

**Better Therapeutics was formerly known as FareWell.**

# BUSINESS

## OF LIFESTYLE MEDICINE

Mark A. Berman, MD, Kevin J. Appelbaum, BSE,  
Katherine L. Edwards, FNP-C,  
David M. Eisenberg, MD, and David L. Katz, MD, MPH

# FareWell and the How of Lifestyle Medicine

**Abstract:** *The what of Lifestyle Medicine, including a whole foods dietary pattern, has been well established, but the how has remained elusive. How do we apply what we know in a cost-effective and widely accessible manner to prevent, treat, and even reverse chronic disease? Over the decade ahead, we believe the field of Lifestyle Medicine and the people who need it most will benefit from addressing the how. This article summarizes the founding and operational principles of FareWell Inc. - a digital therapeutics company targeting lifestyle-related cardiometabolic diseases. We outline our current use of mobile health technology and artificial intelligence and describe our early clinical experience, business model, and key anticipated challenges.*

**Keywords:** diet; lifestyle; mobile applications; artificial intelligence; innovation

### Increasing Access to Lifestyle Medicine Is Our Collective Challenge

Over the past 40 years, several lifestyle medicine interventions utilizing whole-food plant-based diets have proven to be efficacious at managing, and in some cases reversing, chronic diseases,

including advanced coronary artery disease, type 2 diabetes, hypertension, hyperlipidemia, and early-stage prostate cancer.<sup>1-4</sup> Despite these advances, access to lifestyle medicine interventions remains low and chronic disease rates continue to rise globally. This reflects

internet access, wearable devices, machine learning, and online social communities. Similarly, the development of the health coaching profession provides an army of relatively low-cost health care professionals that can facilitate behavior change in a patient-centric model.

 Over the past decade, new technologies have emerged that may enable more scalable, cost-effective lifestyle medicine models. 

both the potency of the root causes—the physical and cultural environment that produces chronic disease—and the difficulty in scaling lifestyle medicine models of care. Several barriers to scaling interventions are well appreciated: lack of reimbursement, lack of training, and to some extent cultural factors within both medical and public sectors.

### New Developments Offer Hope

Over the past decade, new technologies have emerged that may enable more scalable, cost-effective lifestyle medicine models. These include the advent and advancement of mobile computing (ie, smartphones), ubiquitous broadband

### Digital Therapeutics Target Chronic Disease Through Diet and Lifestyle

At FareWell, we are creating novel digital therapeutics targeting lifestyle-related cardiometabolic diseases at lower cost than existing therapies (eg, multiple medications or surgery), with equal or greater efficacy and considerably fewer side effects. It is an ambitious aim but, to be fair, we are standing on the shoulders of giants—implementing what has been discovered in the field of lifestyle medicine and behavioral science over decades.

Our current digital therapeutic program includes meal planning tools, smart shopping lists, recipes curated by a physician, dietitian and chef-educator,

DOI: 10.1177/1559827617701411. FareWell, Inc, San Francisco, California (MAB, KJA, KLE, DLK), and Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, Massachusetts (DME) and Yale University Prevention Research Center, Griffin Hospital, Derby, CT (DLK). Address correspondence to Mark A. Berman, FareWell, Inc, 445 Bush Street, Suite 300, San Francisco, CA 94108; e-mail: mark@farewell.io.

For reprints and permissions queries, please visit SAGE's Web site at <http://www.sagepub.com/journalsPermissions.nav>.

Copyright © 2017 The Author(s)

daily self-monitoring features with personalized weekly goals, bi-weekly live one-on-one health coaching and support from our online member community, and an educational curriculum we call Wise Bites. Participants receive a digital scale that automatically logs weights on a simple dashboard, accessible by both participant and their coach. Health coaching provides participants behavioral support while also enabling another degree of personalization. The coaching team utilizes care-escalation protocols to allow escalation of care to our Lifestyle Medicine FNP, with support from a Lifestyle Medicine MD, Chef-Educator and Behavioral Psychologist.

To facilitate long-lasting lifestyle change it is critical to create a framework for skill acquisition within a behavior change framework that supports autonomy and fosters a growth-oriented mind-set. Internally, we describe this core skill set as culinary health literacy (“CHL”) and use that term to be inclusive of specific components of food literacy, health literacy, and behavioral skills (like planning and self-monitoring). Our initial program is intended to enable a basic proficiency in CHL.

Digital tools offer many unique opportunities for enhancing care beyond skill acquisition and behavioral support. These include population management tools that allow us moment-by-moment awareness of which members of our population need less versus more support; the use of online community support and peer mentorship through popular social networking platforms like Facebook; the ability to connect with wearable devices and other health apps to passively gather lifestyle and health related data; and the application of data science to understand which engagement patterns correlate with outcome change.

We are perhaps most excited about the application of machine learning and artificial intelligence to lifestyle medicine and have begun to apply these tools, initially in the form of descriptive and

predictive analytics. The ability to predict outcomes based on available data should enable us to learn the most effective course of action to take based on moment-to-moment predictions. This begins a journey to what is often called prescriptive analytics.

The nutritional features and exercise recommendations were all derived from evidence-based interventions and findings.<sup>1-9</sup> Additionally, we incorporated key principles established by our advisory board. For instance, the work of Dr David Eisenberg and colleagues has demonstrated the importance of meals prepared at home<sup>10</sup> and the potential value of teaching kitchens. Dr David Katz, the immediate past president of the American College of Lifestyle Medicine (ACLM) and now FareWell’s Chief Medical Officer, has studied and written extensively on the need for skillpower and the power of lifestyle *as* medicine.<sup>11</sup> Margaret Moore pioneered the field of health coaching, and Master Chef Mark Erickson and the Culinary Institute of America are international leaders in culinary education.

### Early Results and Experience

From May through June 2016, we recruited participants for a pilot study via Facebook ads that announced our free 16-week pilot program. We preferentially screened-in 601 participants to include women, in any US state, aged 45 to 54 years, with a body mass index of 30 to 35 kg/m<sup>2</sup> (ie, class 1 obesity), who also reported a willingness to prepare meals at home and eat mostly whole, plant-based foods. Our pilot was intended to be a nonrandomized, convenience sample, which enabled us to study first-run engagement, acceptability, and efficacy.

Ninety-five members started the program and 71 (74.7%) completed the 16 weeks. Among all completers we found an average of 5.1% body weight lost, and, in the top tertile of engagers (ie, those who made the most use of the

digital tools), we found an average of 7.1% weight loss in just over 14 weeks. Participants in the top quintile of skill acquisition (measured by a priori definitions of technique-driven meal type repetition) lost 8.2% body weight in this same period.

All members of our pilot who enrolled after June 15, 2016 were invited to participate in a laboratory study of before and after program blood tests. We screened participants who expressed interest to decrease the likelihood of confounding factors (eg, recent medication adjustments) and offered follow-up laboratory blood tests to those who had baseline metabolic abnormalities (ie, elevated fasting glucose, fasting insulin, hemoglobin A1c, ALT [alanine transaminase], and/or fasting lipids) and completed the 16-week program.

At present, we have a small sample of before-after labs and our findings are consistent with those found in the plant-based nutrition and lifestyle medicine literature.<sup>2</sup> For example, among 7 participants with impaired glycemic responses at baseline, all 7 showed improvement in A1c (5 participants improved, with 3 of the 5 returning to normal) or insulin sensitivity (7 participants) at 16 weeks. Glycemic measures assessed include fasting blood glucose and insulin, hemoglobin A1c, and calculated HOMA2 (homeostatic model assessment-2) measures of beta-cell function and insulin resistance.

Finally, a member of our team (eg, a coach) had contact with every member who completed the program—this means that on a daily basis our team received anonymized feedback about the human experience of participating in our program. While we have not done a formal qualitative analysis of these data, 2 clear themes have emerged: (1) the process of health coaching regularly provokes surprising insights in members that they consider to be transformative and (2) our approach to facilitating lifestyle change is different than what members have previously experienced.

## What's Next?

This is just the beginning for us. The year ahead offers the opportunity to apply the findings from our initial pilot study and gather more robust data.

More specifically, we intend to broaden our demographic samples and attempt to reproduce our results with a more complete version of our product. Weight loss and health promotion was a natural starting point, but our real interest lies in the management of lifestyle-related chronic disease and, to that end, we are beginning trials in people with more advanced metabolic disease.

We also know there is more potential in digital therapeutics beyond a scalable operational method for lifestyle interventions. The application of machine learning and artificial intelligence allows us to explore uncharted territories in Lifestyle Medicine and population health. In the year ahead, we will further develop our machine learning models in an effort to advance from descriptive to prescriptive analytics.

## Business Model

FareWell is currently selling its program to individuals through a variety of monthly subscription-based options and implementing a referral program for health care providers. This direct-to-consumer channel delivers meaningful benefit to those willing to pay out-of-pocket, and allows for rapid innovation by deploying, testing, and refining programs for maximum cost-efficacy.

Next, FareWell will begin selling its programs to large, self-insured employers, and work with pilot employers to demonstrate the ability to improve outcomes linked to measurable health care cost savings across a broad range of employee populations. Value-based pricing will ensure FareWell's incentives are aligned with those of its customers.

Longer term, as we aggregate peer-reviewed clinical research data with real-world outcomes, we expect FareWell to gain the support of payers and providers, making FareWell's digital therapeutics available to the millions of Americans who could benefit, and a potential first-line therapy to providers treating the epidemic of chronic disease.

## Challenges Ahead

We anticipate 3 distinct challenges to FareWell's business model.

*Digital therapeutics are newly emerging, as are the pricing and payment models.* Digital therapeutics are in their nascent stage and thus payment models are not well established.

Reimbursement for some lifestyle medicine programs and for digital implementations of pre-existing behavioral interventions are occurring with increasing frequency, but it is early. Exactly how and at what pace pricing and payment models will develop remains uncertain.

*Awareness of lifestyle medicine in the enterprise.* Payers, employers, and even provider groups do not have high awareness of lifestyle medicine. Many terms like “wellness,” “disease management,” and “healthy eating” have become commonplace in these settings and create confusion when attempting to explain what differentiates lifestyle medicine solutions.

*Maintaining change in a toxic environment.* FareWell's task is to facilitate lifestyle change that will last for years. This is difficult to do principally because the pressures from our obesogenic environment and culture are unrelenting. To do this requires we facilitate change in a way that strengthens autonomy and

meaning and offers a new way of living that is ultimately more pleasurable than the default or prior experience.

## Concluding Thoughts

The *what* of lifestyle medicine—a whole foods dietary pattern featuring an abundance of vegetables, fruits, whole grains, legumes, nuts and seeds, regular exercise, not smoking or drinking heavily, restorative sleep, love, and purpose—has been established, but the *how* has remained elusive. *How* do we apply what we know in a cost-effective, scalable, and widely accessible manner to prevent, treat and even reverse disease whilst enabling healthier, more vibrant living? Over the decade ahead, we believe the field of lifestyle medicine and the people who need it most will benefit from addressing the *how*. If, collectively, we can do that, we may just tip societal forces to address the root causes of so much preventable suffering.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. [AJLM](#)

## References

- Ornish D, Scherwitz LW, Billings JH, et al. Intensive lifestyle changes for reversal of coronary heart disease. *JAMA*. 1998;280:2001-2007. Erratum in: *JAMA*. 1999;281:1380.
- Jenkins DJ, Kendall CW, Faulkner D, et al. A dietary portfolio approach to cholesterol reduction: combined effects of plant sterols, vegetable proteins, and viscous fibers in hypercholesterolemia. *Metabolism*. 2002;51:1596-1604.
- Barnard ND, Cohen J, Jenkins DJ, et al. A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial. *Am J Clin Nutr*. 2009;89:1588S-1596S.
- Ornish D, Lin J, Chan JM, et al. Effect of comprehensive lifestyle changes on telomerase activity and telomere length in men with biopsy-proven low-risk prostate

- cancer: 5-year follow-up of a descriptive pilot study. *Lancet Oncol.* 2013;14:1112-1120.
5. Verheggen R, Maessen M, Green D, Hermus A, Hopman M, Thijssen D. A systematic review and meta-analysis on the effects of exercise training versus hypocaloric diet: distinct effects on body weight and visceral adipose tissue. *Obes Rev.* 2016;17:664-690.
  6. Korat AVA, Willett WC, Hu FB. Diet, lifestyle, and genetic risk factors for type 2 diabetes: a review from the Nurses' Health Study, Nurses' Health Study 2, and Health Professionals' Follow-up Study. *Curr Nutr Rep.* 2014;3:345-354.
  7. Office of Disease Prevention and Health Promotion, US Department of Health and Human Services. 2008 Physical Activity Guidelines for Americans. <https://health.gov/paguidelines/guidelines/summary.aspx>. Published October 2008. Accessed February 1, 2017.
  8. Spencer E, Appleby P, Davey G, Key T. Diet and body mass index in 38 000 EPIC-Oxford meat-eaters, fish-eaters, vegetarians and vegans. *Int J Obes Relat Metab Disord.* 2003;27:728-734.
  9. Butryn ML, Webb V, Wadden TA. Behavioral treatment of obesity. *Psychiatr Clin North Am.* 2011;34:841-859.
  10. Zong G, Eisenberg DM, Hu FB, Sun Q. Consumption of meals prepared at home and risk of type 2 diabetes: an analysis of two prospective cohort studies. *PLoS Med.* 2016;13:e1002052.
  11. Katz DL, Colino S. *Disease-Proof: The Remarkable Truth About What Makes Us Well.* New York, NY: Hudson Street Press; 2013.