

Preventing Diabetes in Youth

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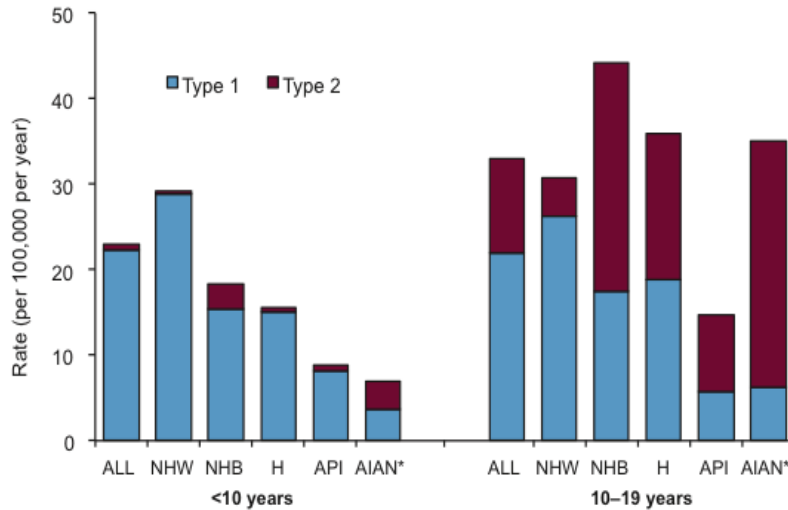
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Overview

- **Epidemiology and Pathophysiology**
 - Beyond gene – environment interactions
- **Diagnosis**
 - Prediabetes and diabetes risk in youth
- **Prevention**
 - What works, what doesn't, and how do you know?

Rate of new cases of type 1 and type 2 diabetes among people younger than 20 years, by age and race/ethnicity, 2008–2009



The SEARCH for Diabetes in Youth Study Group.

Pathophysiology

- J.S. is a 13 year-old Hispanic female referred to pediatric endocrinology by a NP at a SBHC for T2DM work-up following an HbA1c of 5.8%
 - MD Hx: denies polyuria, polydipsia, weight loss*
 - Fm Hx: raised by MGM (+T2D), mother had GDM (current history unknown), father is deceased
 - PE: BMI >99th percentile (37 kg/m²), marked acanthosis, Tanner stage IV, vitals and BP WNL
 - Other: 6th grade, a few friends, P.E. 2 x's/wk (hates it), 4 hrs/day screen time, 44 oz soda/day

Gene – Environment Interaction

- Biological factors
 - Family History (T2D + GDM)
 - Ethnicity
 - Tanner Stage
- Environmental factors
 - Sedentary lifestyle
 - Low physical activity
 - Increased added sugar intake

Diagnosis?

- You order a 2-hour OGTT
 - Repeat HbA1c
 - Fasting and 2-hour glucose and insulin
- Results:
 - HbA1c = 5.6%
 - Fasting:
 - Glucose = 92 mg/dl
 - Insulin = 22 uUI/ml
 - 2-hour
 - Glucose = 136 mg/dl
 - Insulin = 450 uUI/ml

Intervention

- How are “we” going to prevent T2DM?
- How are “we” going to know if “we” have prevented T2DM?
- What resources are available to “our” patients?
- What resources need to be available?

Preventing Diabetes in Obese Latino Youth: “A case series”

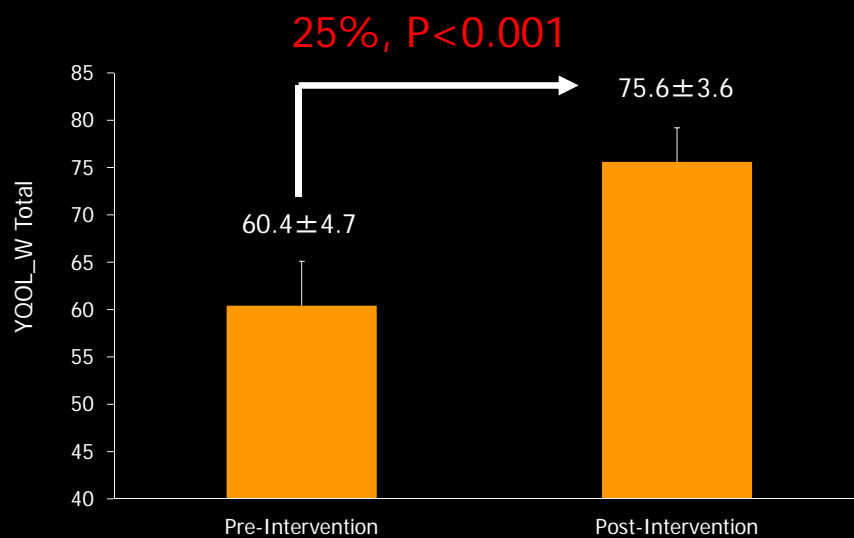
- Comprehensive Lifestyle Intervention
 - Nutrition education
 - Physical activity
 - Behavior modification techniques
 - Social support
 - Family
 - Peers
 - Providers

Pre-Post Intervention (N=37)

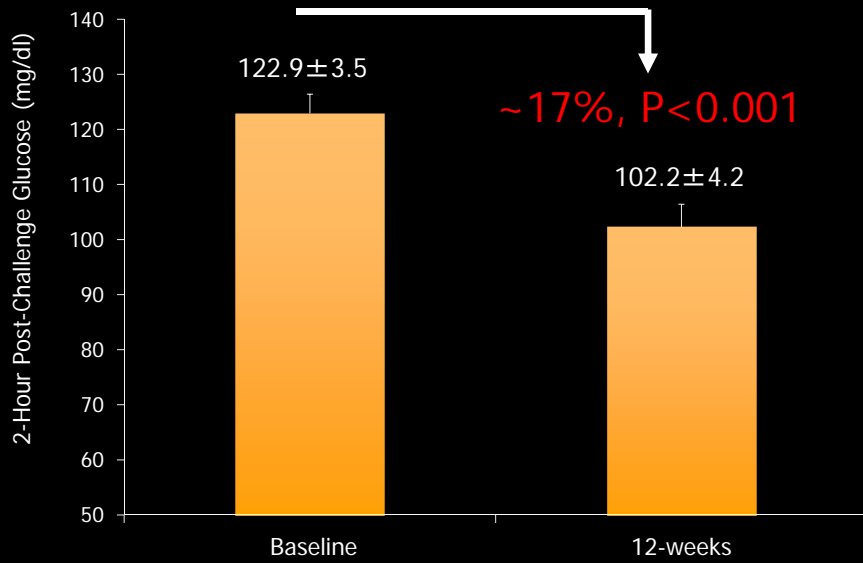
| | Pre | Post | P-value |
|--------------------------|------------|------------|---------|
| Weight (kg) | 97.3 ± 3.1 | 96.5 ± 3.0 | 0.2 |
| BMI (kg/m ²) | 35.4 ± 1.0 | 35.0 ± 1.0 | 0.01 |
| Glucose (mg/dl) | 87.5 ± 1.2 | 88.3 ± 1.4 | 0.5 |
| Insulin (uU/mL) | 16.7 ± 1.9 | 17.0 ± 2.1 | 0.8 |

Data are Means ± SE

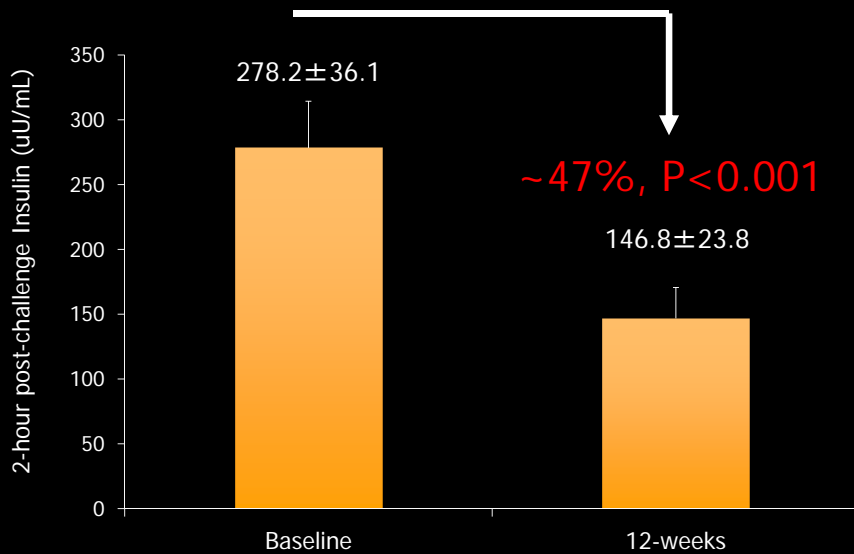
Change in Quality of Life

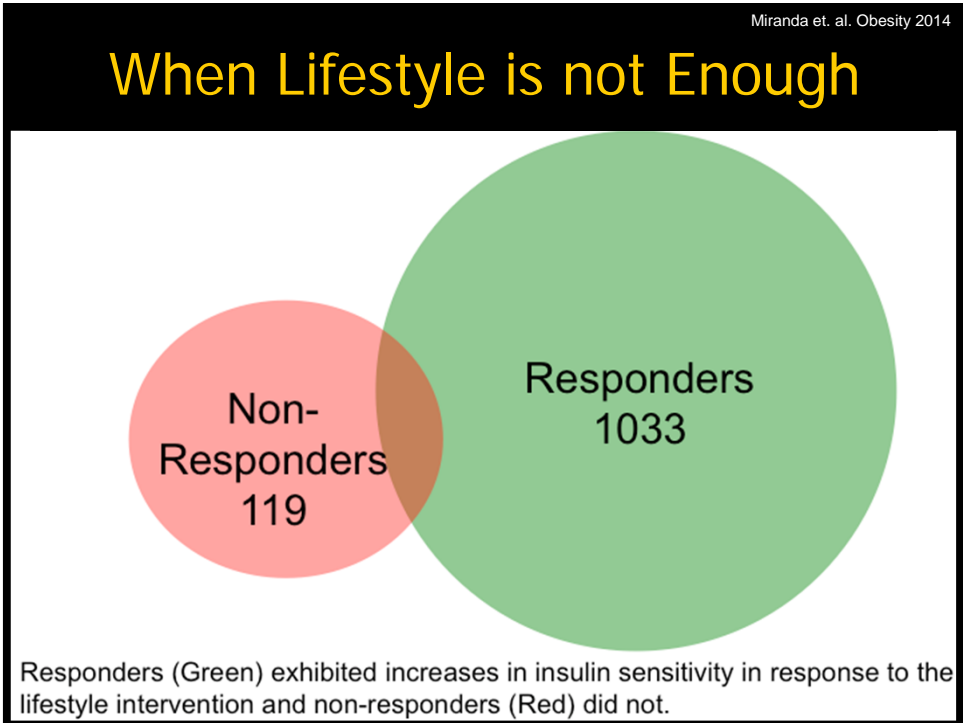
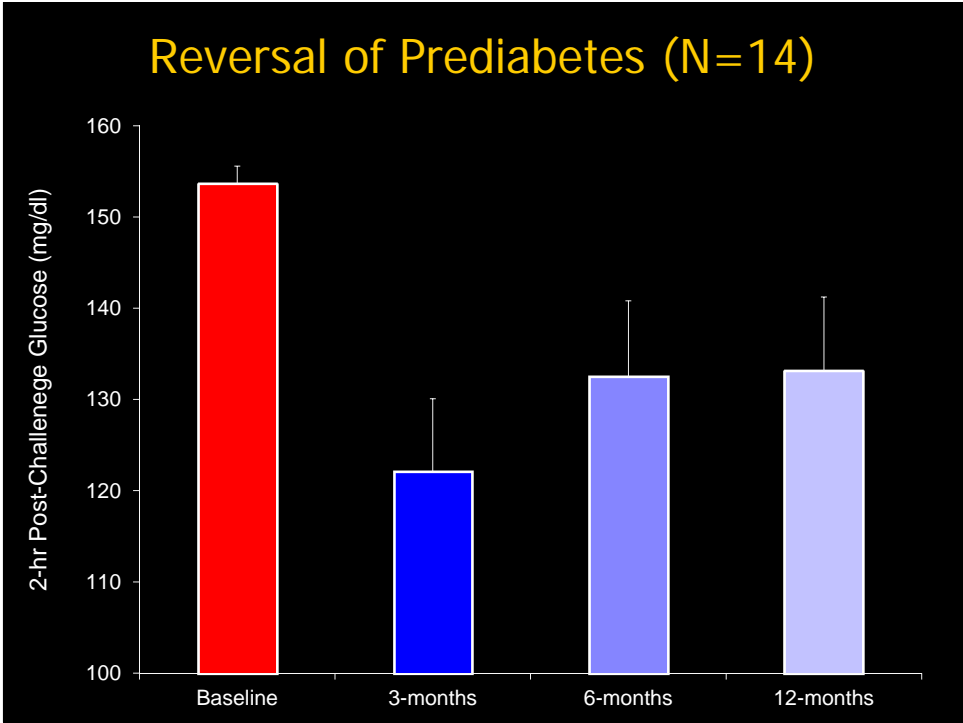


Change in Glucose Tolerance



Change in Insulin Sensitivity





Conclusions

- T2D in youth is a complex and aggressive
- Early identification and intensive intervention
 - Defining what “works” and in whom is critical
- Acknowledge your role and the role of those around you



Precision Medicine for Obesity:
“Eat less, exercise more, and choose your parents wisely.”