



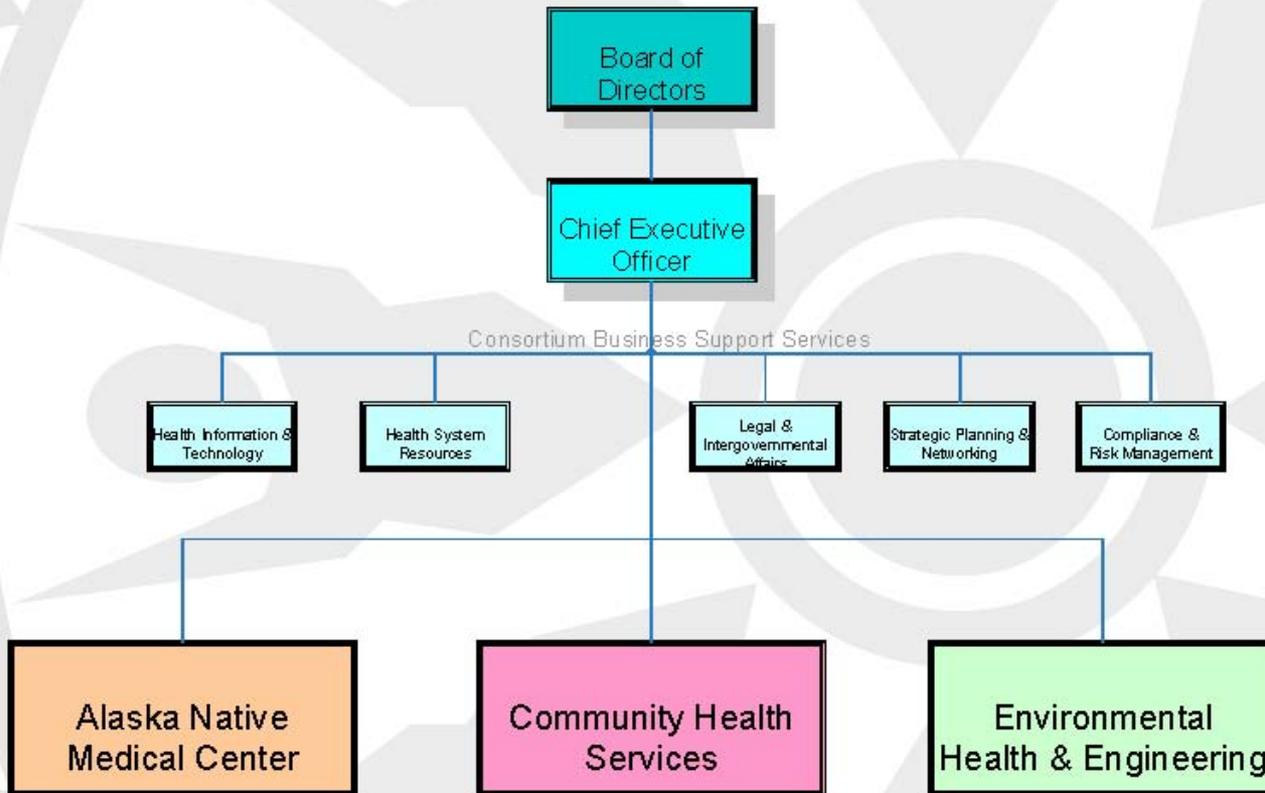
Traditional Foods, Ways and Community Wellness



Gary Ferguson, ND
Director of Wellness and Prevention
Community Health Services
Alaska Native Tribal Health Consortium

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM

ORGANIZATIONAL CHART
2007



COMMUNITY HEALTH SERVICES

Wellness and Prevention Department

HP/DP

Tobacco

Injury Prevention

Nutrition

Worksite Wellness

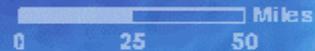
Media Center

FDPIR

NPCC

Elders

EASTERN ALEUTIAN ISLANDS









A history rich in culture,
traditions...

The Unangan/Aleut



Time of Contact for Alaska Native Groups

- ◆ Aleut 1750-1780
- ◆ Southern Eskimos 1780-1840
- ◆ Northern Eskimos 1850-1870
- ◆ Interior Indians 1840-1860
- ◆ Coastal Indians 1775-1800

First Contact

- ◆ Vitus Bering's expedition to Aleutian Chain in 1741
- ◆ Prior to 1760: Aleuts numbered 10,000
- ◆ Within 10 years the population dropped by 50%
- ◆ By 1790: Aleuts numbered 1,900

Dietary Variation b/t Regions

Pre-contact:

- ◆ High protein diet
- ◆ Low Carbohydrates
 - ◆ 10 grams of carbohydrate/2,5000 calories
 - or
 - ◆ $1/10^{\text{th}}$ the daily glucose requirement of the human brain
 - ◆ Mainly from liver, fish roe, whale muktuk, greens, roots, and berries

Dietary Changes: 1950s

- ◆ Local source of carbohydrates ranged from 20 – 45 %
- ◆ Portion consumed as candy and pop ranged from 15 – 32%
- ◆ In Adults: 1/3rd of daily calories were from bread, cereal, grain products

Dietary Changes: 1980s

1989: Statewide survey doing 24 hour dietary recall from Alaska Native people

On average:

	MEN	WOMEN
Protein	19%	18%
Fat	38%	37%
Carbs	41%	44%



A Changing Picture....







SIMPLY COOK & SERVE
COOK THOROUGHLY. SEE TOP PANEL.

MICROWAVEABLE

HUNGRY-MAN

HEARTY BREAKFAST

Buttermilk Pancakes,
French Toast, Hash Brown
Potatoes & Sausage

NEW!

NOW WITH
FRENCH TOAST
30% MORE SAUSAGE

OVER **1 lb.** OF FOOD

KEEP FROZEN

NET WT: 16.1 OZ. (1 LB. 0.1 OZ.) 456.4g



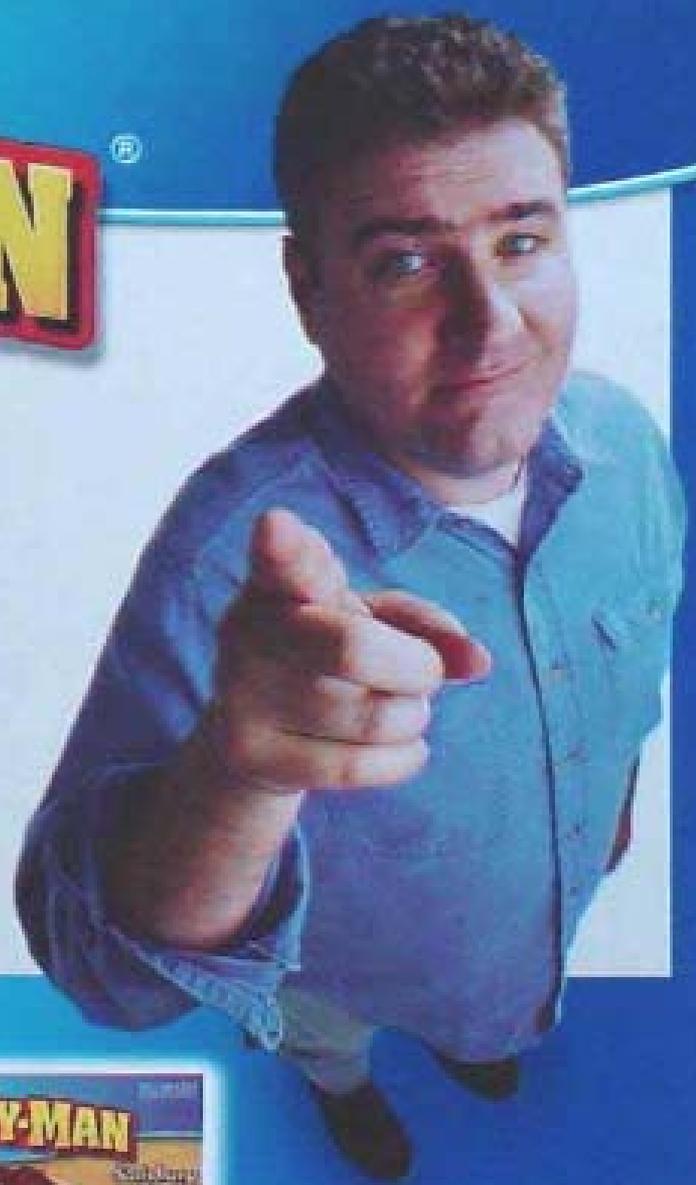
SEE TOP PANEL

Swanson™

HUNGRY-MAN®

“I know
what I like,
and I like
a lot of it.”

Good thing there's Hungry-Man®. With more of the great foods men love, Hungry-Man satisfies the biggest appetites.



Nutrition Facts

Serving Size 1 package (456g)

Amount Per Serving

Calories 1,030

Calories from Fat 570

% Daily Value*

Total Fat 64g

99%

Saturated Fat 21g

104%

Cholesterol 690mg

231%

Sodium 2,090mg

87%

Total Carbohydrate 78g

26%

Dietary Fiber 4g

17%

Sugars 22g

Protein 36g

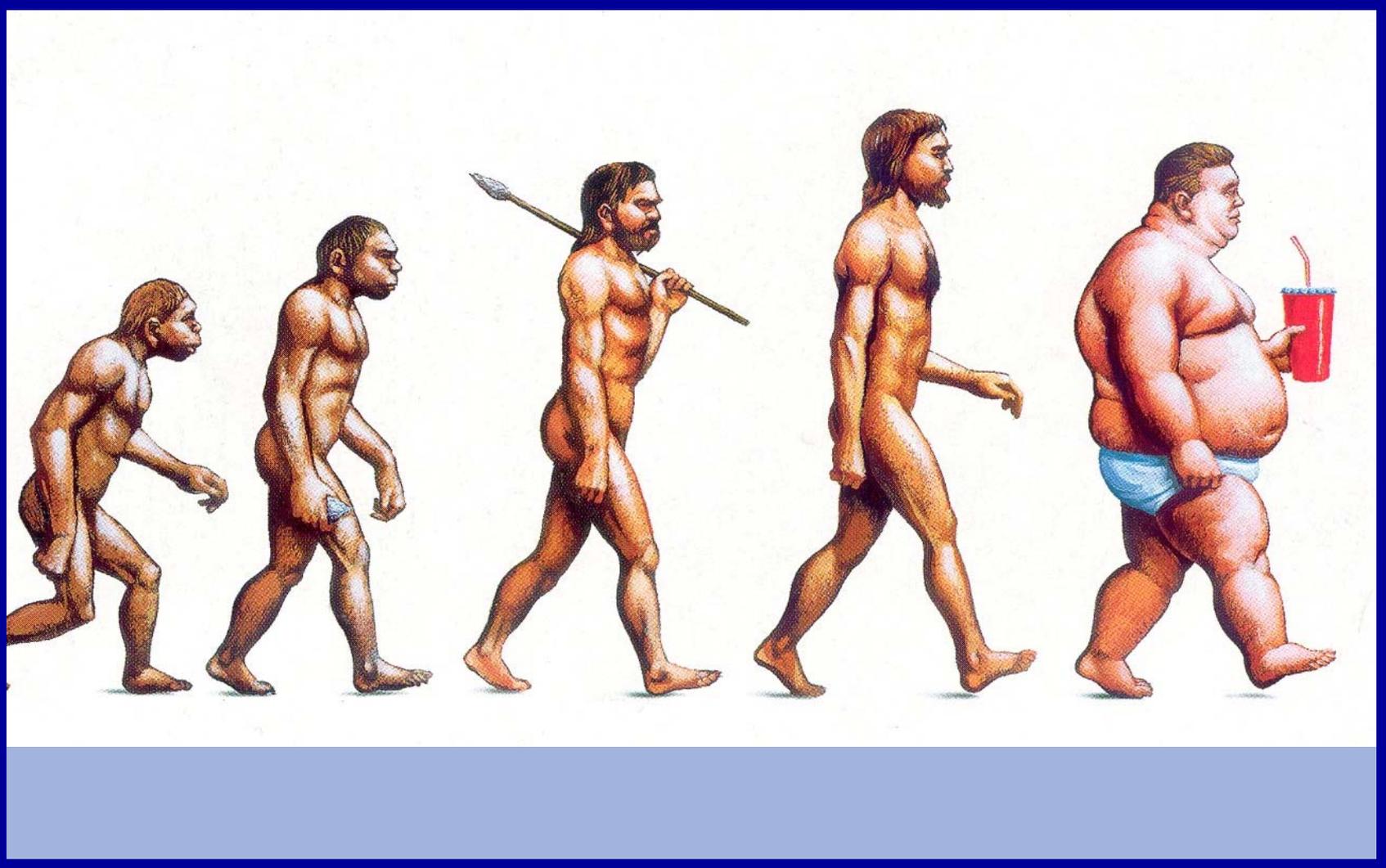
Vitamin A 25%

Vitamin C 2%

Calcium 20%

Iron 25%





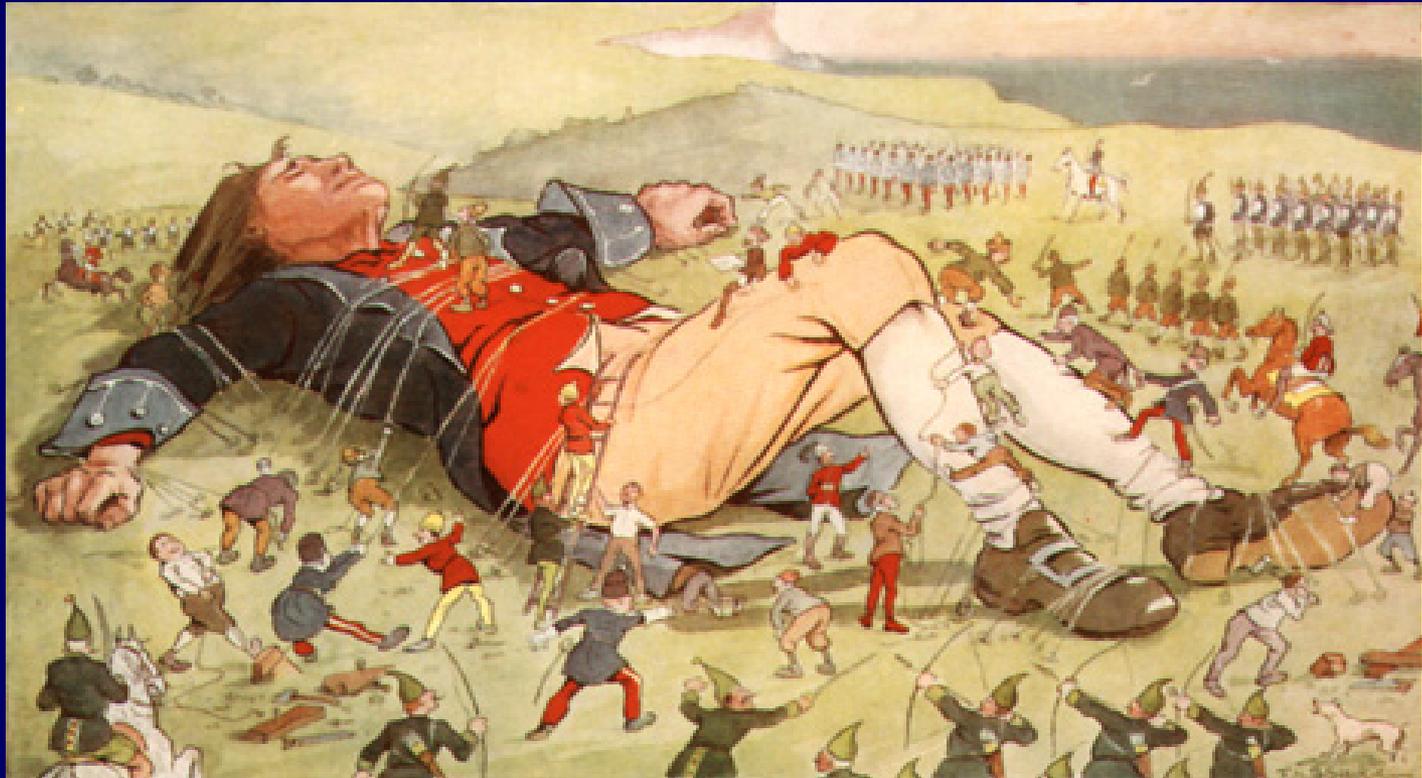
The Thrifty Gene Theory

Why American Indian and Alaska native people are more likely to gain weight easily?

However.....

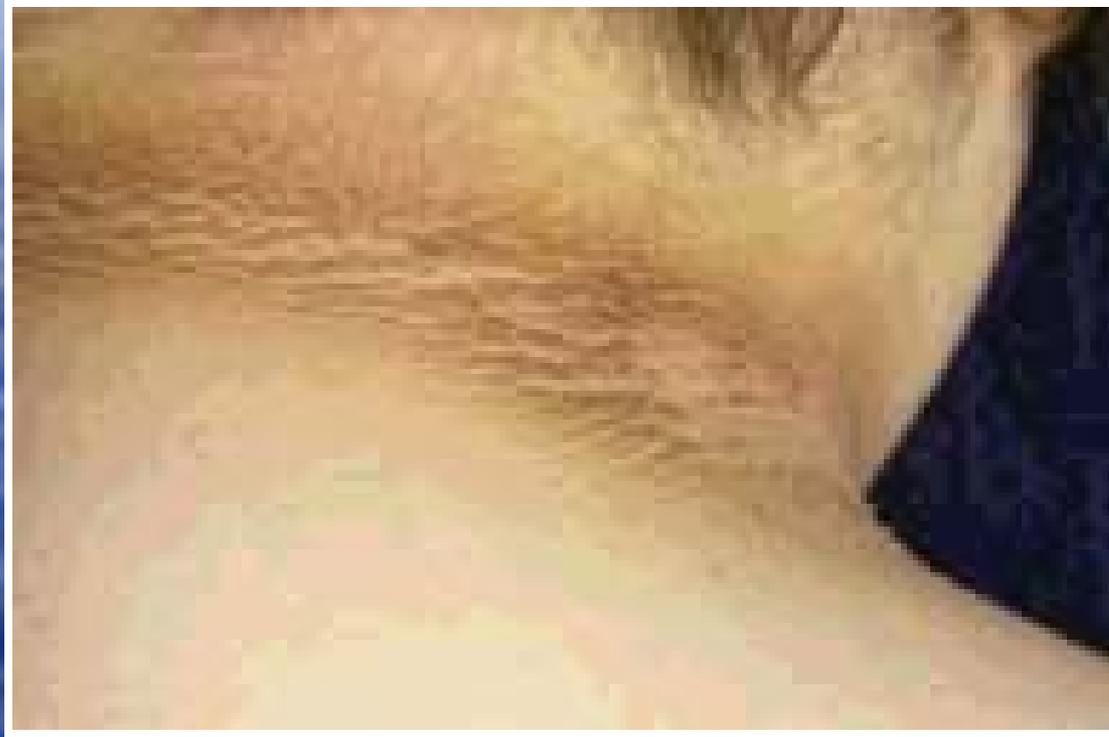
- ◆ Genetics load the gun
- ◆ It's the environment that pulls the trigger
- ◆ We are each in charge of the trigger

Type 2 DM and Metabolic Syndrome in Children



**The Giant is
Awakening**

Signs of Insulin Resistance

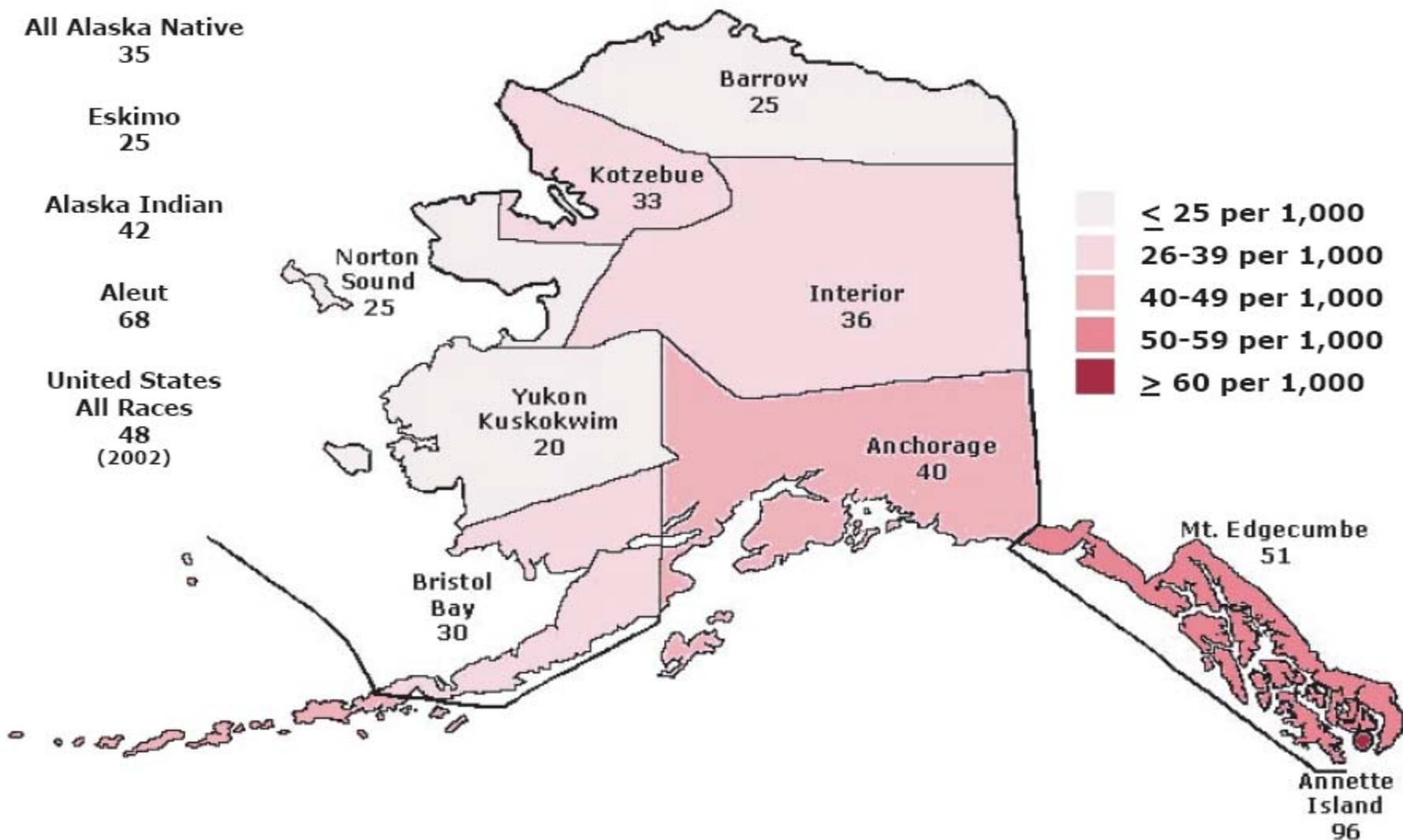


**Rash on the Neck:
Acanthosis Nigricans**

2003 Diabetes Prevalence Among Alaska Natives Per 1,000 User Population

Age-Adjusted to U.S. 2000 estimated population

Regions by Previous IHS Service Units



BMI and Insulin Levels Among Alaska Native People: Includes Aleut, Siberian Yupik, Central Yupik and Inupiat regions

- ◆ Three studies^{1,2,3} have found an association between increasing BMI and increasing insulin levels...
- ◆ **THUS**, demonstrating higher BMIs are associated with increasing insulin resistance

1. Role of Obesity in the Relationship Between Plasma Insulin Concentration, Blood Pressure, and Various Measures of Carbohydrate and Lipid Metabolism in Individuals of Aleut Descent. Manuscript in process.
2. Low Fasting Insulin Levels in Eskimos Compared to American Indians: Are Eskimos Less Insulin Resistant? *Int. J. Circumpolar Health* 1999;58:272-281.
3. Glucose Tolerance and Insulin-Resistance Syndrome among St. Lawrence Island Eskimos – *Int J. Circumpolar Health* 96:348-354.

Waist : Hip Ratios (WHR) and Insulin Levels Among Alaska Natives

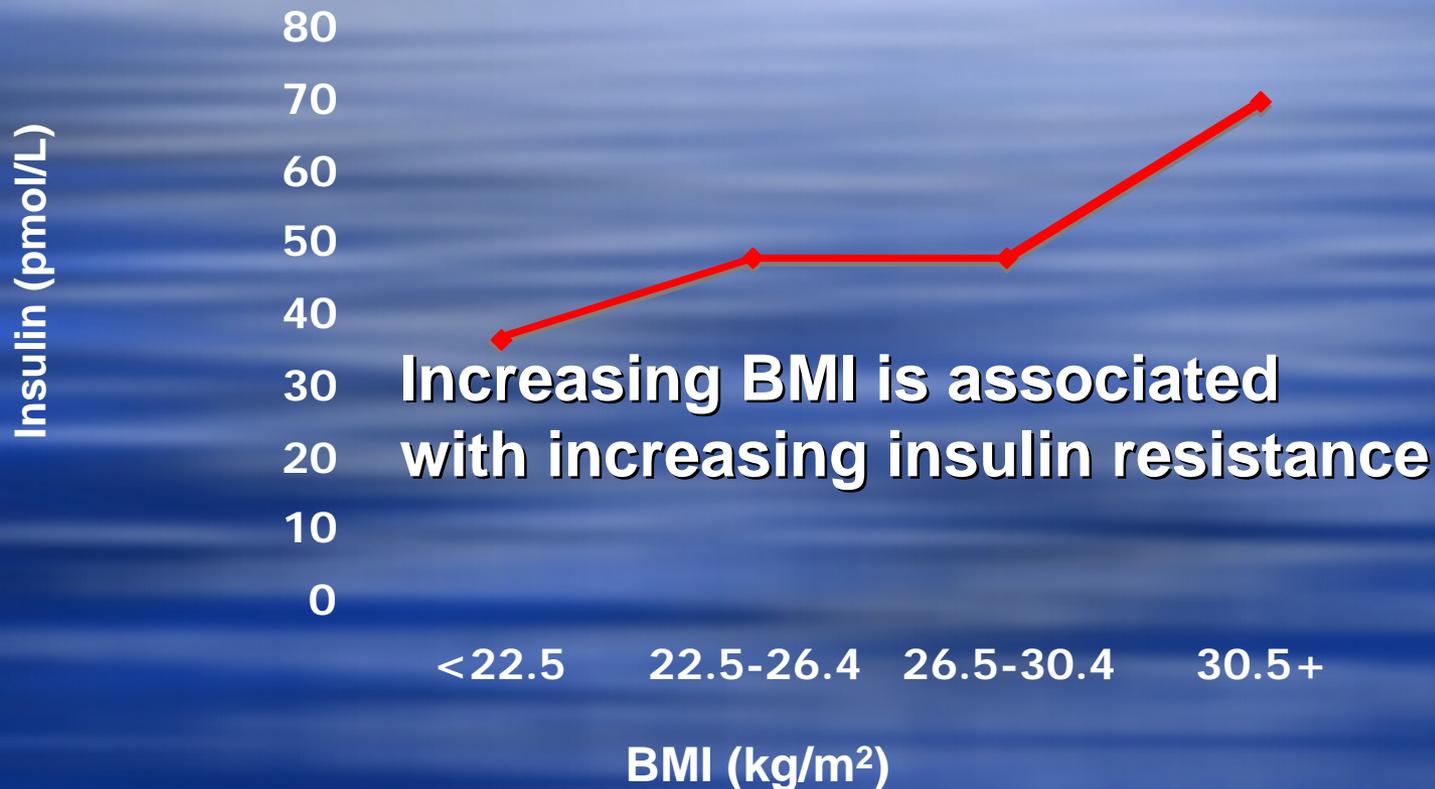
- ◆ Three studies^{1,2,3} have found an association between increasing WHR and increasing insulin levels...
- ◆ Higher WHRs are associated with increasing insulin resistance

*1. *Body Fat Distribution in Alaska Natives of the Norton Sound Area: The Relationship of Diet Physical Activity and Type II Diabetes Mellitus* – 1994 study - Doctoral Dissertation Johns Hopkins University

*2. *Glucose Tolerance and Insulin-Resistance Syndrome among St. Lawrence Island Eskimos* – 1992 study – published in *Circumpolar Health* 96

*3. *Role of Obesity in the Relationship Between Plasma Insulin Concentration, Blood Pressure, and Various Measures of Carbohydrate and Lipid Metabolism in Individuals of Aleut Descent* – 1989 study – manuscript in progress

The Association between BMI and Insulin





Age 40
Weight: 250
Height: 5' 4"

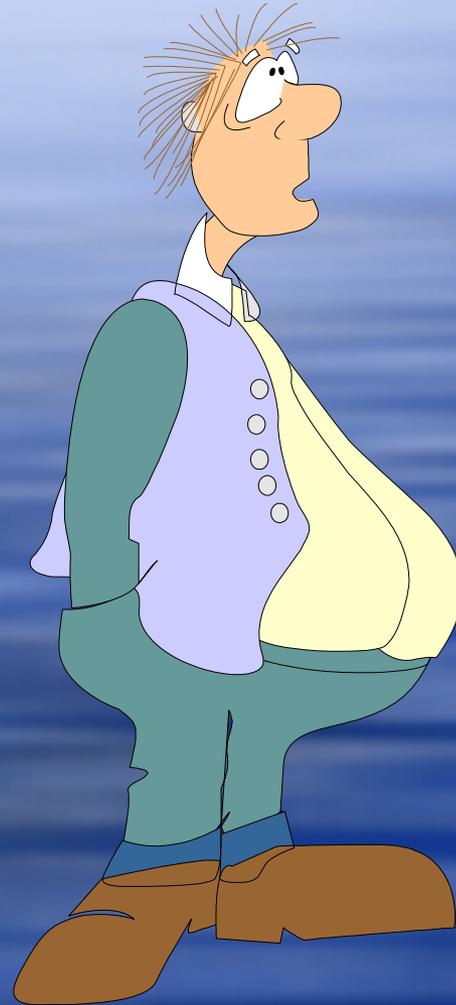
BMI : 42

Age 36
Weight: 143
Height: 5' 4"

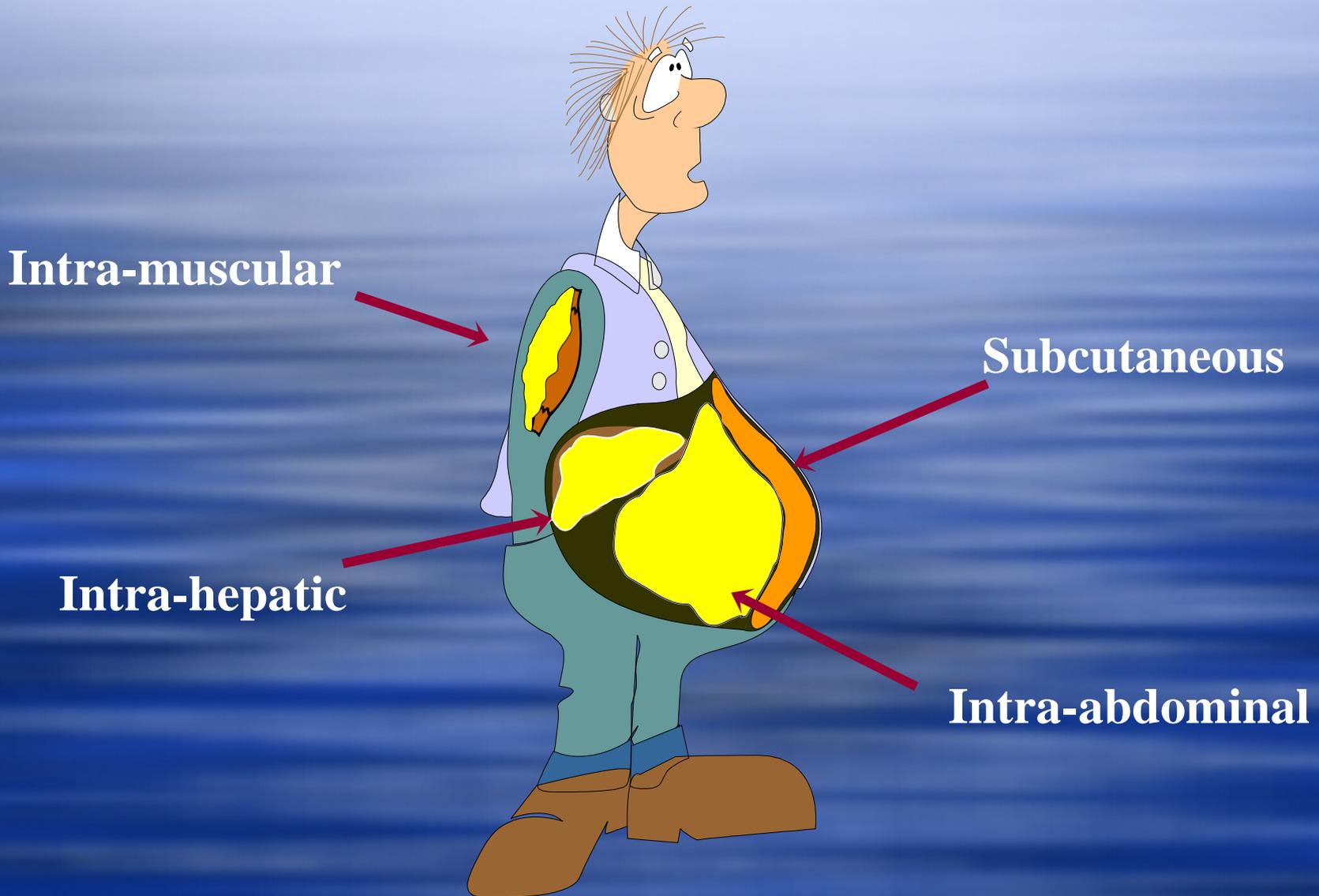
BMI : 24

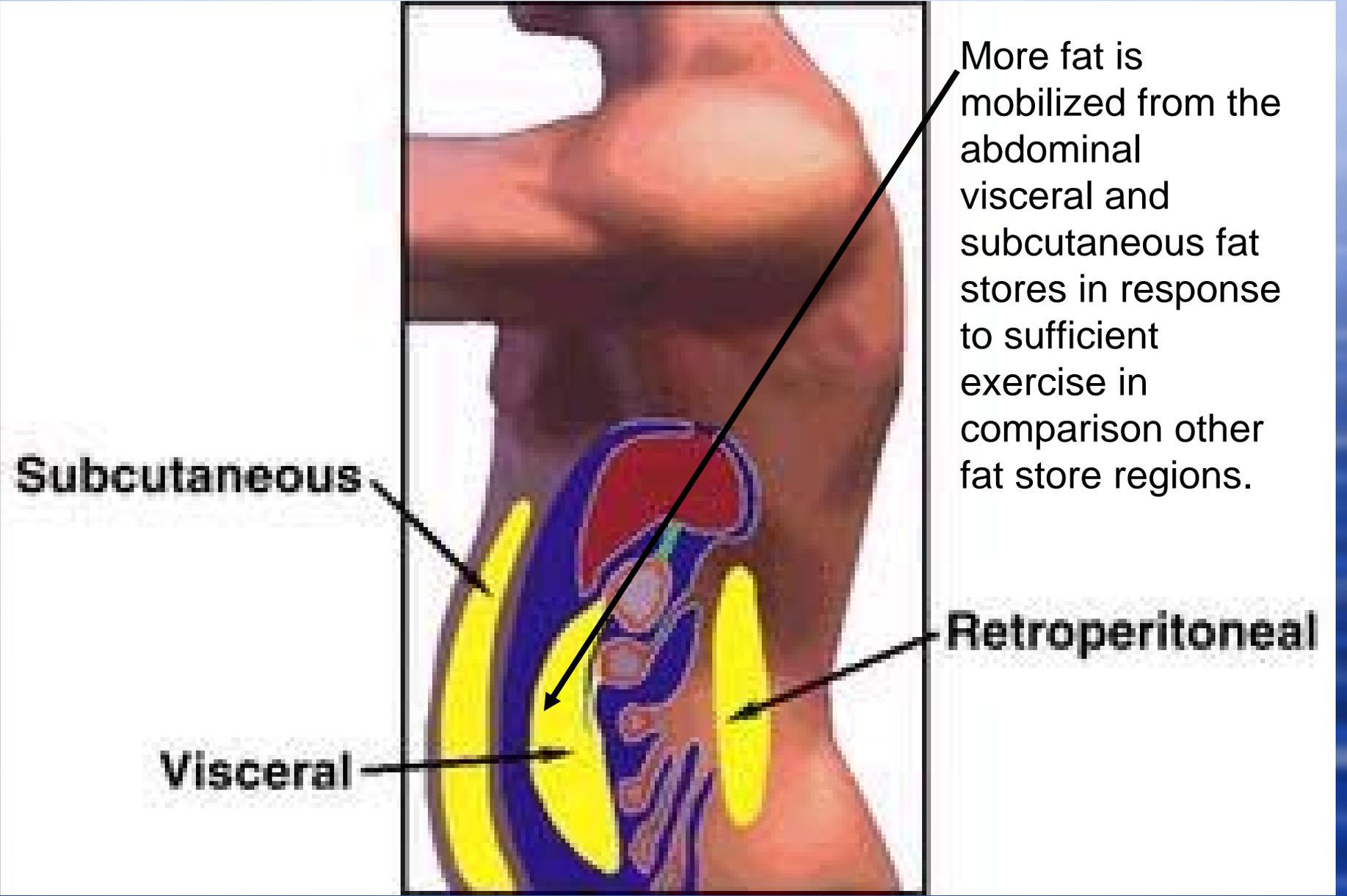
Signs of Insulin Resistance

Visceral Adiposity



Fat Topography In Insulin Resistant Subjects





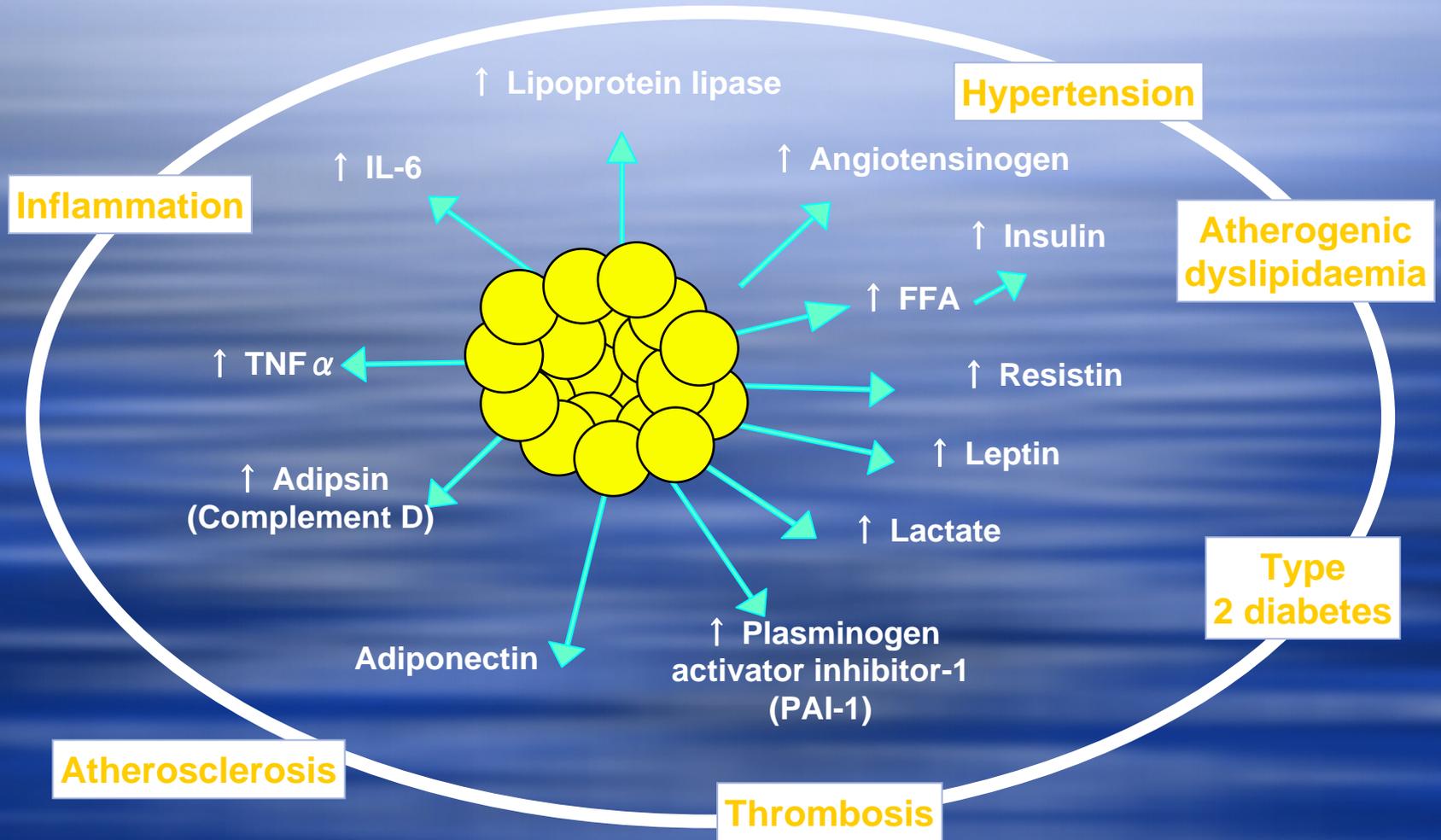
Subcutaneous

Visceral

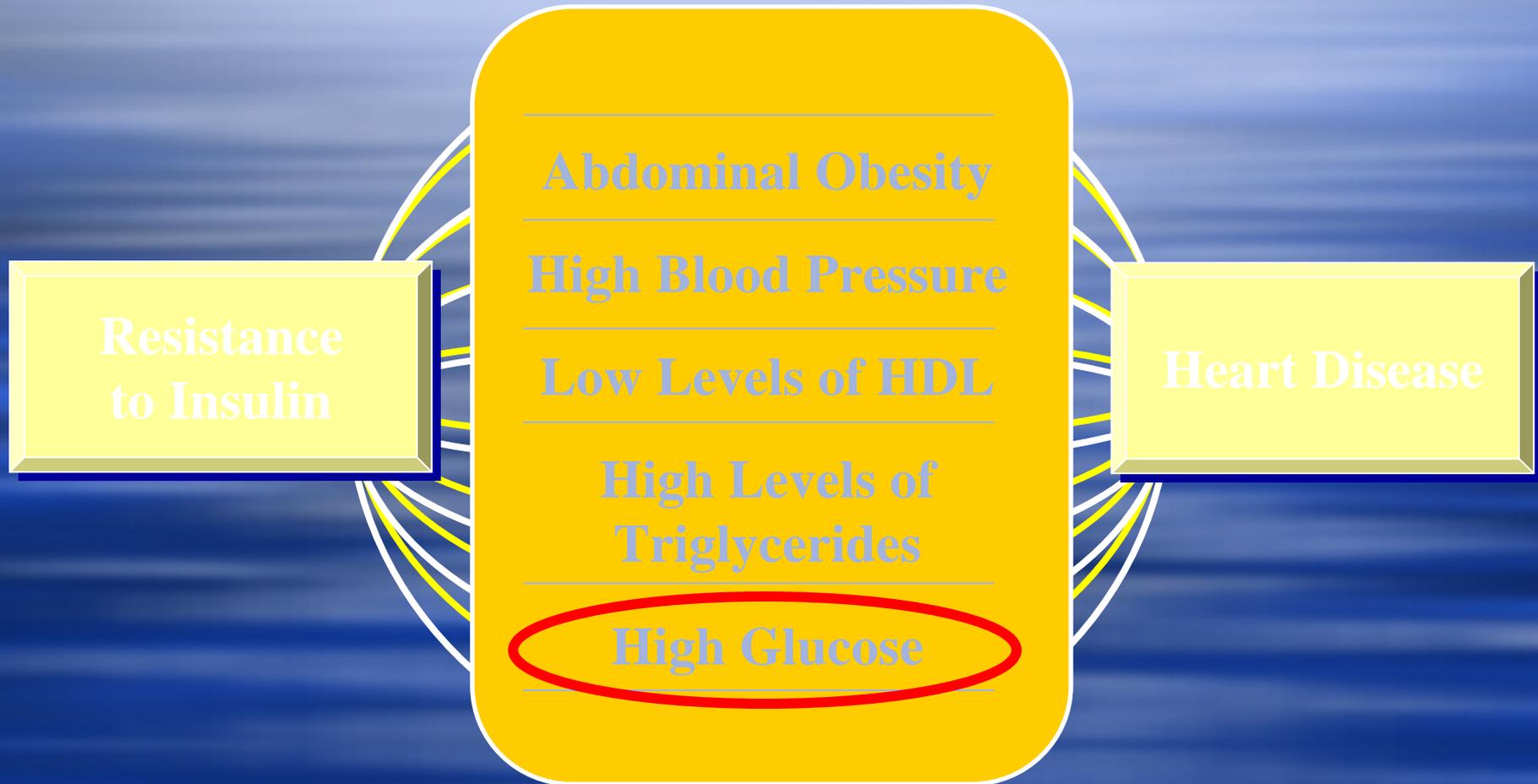
Retroperitoneal

More fat is mobilized from the abdominal visceral and subcutaneous fat stores in response to sufficient exercise in comparison other fat store regions.

Adverse Cardiometabolic Effects of Products of Adipocytes



The Metabolic Syndrome



Potential Dietary Risk Factors for Diabetes

- ◆ Higher carbohydrate diets and decreased protein consumption were associated with upper body fat distribution ¹
- ◆ Gestational diabetes rates decreased following a “STOP THE POP” education program among pregnant women ^{2,3}

1. *Body Fat Distribution in Alaska Natives of the Norton Sound Area: The Relationship of Diet Physical Activity and Type II Diabetes Mellitus* – 1994 study - Doctoral Dissertation Johns Hopkins University
2. *Prevalence of diabetes mellitus in pregnancy among Yupik Eskimos, 1987-88.* Diabetes Care 1993;16 suppl. 1:315-317.
3. *Decreased rate of gestational diabetes mellitus following nutrition education in Alaska Natives.*

Drink More Diet Soda, Gain More Weight?

- ◆ **Overweight Risk Soars 41% With Each Daily Can of Diet Soft Drink**
- ◆ For regular soft-drink drinkers, the risk of becoming overweight or obese was:
 - 26% for up to 1/2 can each day
 - 30.4% for 1/2 to one can each day
 - 32.8% for 1 to 2 cans each day
 - 47.2% for more than 2 cans each day.
- ◆ For diet soft-drink drinkers, the risk of becoming overweight or obese was:
 - 36.5% for up to 1/2 can each day
 - 37.5% for 1/2 to one can each day
 - 54.5% for 1 to 2 cans each day
 - 57.1% for more than 2 cans each day.For each can of diet soft drink consumed each day, a person's risk of obesity went up 41%.

Fowler, S.P. 65th Annual Scientific Sessions,
American Diabetes Association,
San Diego, June 10-14, 2005; Abstract 1058-P.

Diabetes and Smoking

**Smoking causes insulin resistance.
Insulin resistance is a risk factor for
diabetes.**

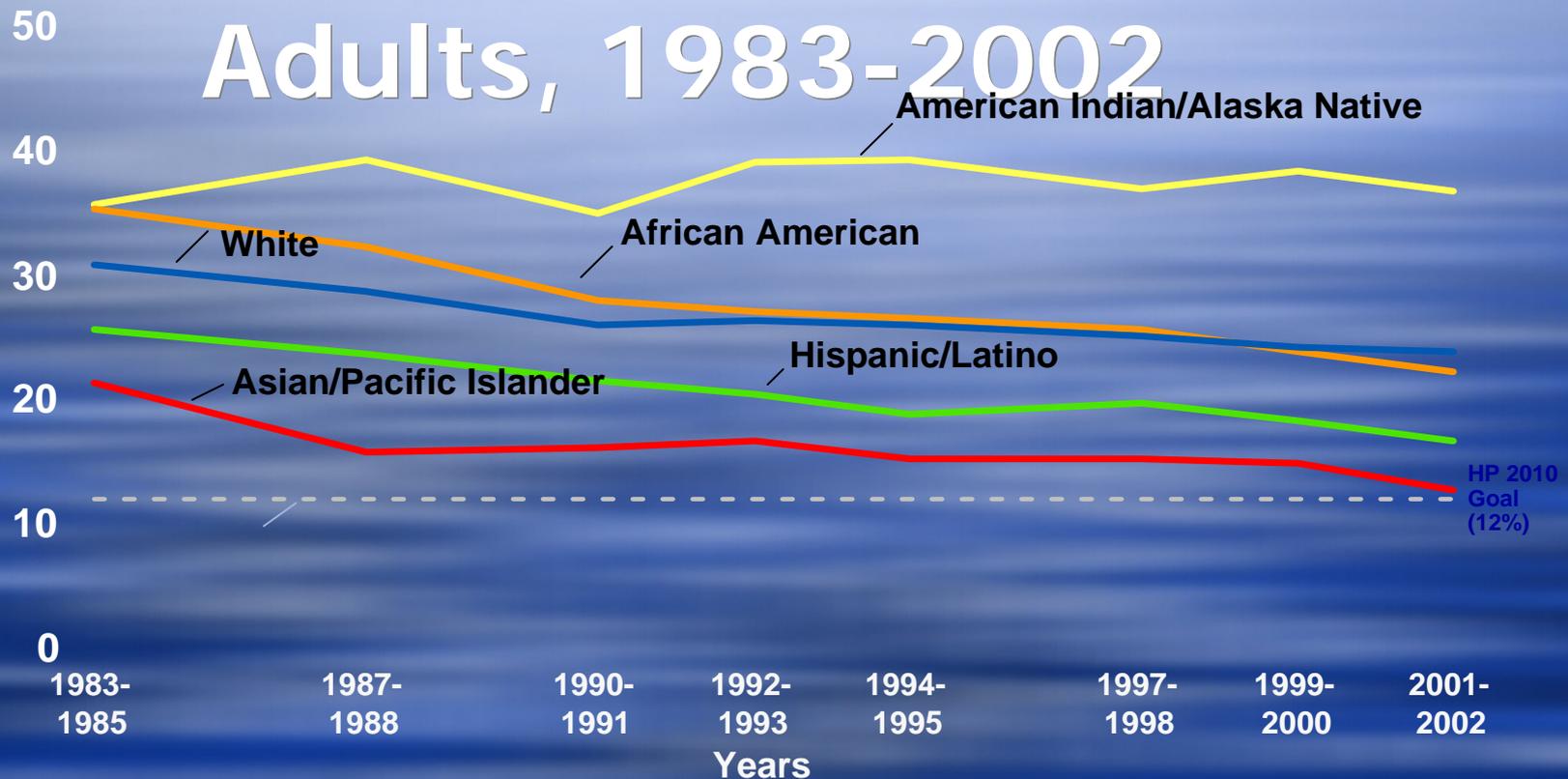
**Smoking also increases diabetic
complications.**



Cigarette Smoking*

Trends:

Adults, 1983-2002



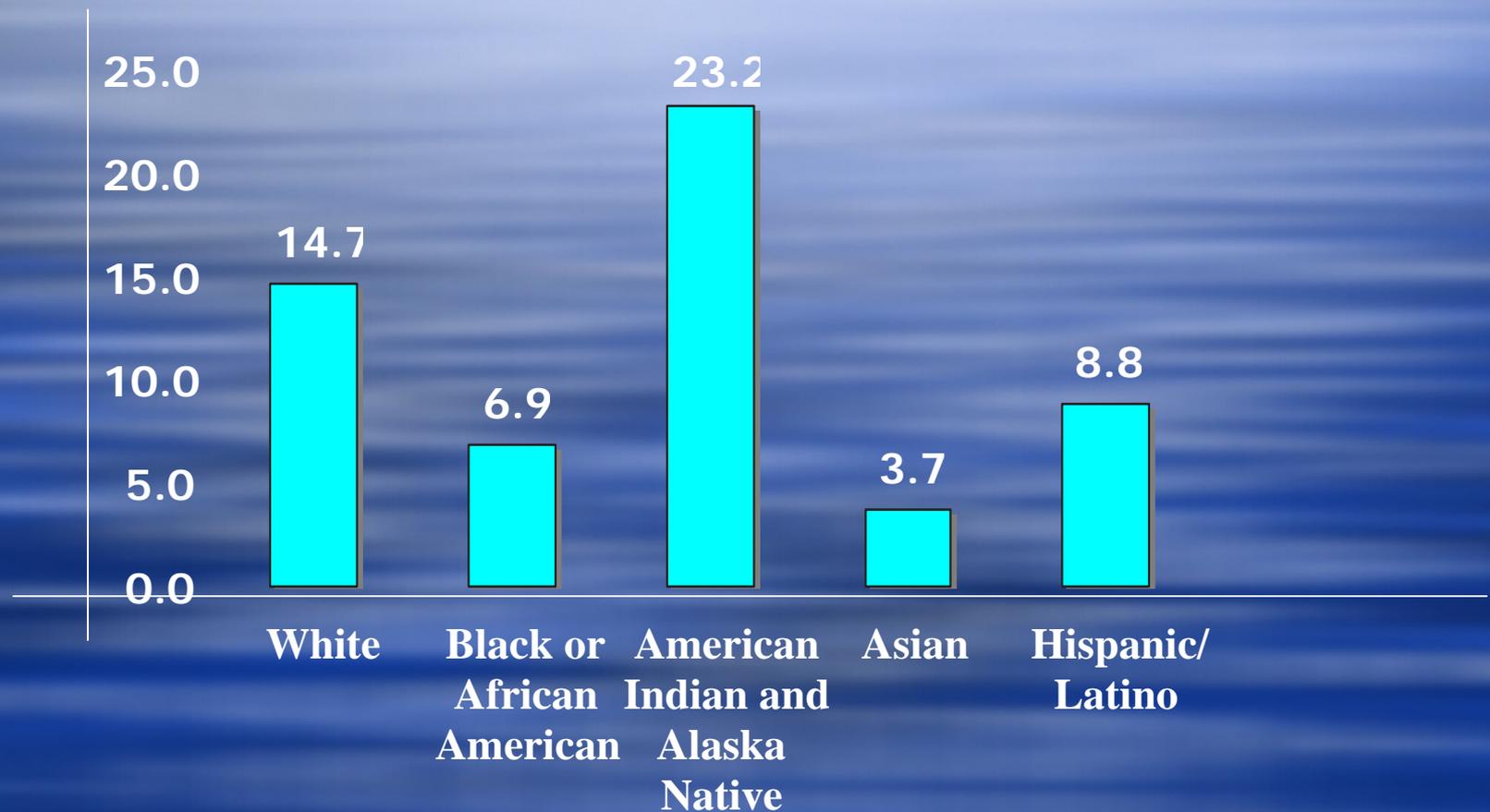
* Smoking on 1 or more of the previous 30 days.

Source: National Health Interview Surveys, 1983-2002, selected years, aggregate data

Between a Rock and a Hard Place



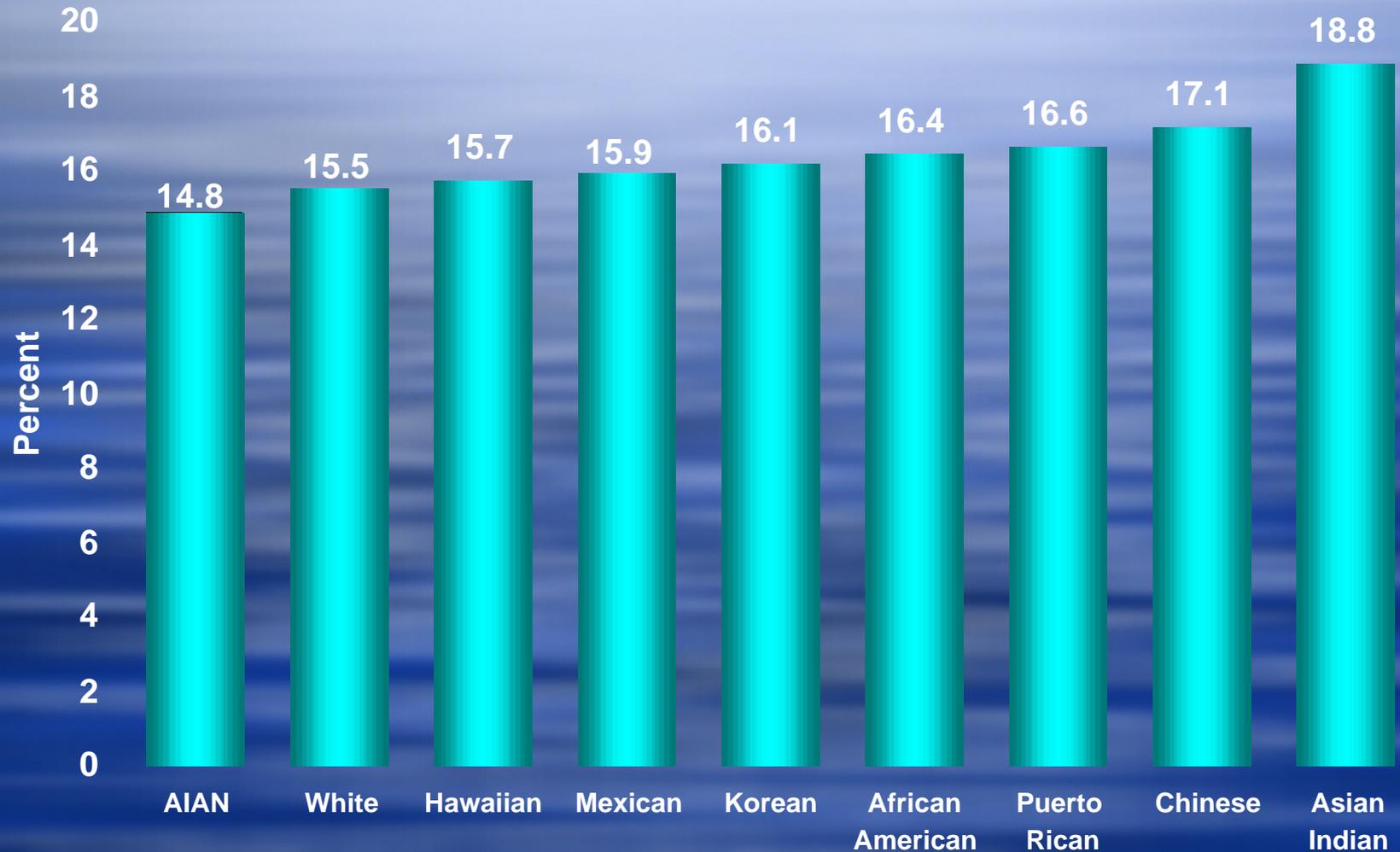
Cigarette Use among Youths Aged 12 to 17, by Race/Ethnicity: 2003



Note: Due to low precision, estimates for Native Hawaiians or Other Pacific Islanders are not shown.
Source: 2003 NSDUH Summary of Findings

Average Age First Cigarette Use

Among Youth Who Began Smoking Between 1999-2001



Source: National Survey on Drug Use and Health. CDC

got air?

Proud to be Tobacco Free

Sand Point School

TRIADD:

The Risk for Alcohol Abuse, Depression, and Diabetes in the American Indian and Alaska Native Population



- ◆ Increased incidence of co-morbidities of Alcohol Abuse, Depression, and Diabetes in AI/AN

Stress--->Cortisol/NE

'Fight or Flight'

Osteoporosis...CVD...T2DM...

Anxiety...Depression...Irritability

"Wellness"

- ◆ Definition: "Wellness is generally used to mean a healthy balance of the mind, body and spirit that results in an overall feeling of well-being. The phrase can be seen as an analogue to the medical term homeostasis."
- ◆ Physical
- ◆ Mental
- ◆ Emotional
- ◆ Spiritual











“steering” the body...



- ◆ Small changes make a HUGE difference









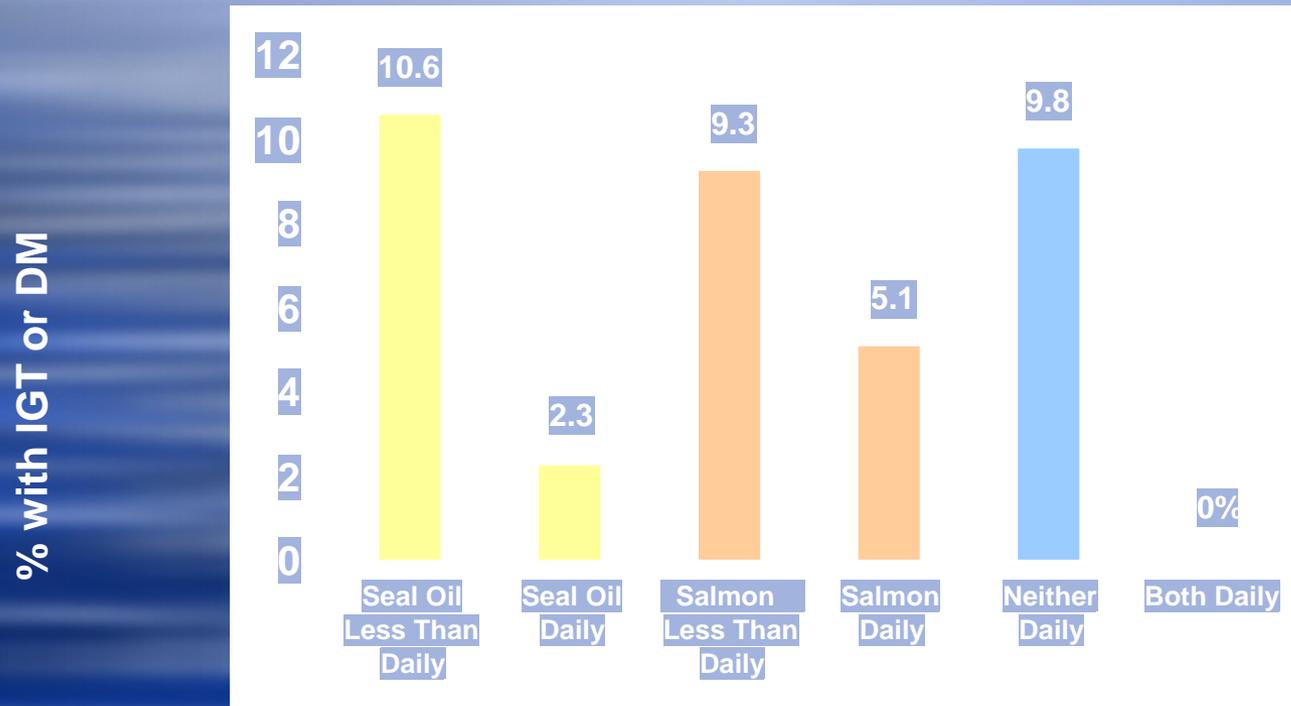
“Let foods be your medicine”
-Hippocrates







The Effect of Seal Oil/Salmon on Glucose Intolerance



Glucose intolerance is more common among those who eat seal oil and/or salmon less than daily

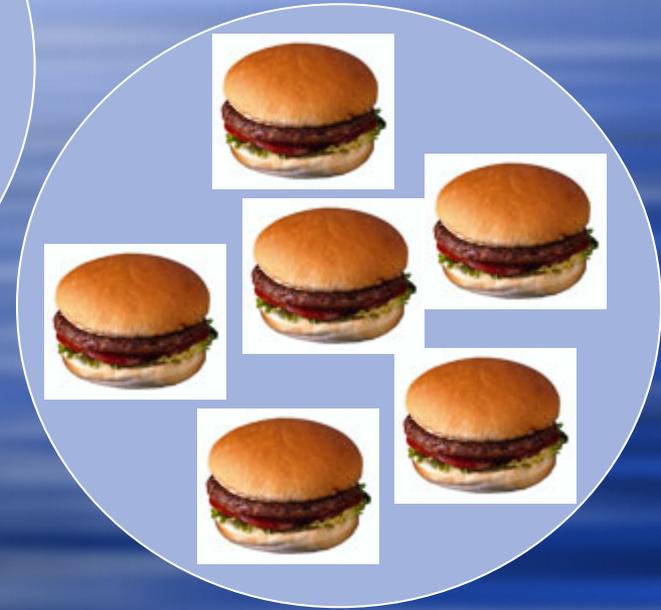
Daily Consumption of Seal Oil or Salmon Associated with Lower Risk of Non-Insulin Dependent Diabetes Mellitus and Impaired Glucose Tolerance in Yup'ik Eskimos and Athabascan Indians in Alaska. Circumpolar Health 1993:270-273.





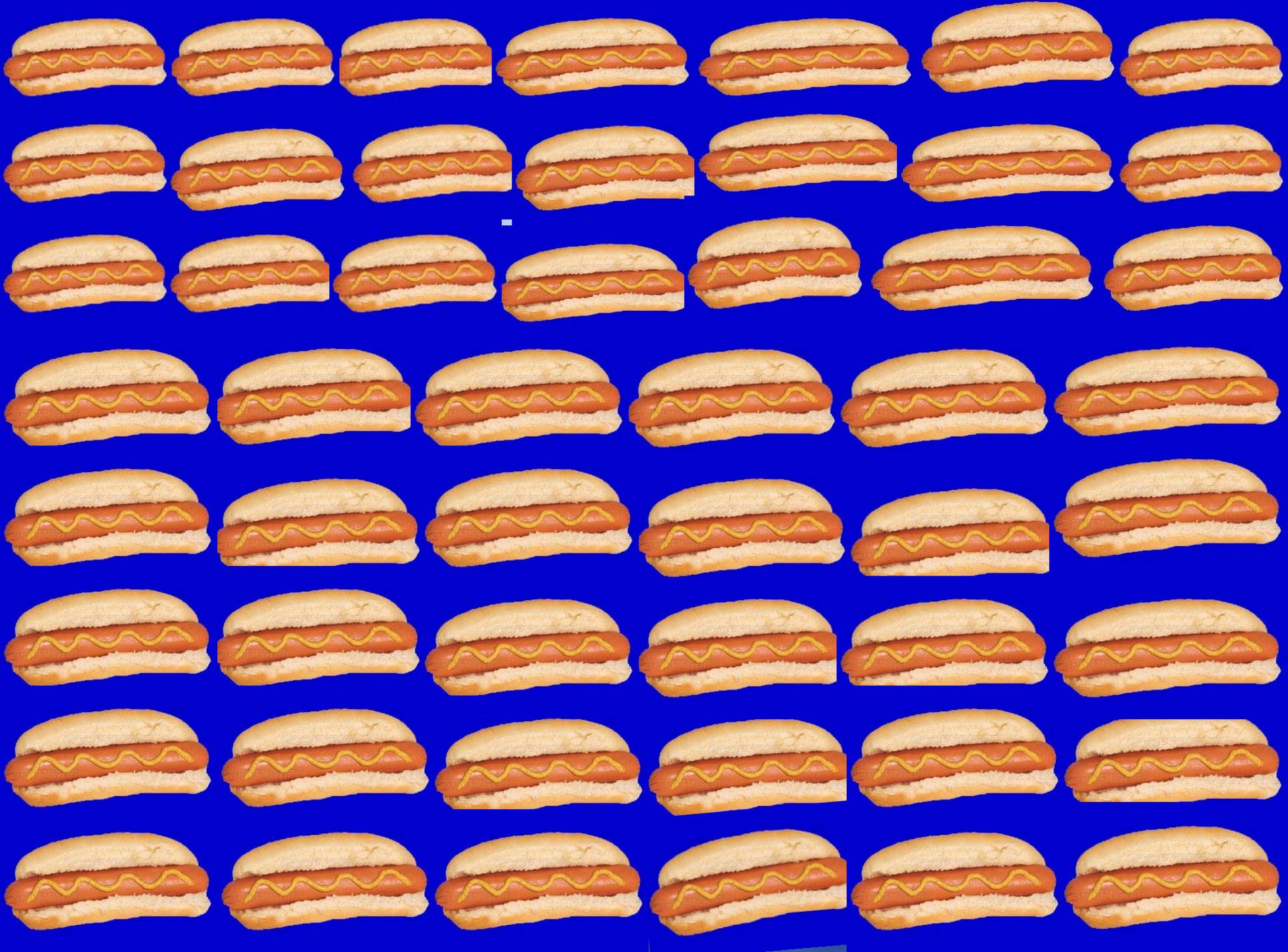


IRON



IRON....

Country food is good for you and your family





An Integrative Team...

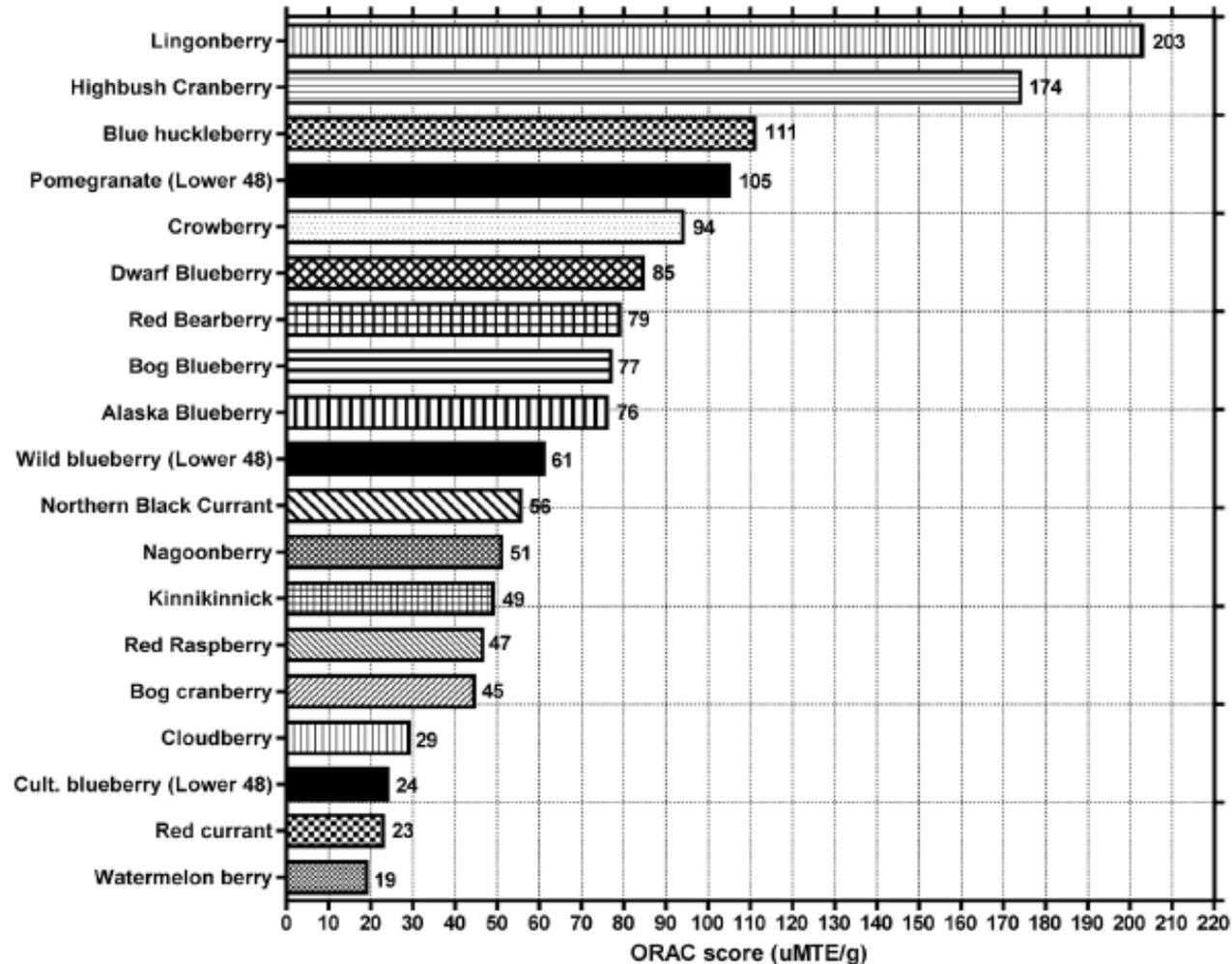








Comparison of berries





Kelp/Seaweed- a rich source of minerals









Healthy Communities

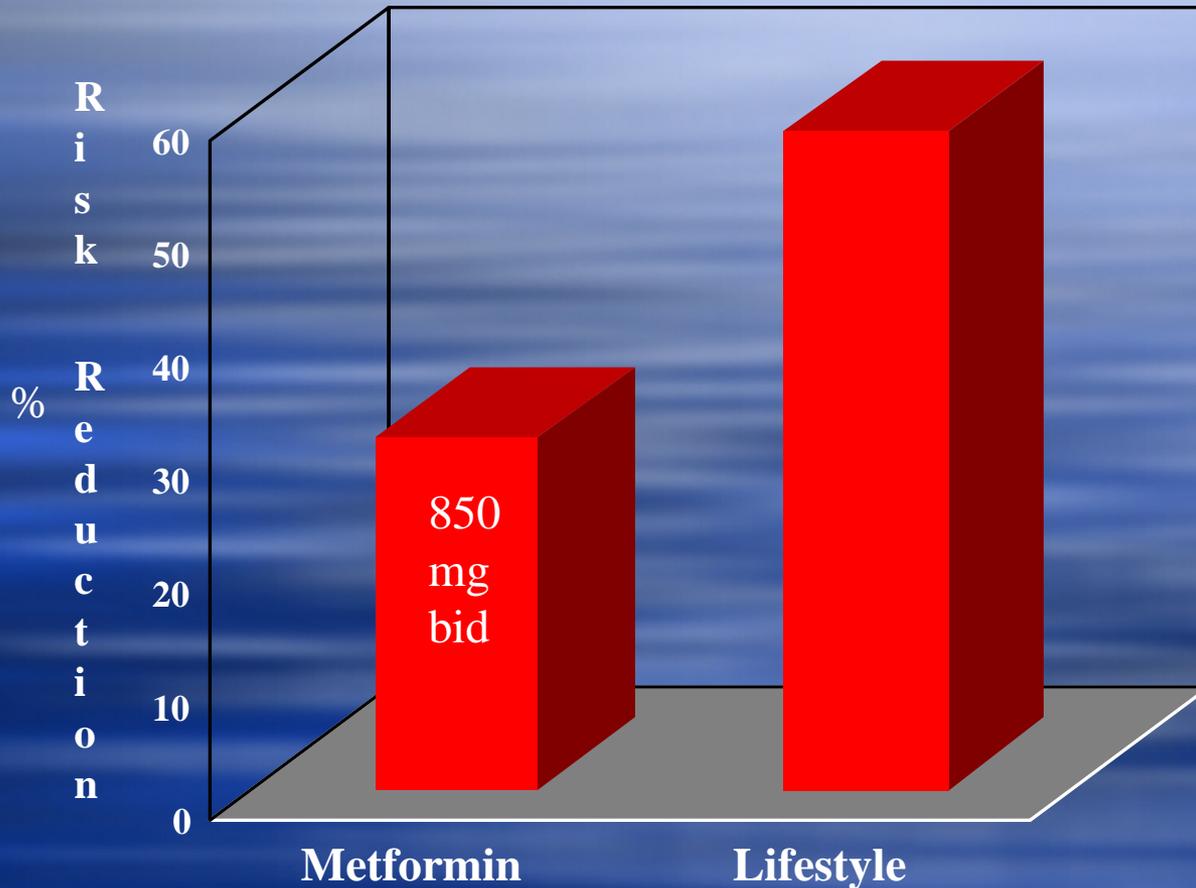


- ◆ Community Ownership
- ◆ Utilizing Community Resources
- ◆ 'Environment' of Wellness



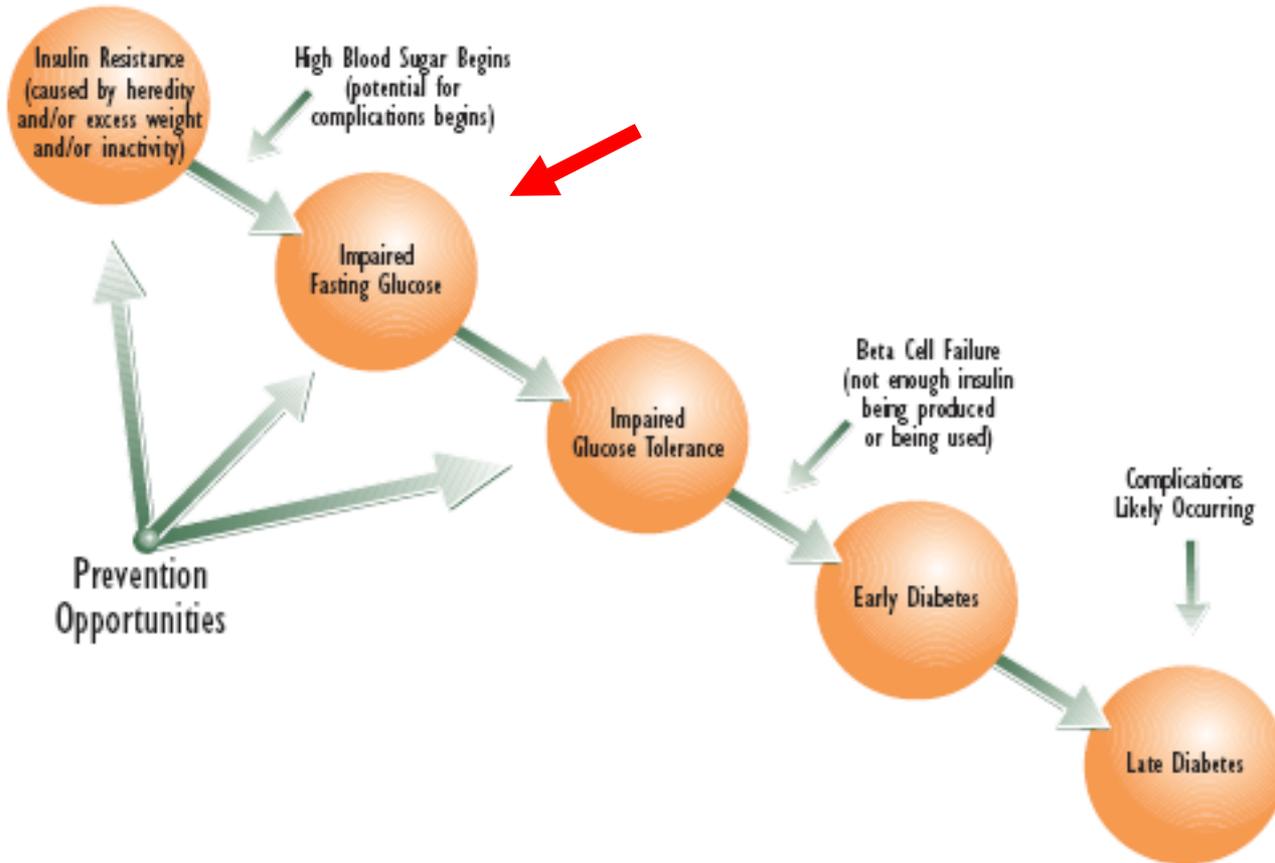
Diabetes Prevention Program

3,234 men & women, 45% minorities, mean age 51, IGT, BMI 34,
3 year study period



- 150 min/wk moderate ex. mostly walking (~700-1000 kcal actual)
- 5% wgt loss or ~11 lb over 3yrs
- Low-fat diet, fat <25% tot cal intake
- Worked well in both men and women, all ethnic groups, all ages (60+yrs ↓71%)

The Natural History of Type 2 Diabetes



Source: Youville Clinic, Winnipeg

EXERCISE

KARATE



RIDE BIKES



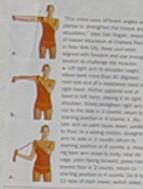
WALK
DON'T
RIDE

SWIM



RUN

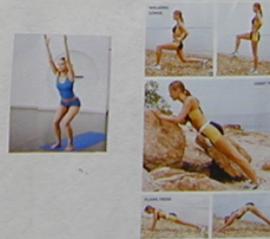
STRETCHING



YOGA



LIFT
WEIGHTS



Make Your Diabetic Patients Walk

Long-term impact of different amounts of physical activity on type 2 diabetes

CHIARA DI LORETO, MD
CARMINE FANELLI, MD
PAOLA LUCIDI, MD
GIUSEPPE MURDOLO, MD
ARIANNA DE CICCO, MD
NATASCIA PARLANTI, MD

ANNA RANCHELLI, MD
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CHIARA TAGLIONI, MD
FAUSTO SANTEUSANIO, MD
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OBJECTIVE — To establish the impact of different amounts of increased energy expenditure on type 2 diabetes care.

RESEARCH DESIGN AND METHODS — Post hoc analysis of long-term effects of different amounts of increased energy expenditure (metabolic equivalents [METs] per hour per week) through voluntary aerobic physical activity was performed in 179 type 2 diabetic subjects (age 62 ± 1 years [mean \pm SE]) randomized to a physical activity counseling intervention. Subjects were followed for 2 years and divided into six groups based on their increments in METs per hour per week: group 0 (no activity, $n = 28$), group 1–10 (6.8 ± 0.3 , $n = 27$), group 11–20 (17.1 ± 0.4 , $n = 31$), group 21–30 (27.0 ± 0.5 , $n = 27$), group 31–40 (37.5 ± 0.5 , $n = 32$), and group >40 (58.3 ± 1.8 , $n = 34$).

RESULTS — At baseline, the six groups did not differ for energy expenditure, age, sex, diabetes duration, and all parameters measured. After 2 years, in group 0 and in group 1–10, no parameter changed; in groups 11–20, 21–30, 31–40, and >40 , HbA_{1c}, blood pressure, total serum cholesterol, triglycerides, and estimated percent of 10-year coronary heart disease risk improved ($P < 0.05$). In group 21–30, 31–40, and >40 , body weight, waist circumference, heart rate, fasting plasma glucose, serum LDL and HDL cholesterol also improved ($P < 0.05$). METs per hour per week correlated positively with changes of HDL cholesterol and negatively with those of other parameters ($P < 0.001$). After 2 years, per capita yearly costs of medications increased ($P = 0.008$) by \$393 in group 0, did not significantly change in group 1–10 (\$206, $P = 0.09$), and decreased in group 11–20 (–\$196, $P = 0.01$), group 21–30 (–\$593, $P = 0.009$), group 31–40 (–\$660, $P = 0.003$), and group >40 (–\$579, $P = 0.001$).

CONCLUSIONS — Energy expenditure >10 METs \cdot h⁻¹ \cdot week⁻¹ obtained through aerobic leisure time physical activity is sufficient to achieve health and financial advantages, but full benefits are achieved with energy expenditure >20 METs \cdot h⁻¹ \cdot week⁻¹.

Diabetes Care 28:1295–1302, 2005

From the Department of Internal Medicine, Section of Internal Medicine, Endocrine and Metabolic Sciences, University of Perugia, Perugia, Italy.

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Abbreviations: CHD, coronary heart disease; FPG, fasting plasma glucose; MET, metabolic equivalent; NHS, National Health Service.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

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See accompanying editorial, p. 1524.

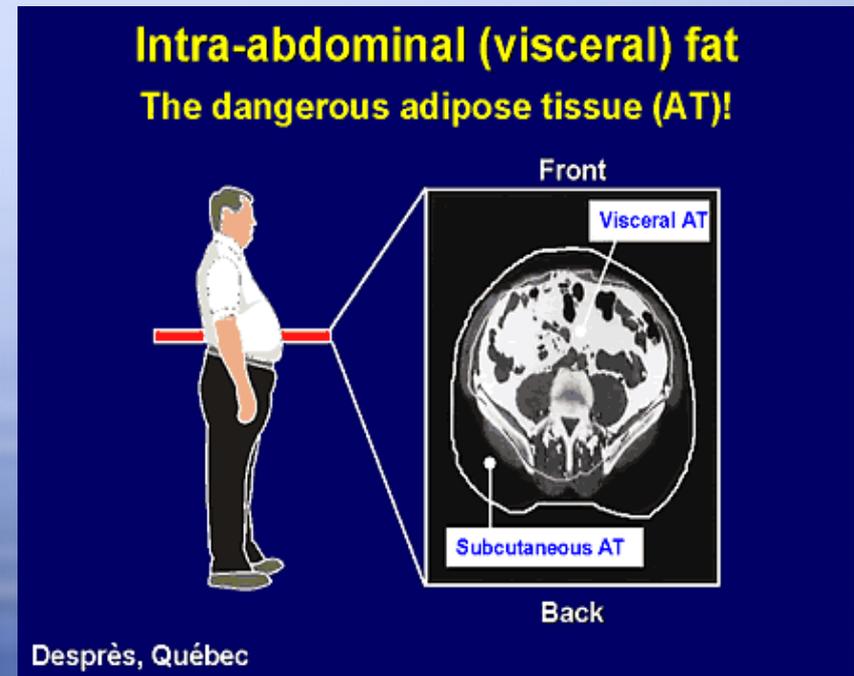
Western and developing countries face two serious health problems: the rising prevalence of obesity and diabetes and the fact that people no longer need to be physically active in their daily lives (1–4). Many studies have shown that regular physical activity improves quality of life, reduces the risk of mortality from all causes (1–4), and is particularly advantageous in subjects with impaired glucose tolerance (5,6) or type 2 diabetes (7–12). Physical activity counseling can motivate most diabetic subjects to increase their levels of voluntary energy expenditure (9–11), but, at present, the relationship between amounts of physical activity and long-term beneficial effects in type 2 diabetes care is unknown. The American Diabetes Association emphasizes the benefits of regular physical activity in the prevention and treatment of type 2 diabetes, referring to proposals given to the general population by several scientific societies (1–4,12). These recommendations advise individuals to engage in ≥ 30 min moderate-intensity physical activity on most (preferably all) days of the week. To maintain long-term weight loss, data from several studies suggest that more exercise (60–75 min/day) is needed (1,12,13).

As no long-term studies have been performed in type 2 diabetic subjects, the influence of different amounts of energy expenditure on diabetes care remains to be established. This study examines the 2-year impact of different increments in energy expenditure on several physiological and biochemical outcomes, on direct medical costs, and on direct and indirect social costs in a group of type 2 diabetic subjects who were randomized to an exercise counseling intervention (9). Our data show that 2 years' counseling resulted in remarkable cost saving; health benefits and financial advantages were significantly related with increased amounts of energy expenditure.

RESEARCH DESIGN AND METHODS

— Eligibility criteria included diagnosis of type 2 diabetes of at

Increasing physical activity can significantly reduce abdominal adipose tissue including waist circumference and improve insulin sensitivity without significant changes in body weight or BMI



DiPietro L et. al. JAP 2006
SoJung & Ross JAP 2005;99:1220
Wong SL et.al. Med Sci Sports Ex 2004;36:286
Ross R et.al. Int J Obes Relat Metab Disord 2003;27:204
Mourier A et.al. Diabetes Care 1997;20:385
Ross R et.al. Ann Intern Med 2000;133:92

Physical Activity

- ◆ Two studies have shown an association between Physical Activity and Glucose Intolerance ^{1, 2}
- ◆ One study showed an association of Physical Activity with lower Waist:Hip Ratio ³

1. The Negative Association Between Traditional Physical Activities and the Prevalence of Glucose Intolerance in Alaska Natives. *Diabetic Medicine*, 1996; 13: 555-560.
2. Glucose Tolerance and Insulin-Resistance Syndrome among St. Lawrence Island Eskimos – *Int J. Circumpolar Health* 96:348-354.
3. *Body Fat Distribution in Alaska Natives of the Norton Sound Area: The Relationship of Diet Physical Activity and Type II Diabetes Mellitus* – 1994 study - Doctoral Dissertation Johns Hopkins University

Effect of a short-term diet and exercise intervention on metabolic syndrome in overweight children.



- ◆ High Fiber, Low Fat nutrition plan plus daily aerobic exercise for 2 weeks reversed Metabolic Syndrome.
- ◆ Decreased Fasting Insulin, insulin resistance, LDL cholesterol, and BP

[Metabolism.](#) 2006 Jul; 55(7):871-8



Back, Trunk, & Spine Strength To Go





Accusplit Eagle 120 Step Counter

Eagle 120XL

Functions and Features:

- Steps only, not distance or calories
- ~2000 steps/mile walked
- ~1500 steps/mile jogged
- Minimum goal: 20,000 steps/wk
Optimal goal: 50,000 +

www.accusplit.com

Metabolic Syndrome Initiative discount for providers

Range of Daily Step Counts

< **5000 steps/day** may be used as a 'sedentary lifestyle index'

5000-7499 steps/day is typical of daily activity excluding sports/exercise and might be considered 'low active'

7500-9999 likely includes some volitional activities (and/or elevated occupational activity demands) and might be considered 'somewhat active'

≥ **10,000 steps/day** indicates the point that should be used to classify individuals as 'active'. Minimum threshold for measurable fat weight loss

>12,500 steps/day are likely to be classified as 'highly active'.

~ 1000 steps per half mile (+- 100 steps)

~ 2000 steps per mile (+- 200 steps)

3200 – 3400 steps per 30 minutes



How much is 2000 steps worth?

2000 Steps a day

= ~100 kcal

x 365 days/year

= 36,500 kcal

= ~10 lbs fat

Household Circuit Rx

Name _____
Date _____
Rx: _____

20 - 90 minutes

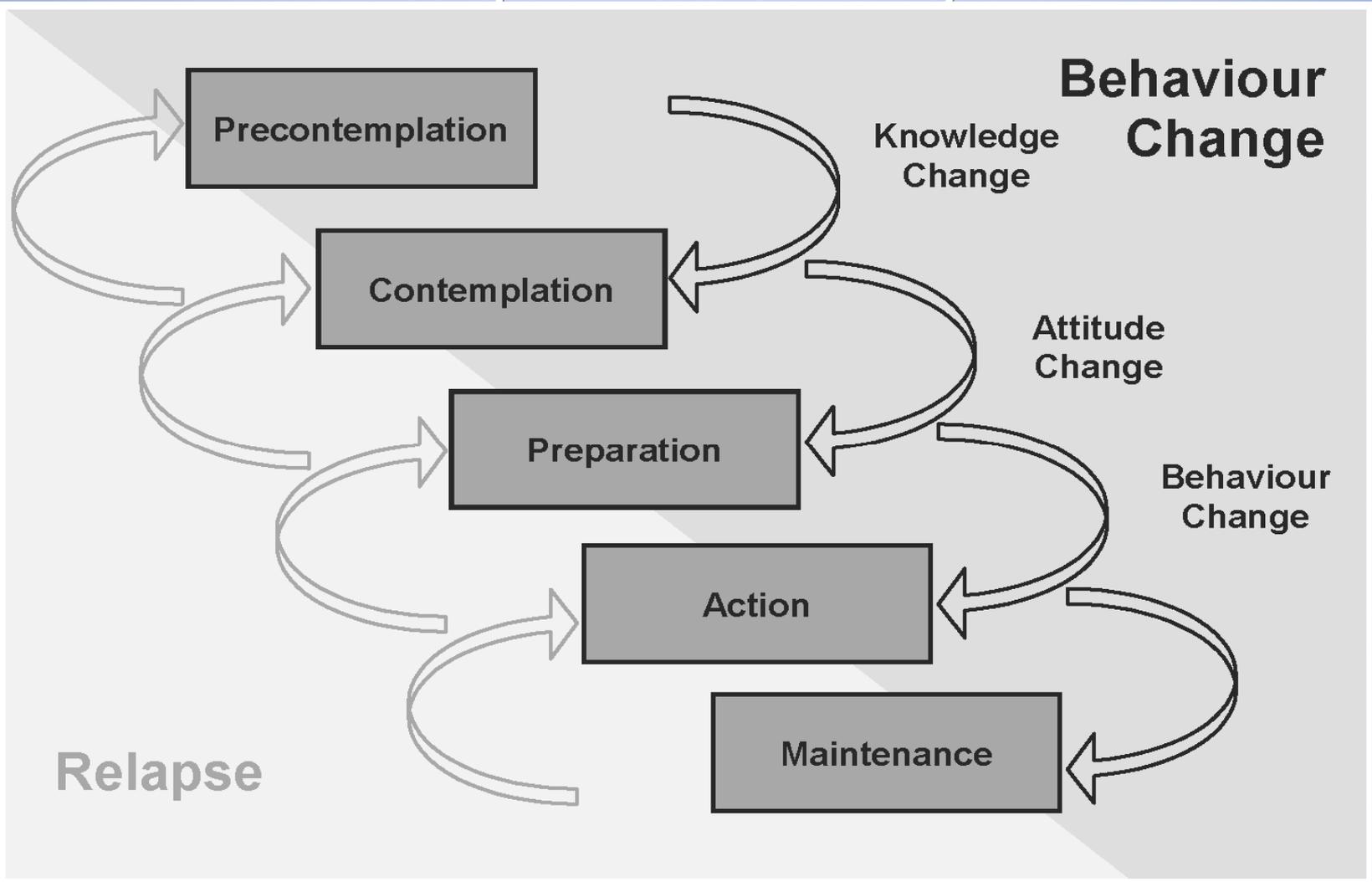


- 2-minute rest/water break between stations
- Always start and end session with warm-up/cool down exercise as prescribed
- Do not continue exercise or go the next station if you experience chest discomfort, palpitations, dizziness or unusual fatigue





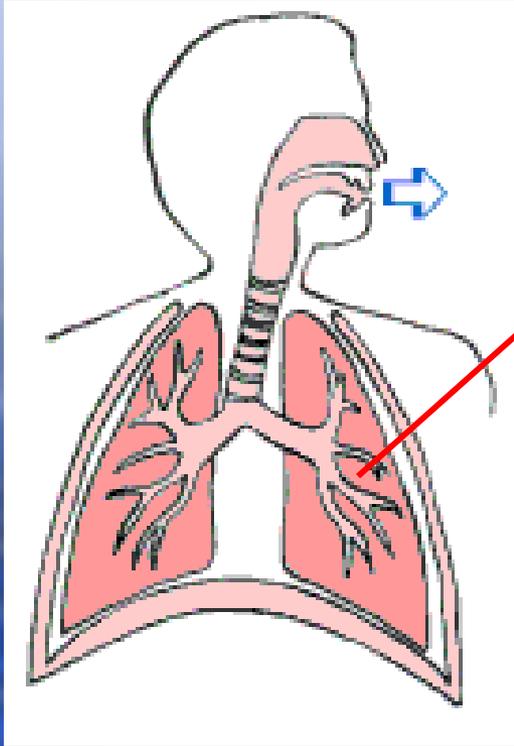
Stages of Change



“Man must first be a good animal”

Goethe

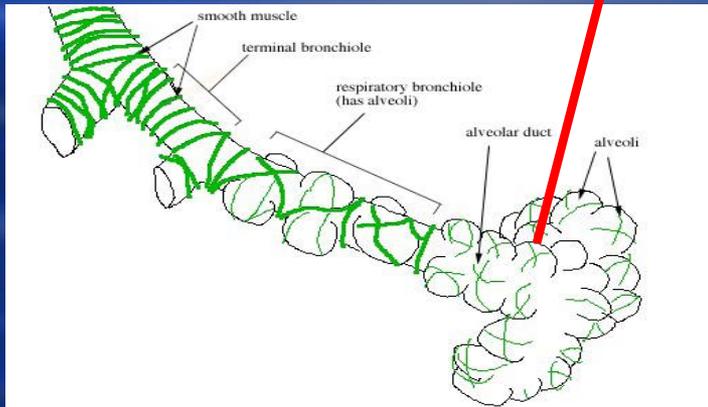




Expiration: stretch receptors in pulmonary tissue stimulates vagus nerve (parasympathetic)

Prolonged expiratory phase: further enhancement of parasympathetic inhibitory tone

Examples: yogic breathing, chanting, singing, diaphragmatic breathing.



Tip
Get Your ZZZZZs
The Importance of sleep

Sleep to Lose Weight

- ◆ People who get only 4 hours of sleep are 73% more likely to be obese
- ◆ 5 hours- 50% more likely
- ◆ 6 hours- 23% more likely













**The doctor of the future will give no medicine,
But will interest his patient in the care of the human frame,
In diet, and in the cause
And prevention
Of disease.
THOMAS EDISON**



Traditional Foods, Ways and Community Wellness



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Alaska Natives are the Healthiest People in the World