

# Diabetes Risk and Prevention Programs in Michigan

June 7, 2013

First Friday Forum



# Overview of the Science of Prediabetes

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Diabetes Partners in Action Coalition Co-Chair



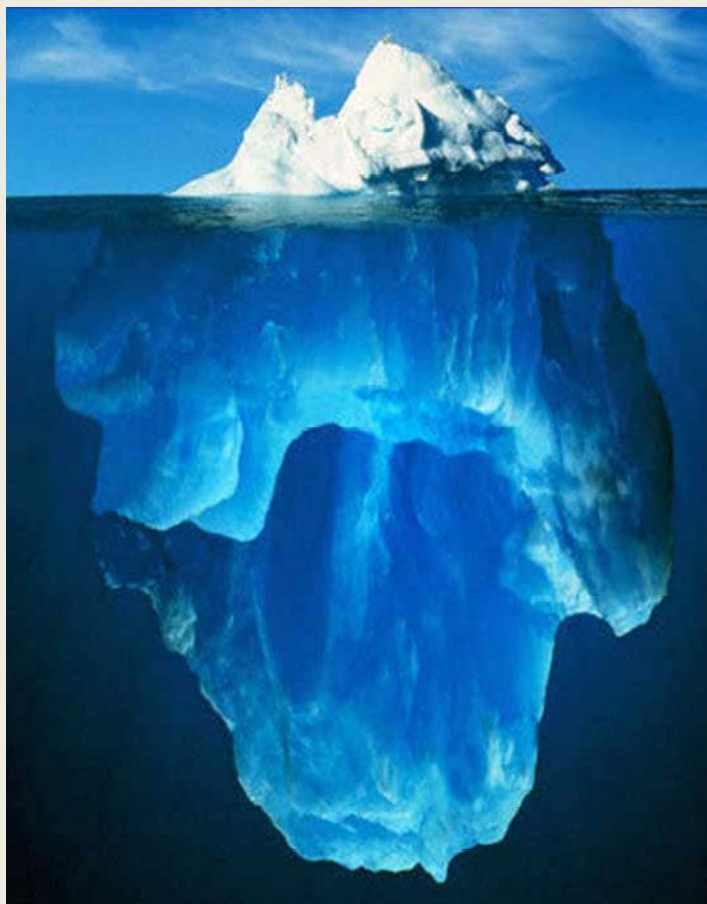
# Learner Objectives

- Define prediabetes
- Understand the heightened risk for diabetes
- State which diabetes complications begin in prediabetes

# Lab Values – Prediabetes/Diabetes

	Normal	Prediabetes	Diabetes
HbA1c (A1c)	Less than 5.7%	5.7% – 6.4%	Greater than 6.4%
Fasting Blood Glucose (FBG)	Less than 100mg/dl	100 – 125 mg/dl	Greater than 125 mg/dl
Oral Glucose Tolerance (OGTT)	Less than 140mg/dl	140 – 199 mg/dl	Greater than 199 mg/dl

# Tip of the iceberg...



26 million with Diabetes

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79 million with Prediabetes<sup>1</sup>

1. Centers for Disease Control and Prevention (CDC). National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States, 2011. Atlanta, GA: U.S. Health and Human Services, CDC, 2011.

# Prediabetes

- 35% of US adults have prediabetes, which equates to about 2.6 million individuals in Michigan.<sup>1,2</sup>
- Only 6.4% of adults with prediabetes in Michigan know their prediabetes status. The numbers are slightly higher for those at higher risk (overweight, older, etc.)<sup>3</sup>

1. Centers for Disease Control and Prevention (CDC). National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States, 2011. Atlanta, GA: U.S. Health and Human Services, CDC, 2011.
2. Prediabetes in Michigan 2011—The Facts. Michigan Department of Community Health, 2011.  
[www.michigan.gov/diabetes](http://www.michigan.gov/diabetes)
3. Fussman C, Pier K. Diabetes Testing and Prediabetes Among Michigan Adults. *Michigan BRFSS Surveillance Brief*. Vol. 5, No. 5. Lansing, MI: Michigan Department of Community Health, Division of Genomics, Perinatal Health, and Chronic Disease Epidemiology, Surveillance

# Prediabetes—Risk of Diabetes

- 9-25% increased 5-year incidence risk for those with A1c 5.5%-6.0%, compared to having an A1c  $\leq$  5.0%
- 25-50% increased 5-year incidence risk for those with A1c 6.0%-6.5%; Relative Risk = 20, compared to those with A1c of 5.0%<sup>4</sup>

4. Zhang X, Gregg EW, Williamson DF, Barker LE, Thomas W, Bullard KW, Imperatore G, Williams DE, Albright AL. *A1C level and future risk of diabetes: a systematic review. Diabetes Care* 2010;33:1665–1673

# End-organ Damage in Prediabetes

- Retinopathy (eye blood vessel changes)
- Neuropathy (damage to small nerves)
- Nephropathy (decrease in kidney function)



# Testing Recommendations

1. Testing should be considered in all adults who are overweight (BMI  $\geq 25$  kg/m<sup>2</sup>\*) and have additional risk factors:

- Physical inactivity
- First-degree relative with diabetes
- High-risk race/ethnicity
- Women who delivered a baby weighing >9lb or history of Gestational Diabetes
- Hypertension OR on therapy for hypertension (even if controlled)
- HDL cholesterol level <35 mg/dL and/or a triglyceride level >250 mg/dL
- A1c  $\geq 5.7\%$ , Impaired Glucose Tolerance, or Impaired Fasting Glucose on previous testing
- Other clinical conditions associated with insulin resistance
- Cardiovascular Disease

2. In the absence of the above criteria, testing for diabetes should begin at age 45 years.

3. If results are normal, testing should be repeated at least at 3-year intervals, with consideration of more frequent testing depending upon initial results and risk status.



# DPP Evidence and NDPP—MDCH Diabetes Prevention

Kristi Pier, MHS, MCHES

Michigan Department of Community  
Health

# Learner Objectives

- Understand the evidence of diabetes prevention from the original studies
- Be aware of the components of the CDC Diabetes Prevention Recognition Program
- Be aware of diabetes prevention programs in Michigan and how to refer participants

# Overview of the Evidence-based Diabetes Prevention Program

- The DPP study for people with prediabetes
  - 3,234 people with elevated glucose levels, non-diabetes
- 3 Groups
  - Placebo
  - Metformin
  - Lifestyle changes
- Lifestyle change group saw a 58% reduction in diabetes incidence
- Metformin group saw a 31% reduction



# Evidence of Lifestyle Change Program

## Original DPP -- Lifestyle intervention

- Achieve at least 7% weight loss
- Moderate physical activity of 150 minutes a week
- One-on-one 16 session program, 2 hour sessions, for 4 months; monthly sessions for remainder of year
- Nutrition, physical activity content, behavior change content, such as goal setting and problem solving

## DEPLOY study—Research into Practice

- Proved similar outcomes in group setting
- 6.0% weight loss at 6 months
- Based in community, primarily utilizing lay health leaders (lifestyle coaches)
- Group sessions, 1 hour (vs 2 hour one-on-one)

# National Diabetes Prevention Program— Lifestyle Balance

## Two Goals

- Lose 5-7% weight
- Moderate physical activity of 150 minutes a week

## Program Structure

- Group program based in community, led by lifestyle coaches
- Core Sessions—16 weekly sessions; Post-Core—6 monthly sessions
- Content includes nutrition, physical activity, behavior change content, such as goal setting and problem solving
- Participants log/track food intake and physical activity

## Participants

- Must be 18 or older
- Have prediabetes (at least 50% of participants) or be at high risk

# CDC NDPP Recognition Program

- The CDC has established a “recognition” program to:
  - Standardize, assuring quality and fidelity as the program is implemented across the country
  - Develop and maintain a program registry
  - Provide technical assistance
- Standards and program delivery requirements are located in the Standards and Operating Procedures document ([www.cdc.gov/diabetes/prevention](http://www.cdc.gov/diabetes/prevention))
- The goal of CDC Diabetes Prevention is to scale the program quickly and seek reimbursement

# Diabetes Prevention Recognition

## Programs must:

- Apply to become DPP delivery organization
- Identify curriculum to be used
- Submit regular data:
  - Attendance—core and post-core
  - Weight and PA documentation
  - Proof of program eligibility requirement— >50% with prediabetes lab value
- Organizations considered “pending” until data submitted and approved





# Lifestyle Coach Training

- Recognized agencies are encouraged to send lifestyle coaches to training
  - CDC identified training agency, Diabetes Training and Technical Assistance Center (DTTAC) and master trainers to deliver approved curriculum
- Current recognized programs in Michigan have trained lifestyle coaches

# MDCH Diabetes Prevention Program Progress

- Three lifestyle coach training sessions by DTTAC; 9 DPRPs; 36 trained coaches
- One of 8 states with grant from NACDD State Diabetes Prevention Project
  - Established Diabetes Prevention Network to update, access resources and provide TA as needed
  - NACDD grant funding to allow us to outreach to providers and establish referral networks
- Online data application to support data reporting to CDC
- Convene 4 working teams to support DPRPs
  - Data, Marketing; 3<sup>rd</sup> Party Reimbursement and Reaching Employers

# A Culture of Prevention

Integrating Health Status into  
the Company Culture

Terri Eudy, MA

Grand Valley Health Plan



# Learner Objectives

- Understand the benefits of risk reduction in employees and cost of diabetes in sick days, absenteeism, loss of productivity and health care costs
- Be aware of benefits of a prevention culture in the worksite

# Waiting for Sickness

## A Poor Business Strategy

### Cost of Diabetes in Michigan

	Cost per person	Estimated number of adults with condition	Estimated cost to Michigan
Prediabetes <sup>1</sup>	\$443	2,602,500	\$1.15 Billion
Diagnosed Diabetes <sup>2</sup>	\$9,963	1,000,850	\$10 Billion

Source: American Diabetes Association. Economic costs of diabetes in the US in 2007 Diabetes Care 31: 1-20, 2008. MI BRFSS 2008-2010, 2010 Census.

[http://www.michigan.gov/documents/mdch/Prediabetes-2011-Final\\_369871\\_7.pdf](http://www.michigan.gov/documents/mdch/Prediabetes-2011-Final_369871_7.pdf);

Source: Zhang Y, Dall TM, Chen Y, Baldwin A, Yang W, Mann SE, Moore V, Le Nestour E, Quick WW. Medical costs associated with prediabetes. Population Health Management 12(3): 165-174, 2009, 2005-2006 NHANES, 2010 Census.

[http://www.michigan.gov/documents/mdch/Diabetes\\_in\\_Michigan\\_Update\\_2013\\_416620\\_7.pdf](http://www.michigan.gov/documents/mdch/Diabetes_in_Michigan_Update_2013_416620_7.pdf)



**Cost Difference?**

**\$9,520 loss per  
person**

# Some Risk Factors for Prediabetes



Impaired Blood  
Glucose Regulation

High Blood Pressure

**Lifestyle**

High Cholesterol

Sedentary Lifestyle

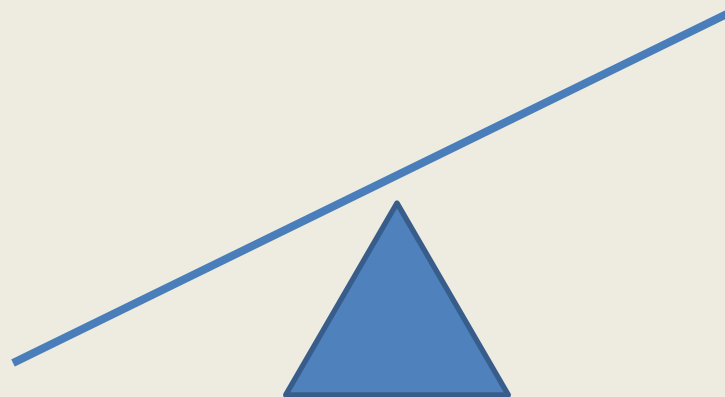
Obesity

# The Economics of Health Status

## A Business Case for Wellness

**Investing in health management programs =** spending less on healthcare costs on one side of the economic equation while increased health related productivity will be realized on the other side

Medical / Hospital  
Drug  
Absence  
Presenteeism  
Workers' Comp  
Disability



Effectiveness on the job

- Safety
- Production/Profit

Retention  
Morale  
Recruitment



# Creating a Culture of Prevention

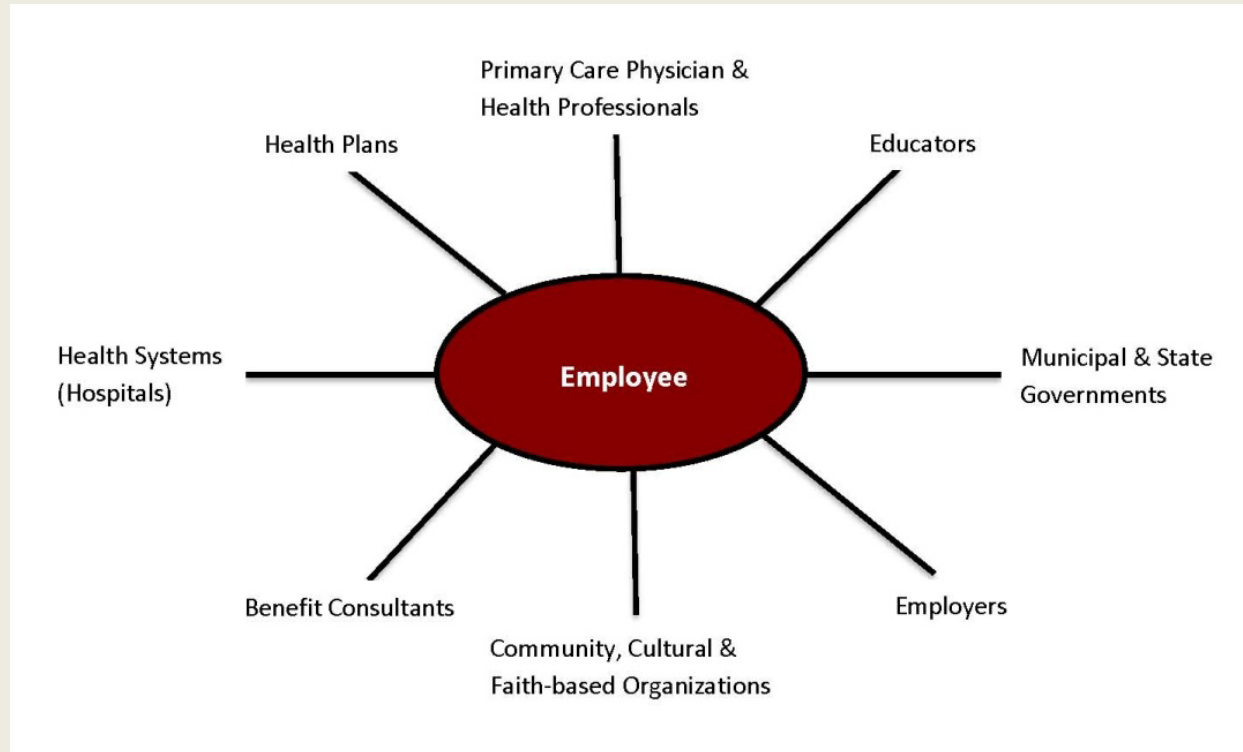
## Integrating Health Status

- Senior leadership
  - CEO, President, Owner, Senior Management
- Align the workplace with the vision.
  - Respect the culture, values and philosophy of your organization
  - Engage operational leaders
  - Integrate policies into company culture and practices



# Creating a Culture of Prevention

## Integrating Health Status



- Engages the total population
- Evidence-based & On-going
- Measurable & Reportable

# Change in Costs Follows Change in Risks

ABC Company	# of Employees	# of Risks	Cost per Employee Annual	Cost to Company Annual	20% Risk Factor Reduction
Health Claims	1047	2.8	\$2618	\$2,740,673	\$524
Productivity Losses		\$9/hr	\$789	\$825,840	\$158
Absenteeism Costs (average 3.4 days lost/year)		\$9/hr	\$111	\$115,733	\$32

Source: Based on research from University of Michigan Health Management Research Center, Cost Benefit Research Report, 2006. Wright et al, JOEM, Vol 46., No 9, 2004

Source: Burton WN, Chen CY, Conti DJ, et al. The Association of Health Risk with On-the-Job Productivity, JOEM, 47:769-777 (Aug 2005)

# A Culture of Prevention

## A Responsible Business Strategy

### Cost of Diabetes in Michigan

	Cost per person	Estimated number of adults with condition	Estimated cost to Michigan
Prediabetes <sup>1</sup>	\$443	2,602,500	\$1.15 Billion
Diagnosed Diabetes <sup>2</sup>	\$9,963	1,000,850	\$10 Billion
<b>Cost difference</b>	<b>\$9,520</b>		

**Cost Aversion: About 24.8 Billion**

Source: American Diabetes Association. Economic costs of diabetes in the US in 2007 Diabetes Care 31: 1-20, 2008. MI BRFSS 2008-2010, 2010 Census.

[http://www.michigan.gov/documents/mdch/Prediabetes-2011-Final\\_369871\\_7.pdf](http://www.michigan.gov/documents/mdch/Prediabetes-2011-Final_369871_7.pdf);

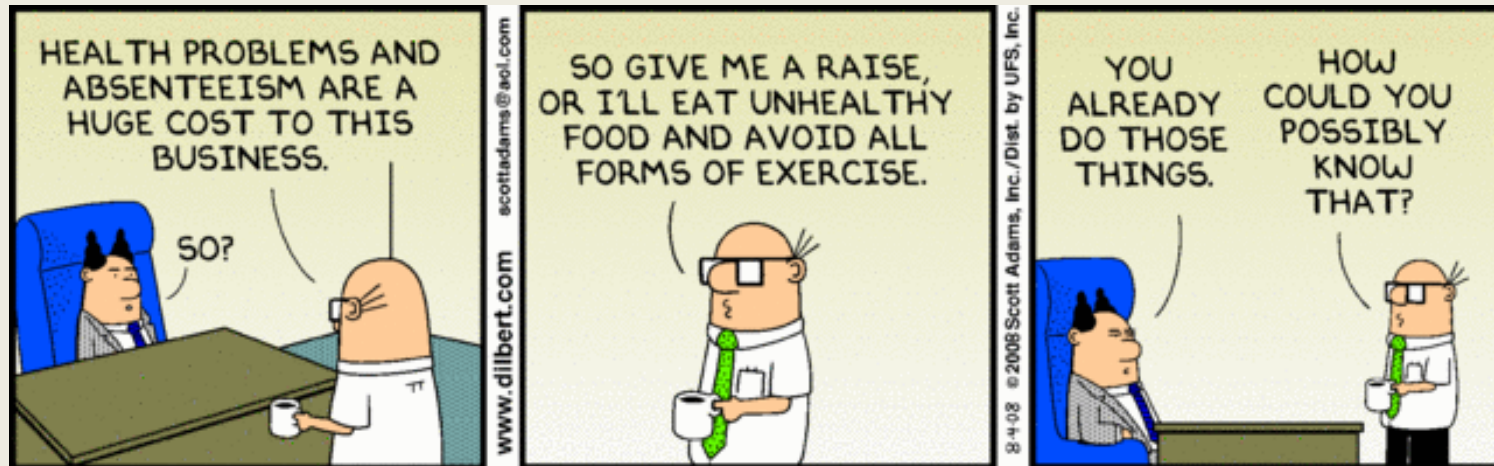
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# A Culture of Prevention

Thank you



# Lessons from the Field— Michigan DPRP

Art Franke, PhD

National Kidney Foundation of  
Michigan



# Learner Objectives

- Understand how a diabetes prevention program is operationalized in the community
- Understand the lifestyle changes promoted in the program
- Give examples of success of participants in the diabetes prevention programs in Michigan

# The Role of the DPP Recognized Centers

- Partners provide support and services for DPP
  - Identify eligible participants
  - Proactive outreach for community engagement
  - Communications and messaging about prediabetes
  - Trained lifestyle coaches
  - Measure outcomes to document success



# Diabetes Prevention: Proven, Possible and Powerful!

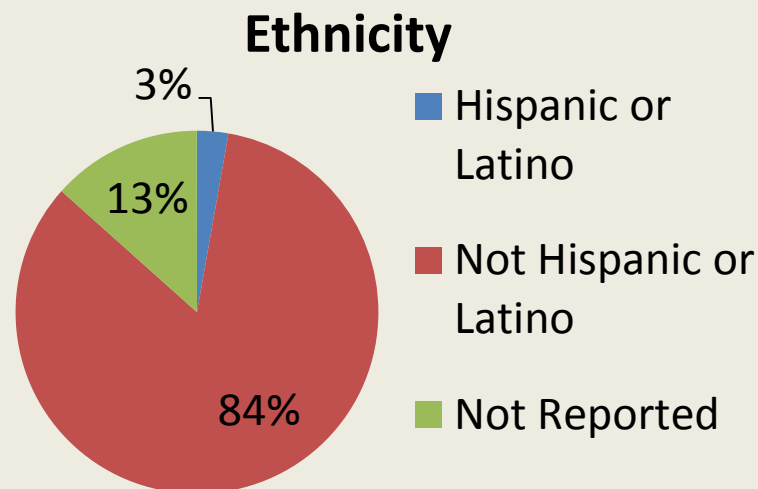
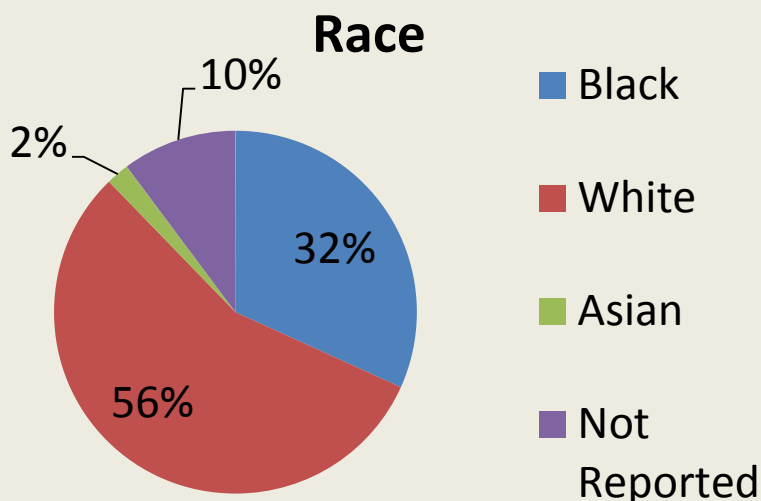
- Delivered in community settings in groups of 10-15 people
- Personal lifestyle goals are set by each participant
- Participant benefits:
  - Instruction on healthy eating, physical activity, and lifestyle changes
  - Group and individual support
  - Educational materials
  - Personalized feedback
  - Motivation for physical activity
  - Useful information
  - ***A healthier you!***

# Examples of DPP Community Engagement

- Church in Inkster with Referrals from FQHC
- Worksite in Ann Arbor
- Chelsea Wellness Center
- Priority Health in Grand Rapids
- Detroit Medical Center working with Emergency Dept.
- St. Mary's Hospital in Livonia

# Demographics – All Sites

N = 107



### Gender

- 84% Female
- 16% Male

### Average Participant Age

58.5 years

### Pre-Diabetes Diagnosis

- 45% by a Physician (FPG, OGTT, A1C, and/or GDM)
- 55% by CDC Risk Assessment

# Physical Activity *Completed Sites*

- Participants who completed the core sessions averaged **177.5 minutes** per week

Workshop Site	Number of Participants	Average Physical Activity* (minutes)
Inkster	15	108.4
NKFM	13	202.6
Chelsea	19	221.4
<b>Achieved</b>	<b>47</b>	<b>177.5</b>

\*Average Physical Activity reported per session

# Core Sessions Attended *Completed Sites*

- Participants from completed sites average **13.6 core sessions**.

Workshop Site	Number of Participants	Average Number of Core Sessions Attended
Inkster	15	13.9
NKFM	13	15.3
Chelsea	19	11.6
<b>Achieved</b>	<b>47</b>	<b>13.6*</b>
<b>DPRP Standard</b>		<b>9.0</b>

\*Weight was measured in 83.4% of sessions. DPRP Standard is 80%.

# Weight Loss at End of Core Phase

## *Completed Sites*

- Participants who have completed the core phase have averaged **4.5%** weight loss

Workshop Site	Number of Participants	Total Weight Loss at End of Core Phase (lbs.)	Average Per-Participant Weight Loss at End of Core (%)
Inkster	15	83.0	-3.0%
NKFM	13	133.8	-5.4%
Chelsea	19	186.0	-5.0%
<b>Achieved</b>	<b>47</b>	<b>402.8</b>	<b>-4.5%</b>
<b>DPRP Standard</b>			<b>-5.0%</b>

# Weight Loss Goals Achieved

## *Completed Core Sites*

- **46.9%** of participants who met the 5% weight loss goal
- **24.8%** of participants who met the 7% weight loss goal

Workshop Site	Number of Participants	Met 5% Weight Loss Goal (%)	Met 7% Weight Loss Goal (%)
Inkster	15	26.7%	6.7%
NKFM	13	61.5%	30.8%
Chelsea	19	52.6%	36.8%
<b>Achieved</b>	<b>47</b>	<b>46.9%</b>	<b>24.8%</b>

# Bottom Line – It Works!

- **Greatest benefits** are associated with those modifications that include **weight loss, dietary changes, and exercise**
- Evidence-based approach to **prevent or delay onset** of type 2 Diabetes
- **Moderate weight loss** (5-7% of body weight)
- **Modest physical activity** (150 minutes per week)

**“I feel better and find it’s much easier to run around with my young grandchildren. It also feels good to fit into smaller clothes.”**

**“I have developed self confidence in my abilities to lose weight and get regular activity.”**