

THE DIABETES PREVENTION PROGRAM IN THE BOP

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*With special thanks
to:*

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PRESENTATION OVERVIEW

- The burden of diabetes in corrections
- Overview of diabetes prevention and the original DPP
- DPP in a correctional setting study
 - Methodology and objectives
 - Baseline characteristics
 - Preliminary outcomes
- Lessons learned/future directions

DIABETES IN CORRECTIONS

DIABETES: A COSTLY EPIDEMIC

29 million

US adults with
diabetes

86 million

US adults with
prediabetes

\$245 billion

spent on diabetes
care in 2012

**20% of healthcare
dollars**

spent on people
with diabetes

**25% of those with
diabetes**

don't know they
have diabetes

DIABETES IN THE CORRECTIONAL SETTING

- **1.53 million incarcerated adults at end of 2015**
 - \$7.7 billion spent by states on inmate health care each year
 - Disproportionately Hispanic and Black
- **Crude rate of diabetes in prisons: 4.2-5.1%**
- **Age standardized prevalence of diagnosed federal inmates: 11.1%**
 - Compared to 6.5% in general population

THE PREVENTION OF DIABETES



WHAT IS PREDIABETES?

- Blood sugar levels are higher than normal, but below the cutoff for a diabetes diagnosis
- Increased risk for type 2 diabetes and cardiovascular disease

Fasting Plasma

Glucose:

100-125

Hemoglobin

A1c:

5.7-6.4%

Oral Glucose

Tolerance Test:

140-199

THE DIABETES PREVENTION PROGRAM

- Randomly controlled trial studying diabetes prevention
- 3,234 patients with prediabetes assigned to either:
 - 1) Placebo
 - 2) Metformin (850 mg bid)
 - 3) Lifestyle modification
- 45% of participants were from minority groups



LIFESTYLE BALANCE

- **Curriculum:**
 - 16 sessions within first 24 weeks (individual)
 - Maintenance stage: 1 time every 1-2 months (group or individual)
- **Goals:**
 - 7% weight loss (1-2 lbs/week)
 - 150 minutes of physical activity per week
- **Recommendations:**
 - Restriction of fat grams and calories
 - Brisk walking
 - Self-monitoring of diet and exercise
- **Delivered by lifestyle coaches**



DPP OUTCOMES

- Lifestyle intervention was effective in preventing/delaying type 2 diabetes:
 - 58% reduction in diabetes incidence compared to placebo and 39% compared to metformin
 - At 10-years, absolute risk reduction for lifestyle compared to placebo was 25.9%; relative risk reduction was 49.4%
- Other positive, long-term outcomes:
 - improved BPs and lipid profiles
 - fewer chronic care medications
 - lower rate of metabolic syndrome
- Effective for all races/ethnicities, both sexes, all ages and regardless of initial BMI

DPP TRANSLATIONS

- Several studies completed on DPP in the community
- Common modifications:
 - Group classes
 - DVD/online versions
 - Fewer sessions
 - Fewer “extras”
 - Lay educators
- Systematic reviews demonstrate that program is still effective:
 - At 12 months, mean weight change of about 4%
 - 45% meeting goal of 7% weight loss at 10-12 months
 - Other favorable results reported: BP, lipids, FBS

STUDY ON THE DPP IN A CORRECTIONAL SETTING

STUDY OBJECTIVES

- 1.** Determine the effectiveness of the DPP in a correctional setting
- 2.** Identify modifications that may make the DPP more effective in a correctional setting
- 3.** Determine whether large-scale implementation of the DPP is feasible for the correctional setting

STUDY SETTING

FCI Danbury, CT

- Low security male facility (~800 inmates)
- Minimum security female facility (~200 inmates)
- Care level 2
- 2 MDs, 3 MLPs, 4 RNs



STUDY METHODOLOGY

- Staggered-start control – 4 groups divided into 2 cohorts
- Intervention = 12-month Group Lifestyle Balance Program
 - First cohort: in-person facilitators & additional physical activity classes
 - Second cohort: DVD-run

**Jan-March
2016**

- IRB-approval
- Participant recruitment

**March
2016**

- First cohort started intervention

**September
2016**

- Second cohort started intervention

**February
2017**

- First cohort completed intervention

**August
2017**

- Second cohort will complete intervention

GROUP LIFESTYLE BALANCE

- **22 group sessions:**
 - Sessions 1-12: once per week
 - Sessions 13-16: twice per month
 - Sessions 16-22: once per month
- **Session topics include: diet, exercise, problem solving, stress management**
- **Food journaling with specific calorie and fat gram goals**
- **Recommended 150 minutes of physical activity per week**
- **Regular weight-ins**

PRIMARY STUDY OUTCOMES

Data collected at baseline, and 6, 12 and 18 months

- Weight/BMI
- HgbA1c
- Blood pressure
- HDL/LDL/Triglycerides
- Attendance rate
- Attrition rate
- Qualitative feedback via questionnaire

PARTICIPANT CHARACTERISTICS

- Individuals with prediabetes or at a high risk for developing diabetes
- 26 males, 21 females
- 43% Black; 30% White; 26% Hispanic; 2% Asian

	Group 1 (n=23)	Group 2 (n=24)
Age	50 (33-69)	48 (25-69)
BMI	32.5 (24.7-42.9)	31.6 (21.8-48)
Systolic BP	123 (108-141)	123 (108-165)
LDL	104 (69-160)	119 (63-156)
HDL	49 (26-80)	48 (36-58)
A1c	5.9 (5.5-6.4)	5.9 (5.4-6.4)
% with prediabetes	78%	84%

INTERVENTION VS CONTROL AT 6 MONTHS

- Intervention group lost significantly more weight than control
- No significant changes in BP, HDL or LDL in either group
- A1c and triglycerides of both groups went down

	Group 1 – Intervention (n=18)	Group 2 – Control (n=19)
Weight (lb)	-11.02	-3.97
Weight (%)	-5.31%	-1.97%
A1c	-0.19	-0.13
Triglycerides	-21	-22

DVD VS. LIVE FACILITATOR AT 6 MONTHS

- Group 1 (live facilitator) lost more weight than Group 2 (DVD)
- Group 2 had greater drop in A1c
- Triglycerides went up for those in Group 2

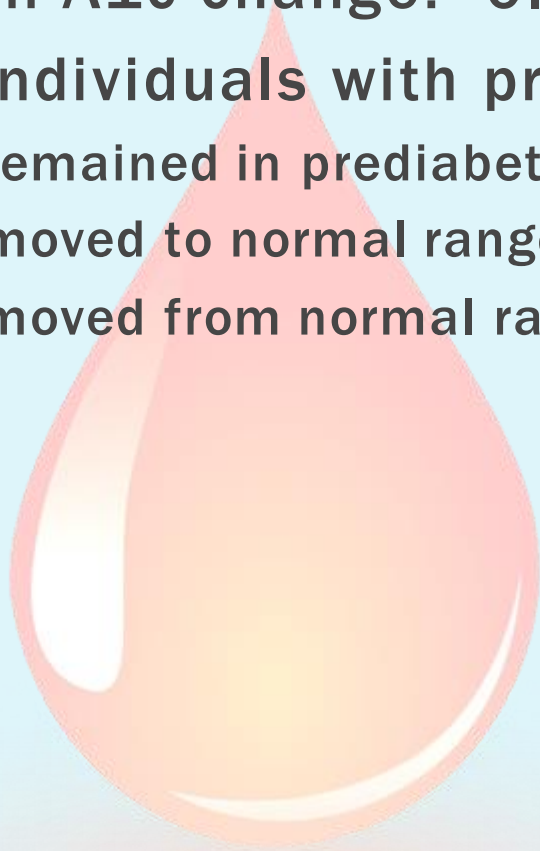
	Group 1 – Facilitator (n=18)	Group 2 – DVD (n=13)
Weight (lb)	-11.02	-6.97
Weight (%)	-5.31%	-3.54%
A1c	-0.19	-0.32
Triglycerides	-21	+25
% meeting goal weight	33%	15%

12-MONTH OUTCOMES: ATTRITION & ATTENDANCE

- 16 program completers in cohort 1 (69.6%)
 - 4 voluntarily withdrew
 - 3 were transferred
- Average number of classes attended = 17 (77.2%)
- Average number of physical activity classes attended = 18 (22.8%)

12 MONTH OUTCOMES: A1C

- Mean A1c change: -0.24
- 11 individuals with prediabetes at baseline
 - 5 remained in prediabetic range
 - 7 moved to normal range
 - 1 moved from normal range to prediabetes



12 MONTH OUTCOMES: WEIGHT

Mean Weight Lost:

-7.7lb/-3.8%

Enrollees Meeting
Weight Goal:

26%

Program Completers
Meeting Weight
Goal:

37.5%

Weight Change
Range:

+7 to -30.4 lb

PARTICIPANT SATISFACTION

- All participants strongly agreed or agreed that:
 - The program improved their overall health status
 - Their knowledge of health and wellness improved
 - The lifestyle coaches were knowledgeable and open to comments and suggestions
 - They would recommend the program to others
 - They plan to continue with the lifestyle changes started during the program
- Only 42.9% strongly agreed or agreed that they met their personal goals
- Pedometers not found by all participants to be helpful

PARTICIPANT REFLECTIONS

The class has improved my overall awareness of my lifestyle, exercising, eating habits. I honestly feel this is one of the best programs I've taken in the BOP. It has also balanced my life in general.

All of us in the program came from very diverse backgrounds; it is highly unlikely that we would have sought each other out and learned about each other had we not had this common link...There are so few opportunities in prison where one can have the opportunity to develop that kind of bond. It was almost like being in a club, one that had a very positive set of goals. You both really did a great job of managing the process and giving us an oasis once a week, or once a month later on in the program, to open up without judgement about our struggles re living in prison and taking care of our health.

The program definitely works, especially tracking through the food journal the caloric intake.

Pedometers were very inspirational and should be part of the program going forward. A very helpful program. Commissary should work with health services to improve choices.

I strongly suggest that this program continues for others. I am 60 yrs old and I feel like I'm 30 yrs old. This program has changed my thinking about my health and my lifestyle in regard to exercise and eating habits.

LIMITATIONS/CHALLENGES

- Single-sex classes
- Limited toolbox (security and funding concerns)
- Unexpected transfers and releases
- Understaffing
- Lockdowns interfering with planned schedule
- Participant-instructor and participant-participant power dynamics
- Difficulty creating controlled situation in confined environment

FUTURE DIRECTIONS

- Study completion in August 2017
- A 6-month program may be more feasible
- Potential to be utilized as a more general behavior-change program
- Support from commissary, food service and other departments may help improve outcomes
- Outcomes may be improved by enhancing the screening process
- Comparison of peer-run program
- Broader roll-out, perhaps tied to incentives for participation
- Emphasis on the domino effect program created

QUESTIONS?

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