

# Update on Diabetes and Nutrition

## Part 2

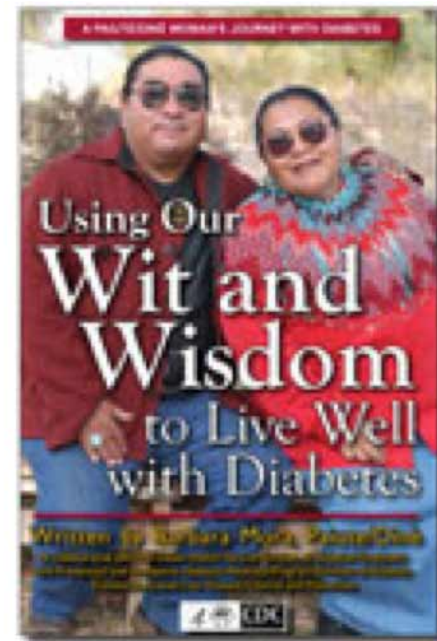
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February 08, 2012  
IHS DDTP Advancements in  
Diabetes Seminars



# Barbara Mora

(Paiute/Diné)



# Context: “Our model has been too small!”

- **Genetics**
- **Lifestyle**
- **Fetal Origins**
- **Stress**

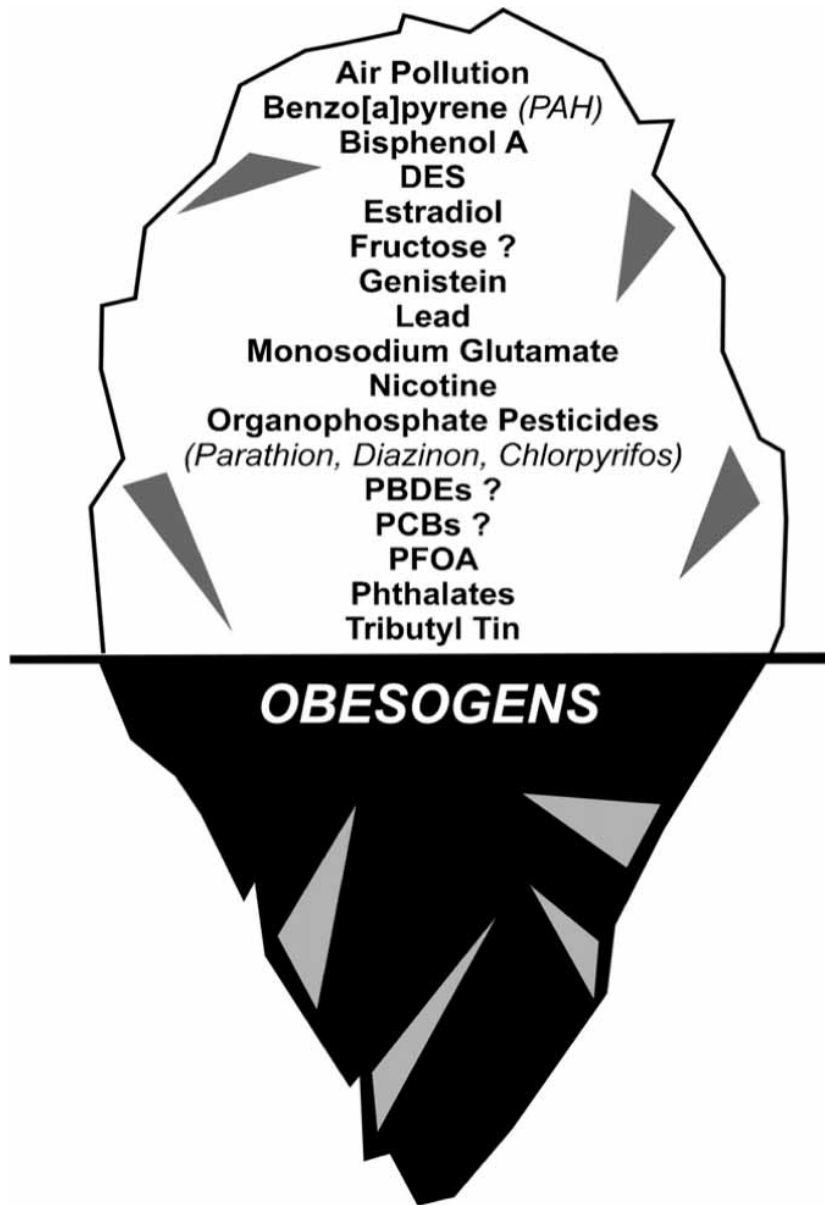


Ann Bullock, MD, Clinical Consultant, IHS  
Clinical Consultant for Family Medicine  
(Minnesota Chippewa Tribe)

International Diabetes  
Federation Consensus on the  
Etiology of T2 Diabetes, 2002.

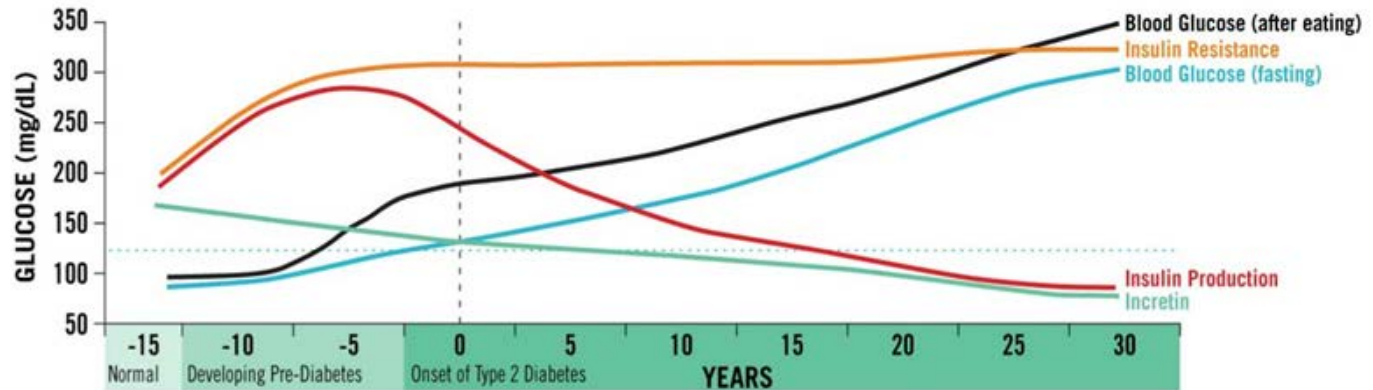
“Prenatal and Early Life Risk Factors for  
Chronic Disease.”

IHS DDTP Advances in Diabetes Webinar:  
[http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=prenatal\\_pt\\_1](http://www.ihs.gov/MedicalPrograms/Diabetes/index.cfm?module=prenatal_pt_1)



- **Endocrine Disrupting Chemicals and Disease Susceptibility.** Schug TT, et al., *J Steroid Biochem Mol Biol.* 2011;127:204–15.
- **Low Dose of Some Persistent Organic Pollutants Predicts Type 2 Diabetes: A Nested Case–Control Study.** Lee D-H, et al., *Environ Health Perspect.* 2010;118:1235–42.
- **Diabetes in Relation to Serum Levels of Polychlorinated Biphenyls (PCBs) and Chlorinated Pesticides in Adult Native Americans.** Codru N, et al., *Environ Health Perspect.* 2007;115:1442-7.

# Medical Nutrition Therapy (MNT) & T2 Diabetes Progression



**Primary Prevention of T2:**  
 Use MNT and public health interventions: **Young girls, pregnant women, infants, children** and in those with obesity and pre-diabetes (IGT/IFG)

**Secondary Prevention of complications:**  
 Use MNT for metabolic control of diabetes (ABCs)

**Tertiary Prevention:**  
 Use MNT to delay and manage complications of diabetes

# The Evidence-Base: Diabetes & Nutrition

1. Diabetes 1 & 2 Evidence Analysis Project. [www.adaevidencelibrary.com](http://www.adaevidencelibrary.com)
2. Franz et al. Evidence for MNT for T1DM & T2DM in Adults, J Am Dietetic Assoc. 2010; 12(110):1852-1889.
3. American Diabetes Assoc. Standards of Medical Care in Diabetes-2012. Diabetes Care. 2012;35(Suppl 1): S11-S63.
4. IHS DDTP. Standards of Care and Clinical Practice Recommendations: Type 2 Diabetes. Dec. 2011. **Now online.**
5. Indian Health Diabetes Best Practice: Nutrition for Diabetes Prevention and Care. 2011.
6. Report of the Dietary Guidelines Advisory Committee, 2010.
7. American Diabetes Assoc. Nutrition Recommendations and Interventions for Diabetes. Diabetes Care. 2008; 31(S1):S61-78.



# Access to MNT in Indian Health



## IHS Diabetes Care and Outcomes Audit, 2011

- 50% of AI/AN people with diabetes received diet education.
- 25% were seen by a registered dietitian for medical nutrition therapy (MNT).
- Most AI/AN individuals and communities do not have adequate access to nutrition services.



# EHR Templates

- Link to the DTTP EHR Templates and the 2011 AADE MNT DSME/T Consult:

<ftp://ftp.ihs.gov/pubs/EHR/Templates/TIU%20Note%20Templates/By%20Clinic/Diabetes%20Education/>

- Link to the MNT Template that includes the AADE 7:

<ftp://ftp.ihs.gov/pubs/EHR/Templates/TIU%20Note%20Templates/By%20Clinic/Dietary%20-%20Nutrition/>



**Leslye Rauth – RD MPH CDE**  
CAPT, US Public Health Service  
IHS NPA ARRA  
Clinical Application Coordinator  
(CAC)  
Sioux City, IA



“ABC” Measures	Targets for Metabolic Control
<p><b>A</b>1C (ADA, 2012) (IHS, 2011)*</p> <p>Pre-meal glucose</p> <p>Peak post-meal glucose</p>	<p>&lt; 7.0%</p> <p>*Individualize goal: &lt; 6.5%, 7%, 7-8%, 8-9%</p> <p>90-130 mg/dL</p> <p>&lt;180 mg/dL</p>
<p><b>B</b>lood Pressure (ADA, 2012) (IHS, 2011)*</p>	<p>&lt;130/80 mmHg</p> <p>*Individualize goal: &lt; 130/80 mmHg, &lt; 140/90 mmHg</p>
<p><b>C</b>holesterol (ADA, 2012)</p> <p>(IHS, 2011)*</p> <p>ADA. Standards of Medical Care in Diabetes. Diabetes Care. January 2012;35(Suppl 1):S11-S63.</p> <p>*IHS Standards of Care and Clinical Practice Recommendations: Type 2 Diabetes, Dec. 2011.</p>	<p>LDL-c &lt;100mg/dL</p> <p>HDL-c &gt; 40 mg/dL</p> <p>Triglycerides &lt;150 mg/dL</p> <p>*Total cholesterol &lt; 200 mg/dL</p> <p>*Triglycerides &lt; 150 mg/dL</p> <p>*Non-HDL cholesterol &lt; 130 mg/dL, &lt; 100 mg/dL (for very high risk)</p> <p>*LDL &lt; 100 mg/dL (optimal goal), LDL &lt; 70 mg/dL (for very high risk)</p>



**What macronutrient mix is best for glycemic management and cardiovascular risk reduction in people with diabetes?**

- A. High carbohydrate, low fat, moderate protein
- B. Low carbohydrate, moderate fat, moderate protein
- C. Very-low carbohydrate, moderate fat, moderate protein
- D. No one optimal mix

# Macronutrients – What’s the Right Mix?

## ADA Position:

- “The mix of carbohydrate, protein, and fat may be adjusted to meet the metabolic goals and individual preferences of the person with diabetes.”

Standards of Medical Care in Diabetes. Diabetes Care. January 2012;35(Suppl 1):S11-S63.

- “Several different macronutrient distributions may lead to improvements in glycemic and/or CVD risk factors.”

Wheeler ML, et al. Diabetes Care. 2012(Feb);35:434-45.

## **Which medical nutrition approach to healthy eating is most effective for people with diabetes?**

- A. Monitoring carbohydrate intake
- B. Low fat, low calorie diets for weight loss
- C. Individualized approach
- D. Low carbohydrate, low glycemic index foods





**Modest weight loss and increased physical activity have important health benefits for individuals who are overweight and have type 2 diabetes?**

True or False?

# Recommendations - Energy Balance, Overweight, and Obesity

- Weight loss is recommended for all overweight or obese individuals who have or are at risk for diabetes. (A)
- For weight loss, either low-carbohydrate, low-fat calorie-restricted, or Mediterranean diets may be effective in the short-term (up to 2 years). (A)
- Physical activity and behavior modification are important components of weight loss programs and are most helpful in maintenance of weight loss. (B)

# Health for Native Life

Weight Loss and Fitness Special Edition  
Number 13

“I’m not a size two. But I’m physically fit, and I’m happy,” says Dena Paddy.

◆◆◆◆  
“WE LOST  
236 LBS!”

11 Men and Women from Navajo to Catawba Lost Weight, Got Fit, and Feel Great!

◆◆◆◆  
Is Your Eating Crazy or in Control?  
This Single Mom’s Story Will Help You Get on Track

Finally, Seven Tips to Weight Loss that Work!

Of Course, Native Americans Had the Answers All Along...

John Shije lost 10 lbs.



Raquel Yopez lost 20 lbs.



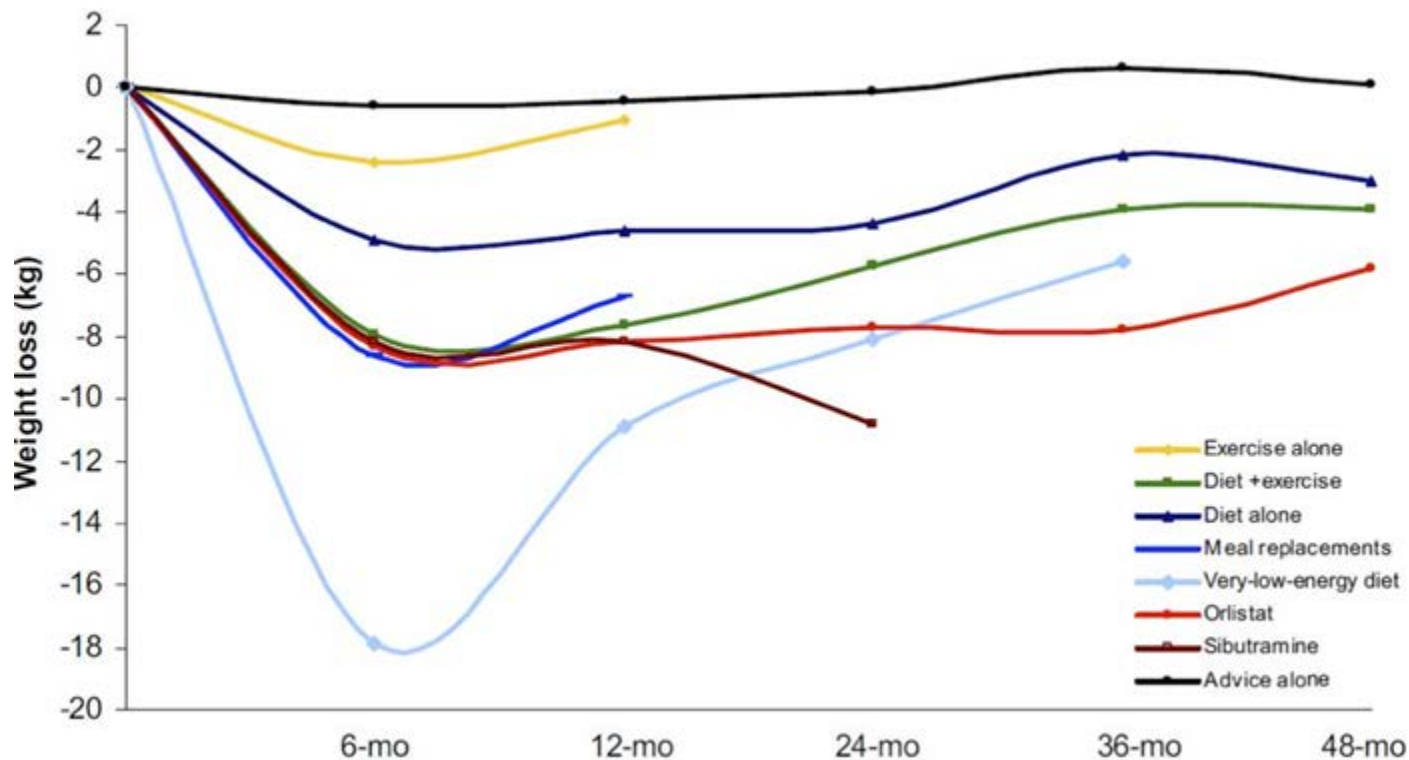
Donald Rodgers lost 30 lbs.





# Average Weight Loss Per Subject Completing a Minimum 1-Yr Intervention

80 studies; 26,455 subjects; 18,199 completers (69%)  
Franz et al. *J Am Diet Assoc.* 2007;107:1755-67.



# Prevention of Type 2 Diabetes-Impact of Selected Interventions

Pan XR, et al. Diabetes Care. 1997;20:537-44;

Tuomilehto J, et al. N Engl J Med. 2001;344(18):1343-50;

Knowler WC, et al, DPP Research Group. N Engl J Med. 2002;346:393-403;

Ramachandran A, et al. Indian Diabetes Prevention Programme. Diabetologia. 2006;49:289-97.

Study		N	Intervention	Treatment	Risk Reduction
Da Qing (China)	IGT	577	Lifestyle	6 years	-34 - 69%
Finnish DPS	IGT	523	Lifestyle	3+ years	-58%
DPP (USA)	IGT	3324	Lifestyle	3 years	-58%
IDPP (Asian Indians)	IGT	531	Lifestyle	2.5 years	-28.5%

# Look AHEAD Trial

- Study: Long term (start 2001), multicenter, randomized clinical trial, study extended – end 2014
- > 5,137 (45-74yrs), overweight or obese individuals
- T2 diabetes for  $6.8 \pm 6.5$  yrs (range 3 mos – 13 yrs)\*
- Research question: Will intentional weight loss reduce the incidence of fatal and nonfatal cardiovascular and cerebrovascular events?

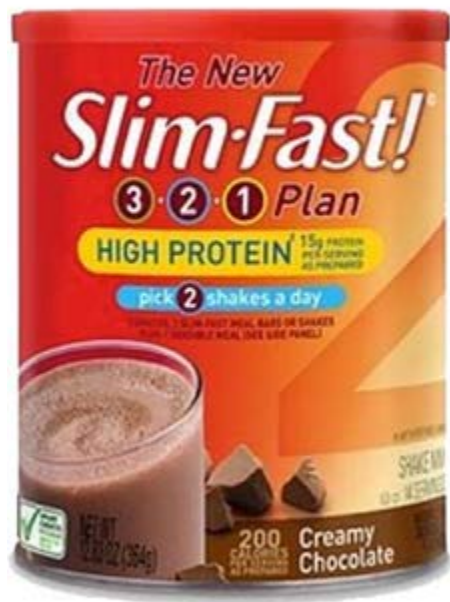
Look AHEAD Research Group. *Diabetes Care*. 2007;30(6):1374-1383  
Bertoni, et al. *Journal of Diabetes and its Complications*. 2008;22(1-9).



# Look AHEAD Trial – 2 Study Groups

- **Intensive Lifestyle Intervention (ILI):**
  - $\geq 7\%$  weight loss at one year (Participants stated goal is  $\geq 10\%$ )
  - $\geq 175$  minutes physical activity/week, working up to 10,000 steps/day
  - Support:
    - 0 – 6 mos: weekly (group and individual)
    - 6 mos – 1 yr: 3x/mos (group and individual)
    - 2 – 4 yrs: at least once/mos individually, follow-up at least monthly, invited to group classes and activities to support efforts
  - Calorie goal: 1200 to 1800 cal/day,
  - Less than 30% of cals as fat ( $<10\%$  sat fat),  $\geq$  of 15% of cals as protein
  - Use of portion-controlled meals and meal replacements
- **Diabetes Support and Education (DSE):**
  - Support: invited to three group sessions/yr
  - Standardized protocol for diet, physical activity and social support.
  - No focus on behavioral strategies

# Meal and Snack Replacements Glucerna, Slim-fast, Optifast, and HMR



## 1200-Calorie Plan

Breakfast	Meal replacement (shake)	220 Cal.
Lunch	Meal replacement (shake)	220
Snack	Meal replacement (bar)	220
Dinner	Meal plan for main meal	500-600

## 1800-Calorie Plan

Breakfast	Meal replacement (shake)	220 Cal.
	1 small fruit	60
Lunch	Meal replacement (shake)	220
	1 small fruit	60
Snack	Meal replacement (shake)	220
Dinner	Meal plan for main meal +	500-600
	1 small roll, 2 t. low-calorie margarine	150
Snack	Meal replacement (shake)	220
	1 small fruit	60



## Look AHEAD Results – Weight Loss, % of Initial Weight

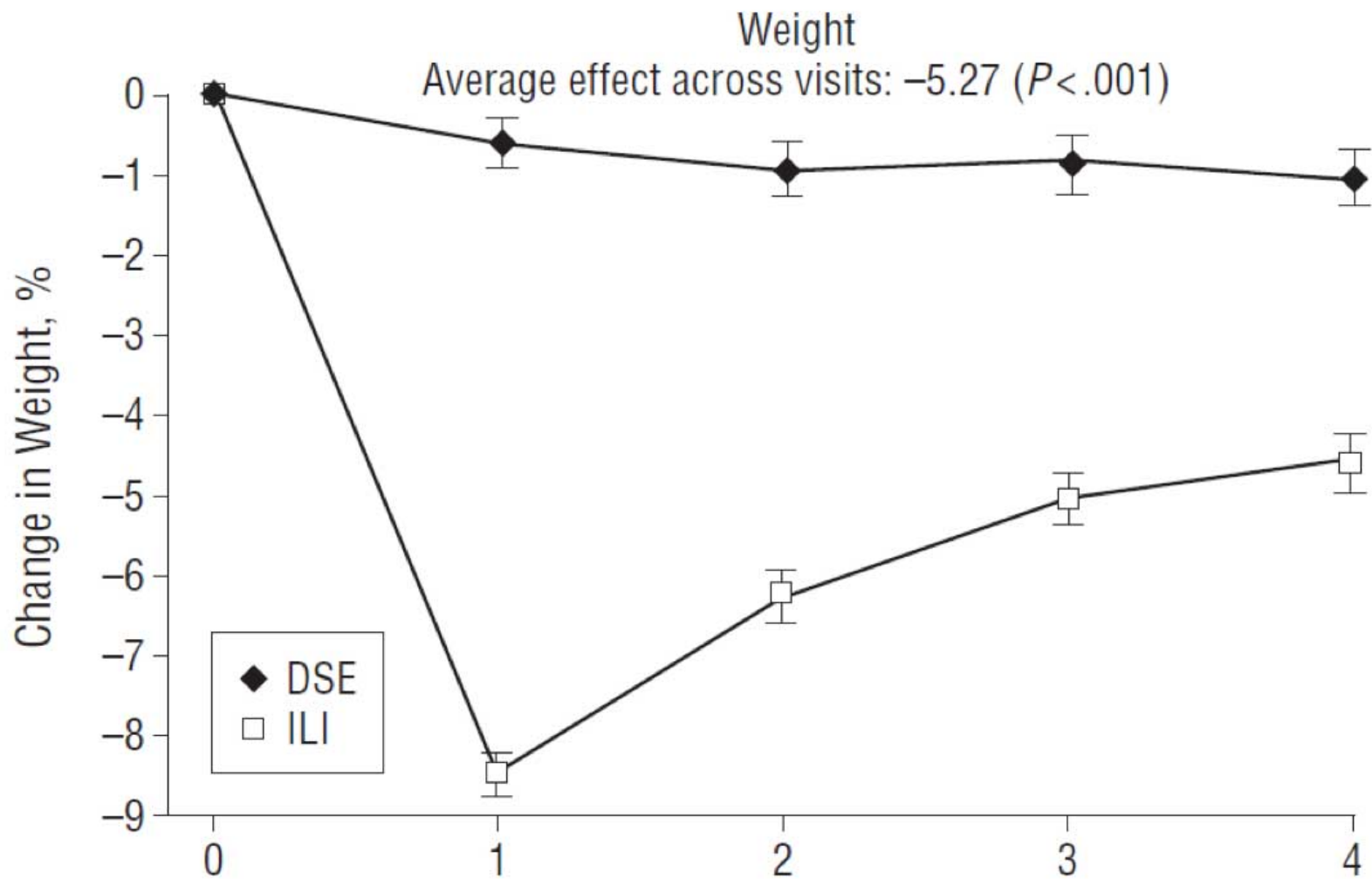
	Intensive Lifestyle Intervention	Diabetes Support & Education
Baseline Weight	100.5 kg (221.1 #)	100.8 kg (221.8 #)
Δ at Year 1	-8.53%	-0.63%
Δ - Year 2	-6.33%	-0.92%
Δ - Year 3	-5.08%	-0.90%
Δ - Year 4	-4.66% (10.3 #)	-1.06% (2.3 #)

### Long-term Effects of a Lifestyle Intervention on Weight and Cardiovascular Risk Factors in Individuals With Type 2 Diabetes Mellitus – Four-Year Results of the Look AHEAD Trial

The Look AHEAD Research Group.

Arch Intern Med 2010;170(17):1566-75.

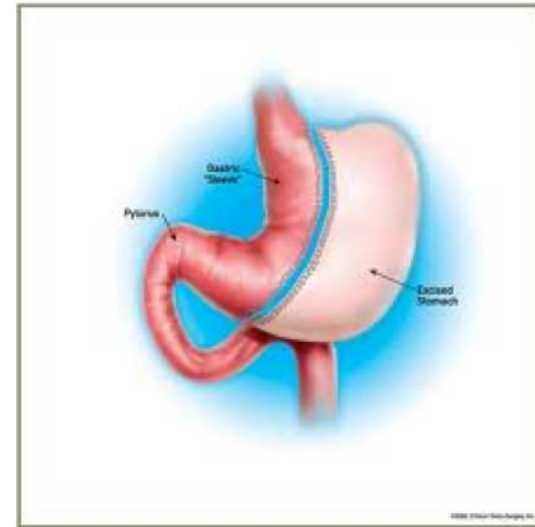




# Bariatric Surgery



<http://www.idf.org/webdata/docs/IDF-Position-Statement-Bariatric-Surgery.pdf>



**Sleeve gastrectomy** is a surgical weight-loss procedure in which the stomach is reduced to about 25% of its original size, by surgical removal of a large portion of the stomach, following the major curve.

Heber D, et al., Endocrine and Nutritional Management of the Post-Bariatric Surgery Patient: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab.* 2010;95:4823–43

# Resources

- ***Native Lifestyle Balance.***

Diné Nation modified version of DPP Lifestyle Balance curriculum. <http://nlb.hncpartners.org/>

- ***Honoring the Gift of Heart Health***

[http://www.nhlbi.nih.gov/health/public/heart/other/american\\_indian\\_risk/index.htm](http://www.nhlbi.nih.gov/health/public/heart/other/american_indian_risk/index.htm)

- ***Honor the Gift of Food***

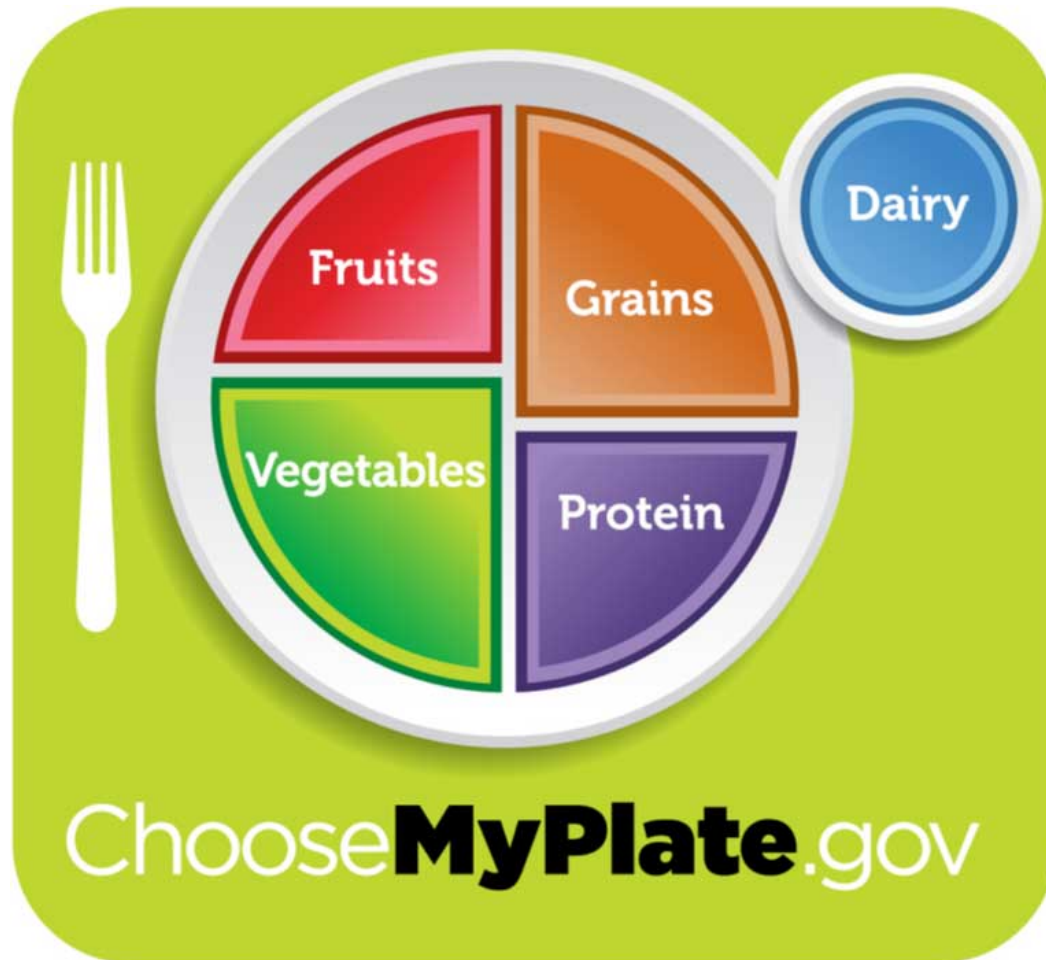
<http://www.ihs.gov/MedicalPrograms/Diabetes/RESOURCES/Catalog/rde/index.cfm?module=catalog&opt=3>



## What is the most effective teaching tool to reach patients with diabetes?

- A. Diabetes Food Guide Pyramid
- B. My Plate, USDA/HHS
- C. Idaho Plate Method
- D. Power Plate (plant-based)
- E. Healthy Eating Plate, Harvard SPH
- F. Any will work – no one “most effective” tool

# Choose**MyPlate**.gov



# My Native Plate

An Easy Way to Help Your Family Know How Much to Eat

Helping your family eat  
in a healthy way **is EASY!**

## Remember these 3 steps:

1. 9-inch plate
2. Divide into quarters
  - 1/4 plate is **fruits**
  - 1/4 plate is **vegetables**
  - 1/4 plate is **starch or grain**
  - 1/4 plate is **meat, fish, or poultry**
3. Set food on the plate no higher than 1–1 1/2 inches.

### Pictured Here

- canned peaches, no syrup
- baked squash and peppers
- steamed white and brown rice
- baked deer meat with garlic
- low-fat or skimmed milk

### To Order Placemats

To order large, full-color placemats for your family or clients, go to the website [www.diabetes.ihs.gov](http://www.diabetes.ihs.gov) and click on "Online Catalog." There is no charge for placemats or shipping.

Produced by: Indian Health Service,  
Division of Diabetes Treatment and  
Prevention, and based on the USDA  
My Plate. For more information, go to  
[MyPlate.gov](http://MyPlate.gov)



Fruits



Dairy

Grains/  
Starch



Vegetables



Protein

### Remember:

1. 9-inch plate
2. Divide into quarters
3. Stack food no higher than 1–1 1/2 inches





# 550 Calorie Dinner



- ½ c. canned peaches, no syrup
- ½ c. steamed brown/white rice
- ½ c. baked squash and peppers
- 1 Tbsp. margarine
- 5 oz. baked deer meat w/garlic
- 1 cup non-fat milk

55 g. CHO (40% of Calories)  
65 g. PRO (45% of Calories)  
9 g. FAT (15% of Calories)



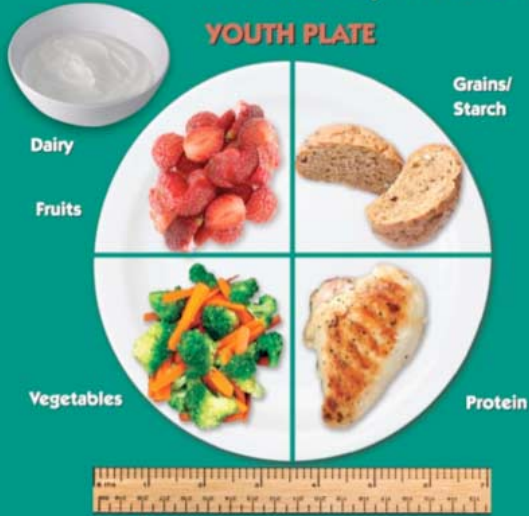
# More My Native Plates for Your Family

## Youth Plate Meal Tips

- Replace the yogurt with a small glass of low-fat milk
- Add a small pat of butter or margarine to the roll

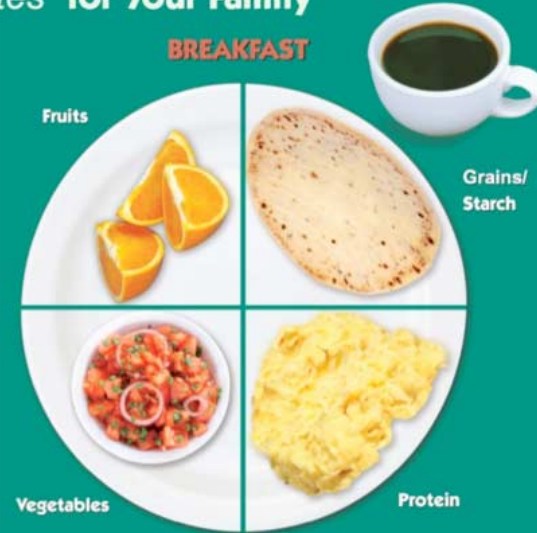
## Pictured Here

- fresh strawberries
- steamed carrots and broccoli
- small roll
- baked chicken
- low-fat yogurt



Use a 7-inch plate for youth.

## BREAKFAST



## Breakfast Tips

- Wipe a little oil on frying pan before scrambling egg
- Replace the orange with half a cup of orange juice

## Pictured Here

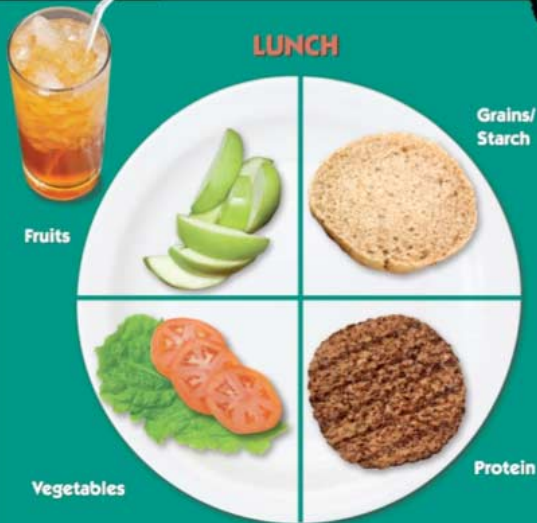
- 1/2 orange
- salsa
- small tortilla
- scrambled egg
- black coffee

## Lunch Tips

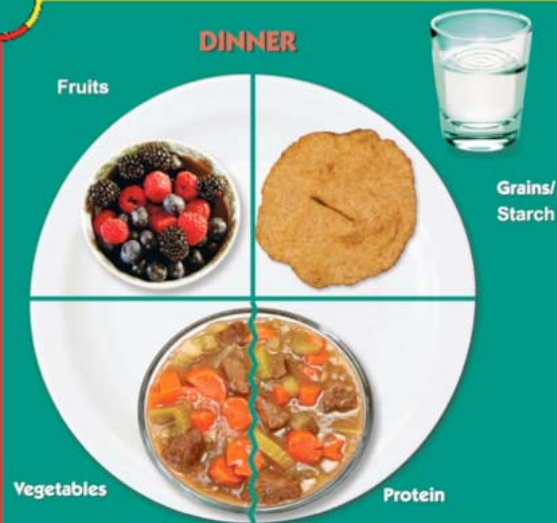
- Use ketchup and mustard on the hamburger
- Skip mayonnaise
- Skip French fries
- Add one slice of cheese to add calcium and vitamins

## Pictured Here

- apple
- lettuce and tomato
- half of a hamburger bun
- small hamburger patty
- unsweetened iced tea



## DINNER



## Dinner Tips

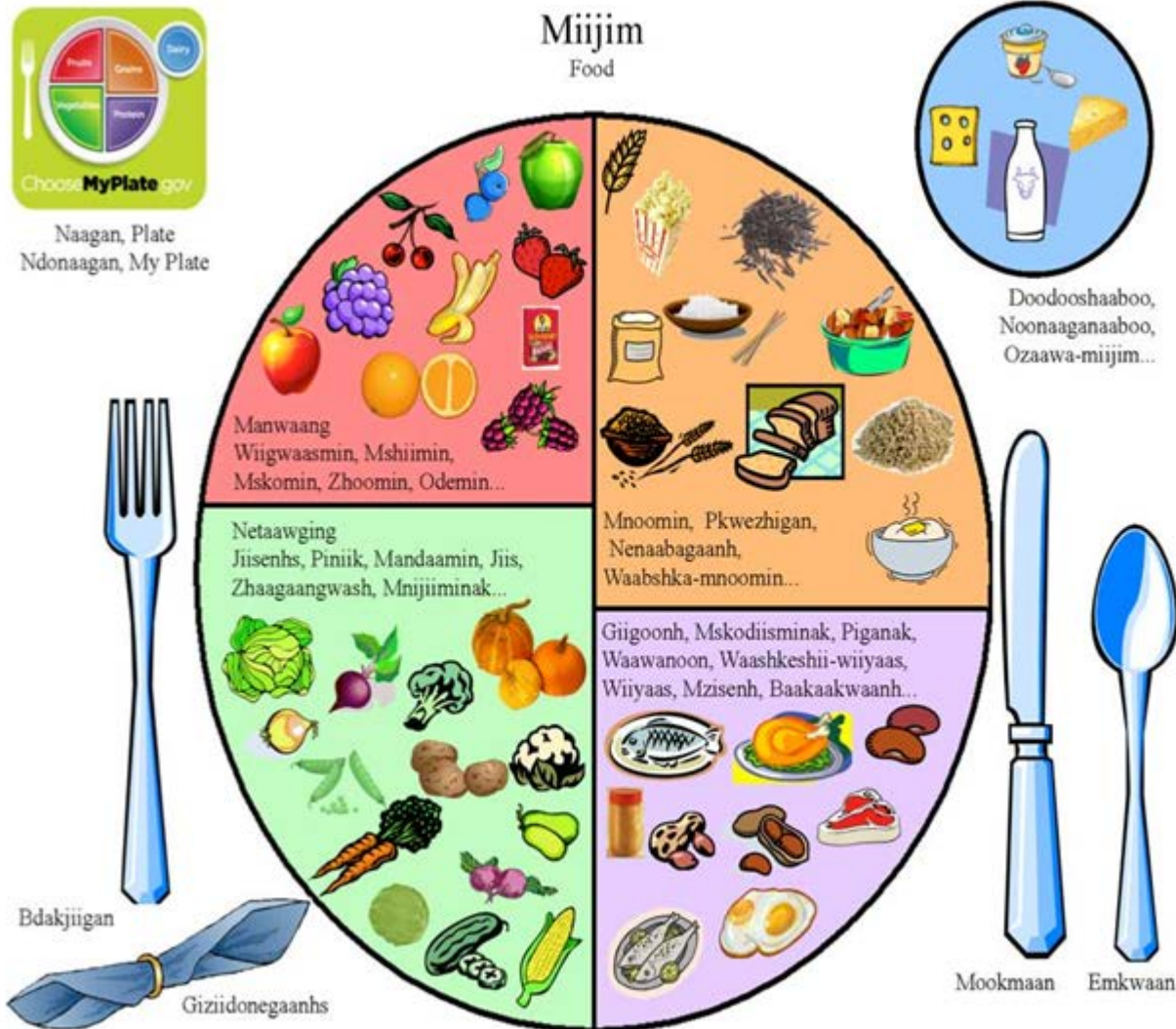
- Top berries with low-fat yogurt to add calcium and vitamins
- Skip butter or margarine, or use one pat

## Pictured Here

- mixed berries
- beef and vegetable stew
- small piece baked whole-wheat fry bread
- water



# Little Traverse Bay Bands of Odawa Indians, MI





# Four Winds Nutrition Guide

BUILDING A HEALTHIER PLATE FOR TODAY

A Balanced Plate of Food for Today's  
Lakota includes the Four Aspects of  
Our Ancestral Diet:

1. Water
2. Lean Meat / Protein
3. Fruit or Vegetable
4. Starch / Grain

In a balanced meal, no  
food group dominates  
the plate.



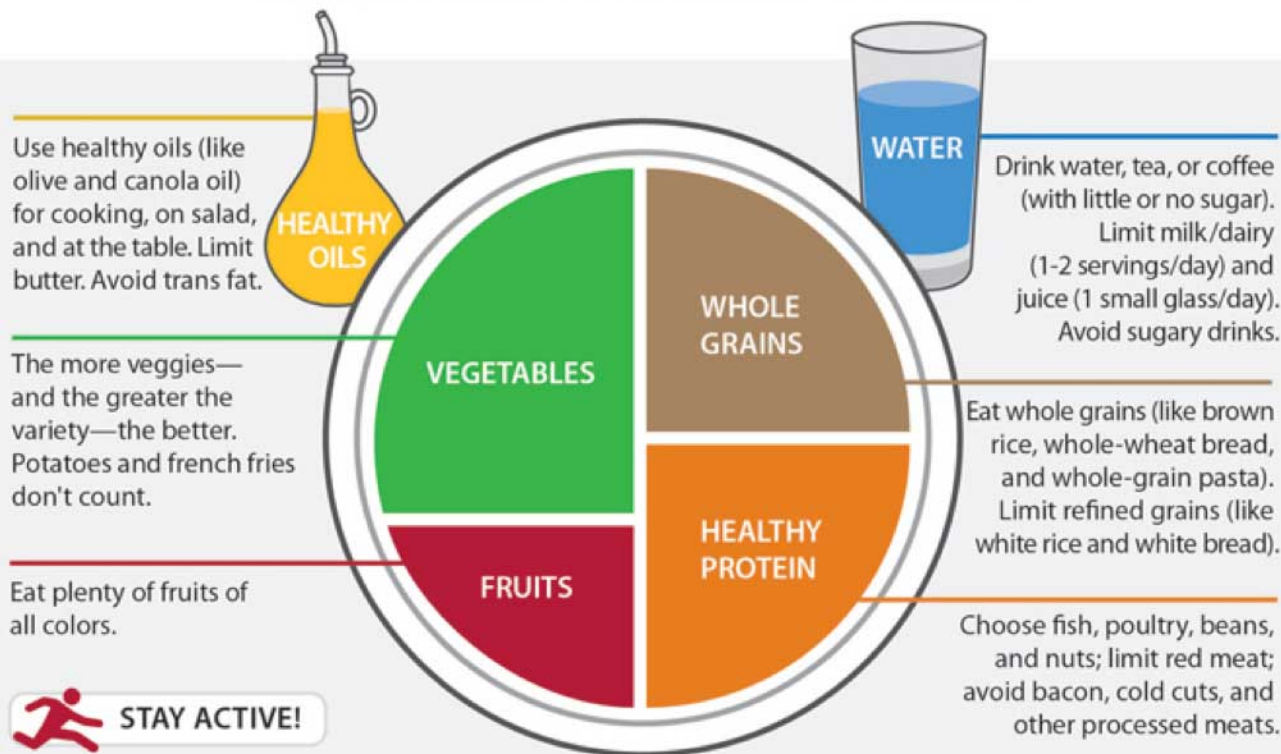
**Kibbe Conti, MS, RD, CDE**  
(Lakota)

LCDR US Public Health Service  
Rapid City Indian Hospital  
3200 Canyon Lake Drive  
Rapid City, SD

Kattelman, KK; Conti, K; Ren, C. The medicine wheel nutrition intervention: A diabetes education study with the Cheyenne River Sioux Tribe. J Am Diet Assoc. 2009;109(9):1532-9.

# Harvard School of Public Health's...

## HEALTHY EATING PLATE



© Harvard University



Harvard School of Public Health  
The Nutrition Source  
[www.hsph.harvard.edu/nutritionsource](http://www.hsph.harvard.edu/nutritionsource)

Harvard Medical School  
Harvard Health Publications  
[www.health.harvard.edu](http://www.health.harvard.edu)



# FOOD for LIFE

Power Plate Resources and Recipes

Food For Life Native American Curriculum available at:  
<http://pcrm.org/health/diets/pplate/power-plate-meals-across-the-globe>



# What's Happening - SDPI

## Indian Health Diabetes Best Practice on Nutrition

- SDPI Diabetes Prevention Programs
  - Oneida Nation Community Nutrition Program
  - Phoenix Indian Medical Center Breastfeeding Support
  - Navajo Area
    - Navajo Nation SDPI Program
    - Northern Navajo Medical Center
    - Tuba City Healthy Living Center
    - Chinle Service Unit Nutrition & Diabetes Services
- AND MANY MORE!**

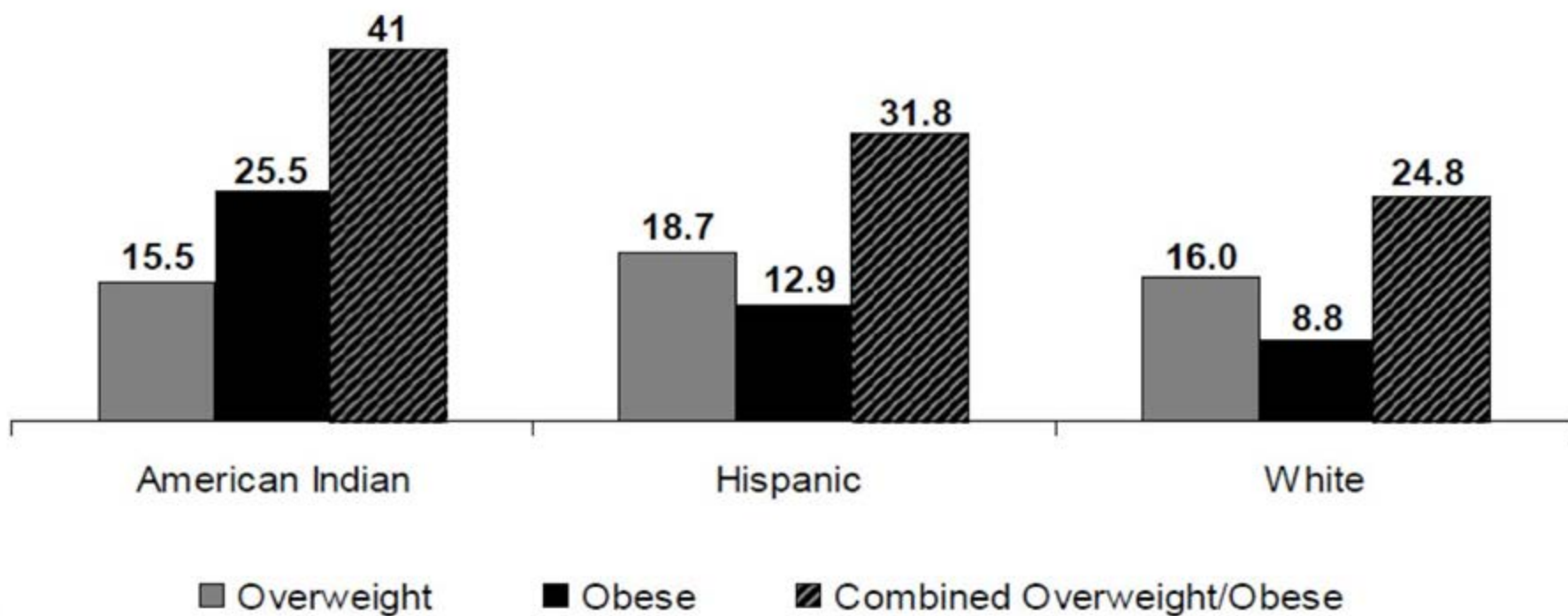


# Community Gardens and SDPI





**Figure 3: Percent of Kindergarten Students Overweight and Obese by Race/Ethnicity, New Mexico, 2010**





# Results – Percent Body Fat

Variable	Intervention			Control		
	N	Mean	SE	N	Mean	SE
<b>Baseline</b>						
% Body Fat	879	32.78	1.04	825	33.29	1.05
<b>Follow-up</b>						
% Body Fat	727	40.26	0.39	682	40.02	0.40
% Body Fat <i>(with imputation)</i>	879	39.86	0.29	825	39.74	0.29

**Pathways: a school-based, randomized controlled trial for the prevention of obesity in American Indian schoolchildren. Caballero B, et al. Am J Clin Nutr. 2003;78(5):1030-8.**







A C T I O N

*It only takes a single thought to move the world.*

“Native Americans, indigenous people are not weak, confused people. We are strong, smart and wise. We have quick wits and love to laugh. We have generous spirits. We are grounded in Mother Earth, connected to our families and communities. We are children of the Creator, vibrant and forever blessed.”

**Barbara Mora**

(Paiute/Dinè)

**Using Our Wit and Wisdom to Live Well with Diabetes**

