

*Panel 2:  
Interventions to Prevent or Manage Diabetes:  
The Evidence Base*

**Science Base for Primary  
Prevention of Diabetes**

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# Risks for Developing Diabetes

- Overweight and obesity
- Physical inactivity
- Poverty
- Ethnicity (African American, Hispanic, Asian, Pacific Islander)
- Family history
- High blood pressure
- Unhealthy cholesterol

# Preventing Diabetes:

## Pre-diabetes:

- Having a glucose level higher than normal but less than the level for a diagnosis of diabetes
- About 40-50 million Americans have pre-Diabetes
- Lifestyle changes can dramatically prevent or slow progression to diabetes

# The Shocking Numbers: Diabetes & Pre-Diabetes in NYC

- **Diabetes: 12.5% of adults** (over age 20)
  - 700,000-800,000 people
  - 25-30% don't know they have it
- **Pre-diabetes: 23.5% more NYC adults**
  - about 1.3 million people
- **TOTAL: 36% of NYC adults have either diabetes or pre-diabetes**
  - about 2 million people

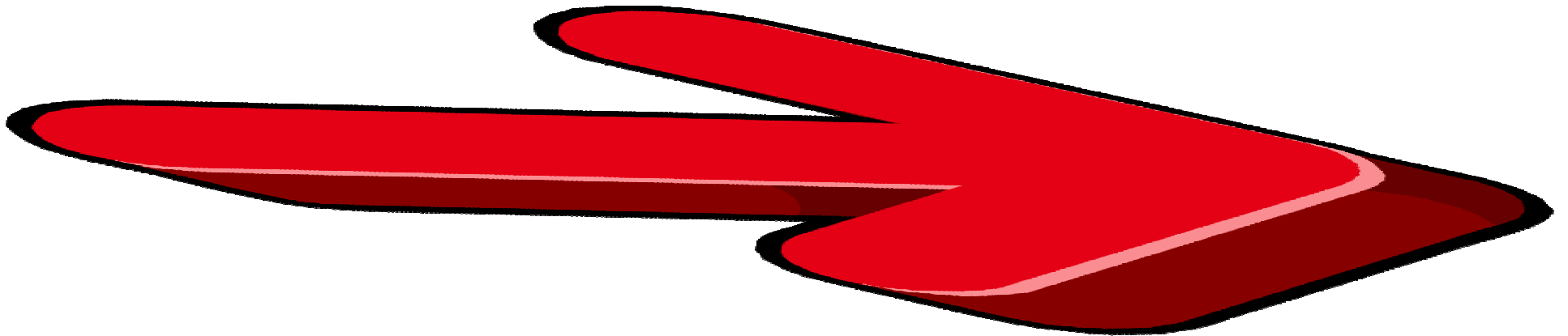
# Preventing and Controlling Diabetes Across the Lifespan

**Physical inactivity**

**Poor Nutrition**



**0** Childhood Obesity **20** Adult Obesity Pre Diabetes Diabetes Complications



# Today . . .

- Strong evidence base for diabetes prevention through interventions for individuals at highest risk from research studies
- Strong evidence base for effectiveness of interventions to increase physical activity
- Societal failure to implement prevention on the needed scale

# Preventing Diabetes: Evidence from Scientific Research

## Strategies for preventing diabetes in individuals:

### 1. Lifestyle Modification

- Increasing physical activity
- Improving diet – healthier, more nutritious options

### 2. Obesity Prevention

- Weight loss and/or maintenance

# Research Studies

## Diabetes Prevention Program (DPP)

- Intensive lifestyle intervention in pre-diabetes:
  - Weekly meetings with lifestyle counselor
  - Group classes and motivational campaigns
- Goals:
  - Reduce weight by 7% from baseline
  - At least 150 min/week of moderate p.a.
  - Reduce total dietary fat to < 25% of calories
- Outcomes:
  - **58% reduction** in diabetes incidence lifestyle intervention group
  - 31% reduction in diabetes incidence in metformin group

# DPP Study Outcomes

- **Weight loss:**
  - Dominant predictor of reduced diabetes incidence
  - Every kilogram of weight: 16% reduction in risk
    - (adjusted for changes in diet and activity)
  - Less calories from fat and more P.A. predict weight loss
  - Increased P.A. was important to help sustain weight loss
- **Importance of Physical Activity - even without weight loss:**
  - P.A. independently reduced diabetes risk: Among almost 500 participants not meeting weight loss goal, those who met P.A. goal had 44% lower diabetes incidence

# Finnish Diabetes Prevention Study Outcomes

## Importance of P.A. even without weight loss:

- Among participants not meeting weight loss goal (>5% weight loss), those who met p.a. goal (>4 hrs/wk) had 70% lower diabetes incidence (after adjustment for baseline, but not follow-up BMI).
- Increases in moderate to vigorous leisure time p.a. and in strenuous, structure leisure time p.a. also resulted in 63-65% reductions in diabetes risk, after adjusting for changes in weight.

# Implementation Grade? F

- Health care system organized to support dialysis and amputations – not prevention
- Fundamental redesign of clinical and community based support for diabetes prevention needed:
  - Obesity prevention and management
  - Pre-diabetes screening in those at highest risk
  - Widespread availability of support services
  - Environmental change to promote physical activity and healthy eating
  - Focus on poor and ethnicities at risk

# Increasing Physical Activity in Community Settings

CDC Task Force on  
Community Preventive Services –  
**“The Community Guide”**

Informational Approaches  
Behavioral & Social Approaches  
Environmental & Policy Approaches

Raise your hands if you took the  
stairs please

# Evidence Base for Physical Activity

## Informational Approaches:

- **Community-wide multi-component campaigns** included strategies such as support groups, p.a. counseling, risk factor screening & education, community health fairs & other community events, and environmental or policy changes such as creation of walking trails.
- **Point-of-decision prompts** - signs placed at elevators & escalators encouraging stair use, with info on benefits of stair use

# Evidence Base for Physical Activity

## Behavioral and Social Approaches:

- **School-based Physical Education (PE)** - increasing amount of PE and active time in PE
- **Social support interventions in community settings** – e.g. buddy activities and walking groups
- **Individually-adapted health behavior change** – interventions designed to meet individual preferences and needs

# Environmental and Policy Approaches

- **Point-of-decision prompts**
  - **Signs placed at elevators & escalators encouraging stair use, with info on benefits of stair use**
  - **Median 54% increase in stair use**

# Environmental and Policy Approaches

- **Enhanced access to places for physical activity, with information outreach**
  - **Interventions**: creating walking trails, building exercise facilities, providing access to nearby facilities
  - **Evidence of effectiveness**: Median 25% increase in percent persons exercising  $\geq 3$  times per week

# Environmental and Policy Approaches

- **Street-scale design and land use policies & practices**
  - **Design interventions:** improved street lighting, improving traffic safety and street landscaping
  - **Policy interventions:** use of building codes and roadway design standards
  - **Evidence of effectiveness:** Median 35% increase in some aspect of p.a. (e.g. number of walkers, % active individuals)

# Environmental and Policy Approaches

- **Community-scale design and land use policies & practices**
  - **Design interventions:** proximity of residential areas to stores, work, schools and recreation areas; continuity and connectivity of streets and sidewalks; esthetic quality and safety
  - **Policy interventions:** zoning regulations, building codes, government policies and builders' policies
  - **Evidence of effectiveness:** Median 161% increase in some aspect of p.a. (e.g. number of walkers or bicyclists)

# DOHMH Existing Physical Activity Efforts

## Behavioral and Social Approach:

- **School (and daycare)-based physical activity**
  - SPARK training curriculum
  - Daycare physical activity regulation & guidelines
- **Social support interventions**
  - STEP OUT (Walking Groups w/ Parks)



# DOHMH Physical Activity Efforts

## Environmental Approach:

- **Creation/enhancement of access to physical activity and info outreach**
  - Shape-Up New York
  - DPHO fitness directories
  - Lifestyle Management pilot in South Bronx
  - PA in faith based organizations



# Towards a Healthier Food Environment: New York City Health Code

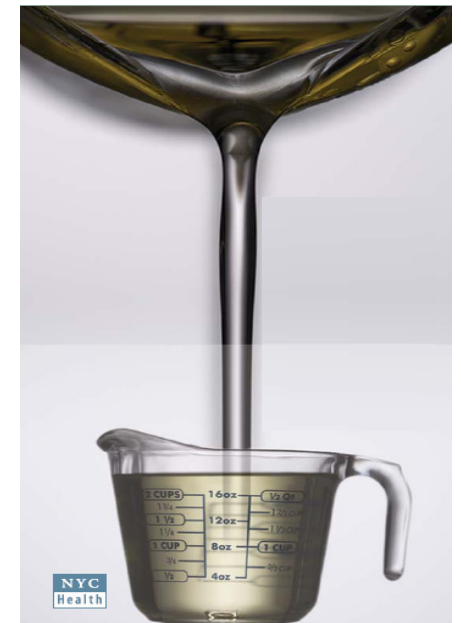
- Trans fat restriction in all NYC restaurants
- Calorie labeling on menus and menu boards
- Daycare nutrition regulation and guidelines



# Towards a Healthier Food Environment: Existing Community Approaches

## Healthy Bodegas Initiative

- 1% milk campaign
  - Fruits and vegetables campaign
- Promoting Greenmarkets
  - Health Bucks
  - Improving School Food and Public Procurement
  - Supermarket Initiative



# Effective Prevention Requires:

- Will to rethink our physical and food environment
- Will to redesign our clinical systems to address chronic disease prevention
- Financial and operational support to take interventions to the scale needed to address a major epidemic

*Failure to act is already fatal and costly*