?	Social Hub
?	Question corner





Results: Survivor Digilegos

Personal Profile	Insurance Info	Treatment Summary	Recent Labs	
Demographics Primary Care Provider	Prescription Plan Group Plan	Zolpidem 5 mg hs for 2 weeks Atenoiol 50 mg bd for 2 weeks	CBC Report P Liver Function Repor	
Transition Assistance	Survey	Alerts	Follow-up	
Immediate Relative Care Home Contact	QoL Survey (Dec 2017) QoL Survey (Jul 2017) NHIS (Aug 2017)	Review physician note on CBC P Refill visit to be scheduled P	PCP Visit in 2 weeks Lab Visit in 4 weeks	



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Preliminary evaluation



- 16 survivors used the prototype
- 5/5 rating for technology acceptance
- 75% indicated used of social media analysis improved their confidence that the system meets their needs
- 14 survivors voted favorably for all Digilego blocks
- Communication pathways for person and clinical contacts should be different.





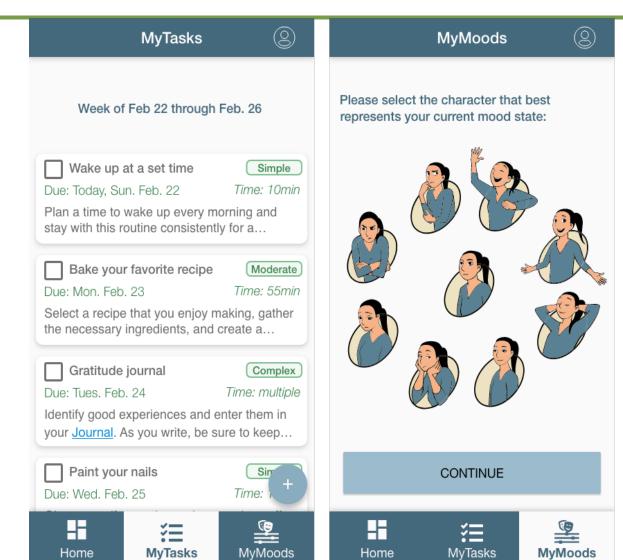


Applications: stress management

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...

Pre-eclampsia

and Eclampsia

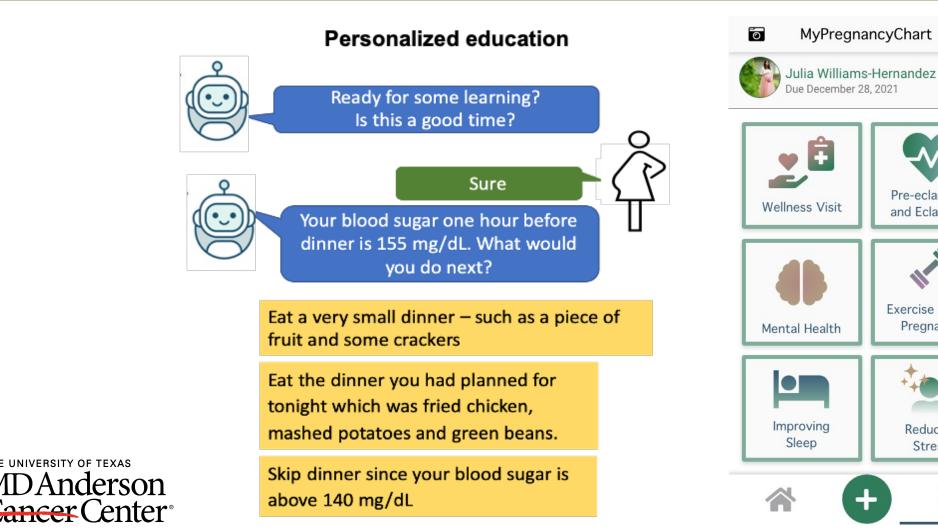
Exercise During

Pregnancy

Reducing

Stress

Applications: high risk pregnancy



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dPAD service opportunities

- Social listening
 - Preprocessed and deidentified datasets
 - Analytics: Trends, Topics, and more
- Mobile applications
 - Online forum
 - Q&A feature
 - Chatbot
 - Journaling
 - Education
 - Redcap integrative
 - Wearables





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Cancer Prevention Research Institute of Texas





Selected Publications



- Zingg A, Singh T, Myneni S. Analysis of Online Peripartum Depression Communities: Application of Multilabel Text Classification Techniques to Inform Digitally-Mediated Prevention and Management. Frontiers in Digital Health. 2021;3:38.
- Zingg A, Rogith D, Refuerzo JS, Myneni S. Digilego for Peripartum Depression: A Novel Patient-Facing Digital Health Instantiation. In AMIA Annual Symposium Proceedings 2020 (Vol. 2020, p. 1421). American Medical Informatics Association.
- Carter L, Rogith D, Franklin A, Myneni S. NewCope: A Theory-Linked Mobile Application for Stress Education and Management. Studies in health technology and informatics. 2019 Aug 21;264:1150.
- Myneni S, Rogith D, Franklin A. Digilego: A standardized analytics-driven consumer-oriented connected health framework. InInternational Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation 2018 Jul 10 (pp. 263-273). Springer, Cham.
- Myneni S, Amith M, Geng Y, Tao C. Towards an ontology-driven framework to enable development
 of personalized mHealth solutions for Cancer survivors' engagement in healthy living. Studies in
 health technology and informatics. 2015;216:113.

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If you are interested...



- Complete the needs assessment dPAD survey
- Attend the dPAD webinars
- Visit the dPAD website: http://go.uth.edu/dPAD
- Link dPAD to resources and projects at UTHealth and MDACC
- Contact us!
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