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Assessing the Impact of Transitioning from In-Person Diabetes Prevention and Management Services to Distance Learning Due to COVID-19

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EXECUTIVE SUMMARY

Introduction

The Los Angeles County Department of Public Health (LACDPH) has a long history of working on type 2 diabetes prevention and management with funding from the US Centers for Disease Control and Prevention (CDC). This work focuses on improving access to and utilization of the National Diabetes Prevention Program (DPP) and the Diabetes Self-Management Education and Support (DSMES) program. LACDPH, as facilitator of the Los Angeles County Diabetes Coalition, addresses diabetes in partnership with a broad array of partner agencies and organizations.

LACDPH engaged Ad Lucem Consulting to assess the impact of the COVID-19 pandemic on delivery of the National DPP and DSMES programs by providers in Los Angeles County. The assessment explores the successes and challenges resulting from the switch from in-person to virtual/distance learning National DPP and DSMES programming that was necessitated by the pandemic. The assessment included a review of internal LACDPH National DPP and DSMES documents, a literature review on the feasibility and success of diet and weight loss and diabetes prevention/education/management interventions delivered via telehealth, and 35 key informant interviews with local National DPP and DSMES providers and national experts on the programs.

Three case studies supplement this report to further explore key aspects of virtual/distance learning provision of the National DPP and DSMES program.

Document Review Key Findings

From June 2020 to May 2021 the majority of National DPP and DSMES providers surveyed by LACDPH reported continuing to actively conduct the National DPP and/or DSMES in-person and/or via virtual/distance learning, however, several National DPP and DSMES providers suspended program provision due to COVID-19. National DPP and DSMES providers who continued to actively run the programs most commonly modified them to adapt to COVID-19 restrictions by offering video and/or phone sessions, utilizing telehealth platforms, and less frequently, by hosting small in-person sessions.

Literature Review Key Findings

Results from telehealth interventions examined for the literature review indicate that virtual/distance learning delivery of National DPP and DSMES can be successful, however, many of these interventions were specifically designed for telehealth delivery. In contrast, the COVID-19 pandemic required many programs designed for in-person to switch rapidly to virtual/distance learning or telehealth in order to continue operating. Additional studies are needed to determine whether programs delivered under pandemic conditions were successful in achieving health outcomes similar to programs initially designed for telehealth provision.

Key Informant Interview Findings

Key informants indicated that virtual/distance learning can be successful and most providers reported they would continue with hybrid (in-person and virtual/distance learning) National DPP and DSMES programs in the future. Virtual/distance learning programs expanded the reach of the National DPP and DSMES; many providers described serving a larger number of individuals across a wider geographic range as virtual/distance learning programming removed barriers to in-person participation experienced before COVID-19. Additional outreach, resources and technologies/equipment are needed, however, to ensure that all populations are able to fully participate in virtual/distance learning programs. Many providers reported that they would benefit from additional training and opportunities to learn about best practices for delivering virtual/distance learning programs. Interviewees called for policy and regulatory changes at the state and federal levels to increase access to the programs, improve reimbursement, and provide additional flexibility for delivering virtual/distance learning programs.

Recommendations

The following recommendations emerged from the synthesis of findings and input from members of the Los Angeles County Diabetes Coalition (LACDP). Coalition members reviewed and discussed the recommendations at a meeting in January 2022. They expressed support for the recommendations overall, especially expanding networking and learning opportunities. LACDP members suggested a number of activities needed to implement the recommendations.

The recommendations provide concrete direction to the Los Angeles County Department of Public Health (LACDPH) on supporting virtual/distance learning diabetes prevention and management in LA County in partnership with the LACDC and other partner organizations/agencies. LACDC members see LACDPH as providing overall leadership for recommendation implementation with LACDC members playing a role in sharing lessons learned and best practices in training and networking activities, in participating in the development of guidance materials on virtual/distance learning delivery of the National DPP and DSMES programs, and by advocating for policy and regulatory changes that facilitate improved program delivery.

While these recommendations were developed for work in Los Angeles County, they provide relevant guidance to local public health departments and National DPP and DSMES providers across the country who are experiencing similar opportunities and challenges around virtual/distance learning program provision.

- Provide technical assistance to new and current National DPP and DSMES providers:
    - Train providers on virtual/distance learning program delivery for diverse populations:

      Participant Engagement
        - Adapting marketing, outreach, referral, and enrollment strategies to the virtual/distance learning setting for diverse populations.
        - Sustaining active participant engagement in the virtual/distance learning setting.
        - Working with interpreters in the virtual/distance learning environment to ensure full participant comprehension and engagement.

- Creating an active, supportive online community among program participants.

Technology

- Addressing virtual/distance learning technology barriers faced by older adults.
- Developing and implementing cyber security protocols.
- Using apps to facilitate virtual/distance learning interaction.

- Develop easy to understand "how to" one pagers for providers on addressing common barriers to virtual/distance learning program delivery and on accessing distance/telehealth platforms for participants.
- Provide on-site technical assistance/mentoring to programs struggling to deliver virtual/distance learning modalities.

- Develop lessons plans/curricula for pre-program sessions for National DPP and DSMES programs to orient participants to using technology.
  - Train and support providers to implement pre-program sessions.

- Support National DPP and DSMES providers to overcome common technology/equipment barriers
  - Identify a few recommended virtual/distance learning platforms that are best suited to National DPP and DSMES program provision and provide instruction/guidance on using the platforms.
    - Explore purchasing and sharing virtual/distance learning platform licenses among National DPP and DSMES providers.
  - Connect National DPP and DSMES providers to funding sources for equipment (e.g., laptops, cameras, lighting) needed to deliver high quality virtual/distance learning programs.
  - Connect National DPP and DSMES providers to funding sources for purchase of participant devices (e.g., iPads, Chromebooks, smartphones, internet hotspots, Bluetooth scales) that can be loaned or given to program participants to facilitate virtual/distance learning.

- Facilitate networking opportunities among National DPP and DSMES providers.
  - Host opportunities (in-person and virtual/distance learning) for National DPP and DSMES providers to share lessons learned and best practices.
  - Create a pool/registry of National DPP and DSMES coaches to fill vacancies when staff turnover occurs.

- Keep National DPP and DSMES providers informed of funding opportunities, and policy and systems changes.
  - Share funding opportunities to support virtual/distance learning program provision.
  - Communicate state and federal policy and regulation updates to providers to facilitate program compliance.
  - Advocate for changes in policies and regulations at the state and federal level to increase access, improve reimbursement, and provide additional flexibility for virtual/distance learning National DPP and DSMES programs.

INTRODUCTION TO NATIONAL DPP AND DSMES

The Los Angeles County Department of Public Health (LACDPH) has a long history of working on type 2 diabetes prevention and management with funding from the US Centers for Disease Control and Prevention (CDC). LACDPH's CDC funded *Solutions for Healthier Communities* (SHC) initiative is charged with promoting and scaling diabetes prevention and management by improving access to and utilization of the National Diabetes Prevention Program (DPP) and Diabetes Self-Management Education and Support (DSMES) program. LACDPH, as facilitator of the Los Angeles County Diabetes Coalition, addresses diabetes in partnership with a broad array of partner agencies and organizations.

Type 2 diabetes and prediabetes (in which blood sugars are elevated but not high enough to be diagnosed as type 2) remain serious health issues faced by a significant portion of the US population. In California, approximately 46% of adults are estimated to have prediabetes or undiagnosed type 2 diabetes, and in Los Angeles County, 1 out of 10 adults has type 2 diabetes. People most at risk for developing type 2 diabetes include individuals over 45 years of age who are overweight or obese, are physically inactive, and/or have a family history of diabetes or had gestational diabetes. Black/African Americans, Latinx, American Indians and Alaska Natives are at higher risk.[i]

The National DPP is a yearlong lifestyle modification program that aims to reduce the incidence of type 2 diabetes through diet and exercise behavior change. The National DPP has its origins in a multi-center randomized clinical trial conducted in the United States in 1996 that compared the effects of lifestyle modification to an oral medication intervention that helps control blood sugar levels on reducing the incidence of type 2 diabetes. Because of the success of the original clinical trial, in 2010 the US Congress authorized the CDC to lead the CDC National Diabetes Prevention Program, an effort to spread the success of the lifestyle modification program across the nation.[ii]

DSMES, a shorter program than the National DPP, supports individuals with diabetes through "facilitating the knowledge and skills necessary for diabetes self-care, as well as activities that assist a person in implementing and sustaining the behaviors needed to manage his or her condition on an ongoing basis."[iii] For people living with diabetes, DSMES services have been shown to have a positive impact on lifestyle changes, such as eating patterns and activity levels, ultimately leading to decreases in hemoglobin A1c levels, prevention or delay of diabetes complications, and improved quality of life.[iv]

I. THIS ASSESSMENT

The Los Angeles County Department of Public Health engaged Ad Lucem Consulting to conduct this assessment of the impact of the COVID-19 pandemic on delivery of the National DPP and DSMES program by providers in Los Angeles County. The assessment explores the successes and challenges resulting from the pandemic-necessitated switch from in-person to virtual National DPP and DSMES programming.

[i] http://publichealth.lacounty.gov/diabetes/about/facts.htm
[ii] https://www.cdc.gov/diabetes/prevention/about.htm
[iii] https://www.cdc.gov/diabetes/dsmes-toolkit/background/background.html
[iv] https://www.cdc.gov/diabetes/dsmes-toolkit/background/background.html

Research questions driving the assessment included:

- What were the virtual National DPP and DSMES program implementation best practices, challenges, and solutions, including technology barriers and solutions?
- What is the additional/different capacity needed for virtual programs?
- What was the impact of the switch to virtual programming on outreach, enrollment, retention, and behavioral/health indicator outcomes for the National DPP and DSMES program and what are strategies for enhancing these in the virtual context?
- How did the switch to virtual programming change program costs, reimbursements, billing and return on investment?
- What policy and systems changes are needed to support ongoing virtual/hybrid program provision?

The assessment included a review of internal LACDPH National DPP and DSMES program documents, a literature review on the feasibility and success of diet and weight loss, National DPP and DSMES interventions delivered via telehealth, and 35 key informant interviews with local National DPP and DSMES providers and national experts on the programs.

Three case studies supplement this report to further explore key elements of virtual/distance learning provision of the National DPP and DSMES programs on the following topics: 1) outreach and enrollment 2) program retention, and 3) use of technology.

DOCUMENT REVIEW

I. INTRODUCTION AND METHODS

The Los Angeles County Department of Public Health (LACDPH) provides oversight and support to National Diabetes Prevention Program (DPP) and Diabetes Self-Management Education and Support (DSMES) providers in Los Angeles County. As a part of this role, LACDPH conducts regular surveillance of National DPP and DSMES providers on program implementation successes and challenges and opportunities and provides updates on federal policies and funding. The LACDPH regularly convenes stakeholders from a variety of sectors through the Los Angeles County Diabetes Coalition in order to increase access to, participation in, and insurance coverage of the National DPP and DSMES program for people at risk of/with type 2 diabetes in Los Angeles County.

Although the number of providers fluctuates from year to year, there are usually between 20-30 National DPP and/or DSMES providers operating in Los Angeles County at any given time. The providers are made up of a diverse group of organizations, ranging from healthcare facilities and wellness centers to community-based organizations and academic institutions.

This brief document review compiles key findings on the impacts of the COVID-19 pandemic on National DPP and DSMES provision that emerged from an analysis of quarterly landscape surveys and key informant interviews with dual capacity providers conducted by LACDPH in 2020-2021:

- National DPP and DSMES Los Angeles County Landscape (June 2020 – May 2021)[v]
- Diabetes Prevention and Management Los Angeles County Landscape (May 2021)[vi]
- National DPP and DSMES Dual Capacity Provider Interview Highlights (August 2021)[vii]
- National DPP and DSMES Dual Capacity Provider Interview Highlights – Themes Table (August 2021)[viii]

II. KEY FINDINGS

LACDPH surveyed National DPP and DSMES providers on the impacts of the COVID-19 pandemic on program provision in June 2020, October 2020, February 2021, and May 2021. Tables 1 and 2 list the survey findings across all four survey periods for National DPP and DSMES providers, respectively. The following key findings emerged from the surveys:

- Across all four survey periods, the majority of National DPP and DSMES providers reported continuing to actively run DPP and/or DSMES.

[v] Data Source: LA County DPH – Quarterly Landscape Survey. Data Collection Period: June 2020, October 2020, February 2021, and May 2021

[vi] Data Source: LA County DPH – Quarterly Landscape Survey (n=29). Data Collection Period: May 2021

[vii] Data Source: Interviews with four dual capacity providers who 1) had experience implementing National DPP and DSMES programs and 2) were (at the time of the interview) actively implementing both programs.

[viii] Data Source: Interviews with four dual capacity providers who 1) had experience implementing National DPP and DSMES programs and 2) were (at the time of the interview) actively implementing both programs.

- According to the May 2021 survey, 78% (n=14) of National DPP providers and 78% (n=14) of DSMES providers were actively running National DPP and/or DSMES.

- In each of the four survey periods, several National DPP and DSMES providers chose to suspend program provision due to COVID-19.
  - According to the May 2021 survey, 17% (n=3) of National DPP providers and 11% (n=2) of DSMES providers chose to suspend program provision due to COVID-19.
- Across all four survey periods, most National DPP and DSMES providers who continued to actively run the National DPP and/or DSMES program modified their program by offering video and/or phone sessions, utilizing telehealth platforms, and less frequently, by hosting smaller in-person sessions.

Table 1: Impact of COVID-19 Pandemic on National DPP Provision

	Jun-20	Oct-20	Feb-21	May-21
Total # National DPP Provider Respondents	19	24	22	18
# actively running National DPP	12	15	16	14
# not running National DPP due to COVID-19	5	7	5	3
# not actively running due to reasons other than COVID-19	2	2	1	1
Modifications to National DPP				
Telehealth platform	4	4	2	5
Smaller in-person sessions	1	1	2	2
Video/phone sessions	10	12	13	9
No modifications	0	1	1	1

Table 2: Impact of COVID-19 Pandemic on DSMES Provision

	Jun-20	Oct-20	Feb-21	May-21
Total # DSMES Provider Respondents	21	20	14	18
# actively running DSMES	15	14	11	14
# not running DSMES due to COVID-19	6	4	3	2
# not actively running due to reasons other than COVID-19	2	2	2	2
Modifications to DSMES				
Telehealth platform	11	7	5	7
Smaller in-person sessions	5	3	4	7
Video/phone sessions	9	13	8	9
No modifications	1	2	1	1

Interviews conducted with four dual capacity (National DPP and DSMES) providers did not inquire about the provision of virtual programming or the impacts of the COVID-19 pandemic on in-person or virtual program provision.

LITERATURE REVIEW

I. INTRODUCTION AND METHODS

Ad Lucem Consulting conducted a review of scientific literature to identify research on the feasibility and success of diet and weight loss interventions, National Diabetes Prevention Program (DPP)-based lifestyle interventions, and Diabetes Self-Management Education and Support (DSMES) interventions delivered via distance learning or telehealth before and during the COVID-19 pandemic. Given that the literature review was conducted during the pandemic, it was unclear whether there would be a body of literature on program modifications necessitated by the pandemic and a broad search was conducted. The review also included an examination of the barriers and facilitators to implementing distance learning or telehealth interventions more broadly, as these interventions may inform the delivery of the National DPP and DSMES via distance learning or telehealth.

Key words used in the search included but were not limited to: "telehealth intervention body mass index, weight loss, management", "telehealth diet and nutrition", "telehealth diabetes prevention", "telehealth diabetes management", and "COVID-19 telehealth intervention". The terms "eHealth", "telemedicine", "virtual", "distance learning", and "online" were all used in place of "telehealth" in separate searches. References cited in research articles found through key word searches were also reviewed to identify additional studies. The publication date for the articles ranged from 2002 to 2021, but the majority of the articles and reports were published between 2014 and 2021. The review was limited to literature from the United States. The searches yielded hundreds of sources and over 50 relevant articles, webpages, and reports were reviewed.

Studies directly examining National DPP, DSMES, and weight loss interventions implemented during the COVID-19 pandemic were extremely limited. However, prior to the COVID-19 pandemic, telehealth was recognized as a beneficial and acceptable means of delivering the National DPP and DSMES.[1,2] As a result, lessons from telehealth interventions delivered prior to the pandemic and barriers and facilitators to telehealth more broadly may be helpful for informing the development and delivery of the National DPP and DSMES programs via telehealth or distance learning in the future.

II. DEFINING TELEHEALTH

Telehealth has been defined as "a collection of means or methods for enhancing health care, public health, and health education delivery and support using telecommunications technologies."[3] Telehealth is considered to be a more universal term than "telemedicine", and can include not only health care but nutrition counseling, dentistry, mental health services, physical therapy, and other health related services. Telehealth can involve live videoconferencing, transmission of health information electronically for providers to review asynchronously, use of devices to collect and transmit health data to providers (remote glucose monitor, remote weight monitoring device, etc.), and mobile health (mHealth) applications for cell phones and tablet computers.[3]

III. KEY FINDINGS

A. Diet and Weight Loss/Management Telehealth Programs

Interventions delivered via telehealth that are focused on improving dietary habits and promoting weight loss have resulted in improvements in diet quality, weight, and other health outcomes. Results from studies and systematic reviews summarized below indicated that a variety of modes of telehealth delivery may be effective and the length of the intervention may impact the results.

A systematic review and meta-analysis was conducted to assess the impact of telemedicine on body mass index (BMI) among people who were overweight or obese as well as people with diabetes and hypertension.[4] The study included 25 randomized controlled trials that included any form of telemedicine (internet-based system, mobile phone, text messaging, video-conferencing, or telephone). The researchers found that the interventions were effective at reducing BMI regardless of type of telemedicine approach used. However, significant reduction in BMI was seen only in interventions that were longer than 6 months.

The effectiveness of telehealth interventions designed to change dietary habits and reduce chronic disease was assessed through a systematic review and meta-analysis conducted in 2016.[5] Based on studies included in the review, the authors concluded that telehealth interventions with adults with chronic disease resulted in improvements in dietary quality, fruit and vegetable intake, dietary sodium intake, and certain clinical outcomes (i.e. weight, waist circumference, total cholesterol, triglycerides, and systolic blood pressure).

The Veterans Health Association (VHA), a leader in providing telehealth services, has provided a number of different telehealth services to veterans aimed at weight management and care for diabetes and other chronic conditions.[6] Researchers conducted an observational study to compare the VHA programs, MOVE! (an in-person hospital-based program) and TeleMOVE (a telehealth version of MOVE!).[6] The two programs were designed to assist with weight management among veterans with obesity. Study results indicate that TeleMOVE participants achieved significantly greater weight loss than MOVE! participants.

B. Telehealth Diabetes Prevention Programs

Weight loss among individuals with prediabetes that participate in telehealth programs focused on diabetes prevention or DPP-based telehealth programs may experience equal or greater weight loss than those participating in in-person programs. In addition, some of the studies and reviews summarized below indicate that live video conferencing and/or additional behavioral support/counseling may result in greater weight loss for telehealth participants.

A systematic review and meta-analysis of eHealth interventions focused on weight loss and based on the DPP lifestyle intervention curriculum found eHealth intervention participants were successful in losing weight and those receiving additional behavioral support lost even more

weight.[7] The researchers who conducted the review defined eHealth interventions as those that included internet-based applications, mobile applications, social media, educational games, DVDs, interactive voice response and videoconferencing. The eHealth interventions were classified as either stand-alone interventions, interventions supported remotely with communication technology, or interventions supported through face-to-face contacts. The mean percentage weight change across all eHealth interventions was a loss of just under 4 percent of initial body weight, but weight loss was slightly higher for interventions that had remote behavioral support or face-to-face behavioral support.

Researchers found evidence that technology-assisted DPPs can be cost-effective and are associated with weight loss. [8] These technology assisted DPPs were defined as programs that included text messaging, web, or smartphone applications (apps), and telehealth (interventions with live or prerecorded video conferencing).

There are high rates of obesity and overweight among military service members and their families and there is a need for weight loss interventions that address the unique challenges of this population. Researchers conducted a study of a videoconference adaption of a community group based DPP intervention called the Group Lifestyle Balance (GLB) program.[9] The study was part of a larger behavioral weight loss intervention with military family members. The 12-week non-randomized trial included forty-three adult family members of military service members and compared weight loss and meeting attendance between in-person and videoconference delivery modes. Both groups lost weight and there was no significant difference in weight loss between the two groups. Participant retention, however, was significantly better in the videoconference group than in the in-person group (96% vs 70%, respectively). Researchers suggest that the improved retention among the video conference group could be due to the ability to join the program from any location through the videoconferencing platform. This convenience and versatility allowed for individuals with competing priorities or who were relocated/deployed during the program to continue remotely.

Researchers interested in testing whether an internet-based program could result in improved weight loss for individuals at risk for diabetes conducted a randomized controlled trial in which adults with obesity who were at risk for diabetes were randomized to receive either a basic internet program or an internet plus behavioral e-counseling program.[10] All participants received an initial introductory session on study procedures and participated in an internet weight loss program. The group randomized to the behavioral e-counseling program also communicated via email with a weight loss counselor. Weight loss among the group randomized to the internet intervention plus e-counseling was greater than in those randomized to the internet only intervention.

Individuals living in rural areas face challenges attending in-person DPPs. As a result, researchers compared data on individuals receiving a DPP intervention delivered in-person in a community in Montana to individuals in several Montana communities receiving the DPP via telehealth; results suggest that participation and weight loss were similar between groups.[11,12]

C. Diabetes Management Telehealth Programs

Telehealth is recommended as a strategy to increase participation in DSMES,[1] and studies indicate that DSMES delivered via telehealth has resulted in improvements in health and behavioral outcomes. Studies and reviews indicate that diabetes management programs delivered via telehealth have resulted in improvement in glycosylated hemoglobin A1c (HbA1c) and other behavioral and health outcomes.[13-15] Devices that allow for remote patient monitoring and programs that include individual coaching or motivational interviewing may further improve results of DSMES telehealth programs.

Researchers conducted a review of the effectiveness of telehealth in the management of diabetes among difficult to reach populations (i.e. rural populations, medically underserved populations, children, prison inmates, older adults, veterans, etc.).[13] The review included a large number of articles on diabetes and telehealth that were published between 2014 and 2019. Many of the telehealth interventions included in the review were successful at lowering HbA1c. To address issues of access to care, the interventions utilized telehealth, remote patient monitoring, telecoaching/telementoring programs, and/or electronic consultations.

Based on a systematic review that included 19 randomized control trials on telehealth motivational interviewing (MI) interventions,[14] motivational interviewing delivered via telehealth appears effective at improving physical activity behaviors, diabetes self-efficacy, systolic blood pressure, and HbA1c among individuals with diabetes and/or prediabetes.

Diabetes disproportionately impacts individuals living in rural areas and low-income black populations. A longitudinal cohort study of a diabetes telehealth program for predominately black and low-income individuals with diabetes was conducted in rural Mississippi and found an improvement in HbA1c levels and other health outcomes after a 12-month program time period.[15] The program included telehealth and remote patient monitoring (RPM), and participants received the GE Care Innovations' diabetic monitoring package and diabetes management education through a tablet with free wireless.

D. Benefits of Telehealth

Many patients have a high level of satisfaction with remote health care services because of the convenience, time savings, and the reduction in travel time and cost associated with remote or telehealth services. For example, telehealth can allow for live synchronous communication with a variety of health care providers and specialists, while limiting the cost and time required to drive to appointments and park.[16]

Telehealth services have been shown to be an effective way to reach individuals who live in rural areas or areas where access to in-person services can be limited.[11, 12, 17] A study that examined the availability/access of National DPP lifestyle change programs across the US found that less than a third (28%) of all counties in the USA have access to a National DPP and rural areas have significantly less access to the program than urban areas. [18] However, telehealth programs can cover a wide geographic area and reach individuals with limited access to in-person programs.[9] In

addition, for individuals who travel for work or who are relocated due to military affiliation, telehealth allows services to continue without disruption during travel or relocation.[9]

Telehealth can provide an effective means for follow-up care with patients between in-person visits. A telehealth intervention delivered by the Mississippi Diabetes Telehealth Network program included remote patient monitoring devices for individual with diabetes.[15] Active use of these devices allowed participants and providers to monitor blood glucose levels between in-person visits and resulted in better diabetes self-management and a decrease in HbA1c levels.

Group education delivered via telehealth has been successful. A group gluten-free education program was delivered via telehealth for patients who lived in rural areas; after nine months of telehealth visits, patients who participated in telehealth group education had similar improvements in gluten-free diet management and health outcomes compared to patients who received in-person education.[19]

E. Challenges with Telehealth

Despite the many benefits of telehealth, patients/participants experience barriers to availability, accessibility, and usability. Barriers experienced by patients or recipients of telehealth services include a lack of access to technology or the availability of a device needed for telehealth services, internet/connectivity issues, and security or privacy concerns.[16, 20] The elderly and individuals requiring translation services may also experience increased difficulty in using telehealth services.[16, 20]

Health care providers experience telehealth delivery challenges related to added workload, practice regulations, and payment. Challenges in providing telehealth services reported by health care providers include, technical difficulties, a lack of support from administrative staff, and increased workload.[17] Providers have faced challenges with practice regulations and payment. For example, providers using telehealth are often required to be licensed to practice in the same state where their patients are receiving the treatment, and in some states, providers are required to have an in-person visit with a patient before they can provide telehealth services.[17]

F. Changes Needed to Support Telehealth Services

There has been a call to expand telehealth services for chronic disease, dietary counseling and remote support groups for chronic conditions.[17] Researchers have concluded that in order to expand telehealth, providers need enhanced personnel and administrative staff to manage telehealth services and individual follow-up in addition to improvements to technology and equipment.[17]

There has also been a call to **increase access to broadband internet**.[17] Following a switch to telehealth, clinics and health care organizations reported some patients were not able to participate in telehealth visits because of lack of broadband internet access. Broadband access varies considerably by geography and demographic factors. According to the Pew Research Center, as of February 2021, 77% of Americans reported that they had access to broadband at home.[21] However, access to broadband was reported to be lower in rural areas (72% vs. 79% in suburban,

and 77% in urban). In addition, only 64% of people 65 and older reported having access to broadband. Access was also lower among people of color and people with lower levels of education and income.

Changes to telehealth regulations are also needed. Regulations may need to change in some states to eliminate the requirement for in-person appointments prior to the use of telehealth services.[17] In addition, since telehealth providers are often required to be licensed to practice in the same state that their patients are receiving the treatment,[17, 22, 23] regulations may need to be changed to allow providers to be licensed in multiple states. For example, more states may need to join the interstate compact created by the Federation of State Medical Boards to expedite licensure for providers in several states.[17]

Several issues need to be addressed by insurance companies and policymakers to expand telehealth services. These include **consistent and permanent coverage and reimbursement for telehealth services by private insurance companies, Medicare, and Medicaid**. For example, prior to the COVID-19 pandemic, payment to clinicians for routine telehealth services for traditional Medicare beneficiaries was limited. However, telehealth services for Medicare were temporarily expanded by Centers for Medicare and Medicaid Services (CMS) during the early months of the pandemic, which allowed beneficiaries to receive telehealth services in a variety of locations and from a range of health care providers at the same rates as face-to-face services.[24] This change is expected to remain in place until the end of 2021, but it is not clear whether coverage for telehealth services will continue after that point.[24]

IV. DISCUSSION

Based on previous studies and reviews, results from telehealth interventions that focused on diet, weight loss, diabetes prevention, and diabetes management showed positive findings and indicate that telehealth delivery of the National DPP and DSMES program can be successful. However, many of the interventions reviewed were specifically designed for telehealth delivery and participants knew from the beginning of the interventions that the delivery mode would be telehealth. In contrast, during the COVID-19 pandemic, many programs designed for in-person had to rapidly switch to telehealth. As a result, additional studies are needed to determine whether programs delivered under pandemic conditions were successful in achieving the same health outcomes as previous studies and what factors may have contributed to the success or failure of these programs. Further studies are needed to determine whether telehealth interventions can be effective for underserved populations, specific age or racial/ethnic groups who may have less access to or familiarity with the technology needed to participate in telehealth. In addition, changes to support the delivery of telehealth and to overcome some of the challenges of telehealth are needed to further expand delivery of the National DPP and DSMES program via telehealth.

KEY INFORMANT INTERVIEWS

I. INTRODUCTION AND METHODS

Ad Lucem Consulting conducted a series of interviews to assess the impact of transitioning from in-person National Diabetes Prevention Program (DPP) and Diabetes Prevention and Self-Management Services (DSMES) provision to virtual/distance learning due to the COVID-19 pandemic. Interviewees were asked about their insights on the challenges and best practices surrounding virtual/distance learning National DPP and DSMES program provision. They were also asked about additional infrastructure, staffing, capacity, and policy and systems changes needed to support ongoing virtual and/or hybrid National DPP and DSMES program provision. Interviews were conducted with:

- Providers of National DPP and/or DSMES programs in Los Angeles County
- Experts with direct knowledge and/or experience with National DPP and/or DSMES programs

Providers spoke to the interview topics based on their unique experiences as local National DPP and/or DSMES providers and experts were able to provide a broader perspective on best practices and challenges with virtual/distance learning National DPP and/or DSMES program provision.

A. Interviewees

A total of 35 interviews were conducted with National DPP and DSMES providers and experts. Twenty-six of the interviews were with National DPP and DSMES providers in Los Angeles County and included individuals from the following organization types:

- Healthcare Providers (17)
- Other (4)
- Academia (3)
- Health Plans (1)
- Community Based Organizations (1)

The remaining nine interviews (with 10 interviewees as one interview was conducted with two people) were with experts located nationwide with direct knowledge of and/or experience with National DPP and and/or DSMES program provision. Experts represented the following organization types:

- Health Management and Training (4)
- Health Professional Association (3)
- State Public Health (1)
- Academia (1)

Two of the expert interviewees spoke to both National DPP and DSMES, two spoke to just DSMES, and six spoke to just the National DPP. Two experts were also National DPP providers, and one provided both the National DPP and DSMES program.

B. Interview Process

The Los Angeles County Department of Public Health (LACDPH) provided Ad Lucem Consulting with a list of provider and expert interviewees. Expert interviewees were further identified through the literature review conducted for this assessment. Interviewees were recruited by email invitation and follow-up phone calls as needed. Ad Lucem Consulting contacted 42 providers and interviewed 26, reflecting a response rate of 62% among providers. A total of 14 experts were contacted and nine were interviewed, reflecting a response rate of 64% among experts. A description of the interview goals as well as the relationship between Ad Lucem Consulting and LACDPH was included in the recruitment emails. All interviews were conducted over the phone by trained Ad Lucem Consulting interviewers and notes on interviewee responses were typed by the interviewer during the call. The interviews were also recorded, and verbatim transcripts were generated.

All interviewees were notified that the interviews were entirely voluntary, and that the interviewee could decide to end the interview at any time. Interviewees were informed that the interview transcripts would be sent to LACDPH, but that their name and the name of the organization they work with would remain confidential. Interviews required approximately 45 minutes to complete, and the interviewees did not receive compensation for their participation. Interviews were conducted from June to October 2021.

C. Interview Questions

There were several topics covered during the provider and expert interviews including: the impact of COVID-19 on National DPP and DSMES program provision, challenges and best practices associated with implementing virtual/distance learning National DPP and DSMES programs, and policy and systems changes necessary to support virtual/distance learning program provision. While there was overlap in the questions asked about each topic, providers and experts were asked questions tailored to their experience/expertise for a few topic areas. Specifically, providers were asked questions about the infrastructure and capacity necessary for implementing virtual/distance learning programs and advice they would provide to National DPP or DSMES programs moving toward virtual/distance learning program provision. Experts were asked about the types of evaluation that are needed to assess the value or impacts of virtual/distance learning National DPP and DSMES programming and what the future looks like for National DPP and DSMES programs.

D. Interview Analysis

Ad Lucem Consulting used the qualitative data analysis software ATLAS.ti to analyze the stakeholder interviews. Ad Lucem Consulting generated a list of thematic “codes” to be used during the qualitative analysis based upon the key themes outlined in the interview questions as well as additional themes that arose during the interview process. The expert and provider interviews were analyzed separately; two “codebooks” were created – one for the provider interviews and the other for the expert interviews with an effort made to ensure consistency between the two analyses. After importing the 35 interviews into ATLAS.ti, Ad Lucem Consulting analyzed the

interviews and exported the ATLAS.ti output of selected interviewee quotations, organized by primary- and sub-themes.

II. KEY FINDINGS

A. Switch to Distance Learning/Virtual

Almost all providers were providing in-person programs prior to the COVID-19 pandemic, and only two of the 26 providers were already offering primarily virtual/distance learning National DPP and/or DSMES programs. The majority of providers switched to providing virtual/distance learning programs shortly after the start of the COVID-19 pandemic. Table 3 provides an overview of the mode of program provision before and after the COVID-19 pandemic by program type.

Table 3: National DPP and DSMES program provision before and after the start of the COVID-19 pandemic among 26 providers that participated in the key informant interviews.

	PROGRAM PROVISION PRIOR TO PANDEMIC	PROGRAM PROVISION AFTER START OF THE PANDEMIC				
		Continued to Offer Primarily Virtual	Switched to Virtual National DPP	Stopped Offering National DPP	Switched to Virtual DSMES	Stopped Offering DSMES
NATIONAL DPP ONLY	10*	1	6	3	N/A	N/A
DSMES ONLY	5	0	N/A	N/A	5	0
NATIONAL DPP & DSMES	11*	1	8	2	9	1

*One provider was already offering the National DPP virtually, and another provider was offering both the National DPP and DSMES virtually before the pandemic.

B. Impact on Outreach and Recruitment

Among program providers, three main outreach and recruitment methods emerged from the interviews: health care provider referrals, community outreach, and email and/or social media recruitment. Some of the providers used primarily just one of the three methods while others used a combination of methods.

For providers who recruit participants primarily through health care referrals, the majority reported that their recruitment methods had not changed. However, some of these providers did report lower numbers of referrals from health care providers due to an overall decrease in primary care visits. Health care providers were not seeing as many patients due to the pandemic and as a result, they were not referring patients to either the National DPP or DSMES program.

Providers that recruited program participants primarily through community outreach efforts experienced some of the greatest recruitment challenges as a result of the pandemic. Providers noted that even before the pandemic, community outreach often required substantial effort and did not necessarily yield many participants. However, community outreach was even more difficult when places that providers used to recruit from were closed to reduce transmission of COVID-19. Providers had to conduct other forms of outreach and some experienced lower enrollments. One

National DPP expert illustrated the challenges of recruitment via community outreach before and after the start of the pandemic:

> ***"In a lot of these communities the recruitment was very much this high touch relationship building with the community where you're going out to health fairs, you're going to like congregate meal sites...you're going to the senior center, you're going to the church. Well, senior centers closed, the congregate meal site has become Meals on Wheels, the church is not servicing, senior housing is not letting anyone in, and the assisted living programs are on lockdown."***

Results of outreach and recruitment efforts through email and social media were mixed. Providers with substantial prior experience using social media noted that they were as successful with recruitment after the start of the pandemic as before. Others with less experience noted that they were not able to successfully recruit via email and/or social media.

C. Impact on Enrollment

Program providers and experts reported that programs experienced an initial drop in enrollment because of a pause to the programs and/or recruitment due to the COVID-19 pandemic. A minority of the programs continued to have low enrollment numbers because of recruitment challenges or participant discomfort with virtual/distance learning programs. However, several interviewees noted that virtual/distance learning programs opened access to individuals from a wide geographic area to those who previously could not commit to a long program, and/or had challenges attending in person. These additional participants who joined virtually, allowed some programs to maintain pre-pandemic numbers and a few to increase their enrollment. For example, one National DPP provider said:

> ***"Switching to virtual allowed us to reach members that wouldn't normally have the time to attend our in-person workshop. So, these are the working people and maybe the elderly who don't want to drive to a site at night."***

Similarly, a DSMES provider mentioned:

> ***"Our enrollment actually probably was better, because people didn't have to drive here and try and find a parking space. And it could fit into their time without them really leaving their home."***

D. Best Practices for Improving Outreach, Recruitment and Enrollment

Providers and experts had a number of suggestions for improving outreach and recruitment efforts for virtual/distance learning National DPP and DSMES programs. Advice included:

- Reach out to health care providers to make sure they are aware of virtual/distance learning services and encourage referrals to the National DPP and DSMES programs.
- Market directly to patients through patient/member portals and newsletters.

- Use social media for marketing.
- Integrate referral process into electronic medical records (EMR) for health care providers.
- Directly communicate with potential participants about how the program meets their individual needs.

Specifically, one National DPP and DSMES provider mentioned that regardless of the mode of outreach or recruitment, providers really need to tailor the message to fit the needs of the individual participant, stating, "…it's about their needs, and how you provide the things that will fulfill those needs." Another National DPP provider that relied on health care provider referrals for recruitment mentioned that they used an existing health care provider newsletter to let providers know, "this is a program we have...and we now are able to offer it in this [virtual] modality."

E. Best Practices for Reaching Low-Income and Ethnically Diverse Populations

When asked about the best practices to reach low-income and diverse racial/ethnic populations, many respondents acknowledged the difficulty in reaching these populations, and some were not sure of the best methods to improve reach. Ideas presented by key informants included:

- Offer materials and classes in a variety of languages and make sure the program is culturally relevant.
- Provide interpreter services.
- Provide more virtual/distance learning programs at times most convenient for the participant population.
- Make it easier to join virtual/distance learning programs by providing the necessary equipment and training on using the equipment and meeting platforms.
- Utilize community health workers as coaches/providers to build on existing trusted relationships with and connection to specific population groups.
- Diversify staff to assure they are culturally aligned with potential participants and have appropriate language proficiencies.
- Conduct more outreach to lower income and diverse racial/ethnic communities.
- Provide programs at no cost or low-cost.

One National DPP expert commented on the importance of meeting participants where they are when asked about best practices for reaching low-income and ethnically diverse populations:

> ***"We would want to make sure that we are meeting participants where they are, and that programs like the Diabetes Prevention Program are tailored to the reality of their lived experience. So that we're talking about the types of food opportunities they have and that we're talking about the types of physical activity or access to healthcare opportunities they have."***

F. Impact on Retention

Interviewees reported two very different experiences when it came to retention of National DPP participants in comparison to retention of DSMES participants. National DPP providers and experts mentioned that retention of program participants was already challenging prior to the pandemic due to the yearlong duration of the program. After the start of the pandemic retention rates were mixed across DPPs. Some interviewees reported that retention was better when they moved to virtual/distance learning program provision. Cohorts that were well established and had already created relationships with each other were generally more likely to continue participating after the move to virtual/distance learning. However, other National DPPs experienced lower retention rates, especially among participants that had a strong preference for in-person provision or were not comfortable with technology.

In contrast, many DSMES providers stated that retention stayed the same or improved after transitioning to virtual/distance learning program provision. This may be due to the fact that DSMES is a shorter program than the National DPP, and virtual appointments may be more convenient for some individuals. One DSMES provider commented, "it's about the same as before… it's not like we saw them for a series of visits. We saw them for the initial and then maybe one follow-up or two. We're still saying about the same." Another DSMES provider mentioned, "most of our patients were happy to be able to meet on Zoom… I actually probably had less 'no shows' doing the virtual than I did when they had to come in."

G. Best Practices for Retention

Providers and experts mentioned several actions that they had taken to improve retention or that they were aware of that could be used to improve retention in National DPP and DSMES programs. The best practices for retention described by interviewees included:

- Set participants up for success by making sure they know how to join virtual/distance learning meetings and know what to expect from the programs (National DPP and DSMES).
- Check in with National DPP participants between each session to stay connected and make sure that their needs are being met.
- Work to increase engagement and social cohesion within National DPP cohorts through facilitation tailored to virtual/distance learning platforms and active relationship building.
- Facilitate communication among National DPP cohort participants between sessions via group message/chats or on social media (Facebook and WhatsApp).
- When possible, use a hybrid approach (part in-person and part virtual/distance learning) to allow for some face-to-face connection and the opportunity to collect health indicator data in-person (National DPP and DSMES).

Two of the National DPP experts specifically noted the importance of having a coach who is trained in facilitating DPP via distance learning as key to engaging and maintaining National DPP cohorts. One noted, "the coaches are truly the heart of the DPP. So, they made a big difference."

H. Challenges with Technology Among Providers

Interviewees mentioned a variety of ways that technology impacted providers' ability to offer virtual/distance learning National DPP and DSMES programs. Comfort levels with the platform (Zoom, GoToMeeting, Doximity, etc.) that providers selected or had available to them to provide virtual/distance learning programming ranged considerably. Some were very familiar with their platform and had experience delivering virtual/distance learning sessions prior to the pandemic, whereas others had very limited or no experience. In most cases, interviewees noted that providers were able adjust to or learn how to use the platform relatively quickly.

Despite quick adjustment to the virtual/distance learning platforms, a small number of interviewees described remaining challenges with particular platforms that are not fully meeting their needs. For example, interviewees noted that connecting to Doximity was easy for participants and the platform is HIPAA compliant, but it is not good for group meetings. On the other hand, respondents mentioned that Zoom is very useful for group meetings but is not HIPAA compliant and can be challenging for participants to access. Providers also noted that they initially did not have the equipment necessary to effectively deliver their program virtually. For example, some providers needed an additional monitor or a webcam.

Even with the proper equipment and platform functionality, technical difficulties were experienced by providers. Occasionally providers experienced challenges with internet connectivity, dropped calls/meetings, or links not working properly. For example, one National DPP expert who also is a program provider stated:

> ***"Your platform might be great and awesome, but the internet might go out... and if they lose it, I always have a dial-in conference line so everyone can get on the phone and talk."***

Interviewees also mentioned challenges modifying materials and delivery for virtual/distance learning. For example, in some cases they had to modify the way that they delivered content by creating new PowerPoint presentations or activities tailored to maintaining participants attention in a virtual/distance learning environment.

Finally, a small number of DSMES providers mentioned that it was challenging not having enough administrative staff to prepare participants/patients for virtual visits and schedule future appointments. One DSMES provider mentioned that it was difficult to find interpreters for virtual visits with patients who did not speak English.

I. Best Practices for Assisting with Technology Among Providers

Interview respondents had a number of suggestions for improving technology capacity and functionality for providers. These suggestions included:

- Provide guidelines, procedures, training, and technical assistance on using specific platforms for virtual/distance learning programs. Facilitate provider mastery of virtual/distance learning platform features and use.
- Provide facilitation training on actively engaging participants and creating an interactive virtual/distance learning experience.
- Provide the equipment needed for virtual/distance learning programs, like webcams, monitors, highspeed internet connections, etc.
- Utilize or provide co-facilitators and support staff to trouble-shoot issues during virtual/distance learning sessions and to manage administrative tasks between sessions.
- Have back up or contingency plans in place to deal with technical difficulties when they arise.

J. Challenges with Technology Among Participants

In general, interviewees reported more issues with technology comfort and access to devices/equipment among participants than among providers. However, there was a wide range of comfort and access among participants. Several interviewees reported that participants did not have permanent phones/phone numbers or email addresses while other interviewees stated that their participants were very tech savvy and had access to a number of different devices.

Participants with less technical knowledge experienced significant challenges getting connected to platforms for virtual/distance learning meetings and were sometimes attending meetings on devices that were not ideal for the platform (smartphones) or via phone/audio only.

Similar to providers, participants also experienced technical difficulties such as unstable internet connections, dropped calls, or difficulties unmuting to speak, etc. Some expert interviewees, especially those working in or familiar with rural areas, mentioned issues with lack of access to broadband internet among participants, but providers did not mention this issue as much.

K. Best Practices for Assisting with Technology Among Participants

Suggestions from interviewees for improving participants' comfort with and access to technology included:

- Provide individual intake sessions via phone and tailor assistance to needs of participants.
- Create and mail easy to read handouts or guides for connecting to the platform and follow-up with an individual call.
- Provide or loan devices (tablets, Chromebooks, smartphones, etc.) to participants along with hotspots/internet connections.
- Be patient with participants and increase check-ins and communication.
- Ask participants to seek assistance from family members to connect to virtual/distance learning meetings.

- Provide a group "Session Zero" before the start of the program to address technology needs of National DPP participants.

Specifically, one National DPP provider stated, "there was a lot of seeing individually where they were at. Kind of assessing those needs and any barriers they might have." Another National DPP and DSMES program provider mentioned:

> ***"We created a little handout flyer with like a one pager on the steps on how to connect to the class. And we sent it out, we mailed it up to them. We use that and we use phone calls to kind of guide them through it."***

L. Impact on Behavior and Health Outcomes

Measuring the impact of the pandemic and the switch to virtual/distance learning program provision on participants' behavior and health outcomes was difficult for several providers. In some cases, providers were able to collect data on these measures from participants but had not yet analyzed the data. In other cases, providers experienced difficulties collecting data from participants, especially data on activity levels and weight among National DPP participants (described more below). As a result, it is difficult to draw an overall conclusion about the impact of the pandemic and the switch to virtual/distance learning program provision on participants' behavior and health outcomes.

Anecdotally, a minority of provider and expert interviewees described how a number of participants improved their eating habits and cooked more after the start of the pandemic due to large amounts of time spent at home. Other interviewees described that participants reported worse eating habits, and how a few experienced food insecurity and were reliant on food pantries for food, which did not provide enough healthy options.

Despite difficulties that some National DPP providers had collecting data on activity levels, a number of interviewees reported that participants' exercise/activity levels decreased. This decrease was thought to be due to participants being stuck at home and in some cases afraid to go out. Interviewees mentioned that participants had to be highly motivated to exercise during the pandemic. One National DPP provider stated:

> ***"We saw activity in minutes plunder, and we saw those not so good eating habits go up…even though they knew staying healthy and maybe preventing diabetes would hopefully make them weather COVID better."***

A number of National DPP providers stated that they had difficulties collecting data on participant weight. Providers who previously collected weight measurements during in-person classes were reliant on self-reported weight from participants in virtual/distance learning programs. Providers mentioned that participants did not seem to want to report their weight. Others described how participants did not have access to a scale at home and could not measure their own weight. For example, one provider stated:

> ***"They really didn't want to share their weights. Also, we heard several people saying that they don't have access to a weighing scale. So that kind of decreased the number of people reporting weights."***

Despite the lack of data on participant weight, providers mentioned that many participants were successful in maintaining their weight and a minority were successful in losing weight. One National DPP provider mentioned that participants in one of her cohorts, "lost weight, they learned new recipes, they connected with each other, and they want to continue to connect with each other." Other interviewees mentioned that participants gained weight.

DSMES providers reported challenges with collecting data on Hemoglobin A1c (HbA1c) and other diabetes indicators because patients were not coming into the office to have lab work done or health indicators measured. A few interviewees speculated that participants likely experienced higher HbA1c levels at least initially. Among those interviewees that did have data, they reported similar or better HbA1c levels with virtual/distance learning DSMES.

M. Best Practices for Improving Behavior and Health

To improve monitoring and data collection on behavior and health outcomes, interviewees suggested providing scales to National DPP participants to monitor their weight and requiring or requesting occasional in-person visits from National DPP and DSMES virtual/distance learning participants to collect health information. Interviewees provided general suggestions for best practices to improve behaviors and health among participants, including:

- Individualized goal setting and coaching for participants
- Frequent communication and check-ins
- Suggestions for healthy eating and exercise that fit with current realities (exercises that can be done at home, healthy recipes for food pantry items, etc.)
- Lists of healthy food resources available in the community

Two National DPP and DSMES program providers also mentioned the importance of not blaming and shaming participants for their behavior and health. Health care professional bias and discrimination against people with overweight or obesity may lead to feelings of shame among individuals. Shame experienced by individuals with obesity or poor health may prevent them from seeking care or participating in the National DPP and/or DSMES program. One National DPP and DSMES program provider stated:

> ***"I think the blame and shame thing really has to be looked at in programs because we see a lot of that...it happens across the board when it comes to health care professionals. Doctors do it all the time."***

N. Impact on Reimbursement, Billing, and Program Costs

The majority of providers reported no change in reimbursement or billing. In some cases, the program was already free for participants and in other cases reimbursement provided by insurers and other organizations did not change. A small number of interviewees were not aware of changes because they did not work directly on billing and reimbursement. However, those providing services to Medicare beneficiaries did experience challenges with reimbursement. Prior to the pandemic telehealth services were limited under traditional Medicare. Even though telehealth services for Medicare were temporarily expanded during the early months of the pandemic, there was still confusion about coverage for services among a minority of the DSMES providers.

For the most part, interviewees did not report any major changes in program costs. Interviewees reported that staffing stayed the same, so costs did not change for personnel. However, DSMES providers talked about seeing more patients virtually than in-person with the same number of staff. National DPP providers also mentioned they may be able to offer more cohorts with the staffing that they have because there is less driving and set up time for virtual/distance learning versus in-person. One National DPP provider stated:

> ***"You don't have to travel. You don't have to go anywhere. You can run it from your home office...So those two to three, or even four hours can be used for education...It can be evolved into providing more classes."***

There were a few areas of cost savings discussed by providers and a few areas where costs increased. Interviewees reported that these changes resulted in a shifting of costs, but likely not an overall increase or decrease in program costs. Providers mentioned spending less, or not spending anything at all on the following: printing materials, classroom rental, travel and parking, and snacks and incentives. Alternately, providers reported increases in costs associated with the following items: equipment for providing virtual/distance learning sessions, mailing of materials, purchasing platform licenses, and purchasing scales for participants.

O. Policy & Systems Change to Support Virtual/Distance Learning

When asked about policy and systems change initiatives that are needed to support virtual/distance learning National DPP and DSMES programs, interviewees had suggestions at either the state or federal level, and National DPP providers had suggestions specifically for the Centers for Disease Control and Prevention (CDC) The suggestions for changes at the state and/or federal level included:

- Provide additional funding for devices/equipment for participants for virtual/distance learning programs (National DPP and DSMES).
- Change regulations to allow providers to be licensed in multiple states, so they can provide services to participants that travel or live in another state (DSMES).

- Continue to allow reimbursement for virtual/distance learning DSMES services for traditional Medicare beneficiaries.
- Make the process for receiving Medicare reimbursement for National DPP less onerous; few organizations are applying to provide Medicare National DPP because of the stringent requirements.
- Increase the National DPP Medicaid reimbursement rate in California.
- Expand broadband availability (mentioned by expert interviewees).
- Expand access to health care/insurance at the state or federal level.

Suggestions about changes related to the National DPP that could be made by CDC included:

- Provide flexibility for maintaining organizational recognition status under the Diabetes Prevention Recognition Program (DPRP) when organizations offer the program in a different modality than the one they originally applied for (i.e., offering distance learning National DPP vs. in-person National DPP).
- Provide flexibility for maintaining DPRP recognition if organizations were not able to meet program requirements during the pandemic (for example, cohorts that don't achieve required weight loss and activity levels).
- Remove the BMI eligibility requirement for the National DPP, as some potential participants with lower BMIs may be at risk for diabetes.
- Update the National DPP curriculum to meet current nutrition guidelines/science and provide guidance for adapting the curriculum to distance learning or online delivery.
- Create a platform that everyone can use to register National DPP participants, conduct classes, collect data, and keep information confidential.

P. Support for Virtual/Distance Learning by LACDPH

When asked about how the LACDPH can support virtual/distance learning or hybrid programming some interviewees stated that they were not familiar with LACDPH's work and/or were not sure of a role for LACDPH. Suggestions from those that did provide an answer included:

- Assist with marketing of programs and referrals to increase program enrollment, especially for small businesses providing the National DPP.
- Facilitate networking opportunities to provide opportunities for sharing best practices among providers.
- Provide free training for new National DPP coaches and materials for delivering virtual/distance learning programs.
- Purchase and share platform licenses with organizations providing virtual/distance learning programs.

- Share information about the pros and cons of various platforms.
- Purchase and loan devices to program participants (iPads, chromebooks, phones, etc.) to enable them to connect to virtual/distance learning programs.
- Purchase or provide funding for equipment to allow organizations to provide virtual/distance learning programs.
- Share updates to policies/regulations at state and federal level with providers to assist them with program compliance.
- Create a coach network (or pool/listing of available coaches) to help fill vacancies when coach/staff turnover occurs.
- Share funding opportunities to support program provision.
- Advocate for policy change to increase in reimbursement for programs, etc.

Q. Key Takeaways

Appreciating the value of both in-person and virtual/distance learning programs, most providers interviewed plan to continue to offer hybrid programs in the future. Virtual/distance learning programs in particular provide significant opportunities to expand the reach of the National DPP and DSMES to a larger number of participants over a wide geographic area. In order to ensure the quality and effectiveness of virtual/distance learning programs, providers may need to modify their outreach and program delivery strategies, including improving the availability of technology and equipment for both providers and participants. LACDPH can play an important role in educating National DPP and DSMES providers on virtual/distance learning programming best practices, as well as advocating for policy and systems changes needed on the state and federal levels to support virtual/distance learning National DPP and DSMES provision.

CONCLUSION

Findings from this assessment show that it was feasible for Los Angeles County National DPP and DSMES providers to pivot to virtual/distance learning program provision and that there is a body of evidence forming that shows virtual/distance learning programs can be successful. At the same time, virtual/distance learning programming brings its own set of challenges and National DPP and DSMES providers need support to build capacity for virtual/distance learning or hybrid programming.

RECOMMENDATIONS

The following recommendations emerged from the synthesis of findings and input from members of the Los Angeles County Diabetes Coalition (LACDC). Coalition members reviewed and discussed the recommendations at a meeting in January 2022. They expressed support for the recommendations overall, especially expanding networking and learning opportunities. LACDC members suggested a number of activities needed to implement the recommendations.

The recommendations provide concrete direction to the Los Angeles County Department of Public Health (LACDPH) on supporting virtual/distance learning in Los Angeles County in partnership with the LACDC and other partner organizations/agencies. LACDC members see LACDPH as providing overall leadership for recommendation implementation with LACDC members playing a role in sharing lessons learned and best practices in training and networking activities, in participating in the development of guidance materials on virtual/distance learning delivery of the National DPP and DSMES programs, and by advocating for policy and regulatory changes that facilitate improved program delivery.

While these recommendations were developed for work in Los Angeles County, they provide relevant guidance to local public health departments and National DPP and DSMES providers across the country who are experiencing similar opportunities and challenges around virtual/distance learning program provision.

- Provide technical assistance to new and current National DPP and DSMES providers:
    - Train providers on virtual/distance learning program delivery for diverse populations:

      Participant Engagement

        - Adapting marketing, outreach, referral and enrollment strategies to the virtual/distance learning setting for diverse populations.
        - Sustaining active participant engagement in the virtual/distance learning setting.
        - Working with interpreters in the virtual/distance learning environment to ensure full participant comprehension and engagement.
        - Creating an active, supportive online community among program participants.

      Technology

        - Addressing virtual/distance learning technology barriers faced by older adults.
        - Developing and implementing cyber security protocols.
        - Using apps to facilitate virtual/distance learning interaction.
    - Develop easy to understand “how to” one pagers for providers on addressing common barriers to virtual/distance learning program delivery and on accessing distance/telehealth platforms for participants.
    - Provide on-site technical assistance/mentoring to programs struggling to deliver virtual/distance learning modalities.

- Develop lessons plans/curricula for pre-program sessions for National DPP and DSMES program to orient participants to using technology:
    - Train and support providers to implement pre-program sessions.

- Support National DPP and DSMES providers to overcome common technology/equipment barriers:
    - Identify a few recommended virtual/distance learning platforms that are best suited to National DPP and DSMES program provision and provide instruction/guidance on using the platforms.
        - Explore purchasing and sharing virtual/distance learning platform licenses among National DPP and DSMES providers.
    - Connect National DPP and DSMES providers to funding sources for equipment (e.g., laptops, cameras, lighting) needed to deliver high quality virtual/distance learning programs.
    - Connect National DPP and DSMES providers to funding sources for purchase of participant devices (e.g., iPads, Chromebooks, smartphones, internet hotspots, Bluetooth scales) that can be loaned or given to program participants to facilitate virtual/distance learning.

- Facilitate networking opportunities among National DPP and DSMES providers:
    - Host opportunities (in-person and virtual/distance learning) for National DPP and DSMES providers to share lessons learned and best practices.
    - Create a pool/registry of National DPP and DSMES coaches to fill vacancies when staff turnover occurs.

- Keep National DPP and DSMES providers informed of funding opportunities, and policy and systems changes:
    - Share funding opportunities to support virtual/distance learning program provision.
    - Communicate state and federal policy and regulation updates to providers to facilitate program compliance.
    - Advocate for changes in policies and regulations at the state and federal level to increase access, improve reimbursement, and provide additional flexibility for virtual/distance learning National DPP and DSMES programs.

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APPENDIX

A. Provider Key Informant Interview Guide

B. Expert Key Informant Interview Guide

A. Provider Key Informant Interview Guide

Ad Lucem Consulting has been engaged by the Los Angeles County Department of Public Health to assess the impact of transitioning from in-person diabetes prevention and management services (National DPP, DSMES) to distance learning due to the COVID-19 pandemic.

We would greatly value hearing about your experience and insights on the challenges and best practices surrounding virtual National DPP and DSMES program provision. The interview will be conducted via Zoom with audio only and will require about 45 minutes to complete. Your responses will remain confidential; a transcript with your name and organization redacted will be shared with LACDPH upon completion of the project. Interview findings will be combined and analyzed for key themes. This interview is voluntary and if you don't know an answer to a question please feel free to tell me to skip that question.

Before we get started, do you have any questions for me?

Introduction

1. Can you tell me briefly about how the COVID-19 pandemic affected your National DPP and/or DSMES program and what factors were involved in moving forward with either one program or both programs virtually?
    a. Which program did your organization switch to providing virtually:
        - National DPP and DSMES
        - National DPP only
        - DSMES only
    b. If either program (or both) was NOT provided virtually, please describe the factors involved in that decision.

Challenges and Recent Impacts

2. What did your program experience as the three greatest challenges to implementing the virtual National DPP and DSMES programs?
    a. Did your program experience challenges around the technology? e.g., participants not having a computer or smart phone, participants not having internet connection, participants not comfortable with online meeting platforms, staff not comfortable running a virtual meeting?
3. What was the impact of the switch to virtual programming on National DPP and DSMES outreach, enrollment, and retention?
4. What was the impact of the switch to virtual programming on National DPP and DSMES behavioral/health indicator outcomes? *(Examples of behavioral changes are healthy eating, physical activity, testing blood sugar, and adhering to medication regimens. Examples of health indicators include weight, blood sugar.)*

5. How did the switch to virtual programming change program costs, reimbursements, billing and return on investment?

Best Practices

6. What are the best practices for overcoming the challenges you mentioned earlier?
    a. e.g., best practices for technology use; enhancing outreach/enrollment/retention; improving behavioral/health indicator outcomes; and/or maximizing costs/reimbursements/billing/ROI?
7. What are the best practices for reaching low-income and ethnically diverse populations with virtual National DPP and DSMES programs?

Infrastructure and Capacity

8. What additional infrastructure, staffing and/or capacity are needed for the virtual National DPP and DSMES program? (e.g., staffing, training, money for new technologies)
9. Are you planning to continue with virtual or hybrid National DPP and/or DSMES programming? Please describe why.

Policy and Systems Changes

10. We are interested in hearing about policy and systems changes to support ongoing virtual and/or hybrid National DPP/DSMES program provision:
    a. What policy and systems changes are needed at the organizational/institutional level?
    b. What policy and systems changes are needed at the governmental level (e.g., county, state, CDC, Medicare/Medicaid, etc.)?
11. What role should the Los Angeles County Department of Public Health play in supporting virtual/hybrid National DPP and DSMES?

Conclusion

12. If you were going to give one piece of advice to a National DPP and/or DSMES program moving toward virtual program provision, what would be the most important advice?

B. Expert Key Informant Interview Guide

Ad Lucem Consulting has been engaged by the Los Angeles County Department of Public Health to assess the impact of transitioning from in-person diabetes prevention and management services (National DPP, DSMES) to distance learning due to the COVID-19 pandemic.

We would greatly value hearing your insights on the challenges and best practices surrounding virtual National DPP and DSMES program provision. It is really important for LADPH to learn from experts in the field who have a broad view of National DPP and DSMES implementation and understanding of program improvement opportunities.

The interview will be conducted via Zoom with audio only and will require about 45 minutes to complete. Your responses will remain confidential; a transcript with your name and organization redacted will be shared with LACDPH upon completion of the project. Interview findings will be combined and analyzed for key themes. This interview is voluntary and if you don't know an answer to a question please feel free to tell me to skip that question.

Before we get started, do you have any questions for me?

Introduction

1. Reflecting back on the COVID19 pandemic, please comment on how you saw National DPP and/or DSMES program provision change?

Challenges and Recent Impacts

2. What do you think are the major challenges related to programs switching to virtual National DPP and/or DSMES program provision due to the pandemic? *Probe:* If not mentioned, probe for outreach/enrollment/retention, behavioral/health indicator outcomes, reimbursement, technology, etc. *(Examples of behavioral changes are healthy eating, physical activity, testing blood sugar, and adhering to medication regimens. Examples of health indicators include weight, blood sugar.)*
3. How do you think the switch to virtual programming due to the pandemic impacts the reach to low-income and ethnically diverse populations?
    a. What are your ideas for how virtual programming can maximize reach to these populations?

Best Practices

4. What do you think are the overall best practices for successful virtual National DPP and/or DSMES implementation by organizations who initially provided in person programming? *Probe:* If not mentioned, probe for best practices around, outreach/enrollment/retention, behavioral/health indicator outcomes, reimbursement, technology, etc.

Evaluation/Professional Assessment

5. What types of evaluation are needed to assess the value/impacts of virtual National DPP and/or DSMES programming?
    a. What key information do you think would make the case (or not) for continuing virtual programming?

6. What do you think the future looks like for National DPP and/or DSMES programs? Is widespread virtual provision here to stay? Are there benefits to in person or virtual program provision that make a strong case for that type of provision? What type of program provision do you see becoming the standard?

Policy and Systems Changes

7. What opportunities do you currently see for policy and systems changes (e.g., at the county, state or federal level) to support ongoing virtual and/or hybrid National DPP and/or DSMES program provision?
    a. What opportunities exist for DPP/DSMES reimbursement changes?

8. What role should local public health departments like the Los Angeles County Department of Public Health play in supporting virtual/hybrid National DPP and DSMES?

Conclusion

9. Are there other experts or leaders in the field with whom you recommend we speak?

Case Studies: Rising to the Challenge

How Los Angeles County National Diabetes Prevention Program (DPP) and Diabetes Self-Management Education and Support (DSMES) programs transitioned to virtual/distance learning during COVID-19

Quickly shifting from in-person to virtual/distance learning was critical but challenging for Los Angeles County National DPP and DSMES providers aiming to keep programs up and running during the COVID-19 pandemic. These programs are essential for helping community members prevent or manage type 2 diabetes.

Los Angeles County Department of Public Health (LACDPH) engaged Ad Lucem Consulting to assess the impact of the COVID-19 pandemic on delivery of the National DPP and DSMES programs by providers in Los Angeles County with funding from the Centers for Disease Control and Prevention [NU58DP006619]. The assessment included a document review, literature review and key informant interviews with local National DPP and DSMES providers and national experts on the programs.

The case studies explore three themes that emerged from the assessment and present practical, actionable steps National DPP and DSMES providers, local public health departments and program partners across the country can take to overcome obstacles and successfully deliver virtual/distance learning programs:

- Participant outreach and enrollment
- Participant retention
- Utilizing technology and equipment

For more information, please visit the LACDPH Diabetes Prevention & Management website: **publichealth.lacounty.gov/diabetes/**

Contact: Telma Menendez, MPH, Diabetes Program Manager, **tmenendez@ph.lacounty.gov**

CASE STUDY: Getting on board during COVID-19

Successes and challenges in outreach and enrollment for virtual/distance learning National Diabetes Prevention Program and Diabetes Self-Management Education and Support programs in Los Angeles County

Introduction

This case study looks at how a select group of Los Angeles County National Diabetes Prevention Program (DPP) and Diabetes Self-Management Education and Support (DSMES) providers maintained or improved outreach, recruitment and enrollment while implementing virtual/distance learning programs during the COVID-19 pandemic. Recommendations in this study are relevant to National DPP and DSMES providers, local public health departments and program partners across the country who are experiencing similar opportunities and challenges in transitioning to virtual/distance learning programs.

Key Challenges

Prior to COVID-19, National DPP and DSMES providers reported using three main outreach and recruitment methods: health care provider referrals, community outreach, and email and/or social media recruitment. Providers faced some challenges with these methods, and the pandemic-necessitated transition to virtual/distance learning exacerbated these challenges. For example, initially health care providers were seeing fewer patients, resulting in fewer referrals for some programs. Other National DPP and DSMES providers who primarily recruited participants through in-person community outreach efforts experienced some of the biggest recruitment challenges when trusted community hubs such as community-based organizations and churches stopped providing in-person services. A few providers who had less experience using email and social media for outreach and recruitment were not as successful implementing this outreach method as those with more experience or those serving people with more technological know-how. These factors made it difficult to connect with potential participants and enroll them into National DPP or DSMES programs.

Successes

A number of National DPP and DSMES providers in Los Angeles County were able to access community members in a wider geographic region despite initial challenges with outreach, recruitment, and enrollment during the shift to virtual/distance learning. Providers were also able to reach and enroll those who previously had challenges attending programs in-person. Similarly, prior studies have found that virtual/distance learning programs are an effective approach to reaching individuals, especially those who live in remote areas and where access to in-person services is limited.[1] [2] [3]

[1] Vadheim LM, McPherson C, Kassner DR, et al. Adapted diabetes prevention program lifestyle intervention can be effectively delivered through telehealth. *Diabetes Educ.* 2010; 36:651-656.

[2] Vadheim LM, Patch K, Brokaw SM, et al. Telehealth delivery of the diabetes prevention program to rural communities. *Transl Behav Med.* 2017;7:286-291.

[3] Knotowicz H, Haas A, Coe S, Furuta GT, Mehta P. Opportunities for Innovation and Improved Care Using Telehealth for Nutritional Interventions. *Gastroenterology.* 2019;157:594-597.

> ***"Switching to virtual allowed us to reach members that wouldn't normally have the time to attend our in-person workshop. So, these are the working people and maybe the elderly who don't want to drive to a site at night."***
>
> ***– Los Angeles County National DPP Provider***

A number of programs relied on social media, email alerts and newsletters to recruit program participants; one program also found that strategic in-person outreach methods – such as canvassing with flyers at key community locations like food banks – complemented the electronic communication and helped drive participants to websites for more information or to register for the programs.

One workplace-based National DPP experienced a smooth transition as it shifted to a virtual/distance learning platform by intensifying existing marketing and outreach efforts. E-mail blasts, strong connections with medical providers, and mailers proved highly adaptable to the new "virtual only" environment. An initial phone check-in with each potential participant was especially effective during the pandemic, allowing the program lead to connect with each person that filled out an intake form to discuss the program and answer any questions.

Recommended Strategies

The following strategies were identified as effective approaches for improving outreach, recruitment, and enrollment in the virtual/distance learning National DPP and DSMES programs:

- Connect with health care providers to ensure they are aware of the virtual/distance learning programs. This includes integrating a patient referral process into electronic medical records.
- Market virtual/distance learning programs through electronic methods, such as: patient/member portals, newsletters, emails, and social media. Complement electronic outreach with flyer distribution at locations visited by potential program participants to drive traffic to program websites and registration.
- Build one-to-one contact with potential participants before the start of the program into outreach plans to share program benefits and address any questions or concerns.

The following additional recommendations are highlighted for reaching low-income communities and communities of color:

- Offer outreach, recruitment and enrollment materials along with interpretation services in languages that ensure programs address the needs of racially/ethnically diverse communities.
- Diversify staff to reflect the ethnic/racial, cultural and language background of participants.
- Engage community health workers who have existing relationships with community members to outreach to specific population groups.
- Offer classes at no-cost or low-cost and at times most convenient for the participants.

CASE STUDY: Staying the Course

What it took to retain participation levels in Los Angeles County National Diabetes Prevention Program and Diabetes Self-Management Education and Support programs during COVID-19

Introduction

This case study looks at how Los Angeles County National Diabetes Prevention Program (DPP) and Diabetes Self-Management Education and Support (DSMES) providers maintained or improved participant retention while implementing virtual/distance learning programs during the COVID-19 pandemic. Recommendations emerging from this study are relevant to National DPP and DSMES providers, local public health departments and program partners across the country who are experiencing similar opportunities and challenges in providing and transitioning to virtual/distance learning programs.

Key Challenges

Retention is critical for ensuring participants reap the full benefits of the National DPP and DSMES programs. Several factors can influence how long a participant will remain engaged in the programs, including the length of the program. DSMES is a shorter program than the yearlong National DPP, and as a result, retention was an ongoing challenge for National DPP providers even before the Covid-19 pandemic. The transition to virtual/distance learning during the pandemic made it more difficult for some providers to keep participants actively engaged in their programs. A small number of National DPP programs that transitioned from in-person to distance/virtual learning faced difficulties retaining participants who had a strong preference for in-person participation due to inexperience with technology.

Successes

Research has shown that virtual/distance learning provides key opportunities for improving participant retention in the National DPP and DSMES programs. For example, participants engaged in virtual/distance learning health education programs appreciated the convenience and time/cost savings associated with participating from home, rather than traveling to a program site.[4] Creative approaches, such as providing participants with remote monitoring devices (e.g., glucometers, Bluetooth scales), encouraged overall active engagement as well as regular biometric monitoring, resulting in better diabetes self-management.[5] In some cases, being online helped with retention for National DPPs in LA County because the program was accessible from everywhere. People who couldn't make it to in-person sessions before the pandemic because of travel time, illness, work and childcare issues, and other factors were now able to participate in the program since it was more accessible. Providers of DSMES also experienced similar or improved retention transitioning to distance/virtual programs.

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[4] Powers MA, Bardsley JK, Cypress M, et al. Diabetes Self-management Education and Support in Adults With Type 2 Diabetes: A Consensus Report of the American Diabetes Association, the Association of Diabetes Care & Education Specialists, the Academy of Nutrition and Dietetics, the American Academy of Family Physicians, the American Academy of PAs, the American Association of Nurse Practitioners, and the American Pharmacists Association. *Diabetes Care.* 2020;43:1636-1649.

[5] Centers for Disease Control and Prevention. Diabetes self-management education and support (DSMES) Toolkit: DSMES Settings. Vol 20212021.

Los Angeles County National DPP and DSMES providers found the following strategies to be effective in improving participant retention:

- One-on-one phone consultations to train participants on successfully using online platforms for classes
- Creating a learning community among participants that establishes strong, supportive relationships as they progress through the program together
- Ensuring that program providers are adequately trained to deliver appealing and inspiring content during virtual/distance learning classes

During the COVID-19 pandemic, one community-based organization providing National DPP worked closely with participants to orient them to virtual/distance learning. The provider created necessary space and time during virtual programming for participants to get to know each other. This approach led to the successful development of a supportive community among participants, who reported looking forward to meeting and talking with each other using the communications tools available in the virtual platform they had been trained on.

> ***"Most of our patients were happy to be able to meet on Zoom…I actually probably had less 'no shows' during the virtual than I did when they had to come in."***
>
> **– Los Angeles County DSMES Provider**

Recommended Strategies

The following strategies were identified as effective approaches for improving participant retention in virtual/distance learning National DPP and DSMES programs:

- Train participants on using the virtual/distance learning technology, ensuring they feel comfortable using available tools and that they know what to expect from the virtual/distance learning format.
- Consider a hybrid model (in-person and virtual/distance learning). Although virtual National DPP and DSMES program provision can work well, program participants may benefit from some in-person interaction to enhance the learning experience, build relationships, and reinforce commitment to completing the program.
- Conduct one-on-one check-ins with participants between sessions to build a strong virtual participant/provider relationship, maximize connectedness and ensure that participant needs are met.
- Work to increase engagement and social cohesion within participant cohorts through facilitation tailored to virtual/distance learning platforms and active relationship building.
- Facilitate communication among cohort participants between sessions through group messaging, chats, and social media (e.g., Facebook and WhatsApp).

CASE STUDY: Tech-savvy

Technology use by National Diabetes Prevention Program and Diabetes Self-Management Education and Support programs in Los Angeles County during COVID-19

Introduction

This case study explores the challenges faced and solutions implemented as National Diabetes Prevention Program (DPP) and Diabetes Self-Management Education and Support (DSMES) providers in Los Angeles County navigated the use of new technology and equipment during the switch to virtual/distance programs as a result of the COVID-19 pandemic. Recommendations from this study are relevant to National DPP and DSMES providers, local public health departments, and program partners across the country who are experiencing similar opportunities and challenges in providing and transitioning to virtual/distance learning programs.

Key Challenges

Evidence shows that while there are many benefits to utilizing virtual/distance learning modalities, participants can experience real barriers such as: 1) lack of access to devices needed to connect to virtual/distance platforms, 2) internet accessibility, 3) security and privacy concerns, and 4) usability of the virtual/distance learning platforms (especially among older adults and participants who require translation). [6] [7] [8]

Challenges experienced by providers when transitioning to virtual/distance learning can include increased workload, difficulties with technology, regulations limiting provision of virtual/distance learning services and payment/reimbursement issues. [9] Los Angeles County National DPP and DSMES providers found that some online platforms had limited capabilities for group classes; other platforms worked well for online groups but weren't compliant with HIPAA privacy regulations. One challenge was that National DPP and DSMES providers did not all have the equipment (e.g., cameras, lighting) or training necessary to conduct virtual classes. While experience with and access to virtual/distance learning technology ranged considerably among program providers, most providers learned to use virtual platforms quickly. In addition, the transition to distance learning required modification of curricula, materials, and activities for the virtual setting. The effort to adapt to virtual program provision added to program providers' workload significantly.

Participants were more likely to experience challenges with technology and access to equipment/devices than providers. While many participants were at least somewhat familiar with technology and had access to devices appropriate for online interaction (computers, tablets, smart phones), others did not have email addresses or even permanent phones/phone numbers. Unstable internet connections and difficulties unmuting/muting were common virtual learning challenges. Many providers had to carefully assess participants' technological know-how, access to reliable internet and equipment, and adjust program delivery to meet their needs.

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[6] Powers MA, Bardsley JK, Cypress M, et al. Diabetes Self-management Education and Support in Adults With Type 2 Diabetes: A Consensus Report of the American Diabetes Association, the Association of Diabetes Care & Education Specialists, the Academy of Nutrition and Dietetics, the American Academy of Family Physicians, the American Academy of PAs, the American Association of Nurse Practitioners, and the American Pharmacists Association. *Diabetes Care.* 2020;43:1636-1649.

[7] Centers for Disease Control and Prevention. Diabetes self-management education and support (DSMES) Toolkit: DSMES Settings. Vol 20212021.

[8] National Consortium of Telehealth Resource Centers. A Framework for Defining Telehealth. Vol 20212021.

[9] Huang JW, Lin YY, Wu NY. The effectiveness of telemedicine on body mass index: A systematic review and meta-analysis. *J Telemed Telecare.* 2019;25:389-401.

> ***"Some of the participants did not have internet connections or they were not comfortable with the technology. So, we had to be very patient and have classes with them. And we actually called them one-on-one."***
>
> **– Los Angeles County National DPP Provider**

Successes

Despite the quick shift to virtual/distance learning, National DPP and DSMES providers were successful in implementing a number of strategies to address technology and equipment challenges. Key to their success was adapting provider facilitation methods to the virtual environment and ensuring providers and participants had access to the equipment and tools needed to deliver high quality learning experiences. Training on facilitating virtual classes and having support staff available during online sessions (to troubleshoot technology issues) proved invaluable.

One community-based organization offering National DPP knew how important it was to meet program participants "where they were at" with technology comfort and created an informational flyer with step-by-step guidance on using technology/equipment. They mailed it to participants for easy reference, and as a way to reduce frustration and build confidence among participants.

Recommended Strategies

The following strategies were identified as effective approaches for successfully utilizing technology while implementing virtual/distance learning programs for participants and program providers:

Participants

- Conduct pre-program sessions by phone for each participant to orient them to the virtual/distance learning format and tailor technology assistance to individual needs.
- Create and mail easy-to-read guides for participants to use when connecting to the virtual/distance learning platforms. Follow up with calls to participants to assure comfort and understanding.
- Ensure participants have the ability to connect to virtual/distance programs by providing or loaning devices such as tablets, computers, smart phones, and hotspot/internet connections.
- Be patient with participants and conduct frequent and between session check-ins and communication.
- Ask participants to seek assistance from family members to help connect them to the virtual/distance learning meetings.

Providers

- Provide guidelines, procedures, training, and technical assistance to program providers on how to use virtual/distance learning technologies.
- Provide facilitation training to providers on creating an interactive virtual and distance learning experience that genuinely engages participants.
- Assure appropriate equipment (such as webcams and monitors) is available to deliver high-quality and engaging virtual/distance programs.
- Utilize co-facilitators and/or support staff to troubleshoot technology issues and to help manage administrative tasks during virtual/distance learning sessions.
- Have contingency plans in place should technical difficulties arise.