

## Diabetes Prevention Programs and a Pharmacist's Perspective

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### Background

Type 2 diabetes is a chronic condition characterized by elevated blood glucose levels that if not controlled, can lead to significant complications such as heart attack and stroke.<sup>1</sup> Prediabetes is a stage in which the blood glucose is elevated but not at the severity of type 2 diabetes.<sup>1</sup> Both type 2 diabetes and prediabetes increase the risk of heart attack and stroke.<sup>1</sup> However, unlike diabetes, which is rarely reversed even at early stages, prediabetes is reversible.<sup>1</sup> The Diabetes Prevention Program (DPP) was first initiated in 1996, when the first clinical trial was conducted.<sup>2</sup> This trial compared metformin against lifestyle intervention of 5%-7% of weight loss with 150 minutes of physical activity per week in patients with prediabetes, and found that the risk of developing type 2 diabetes was lowered by 31% in the metformin group and 58% in the lifestyle group.<sup>2</sup> This study helped with the implementation of the National DPP in 2010, which mimics the lifestyle interventions shown to decrease the risk of developing diabetes.<sup>1</sup> According to the Centers for Disease Control and Prevention (CDC), the National DPP partners with public and private organizations to help patients with prediabetes implement evidence-based lifestyle modifications to delay or prevent their chances of developing type 2 diabetes.<sup>1</sup>

DPPs allow patients with prediabetes to have access to affordable, high-quality, and evidence-based interventions which can help improve their overall health. Programs may choose to apply to gain CDC recognition which allows for reimbursement opportunities. In order to gain full recognition status, a DPP must meet CDC standards to ensure the quality of content delivered.<sup>3</sup> A few of the standards include using a CDC-approved curriculum, having the capacity and commitment to deliver the program over a year, and the ability to submit data on participants' progress.<sup>3</sup> Each DPP offers a total of 22 sessions, each 1 hour long.<sup>1</sup> The year is split in 2 components with the first 6 months having sessions every 1-2 weeks and the last 6 months having sessions monthly.<sup>1</sup> The goal of the first 6 months is to lose 5% of body weight and get 150 minutes per week of physical activity.<sup>1</sup> The goal of the last 6 months is to learn to continue lifestyle changes to either maintain the 5% weight loss or to

lose even more weight.<sup>1</sup> The DPP sessions focus on teaching participants how to change their lifestyle by switching to a healthier diet, adding in moderate-intensity physical activity, learning coping skills, developing a sense of responsibility for everyday lifestyle choices, and also by providing a sense of community and social support.<sup>1</sup>

Those who run the programs need to be certified and trained as lifestyle coaches, and programs submit data to the CDC on body weight and physical activity minutes every 6 months to show how the program is impacting participants.<sup>1</sup> Lifestyle coaches do not need a background in health care which provides an opportunity for anyone to run a DPP. This potentially allows DPPs to be readily available throughout the United States. Having DPPs readily available for patients could be a significant way of preventing diabetes considering more than 88 million Americans, or 1 in 3, have prediabetes.<sup>1</sup> In comparison, there are 30 million Americans with diabetes and 1 in 4 health care dollars are spent on those with diabetes.<sup>1</sup> These numbers highlight the importance of addressing the prediabetes population.<sup>1</sup> Focusing on the 88 million with prediabetes through DPPs could not only benefit the health care system, but could help individuals prevent chronic disease complications. These patients could then set examples to others on living healthy lifestyles.

### Diabetes Prevention Programs in the United States

In the United States, as of 2015, the average reported prevalence of prediabetes per state is 6.8% with Vermont having the lowest prevalence of 4.8% and Hawai'i having the highest of 14%.<sup>4</sup> Most recent data from 2018 indicates that the prevalence of prediabetes in Hawai'i has marginally increased to 14.5%.<sup>5</sup> As of July 2020, the United States has a total of 1639 reported DPPs.<sup>6</sup> The average number of reported DPPs in each state is 32 with Vermont having the lowest number at 2 DPPs and California having the highest number at 128 DPPs.<sup>6</sup> Hawai'i has 17 reported DPPs which is about half of the national average.<sup>6</sup> While there was a good growth of programs over the 10 years since the programs started, to accomplish a goal of targeting

the 88 million patients with prediabetes by having DPPs readily available, the US needs to greatly increase the number of DPPs. Having lifestyle coach training open to anyone provides a significant number of opportunities for DPPs to open up and this should be capitalized on especially by health care professions.

### **Pharmacist's Role**

One of the healthcare professionals that is widely accessible to patients are pharmacists. Pharmacists have a unique position in the healthcare field because they are so easily accessed by patients in multiple settings from retail stores, to outpatient and inpatient facilities. Pharmacists are the most accessible healthcare professional and are in the top 5 most trusted professionals.<sup>7,8</sup> They build relationships with patients through consistent patient interaction. Because of the relationships that are built between pharmacists and patients, patients may be more receptive to what a pharmacist has to offer. Pharmacists are clinically trained and have knowledge on the body and chronic conditions which can provide an advantage when it comes to educating patients on their health. Pharmacists counsel patients regularly and could easily educate patients on the risks of prediabetes and diabetes. Utilizing technicians and students could also be beneficial, as patients may feel more comfortable interacting with them and students and technicians can also build their clinical knowledge and patient counseling skills.

The idea of having pharmacists lead DPPs isn't just coming from a pharmacist's perspective. The CDC has a document titled "Rx for the National Diabetes Prevention Program. Action Guide for Community Pharmacists."<sup>7</sup> This document explains the availability of pharmacists and advantages of having a pharmacist-led DPP. The CDC has 3 tiers of DPP workforce categories.<sup>7</sup> Tier 1 is promoting awareness of prediabetes and patients at risk, tier 2 is screening, testing, and referring patients, and tier 3 is offering a DPP.<sup>7</sup> Out of the 3 tiers, the CDC lists pharmacists in all 3, which puts them in the perfect position to not only promote DPPs and get patients enrolled in programs, but more importantly, to lead DPPs.<sup>7</sup> Pharmacies could promote awareness of prediabetes by displaying promotional and educational materials.<sup>7</sup> Pharmacists could screen and/or test patients for prediabetes and refer them to DPPs in the area or even to their own DPPs.<sup>7</sup> Screening their own patient population can eliminate the entire process of external patient recruitment.<sup>7</sup> Each program can apply for full CDC recognition which will qualify programs for reimbursement on a pay-for-performance model.<sup>7</sup> Reimbursement provides benefits to pharmacies and helps to keep pharmacist-led DPPs sustainable.<sup>7</sup> Because pharmacists are in an ideal position to increase the number of DPPs, they can play a key role in decreasing the 88 million people with prediabetes and ultimately help to decrease the 30 million people with diabetes.<sup>7</sup>

### **Pharmacist-Led Diabetes Prevention Program Experience**

Pharmacy-led DPPs are already available in the US. There are about 52 and one of the pharmacist-led programs in Hawai'i is on the island of Kaua'i.<sup>6</sup> This DPP is led by Dr. Aryn Meguro and Dr. Bryce Fukunaga who are both pharmacists and Assistant Professors at the Daniel K. Inouye College of Pharmacy. Both became certified lifestyle coaches in July 2018 and started their first DPP on Kaua'i in July 2019 in partnership with Wilcox Medical Center and the Hawai'i State Department of Health. Prior to the start of their program, they recruited participants at the Diabetes Awareness Expo at the Wilcox Medical Center where they provided education on prediabetes and advertised their upcoming DPP. The Department of Health also played a role in advertising the upcoming DPP. They were initially recruited 15 participants. Participants mentioned they appreciated having the actual lifestyle coaches doing the recruiting themselves. This personal aspect made them more willing to sign up for the program. By the end of the year, there were 6 participants who regularly attended the sessions. Those who were able to lose 5% or more of their body weight attributed their success to either tracking calories or by being mindful about portion sizes while keeping up with their weekly activities. One unique aspect of this DPP was that since Dr. Meguro and Dr. Fukunaga both continuously have pharmacy students on experiential rotations, they allowed students to participate in all the sessions. The participants saw this as a benefit, as having more people contributing to discussions led to more solutions on ways to live healthier lifestyles. Student involvement not only benefited the participants, but it also impacted students in a positive way. Students became more comfortable and confident in interacting with patients and one student enjoyed his experience so much that he became certified as a lifestyle coach within weeks of attending his first DPP session.

Dr. Meguro and Dr. Fukunaga just completed the last session of their DPP in July 2020 and are in the process of submitting their data to the CDC. The last session included some time to reflect back on the year. One participant said, "We're at an age where we need to get more serious about health and this program is helping. The support is good and the information is good." Another participant said, "You two made the difference. You made it easy to understand everything and we were comfortable to ask you questions." When asked what they thought of having pharmacists as their lifestyle coaches, the class responded saying "It was good that you are professionals and have knowledge because someone without this kind of knowledge may not have been able to explain health topics in different ways for us to understand." The participants were also encouraged to become lifestyle coaches themselves to continue helping others and a health background is not needed to become certified.

## Future Plans

Dr. Meguro and Dr. Fukunaga plan to start another DPP to directly help reduce the risk of developing diabetes. They also plan to indirectly reduce the risk of diabetes by becoming master trainers so that they can certify lifestyle coaches to run their own DPPs. This will allow them to help increase the number of DPPs available and because of their access to pharmacy students, they hope to incorporate lifestyle coach certification into the pharmacy curriculum at the Daniel K. Inouye College of Pharmacy. Adding this certification into the curriculum will encourage these future pharmacists to run and maintain their own DPPs, further expanding available DPPs. Their vision is to solidify a culture based on preventative care where future pharmacists will see DPPs as part of their normal workflow. This preventative mindset through DPPs will not only help prevent diabetes, but the lifestyle and behavioral changes learned from DPPs could also help in preventing other chronic conditions such as hypertension and hyperlipidemia.<sup>9</sup> The roles of a pharmacist are continuously evolving and incorporating DPPs is a positive step towards improving patients' health and wellbeing.

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