

# Evidence-Based Diabetes Prevention

## THROUGH LIFESTYLE CHANGE INTERVENTIONS



Over the last 15 years, a number of scientific studies have evaluated the design and effectiveness of lifestyle change interventions for delaying or preventing type 2 diabetes.

### STUDIES

#### The original NIH-funded Diabetes Prevention Program study<sup>1</sup>

- Multi-centered, RCT
- 3234 overweight adults with prediabetes
- Structured lifestyle intervention that lowered weight by 7% through low calorie diet and increased physical activity
- Lifestyle reduced risk of developing diabetes by 58%; 71% among adults > 60 years.

<sup>1</sup> Knowler WC, et al. N Engl J Med. 2001;346:393-403.

#### The intervention delivered in a real-world primary care setting<sup>2</sup>

- RCT in primary care clinic
- Three study groups: Usual care, Coach-led Group Lifestyle, Self-directed DVD Lifestyle
- Both intervention groups received email reminders about self-monitoring via clinic's EHR
- Percent achieving 5% weight loss: 14.4% UC; 37% Coach, 35.9% DVD. Both intervention groups: greater improvements waist circumference & fasting plasma glucose

<sup>2</sup> Ma J, et al. JAMA Intern Med 2013;173:113-121.

#### The intervention delivered in the community<sup>3</sup>

- Matched-pair, group randomized trial
- DPP delivered at YMCA vs brief counseling alone.
- DPP in group setting in community effective way to deliver DPP.

<sup>3</sup> Achermann RT, et al. Am J Prev Med. 2008;35:357-63.

#### Systematic Review of translational DPP studies<sup>4</sup>

- Review of 17 translational studies
- Group-based interventions
- Results: all programs yielded significant weight loss, reduced risk in developing type 2 diabetes. Greater benefits with sustained weight loss over time
- Effectiveness found in program using original curriculum

<sup>4</sup> Johnson M, et al. Diabet Med. 2013;30:3-15.

#### Fifteen-year outcomes of original DPP<sup>5</sup>

- 15-year follow up of 2,776 original cohort
- Diabetes incidence still reduced by 27% in lifestyle group compared to placebo.
- Women in lifestyle group had 21% lower prevalence of microvascular complications
- Participants who did not develop diabetes had 28% lower prevalence of microvascular complications compared to those developing DM.

<sup>5</sup> Diabetes Prevention Research Group. Lancet Diabetes Endocrinol 2015;3:866-75.

#### Impact of DPP lifestyle intervention on hypertension & hypercholesterolemia<sup>6</sup>

- Lifestyle intervention group significantly improved hypertension, triglycerides and HDL cholesterol compared to placebo
- Medication use for hypertension and hyperlipidemia was reduced by 25% among the lifestyle group compared to placebo.

<sup>6</sup> Ratner R, et al. Diabetes Care. 2005;28:888-94.

#### Primary predictor of reduced diabetes incidence<sup>7</sup>

- Investigation into relative contributions of factors on risk of developing type 2 diabetes in original cohort
- Weight loss was primary predictor of reduced diabetes incidence

<sup>7</sup> Hamman RF, et al. Diabetes Care. 2006;29:2012-17.

#### Cost-effectiveness of DPP<sup>8</sup>

- Systematic review
- Diet & physical activity programs are cost effective for people with prediabetes.
- Cost-savings when group-based
- CE ratio: \$1,819/QALY using health system perspective.

<sup>8</sup> Li R, et al. Ann Intern Med. 2015;163:452-60.