

Distance Learning for Delivery of the Diabetes Prevention Program: Experiences of the Cooperative Extension National Diabetes Prevention Program Working Group (CE-NDPP)

Social distancing restrictions imposed in early 2020 due to COVID-19 forced a halt to vital in-person Extension diabetes prevention programs. The Cooperative Extension-National Diabetes Prevention Program working group assisted the transition of member programs to a distance learning format through continuing education on best practices for virtual program delivery and information exchange forums on member successes and challenges. Sixteen states transitioned to distance learning and 107 programs were implemented using delivery platforms and systems appropriate to their resources and needs. Co-facilitation, educator support, and partnerships were important to success, and expanded reach to new audiences and high retention were benefits.

BEST PRACTICES

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Diabetes is one of the most common chronic diseases in the United States, affecting over 30 million Americans. An additional 84 million people have prediabetes, approximately 30% of whom will develop diabetes in the coming five years (Center for Disease Control and Prevention [CDC], 2020a). Prediabetes, a risk factor for type 2 diabetes, can be detected through simple screening tests (Engberg et al., 2009; American Diabetes Association, 2018). The high prevalence of prediabetes and small percentage of Americans who are aware that they have prediabetes (15%) creates an urgency to increase prediabetes screening and expand

access to diabetes prevention programs for those at risk (CDC, 2020b).

To address the increasing burden of type 2 diabetes in the U.S., the Centers for Disease Control and Prevention (CDC) created the National Diabetes Prevention Program (National DPP) in 2010 to organize efforts to prevent or delay type 2 diabetes. A key component of the National DPP is an evidence-based lifestyle change program (LCP) that reduces the risk for developing type 2 diabetes by as much as 58% in people with prediabetes who lose 5 – 7% of body weight by (Knowler et al.,

2002; Knowler et al., 2009). Those who achieve normal glucose regulation during this time have a 56% lower risk of developing diabetes in 10 years (Perreault et al., 2009). Despite efforts by the National DPP to expand programming, many areas do not have access to diabetes prevention education and many at-risk groups are underrepresented in these programs. The Cooperative Extension System (CES) has the potential to meet this need through its vast reach and mission to bring knowledge and skills to communities to improve health and well-being (Buys & Rennekamp, 2020; Cooperative Extension System, n.d.).

The CES National Framework for Health and Wellness published in 2014 aligns with the U.S. Department of Health and Human Services' National Prevention Strategy (National Prevention Council, 2011; National Framework for Health and Wellness, n.d), and is based on the Social-Ecological model. Chronic disease prevention and management is one of the six priority program areas identified in the framework. Many State CES have joined the National DPP and adopted the CDC recognized LCP for diabetes prevention as one of their Extension chronic disease prevention programs. In most states, the LCP is delivered by Family and Consumer Sciences Extension educators trained as lifestyle coaches.

The CDC LCP, a twelve-month lifestyle intervention, can be delivered in-person, asynchronous online (no group meetings), synchronous distance learning, or a combination of in-person and distance learning (CDC, 2021). For in-person and distance learning programs participants meet for a minimum of sixteen sessions in the first six months, and once a month for the final six months. A trained lifestyle coach facilitates lessons on healthy eating, physical

activity, problem solving and stress management. Participants track their weight and physical activity for each session.

PURPOSE

The Cooperative Extension-National Diabetes Prevention Program working group (CE-NDPP), was formed in 2017 to expand diabetes prevention program delivery through Extension, and increase the number of state Cooperative Extension Services recognized by the CDC as diabetes lifestyle change program providers. Working group membership has expanded to 21 states (AK, AZ, AR, CO, FL, GA, ID, KS, KY, MI, MN, MO, NC, ND, NJ, NM, OK, SC, TN, VA, WA). When the CDC allowed in-person programs to transition to distance-learning in early 2020 due to COVID-19, the CE-NDPP focused their efforts on assisting member states transition their in-person programs to distance learning. This paper describes the CE-NDPP activities, actions taken and lessons learned by its member, and future opportunities created by these actions.

BACKGROUND

Diabetes emerged as a significant risk factor for severe COVID-19 infection (Petrilli, et al., 2020; Singh et al., 2020; Yang et al., 2020). People with COVID-19 and diabetes are more likely to be admitted to the ICU, require mechanical ventilation, and succumb to the disease (Seiglie et al., 2020). The social distancing restrictions implemented in early 2020 to control the spread of COVID-19 resulted in lower levels of physical activity, increased stress, and lower dietary quality (Gallagher et al., 2021; Tison et al., 2020;). At the same time, many Extension educators were forced to halt critical in-person LCPs when prevention of diabetes was more important than ever.

To help communities combat the negative impact of COVID-19 on diabetes risk, Extension pivoted to provide the CDC LCP in distance learning formats. During COVID-19, the CE-NDPP supported member states by offering a national webinar on best practices for virtual delivery of the LCP and highlighting systems developed by three state Extension Services who had successfully transitioned to a distance learning format. Monthly meetings were conducted to support sharing of ideas and experiences throughout the year. In addition, the CE-NDPP investigated the response to COVID-19 and lessons learned among CE-NDPP member states. In

early 2021, the CE-NDPP collected data from its members about their transition to distance learning, the platforms used, number of cohorts transitioned to or started through distance learning, CDC recognition status, and lessons learned. An online survey was emailed to the 21 CE-NDPP state Extension program members. In addition, in-depth information from three states about their strategies for delivering the LCP through distance learning was collected. The project was determined to be exempt from IRB Review by the University of Tennessee Institutional Review Board, as it did not involve human subjects as defined by federal regulations.

FINDINGS

SURVEY RESULTS

Twenty CE-NDPP members responded to the online survey and provided information about their respective state Extension programs. In response to COVID-19, 16 states pivoted from in-person to distance learning or online programs and educated 107 cohorts of LCP participants. These programs used a variety of formats including video conferencing and audio only teleconferencing. Eight Extension organizations applied for CDC recognition in the distance learning modality during the pandemic. Key lessons learned, benefits and challenges are presented in **Table 1**.

HIGHLIGHTS OF THREE EXTENSION DISTANCE LEARNING PLATFORMS FOR THE CDC LIFESTYLE CHANGE PROGRAM

The CE-NDPP featured details of three State Extension System approaches to distance learning systems for delivering the LCP in a national webinar on November, 6, 2020. (**Table 2**)

Virginia Cooperative Extension (VCE):

APPROACH

A core team of VCE Extension faculty mobilized in early 2020 to create the online platform and provide the training necessary for Extension agents to offer the LCP through distance learning. VCE utilized Canvas™, a web-based learning management system available at Virginia Tech, to create an all-in-one online participant program platform that contains all required participant and Extension Lifestyle Coach materials and facilitates collection of CDC required outcome metrics. Design criteria for the platform were that it house standardized materials to facilitate all 26 sessions of the program, facilitate between-session communication, have a

simple participant interface for easy access to live sessions, data collection systems, and participant resource materials, and comply with HIPAA standards.

VCE adjusted their process for evaluating eligibility of interested individuals to accommodate the online environment. Rather than a group information session, interested individuals are contacted for an individual phone conversation at which time eligibility is determined, program fit assessed, and required information collected for eligible individuals who choose to register for the program. Registered participants are mailed a set of program materials prior to the start of the program that include the participant handbook and tracking logs, activity monitor, stretch band, and calorie book.

PROGRAM FEATURES AND DATA COLLECTION

The final Canvas program platform met all design criteria. The Lifestyle Coach customizes a home page with their personal information and an introduction video. Modules for each of the 26 sessions contain all required instructional materials. The Lifestyle Coach is able to customize each module and control participant access as the session date approaches. VCE staff developed a schedule of between session texts with supportive links to CDC reinforcement videos that the Lifestyle Coach distributes to participants through the Canvas platform. Participants enter the Canvas platform on a landing page for the session scheduled for that week. A Zoom link to the live sessions is found on the landing page for ease of access, as well as a link to the HIPAA compliant data entry system (Google Forms) where participants report their weekly weights and physical activity minutes. Electronic copies of the relevant pages from the participant handbook and additional support materials and links are also found on this page. Finally, short training videos on Canvas, Zoom, and a food tracking app (Loselt!) are linked on every session landing page to orient participants to the technology.

University of Minnesota Extension (UME)

APPROACH

UME conducted an ongoing series of LCP telehealth cohorts in early 2020 to pilot its effectiveness and to establish best practices for a distance delivery model. The team chose Zoom for session delivery, as it is easily accessible from a variety of devices and includes built-in tools for engagement. Each cohort was led by a team of two lifestyle coaches: the primary coach provided course content and facilitated group discussion, and the

second coach monitored the chat and handled any technological issues that might arise. Outside of the distance learning classroom, each pair of lifestyle coaches worked with a multidisciplinary planning team, including distance learning support and an evaluation specialist, that provided training and support on Zoom, record-keeping, data gathering methods, post-session debriefs, and other strategies to foster participant engagement in a distance learning setting. In addition, each pair of coaches also worked with organizational Master Trainer Selects on an ongoing basis to discuss and plan visuals, engagement tools, and adapt content for a distance learning environment.

PROGRAM FEATURES AND DATA COLLECTION

Participant experience was prioritized throughout all phases of planning and program implementation. A participant readiness assessment was developed and established as a key element of program delivery. This tool was initially designed as a way for coaches to connect with participants to determine their comfort level with technology and if they had a reliable, affordable way to connect to the internet. It immediately became clear that the readiness assessment became a mechanism to build trust and rapport between coach and participant as it provided a space for coaches to work alongside participants to best prepare them for successful participation and completion of the program. Qualtrics was initially selected to collect session data because it was institutionally available to the lifestyle coaches and allowed for secure data collection and analysis. Participants were provided with a de-identified code to use when entering their data. However, over time it became evident that this data collection system was neither easy nor comfortable for many of the participants. To make data collection easier, coaches allowed participants to choose a method that worked for them, either providing the information over the phone, through a password protected Excel spreadsheet, or an online application such as MyFitnessPal or Loselt!. Although this approach required more time of the lifestyle coach, participants felt less burdened and submitted data more consistently.

University of Idaho (UI)

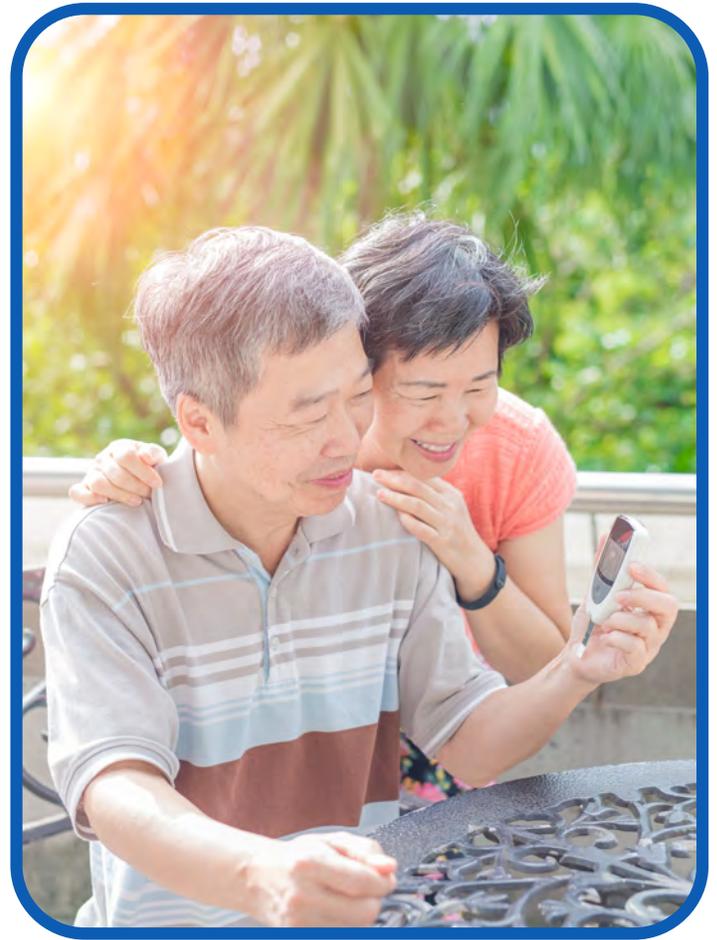
APPROACH

A team of two Extension faculty developed an online delivery system for the UI LCP in January, 2020 and applied for CDC recognition status to provide a distance learning modality. The first UI LCP distance learning program began in February 2020. With the onset of COVID-19 in March 2020, all faculty and professional staff were trained to deliver the program via distance learning, and all in-person programs were moved to distance learning. To develop the distance learning platform for the UI LCP, lead faculty utilized programs and tools readily available through their university.

PROGRAM FEATURES AND DATA COLLECTION

Participants interested in the UI LCP register using the UI Marketplace, an online site where UI Extension customers sign up and register for classes. Once a participant registers, they are sent an email with a welcome letter and link to a Qualtrics survey to complete a program consent form and questionnaire. Upon completion, a participant is assigned a de-identified code and receives a second email with details to attend their first program session. UI Extension faculty and staff lifestyle coaches deliver the UI LCP live using the UI Zoom video-conferencing system. Using the Zoom program tools, the coaches share their screen to display session handouts, supplemental information such as weight logs, and lead group discussion. Participants can also unmute or use chat to participate in discussions. In the first distance learning session, participants are informed how to access a Qualtrics link and use their de-identified code to log their weight and physical activity.

The UI lead faculty are currently considering other distance learning delivery programs and methods to further enhance and develop the UI National DPP. The current delivery method, using four programs for registration, program delivery, and data collection is working, but has several limitations. The current delivery system is not an all-in-one platform that coaches and participants can access for everything, such as materials, communication, and recordings. Participant tracking of enrollment, forms, and logs involves integrating data from three programs. One platform that collected all data and forms could streamline this process, reduce data collection workload and errors. UI lead faculty plan to pilot an integrated platform designed for the diabetes prevention program in 2021 to determine if it may be an option for DPP distance learning.



DISCUSSION

The COVID-19 pandemic presented challenges to chronic disease prevention efforts. As Extension offices suspended in-person programming across the country, many program coordinators made the decision to pivot to remote delivery. In the case of Extension organizations offering the CDC LCP, the peer support and resources offered by the CE-NDPP helped ease the transition to this unfamiliar delivery mode. The CE-NDPP provided a way for program coordinators to get support for challenges and share best practices.

Cooperative Extension is embedded in all land-grant universities in the United States. As part of the university system, organizations had immediate access to a variety of distance learning delivery platforms, data collection management systems, and support from university digital learning offices. This connection with the university system allowed Extension to respond with the necessary tools and support to seamlessly transition to distance delivery. The three programs featured in

this article developed distance learning platforms and systems based on their local needs and resources.

All three programs found that Zoom provided sufficient functionality and opportunity for engagement to provide a quality experience for participants during sessions. Each developed different systems for collecting weekly weights and physical activity minutes from participants as required by the CDC. VCE opted for an integrated platform that centralized operations and combined systems into a “one stop shop”. They standardized materials used in program delivery while still allowing for some customization by the educators. UME took a team approach to conducting the program, providing educators with support through a multi-disciplinary team. Their system was participant centered with educators adapting their instruction and data collection methods to meet the participants needs and preferences. UI used four separate systems for participant registration, program delivery, communication and data collection that they found cost effective, but are looking for a more integrated system for future programs that they believe will be more efficient.

Increased flexibility in modes of delivery of the LCP will enhance Extension’s ability to equitably serve our target audience. Given the growing use and acceptance of accessible technologies in low-income communities, synchronous remote LCP delivery can benefit many low-income individuals at risk of diabetes (Kim et al., 2019; Reininger et al., 2013). Online distance learning programs address the concerns of lack of transportation and long distances to in-person classes (Mensa-Wilmot, et al. 2017). Although internet access is an issue for some communities, the vast majority of the US population has access to various types of mobile technology (Seervai & Gustafson, 2018). All of the CE-NDPP member states that applied for CDC recognition as a distance learning LCP provider plan to continue their in-person programs to accommodate the resources and preferences of people who wish to participate in the LCP.

The challenge for state Extension Services is to develop program delivery systems that enhance the conduct of the LCP and its key strategies of goal setting, self-monitoring, and motivational peer support within an appealing and user-friendly interface critical for successful weight loss (McTigue & Conroy, 2013). The CE-NDPP provides program coordinators a platform to discuss these needs, share best practices, and

coordinate national evaluation efforts. The lessons learned during the COVID-19 pandemic by CE-NDPP members presented in this paper will inform the conduct of future distance learning and in-person LCP programs. The CE-NDPP will continue to meet monthly and plan support activities to improve diabetes prevention efforts in Extension far beyond the COVID-19 pandemic era.



You may click here to access the references, tables, and graphs for this article.



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Tables:

Table 1
Lessons Learned, Benefits, and Challenges of CE-NDPP Member States with Diabetes Prevention Lifestyle Management Programs During COVID-19 (N=16)

Lessons learned	Extension infrastructure: Technology resources of the university made online delivery more feasible.
	Co-facilitation: The co-facilitation model is advantageous in regards to group support, coach support, and technology issues.
	Regular support of educators: Monthly meetings provided technical assistance to Extension educators.
	Partnership: Partnerships enhanced various aspects of the program including recruitment efforts, lifestyle coach training, and participants retention.
Benefits	New audiences and formats: Virtual formats made programs available to individuals who might otherwise not be able to attend in-person sessions due to scheduling/work conflicts and transportation limitations.
	Expanded reach: While most states offer DPP in some, but not all counties, the virtual format of program delivery enhanced statewide reach.
	Added benefits of the program beyond diabetes prevention: The National DPP provided a form of social support for participants during a time of unprecedented isolation
	High retention: up to 100% retention even with the change to virtual formats
Challenges	Challenges with internet access: Many communities still do not have good broadband which hinders virtual program participation.

Table 2***Characteristics of Three Extension System CDC Lifestyle Change Programs***

State Extension Service	Year of CDC LCP initiation	CDC recognition status*	Initiation date of distance learning (DL)	# of DL cohorts/ participants	Program platform/ conferencing system	Weekly data collection method
Virginia Cooperative Extension	2016	In-Person Preliminary	July, 2020	5/66	Canvas/Zoom	Qualtrics
University of Minnesota Extension	2013	In-Person & Distance Learning Full	June, 2020	6/43	None/Zoom	Per participant preference
University of Idaho Extension	2017	In-Person Pending Distance Full	February, 2020	10/125	None/Zoom	Qualtrics

*CDC recognition status - (pending, preliminary, full) granted for delivery mode (in-person, online, distance learning)