

Interventions for Primary and Secondary Prevention in Diabetes: *From Trials to Translation*

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Discussion Points

- Primary prevention of type 2 diabetes
 - Position statement
- Managing type 2 diabetes
 - Standards of care and controversy
- Behavioral interventions for primary and secondary prevention in diabetes
 - Cautionary tales

The Diabetes Prevention Program

A Randomized Clinical Trial
to Prevent Type 2 Diabetes
in Persons at High Risk



Study Design

- 3-group randomized clinical trial
- 27 clinical sites
- Eligibility: high risk for type 2 diabetes
- Goal of 50% minority subjects
- Primary Outcome: Onset of type 2 diabetes

DPP Study Interventions

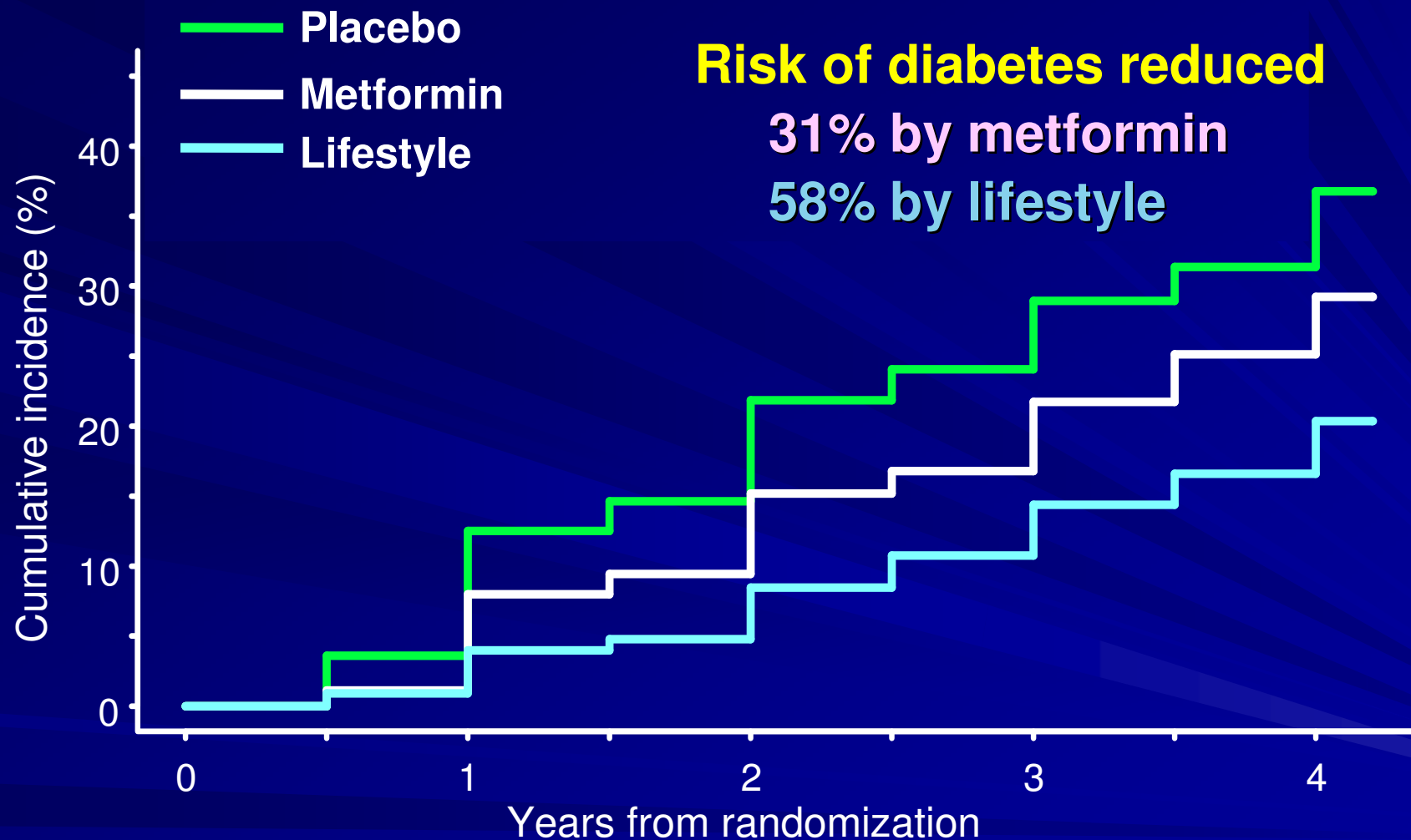
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graph TD; A[DPP Study Interventions] --> B[Intensive Lifestyle (n = 1079)]; A --> C[Metformin (n = 1073)]; A --> D[Placebo (n = 1082)];
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**Intensive
Lifestyle
(n = 1079)**

**Metformin
(n = 1073)**

**Placebo
(n = 1082)**

Incidence of Diabetes



The DPP Research Group, *NEJM* 346:393-403, 2002

Summary

- Intensive lifestyle intervention reduced the development of diabetes by 58%
- Metformin reduced the development of diabetes by 31%
- Both interventions were effective in men and women and all ethnic groups
- Intensive lifestyle intervention was effective in all age groups, including those ≥ 60 years of age.

DPP Lifestyle Intervention

16 session core curriculum	First 24 weeks
Tailored individual intervention	6 months to study end
Tool box strategies	When not achieving study goals
4-8 week “after core” classes/campaigns	3 times per year

Lifestyle Intervention Structure

- 16 session core curriculum (over 24 weeks)
- Long-term maintenance program
- Supervised by a case manager
- Access to lifestyle support staff
 - Behavior counselor
 - Dietitian
 - Exercise specialist

Lifestyle Intervention results

Results: *After Core Curriculum*

- Weight Loss 6.6 kg (14.5 lb)
- % weight loss 7.0 %
- % at or above weight loss goal 49.7%
- Physical Activity 224 minutes
- % at or above activity goal 74.4 %

The Diabetes Prevention Program: Predictors and Outcomes of Preventive Medication Adherence



Predicting Development of Diabetes by Adherence to Metformin Compared to Placebo Group

	Risk Reduction (95% CI)	p value
Adherent to metformin	40.3% (24, 53.1)	<0.0001
Non-adherent to metformin	20.3% (1.76, 35.3)	0.03

Predicting Later Medication Adherence by Early Adherence Behavior

	Odds Ratio (95%CI)	p value
Adherence at 1 year	4.53 (3.61, 5.69)	<0.0001
Adherence at 3 years	3.13 (2.31, 4.25)	<0.0001

ADA Recommendations to Prevent or Delay Type 2 Diabetes

- Screening at \geq age 45, younger with risk factors
 - Anytime--paper and pencil risk test
- Awareness of lifestyle for those at high risk
- Counseling re: lifestyle for those with IGT
 - Follow up counseling is important
- Screening for those with pre-diabetes q 1-2 yrs
- Attention to other risk factors
- Pharmacotherapy should *not* be used routinely to prevent/delay diabetes

Type 2 Diabetes Standards of Care

- The **ABCs** of diabetes
 - A1c <7%
 - Blood pressure <130/80 mg/Hg
 - Cholesterol (LDL) goals <100 mg/dl
 - Smoking cessation or prevention
- **How?** Healthy eating, exercise, medication adherence:
self management
- **Screening** for complications: eyes, kidneys, feet, heart, and depression

Type 2 Diabetes Standards of Care

- Some controversy about first line of treatment for type 2 diabetes
 - Had previously been only lifestyle change
 - New position statement adds metformin to lifestyle change as first line of treatment

Retinopathy Screening for African Americans with Diabetes

- Purpose: Increase rates of retinopathy screening
- Demographics: 280 African Americans (65% female)
- Design: Randomized controlled trial
 - Intervention - tailored telephone counseling, booklet and video
 - Control - standard care, plus mailed health information

Walker EA, Basch CE et al.: *J Diabetes Complic* 11:298-306, 1997

Subjects Receiving Documented Dilated Eye Exam in Intervention vs. Standard Care

N = 280 African Americans

Eye Exam	Telephone Intervention Group	Standard Care
	% (n)	
Yes	54.7 (72)	27.3 (39)
No	45.3 (65)	72.7 (104)
	OR 4.3 (95% C.I. = 2.4, 7.8)	

Basch C, Walker EA et al: *Am J Public Health* 89:1878-92, 1999

Vision is Precious Study

Randomized controlled trial to:

- test the hypothesis that a tailored telephone intervention will result in a higher rate of screening for diabetic retinopathy than a standard print intervention
- assess differences in subgroups (English- and Spanish-speaking, gender, etc)
- assess comparative risk perceptions about diabetes and its complications over time.
- perform an intervention cost evaluation (in process)

Methods

- **Sample** 598 adults with diabetes, who have not had a dilated eye exam in > one year, from three health care systems in Bronx, NY.
- **Design** Randomized controlled behavioral intervention trial
- **Procedures** Health educators recruit participants and implement the interventions by telephone and mail over 6 months, according to protocol in English or Spanish.

Improving Diabetes Outcomes (*I DO*) Study

- A large NIH-funded diabetes intervention study (~550 1199 Union members)
- Intervention delivered in Spanish and English by telephone and/or by mail
- Goal is to improve diabetes outcomes (HbA_{1c}) through medication adherence primarily, and by activity and healthy eating

Chronic Care Model



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Websites

- National Diabetes Education Program
ndep.nih.gov
- American Diabetes Association
diabetes.org
- State and city DOH websites
- *CDC.gov/diabetes*