

Tools to tackle pre-diabetes



Professor Gladys Block describes the key features of her novel behavioural intervention program and the principles which ensure continued engagement and success

Alive-Pre-Diabetes (Alive-PD) is a one-year behavioral change program. Can you provide an overview of the project?

Alive-PD is a diabetes prevention program that is fully automated and thus capable of reaching large numbers at very low cost, with virtually no staff burden. It is aimed at pre-diabetics, people on the road to diabetes. Using email, web and smartphone technology, it helps participants both develop and maintain improved physical activity and eating habits, which may also lead to sustained weight loss. Alive-PD is a refinement of ALIVE!, an evidence-based diet/activity behavior change program already proved effective in a randomized trial.

Individuals with pre-diabetes are identified by the Health Risk Assessment (HRA). What does this entail and how accurate are the results?

A definitive test for pre-diabetes would involve the measurement of blood glucose or haemoglobin A1c. However, if these blood tests are not available the pre-diabetes HRA used in Alive-PD can identify people who are at high risk of being pre-diabetic or of developing diabetes. The risk score generated by the seven-item questionnaire is used on the websites of both the American Diabetes Association and the US Centers for Disease Control and Prevention. It has been tested in the US

National Health and Nutrition Examination Survey and is one of the allowable criteria for enrollment into the US National Diabetes Prevention Program.

Which components and behavioral principles underlie Alive-PD?

Alive-PD begins with the same components and behavioral principles as ALIVE!. These include short- and long-term goal-setting, individualisation, management of triggers, self-monitoring, social support, information and skill-building, repetition, reminders and reinforcement. The individual moves in small steps from his/her individual starting level, building confidence in their ability to change.

Alive-PD builds on those principles and adds features, some of which are derived from recent psychological research, including automated coaching on barriers, between-participant social support, competition and monetary rewards. Participants can share with their social networks and solicit support from personal networks.

Alive! was originally developed by NutritionQuest in collaboration with leading university experts (from Berkeley, Brown and Stanford), Kaiser Permanente researchers and from international experience with large-scale health behavior change programs.



Alive and well

To what extent does the automated system tailor content to individual needs?

Weekly small-step goal-setting is a key component of Alive-PD. The physical activity goals are based on a multi-week activity plan developed by the individual, starting with his/her baseline activity level. Suggested weekly dietary goals are based on responses to a baseline diet and lifestyle questionnaire, and are specific to the individual. For example, the program doesn't give cooking goals to people who don't cook. Goals suggest changes in portion size, frequency or type of foods actually reported by the individual, and are intended to be small cumulative steps within the participant's practical budgetary, home and work life constraints.

The programme works as a turnkey system, allowing for easy administering and optional program features. Can you outline how this works in operation?

After setting up an account with NutritionQuest, an organisation recruits participants and directs them to an organisation-specific URL. Once the individual has enrolled in the Alive-PD program and provided an email address, all subsequent communications occur through the NutritionQuest servers. The program is completely algorithm-driven, from the initial questionnaire and feedback, through delivery of tailored goals to the participant's email address, to the coaching and other activities on the home page. Additional features may be selected by the organisation, including automated interactive voice response phone coaching and automated printed newsletters. Reports on participation and behavior change can be provided to the organisation. Individuals can also enroll.

Has Alive-PD encountered limitations as a largely internet-based service?

The greatest challenge for all technology-delivered programs is ensuring continued and regular participation. Alive-PD focuses extensively on features to promote engagement and reward and incentivize continued participation. Choosing a goal in the email takes the participant automatically to the website, overcoming the initial barrier of accessing the website. There, a team system promotes competition between and social support within teams, with monetary rewards keyed to participation. Weekly health information is accompanied by quizzes, and may be shared on social media. Automated coaching helps participants overcome barriers and tracking keeps the goals in mind. A weekly infographic stimulates participants who are more engaged by visual media. All are designed to keep the participant engaged and on track.

A team at NutritionQuest in Berkeley, California has developed and tested a multi-media intervention programme – Alive-PD – designed to alter high-risk behavior among people on the road to diabetes. The tailored system is capable of reaching huge numbers of people at risk

ONE OF THE greatest challenges for modern medicine is presented by the world's growing diabetes epidemic. By 2030, 470 million people worldwide are expected to have pre-diabetes, a condition in which the blood glucose is higher than normal but not yet high enough to be diagnosed as diabetes. Every year 5-10 per cent of this group will progress to diabetes. This growing burden necessitates widespread efforts to assist pre-diabetics to reduce their major risk factors, such as obesity, inactivity and poor diet.

Pre-diabetics have a window of opportunity in which to modify their behavior and reverse, or at the least significantly delay, their progression to diabetes. Diabetes prevention programs that use intensive monitoring and in-person coaching to achieve changes in eating behavior, physical activity and weight loss have been shown to improve the outcome for pre-diabetics. However, such programs are expensive, and can reach only a fraction of the millions of pre-diabetics in need of assistance. As such, experts and researchers in this area have recognized an urgent need for less expensive tools that can be readily applied to large groups of patients. One such tool at the forefront of this effort is Alive-Pre-Diabetes, or Alive-PD, a year-long multimedia intervention program delivered by email, web and smartphone. It was developed by Dr Gladys Block, Emerita Professor, University of California, Berkeley, along with the team at NutritionQuest.

THE STEP-BY-STEP APPROACH

Alive-PD is an automated programme. Crucially, it is a modification of a strategy proven effective in a randomized trial. This underpinning of an evidence-based intervention sets it apart from most other web-based behavioral modification programs. The predecessor of Alive-PD – also conceived and developed by the Block team – is A Lifestyle

Intervention Via Email (ALIVE!). Recognising the importance of measuring impact and efficacy, the Block team designed and conducted a randomized, controlled trial involving over 800 individuals, with impressive results. The trial examined the impact on individuals following the ALIVE! approach versus a control group that received no support. The data demonstrated that the program significantly increased physical activity and fruit and vegetable intake, and decreased saturated fat intake, compared to the control population: "The changes were not only statistically significant, they were also of meaningful size," highlights Block. "For example, the intervention group increased their weekly amount of moderate activity by 46 minutes more than the control group."

PUSH OR PULL?

One of the key concepts behind the 'Alive' system and arguably central to its success is the 'push'-initiated interaction between the program and its participants. A participant is contacted regularly by an automated system, with content designed to maximize program engagement: "Continued engagement is critical for achieving long-term behavioral change and weight loss, and Alive-PD has included numerous components to maintain participation," explains Block.

The design of both ALIVE! and Alive-PD has been guided by the expertise of co-owner Dr Clifford Block – a behavioral psychologist experienced in designing large-scale technology-delivered interventions. With his guidance, the group created a technology-driven regime that could be tailored to the individual. Its components are based on well-established behavioral principles: "These principles suggest concrete behavioral management strategies, such as setting goals, self-monitoring, anticipating barriers, rewarding accomplishments and increasing skills as ways to elicit and reinforce

An activity plan guides a participant's progress toward the recommended aerobic activity level. The plan may be changed at any time with the drop-down menus, including the long-term target, the weeks to get there, the days per week, etc.

Change your Activity Plan

You are currently working towards getting 150 minutes of aerobic activity per week. This week you are scheduled to do 55 minutes of aerobic activity on three days. If your current plan is no longer working for you, or you want to start over, you may change it below.

I want to start by exercising:

3 days per week

I want to start out doing:

55 minutes per week

My long-term target is to get to:

150 minutes (two 1/2 hours) per week

I want to get to my long-term target in:

12 weeks

Select an activity:

Walk briskly for fitness



My Activity Plan

Week 1 At least 55 minutes total
11/18/13 About 20 minutes on 3 days:
to 11/24/13 Walk briskly for fitness.

Week 2 At least 65 minutes total
11/25/13 About 25 minutes on 3 days:
to 12/1/13 Walk briskly for fitness.

Week 3 At least 75 minutes total
12/2/13 About 25 minutes on 3 days:
to 12/8/13 Walk briskly for fitness.

INTELLIGENCE

ALIVE-PD

OBJECTIVES

To reach large numbers of pre-diabetics with an effective, research-based intervention to reduce their risk of developing diabetes.

PARTNERS

Palo Alto Medical Foundation Research Institute, Palo Alto, California, USA

FUNDING

National Institute of Nursing Research, part of the National Institutes of Health

CONTACT

Professor Gladys Block
Scientific Director

T +1 510 301 2984
E gblock@berkeley.edu

www.sph.berkeley.edu/gladys-block

NutritionQuest
15 Shattuck Square
Suite 288
Berkeley
California
94704
USA

T +1 510 704 8514 (NutritionQuest)

www.nutritionquest.com

GLADYS BLOCK is internationally known for her research on dietary factors, with 180 peer-reviewed publications. Since retiring from University of California, Berkeley, she has focused on translational research for real-world applications.

CLIFFORD BLOCK is a behavioral psychologist who spearheaded important international programs using technologies and behavioral principles to improve health and education. He applied this expertise to guiding Alive-PD's behavioral intervention components.

TORIN BLOCK, CEO of NutritionQuest, was instrumental in the design of Alive-PD and its predecessor programme, ALIVE! He guided the integration and implementation of all behavioral, technical and programming components.

Founded on years of evidence, Alive-PD stands apart as an exemplary model of modern disease prevention

the desired behaviors, until they become well-established habits," emphasizes Clifford Block. Leading health behavior change experts have extensively collaborated with the NutritionQuest team, as have experts in diabetes and the evolving fields of positive psychology and behavioral economics, which are important for sustaining motivation and engagement.

MAINTAINING GAINS

Establishing and maintaining habitual change is central to the project and to the success of the participants. Alive-PD is not a simple weight-loss programme (although weight-loss may also reduce diabetes risk) – rather, it focuses on long-term changes in physical activity and eating habits by providing small and frequent goals for participants to work towards. In essence, it is a gradual step-by-step framework that is achievable and easy to follow. One of the strengths of this framework is the fact that it is custom-made to each participant. This tailoring – based on an initial questionnaire during registration – provides participants with achievable and relevant goals, as well as the opportunity to create their own. Block provides an example of goals relevant to real life: "This week when I shop, I will show my children how to read the label and choose cereal with less sugar". Over time, such small steps lead to meaningful changes that can be maintained.

The effectiveness of this approach was measured during the randomized trial assessing the efficacy of the predecessor programme, ALIVE!. Not only was the trial able to demonstrate that the intervention group significantly changed all of their habits in the target areas, as mentioned, but critically these changes were sustained over time: "The significant improvements that were achieved by the intervention group compared with the control group were maintained and remained statistically significant four months after the conclusion of the intervention," points out Block. This finding is powerful in providing credibility to the program's

Participant's home page, week 1. Shown are the two weekly Health Notes and the dashboard with links to the activity plan, daily logging, team competition, messaging system and other features.

ambition of achieving long-term behavioral change. In the context of diabetes, this is the only type of change that will be sufficient to reduce an individual's risk profile and subsequently their chance of developing diabetes.

Despite the success of previous trials and the expertise behind the program design, the Block team (which is completed by CEO of NutritionQuest, Torin Block) is keen to continually evaluate and thus improve the program. As such, the group is currently running a second randomized controlled trial, focusing on measuring the project's impact on diabetes-relevant biomarkers: "It will assess the effectiveness of Alive-PD in inducing changes in glucose and hemoglobin A1c blood measures as well as changes in lipids, blood pressure, weight and waist circumference, compared with a delayed-entry control group," explains Block.

GOOD CREDENTIALS

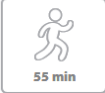
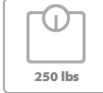




Today diabetes has reached epidemic proportions. The condition is life changing; it vastly increases the risk of many debilitating diseases and requires frequent and expensive intervention. Without improvement, this vulnerable sector of society will place a huge financial and medical burden on resources in coming decades. In this context, it is essential that programs and services are created which can reduce the risk profiles of pre-diabetics and thereby reduce the number of people advancing to diabetes and other disease.

Alive-PD has the potential to do just that. This intervention program is available as a tool for organizations, for patients directly, or for healthcare professionals to prescribe. It is entirely automated, thus dramatically reducing staff time and costs. Founded on years of evidence and expertise, Alive-PD stands apart as an exemplary model of modern and credible disease prevention.

Randomized trial paper reference: Sternfeld B, Block CH, Quesenberry CP, Jr, Block TJ, Husson G, Norris J, Nelson M, Block G. Improving Diet and Physical Activity with ALIVE. A Worksite Randomized Trial. American Journal of Preventive Medicine 2009; 36(6):475-483. PMID- 19460655


Watch Dr Gladys Block's presentation at Stanford Medicine-X: <http://medicinex.stanford.edu/portfolio/5562>

You Can Do It, Clifford!


Home	My Goals	Challenge Points	Messages	Health Notes	Support
 55 min Activity Plan	 250 lbs Log Weight	 Inbox (2)	 120 My Points	 15745 Prevention Pennies	 LEAD TEAM TEAM A Leaderboard

YOUR IMPORTANT HEALTH NOTES

Pre-Diabetes: A Tipping Point

 You have pre-diabetes—what now? What is it? Can it be reversed?
[Read more.](#)

What Should I Eat? And Not Eat?

 You don't need a crash diet! Here are the key tips for preventing diabetes. And they will help you lose weight.
[Read more.](#)

NutritionQuest