OBESITY:
The Growing Epidemic and its Medical Impact

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EXHIBIT **_H___** Committee Name **OBESITY** Document consists of **38** pages.
☑ Entire document provided.
☐ Due to size limitations, pages _____ provided. A copy of the complete document is available through the Research Library (775/684-6827) or e-mail library@lcb.state.nv.us).
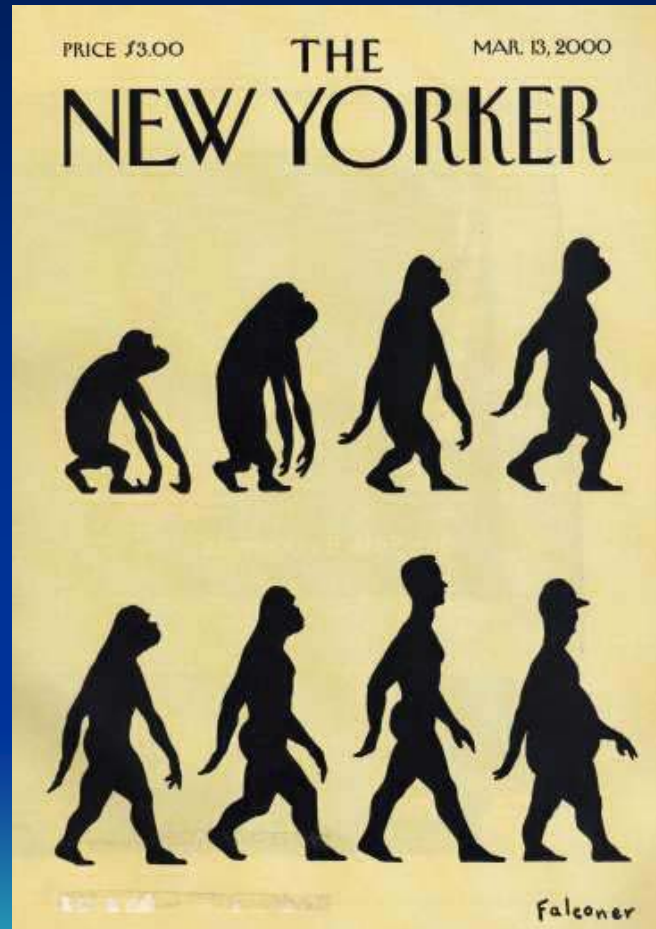Meeting Date __**11-03-03**_____

The Continuing Evolution of Man

live large - live free
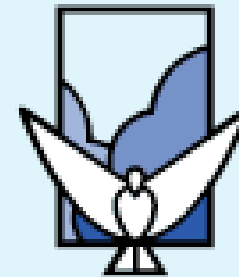
FREEDOM PARADISE®
The size-friendly vacation club
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Some people have chosen to stay anonymous...

Many already decided to start living...

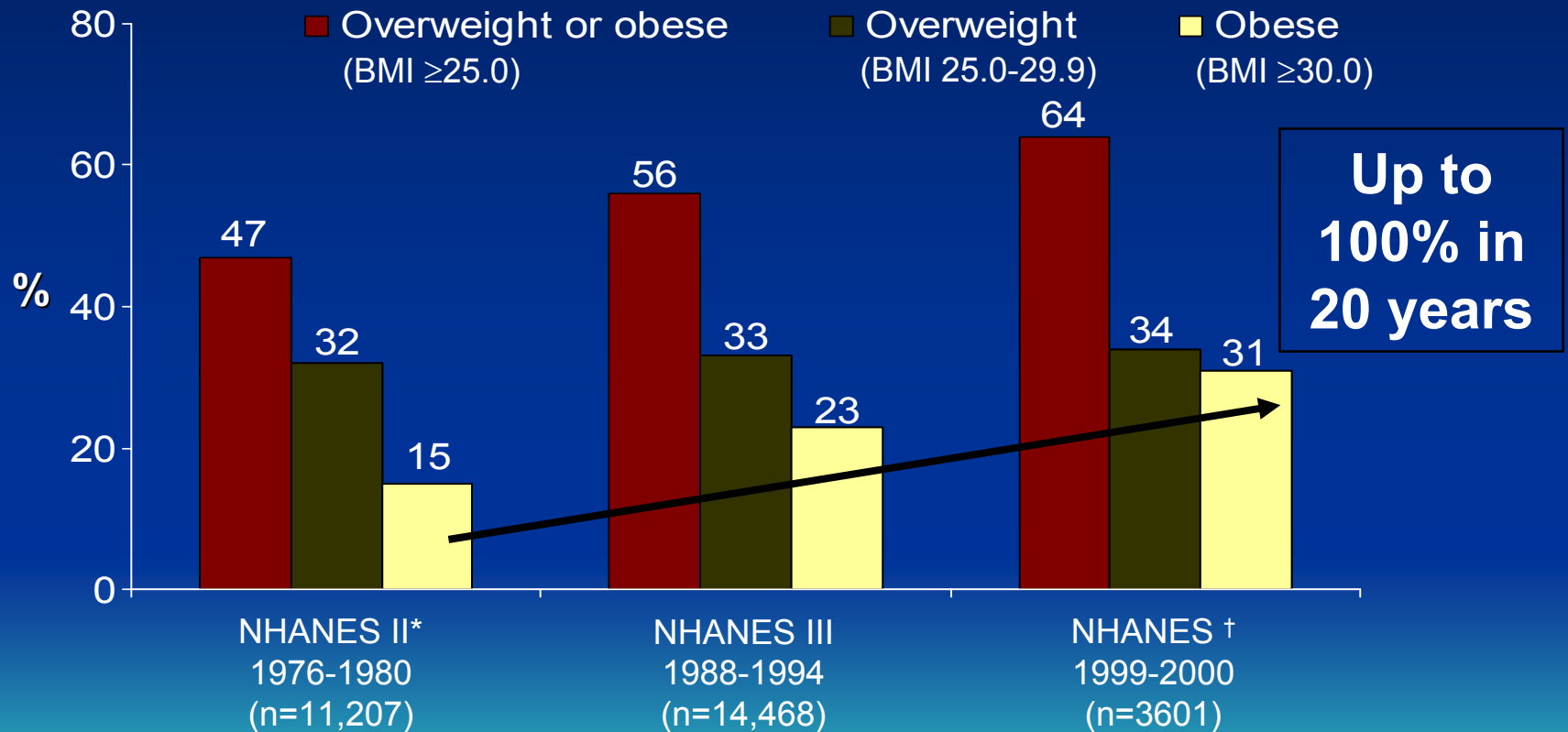# Prevalence of Overweight and Obesity Among US Adults

WHAT IS YOUR BODY MASS INDEX?

$$BMI = \left\{ \frac{WEIGHT\ (pounds)}{HEIGHT\ (inches)^2} \right\} \times 703$$

Weight in Pounds

Height	120	130	140	150	160	170	180	190	200	210	220	230	240	250
4'6	29	31	34	36	39	41	43	46	48	51	53	56	58	60
4'8	27	29	31	34	36	38	40	43	45	47	49	52	54	56
4'10	25	27	29	31	34	36	38	40	42	44	46	48	50	52
5'0	23	25	27	29	31	33	35	37	39	41	43	45	47	49
5'2	22	24	26	27	29	31	33	35	37	38	40	42	44	46
5'4	21	22	24	26	28	29	31	33	34	36	38	40	41	43
5'6	19	21	23	24	26	27	29	31	32	34	36	37	39	40
5'8	18	20	21	23	24	26	27	29	30	32	34	35	37	38
5'10	17	19	20	22	23	24	26	27	29	30	32	33	35	36
6'0	16	18	19	20	22	23	24	26	27	28	30	31	33	34
6'2	15	17	18	19	21	22	23	24	26	27	28	30	31	32
6'4	15	16	17	18	20	21	22	23	24	26	27	28	29	30
6'6	14	15	16	17	19	20	21	22	23	24	25	27	28	29
6'8	13	14	15	17	18	19	20	21	22	23	24	25	26	28

Height in Feet and Inches

Chart from CDC: For Adults, aged 20 years and older

BMI Clinical Guidelines*

Classification	BMI (kg/m^2)
Underweight	< 18.5
Normal Weight	19 - 24.9
Overweight	25 - 29.9
Class I Obesity (Mild)	30 -34.9
Class II Obesity (Moderate)	35 - 39.9
Class III Obesity (Extreme)	$\geq$ 40

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OBESITY is a "Gateway Disease"

Health Risks of Obesity:
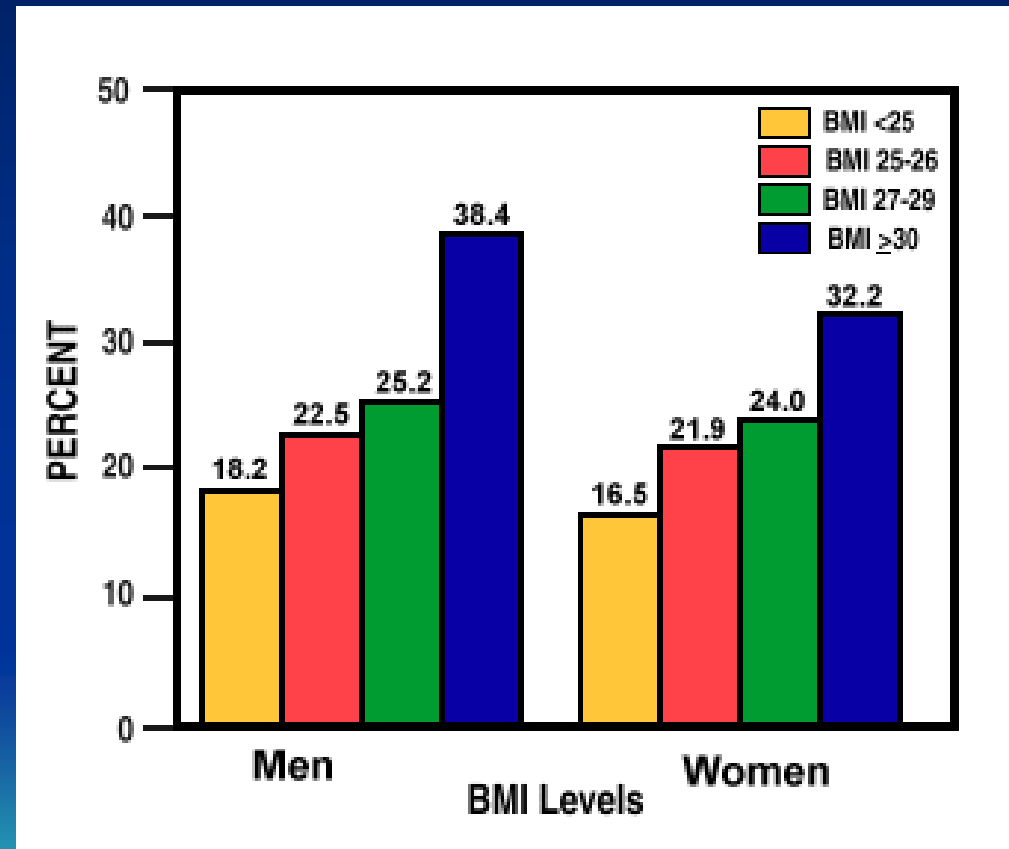
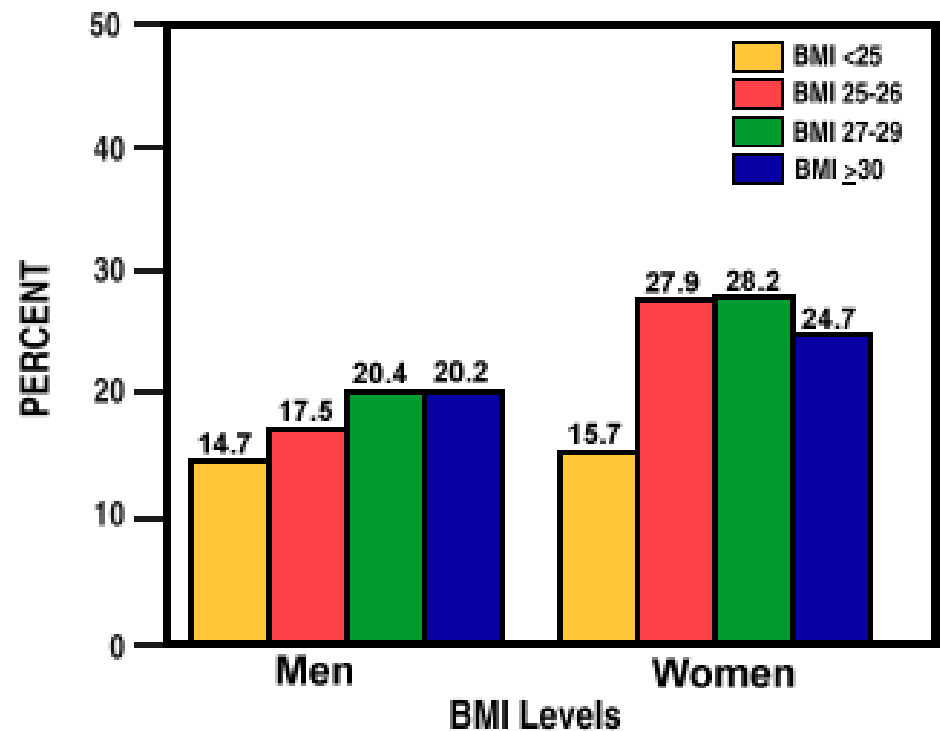# NHANES III Age-Adjusted Prevalence of Hypertension According to Body Mass Index

High blood pressure is defined as mean systolic blood pressure 140 mm Hg, or mean diastolic blood pressure 90 mm Hg

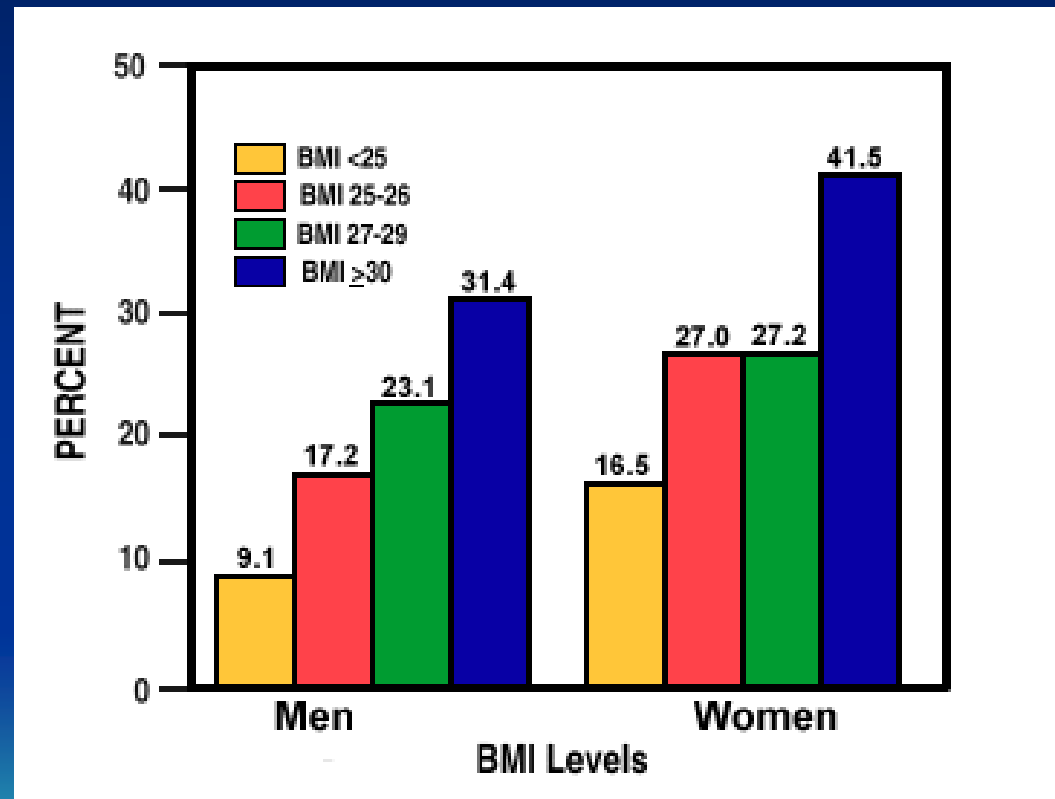NHANES = **National Health and Nutrition Examination Survey (Centers for Disease Control)**

NHANES III Age-Adjusted Prevalence of High Blood Cholesterol According To Body Mass Index

Defined as 240 mg/dL

# NHANES III Age-Adjusted Prevalence of Low HDL-Cholesterol* According To Body Mass Index

Defined as 35 mg/dL in men and 45 mg/dL in women

26 -Year Incidence of Coronary Heart Disease in Men

Legend: ■ <50 years ■ 50+ years

Y-axis: Incidence/1,000 (0 to 600)

X-axis: BMI Levels

BMI Level	<50 years	50+ years
<25	177	333
25-<30	255	366
30+	350	440

26 -Year Incidence of Coronary Heart Disease in Women

Adapted from Hubert HB et al. *Circulation* 1983;67:968-977.

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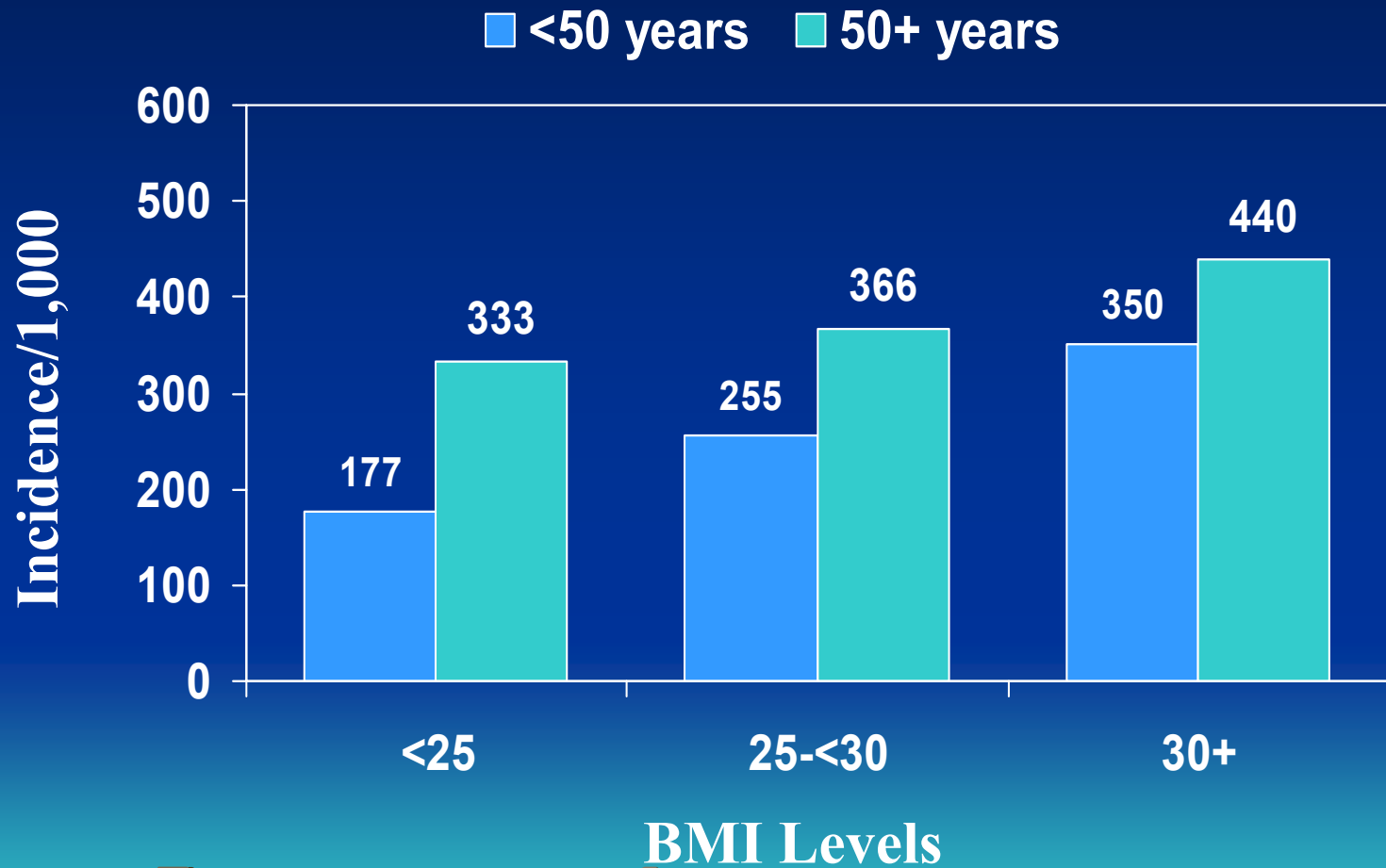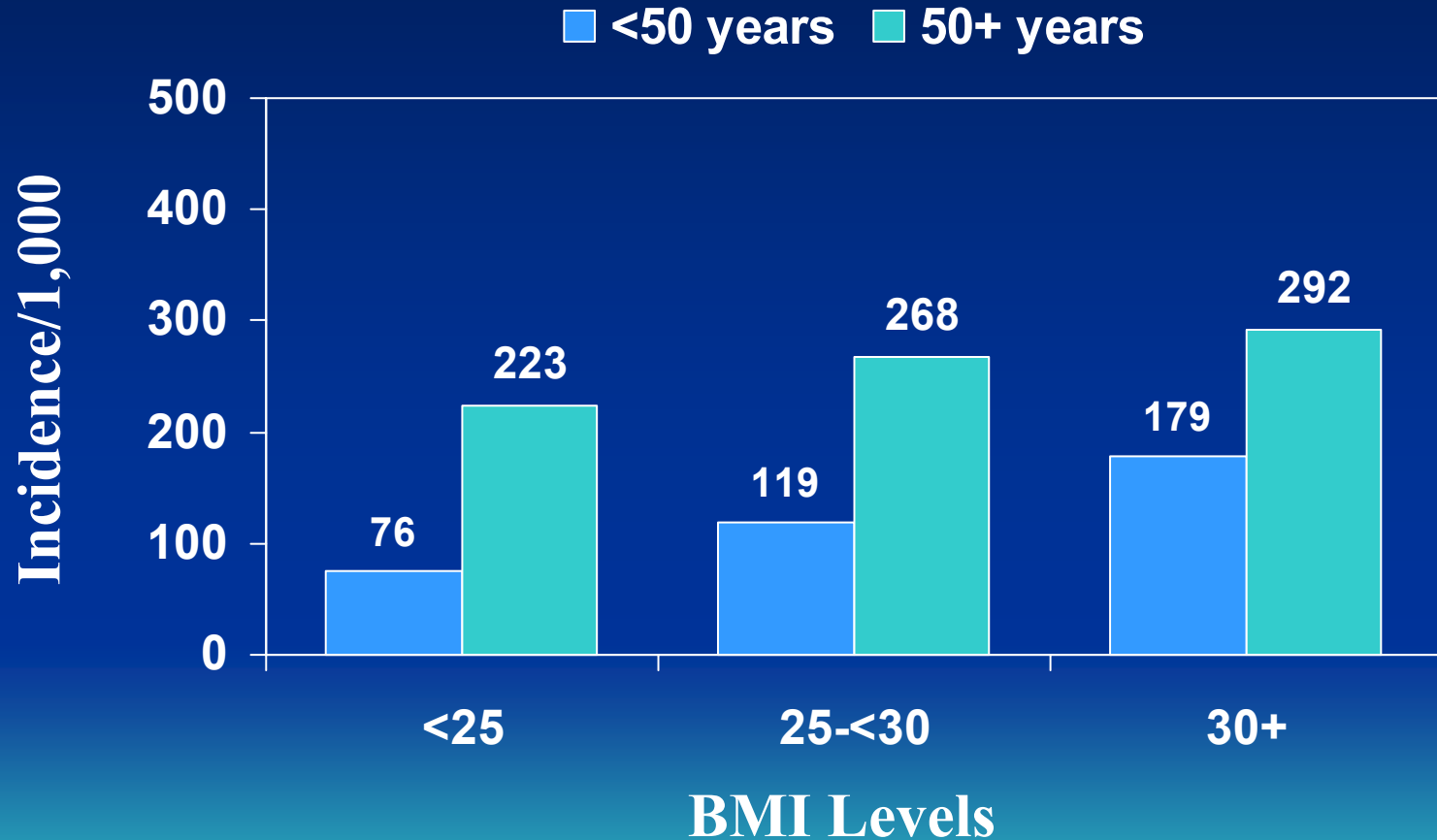
Cholescystectomy
(Gallstone disease)
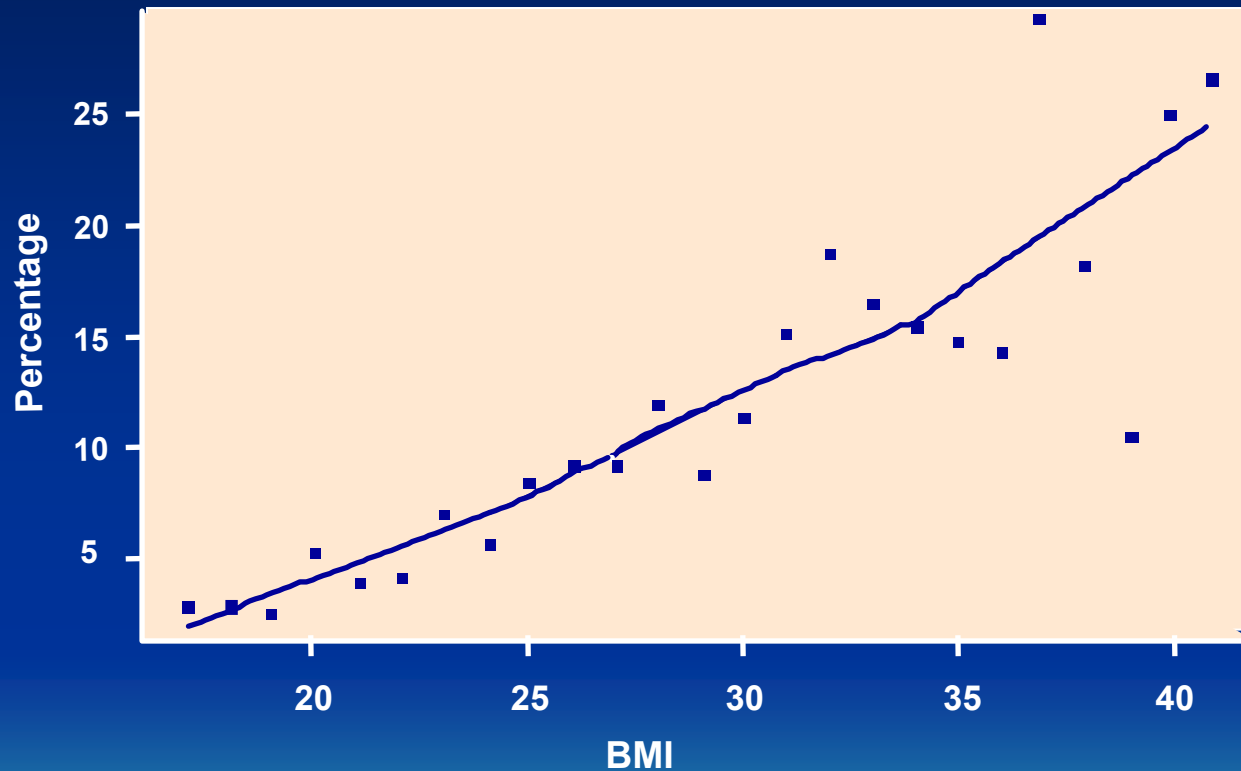
Back Pain
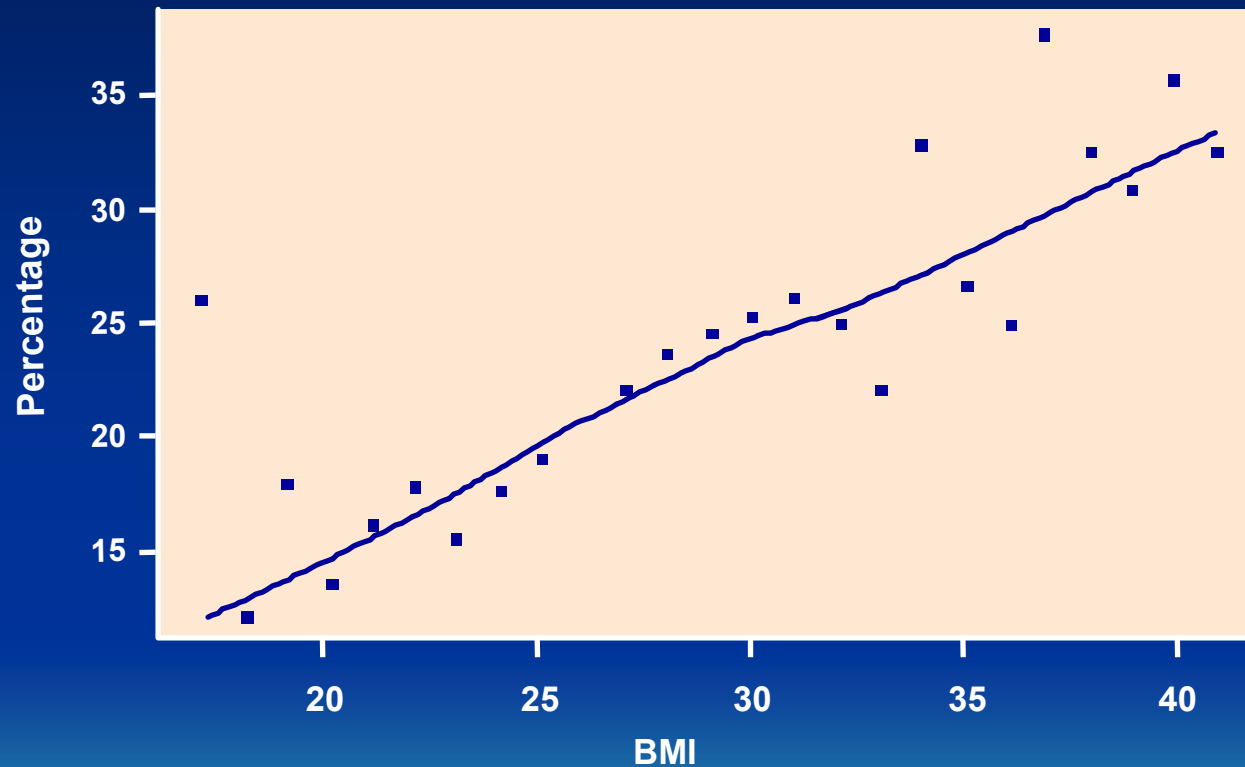
Other risks of Obesity

- **Congestive Heart Failure**
- **Stroke**
- **Osteoarthritis**
- **Sleep Apnea**
- **Cancers**
  - *Colon, Breast, Endometrial, Gallbladder*

The **Dysmetabolic Syndrome** and **Type 2 Diabetes**

Clinical Identification of the Dysmetabolic Syndrome
Any 3 of the Following:

Risk Factor	Defining Level
Abdominal obesity Men Women	Waist circumference >102 cm (>40 in) >88 cm (>35 in)
Triglycerides	≥150 mg/dL
HDL cholesterol Men Women	<40 mg/dl <50 mg/dl
Blood pressure	≥130/ ≥ 85 mmHg
Fasting glucose	≥ 110 mg/dL

Age-Specific Prevalence of the Dysmetabolic Syndrome Among 8814 Subjects
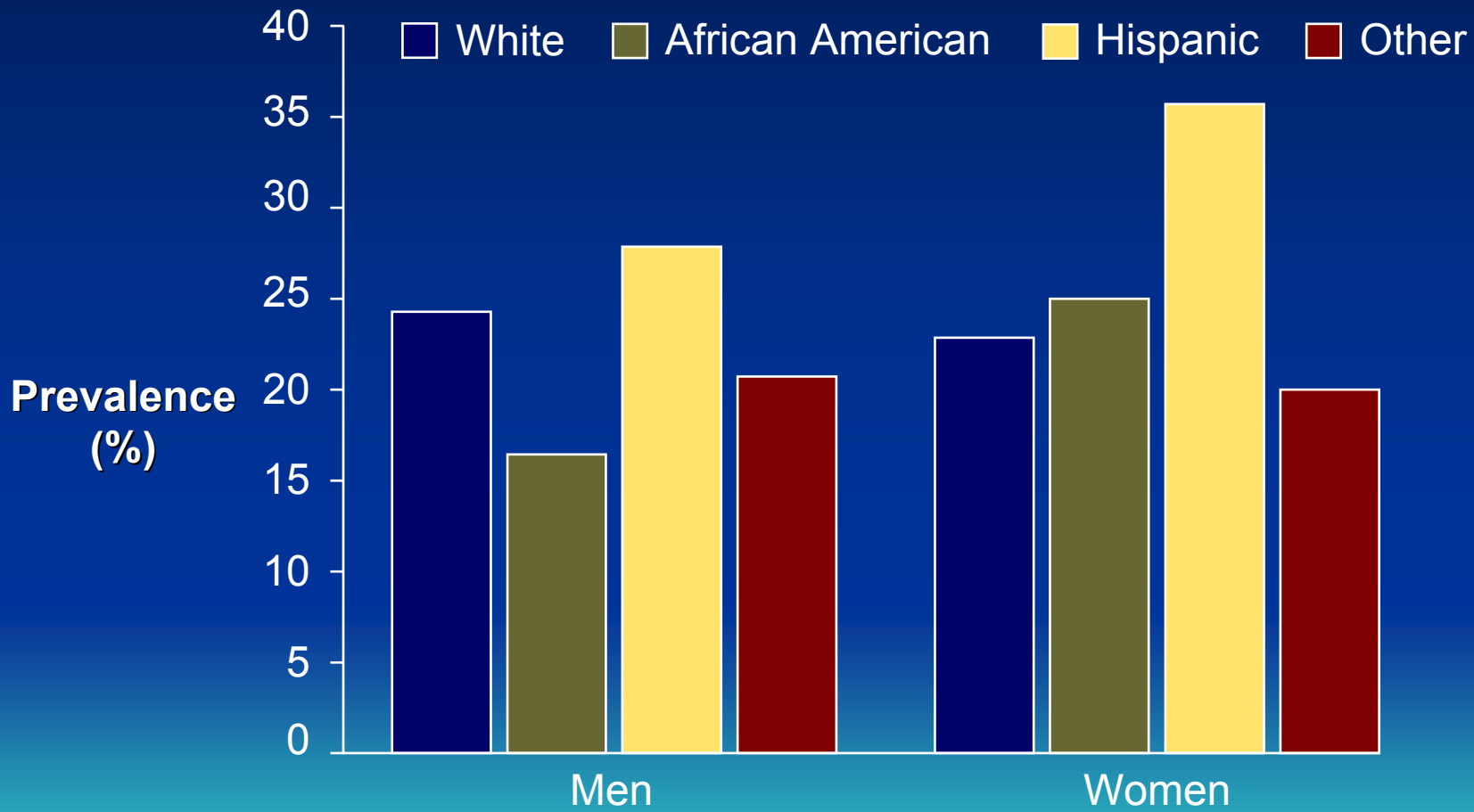
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Age-Adjusted Prevalence of the Dysmetabolic Syndrome

Bar chart legend: White, African American, Hispanic, Other

Y-axis: Prevalence (%), scale 0 to 40

X-axis groups: Men, Women

Obesity and Diabetes Risk
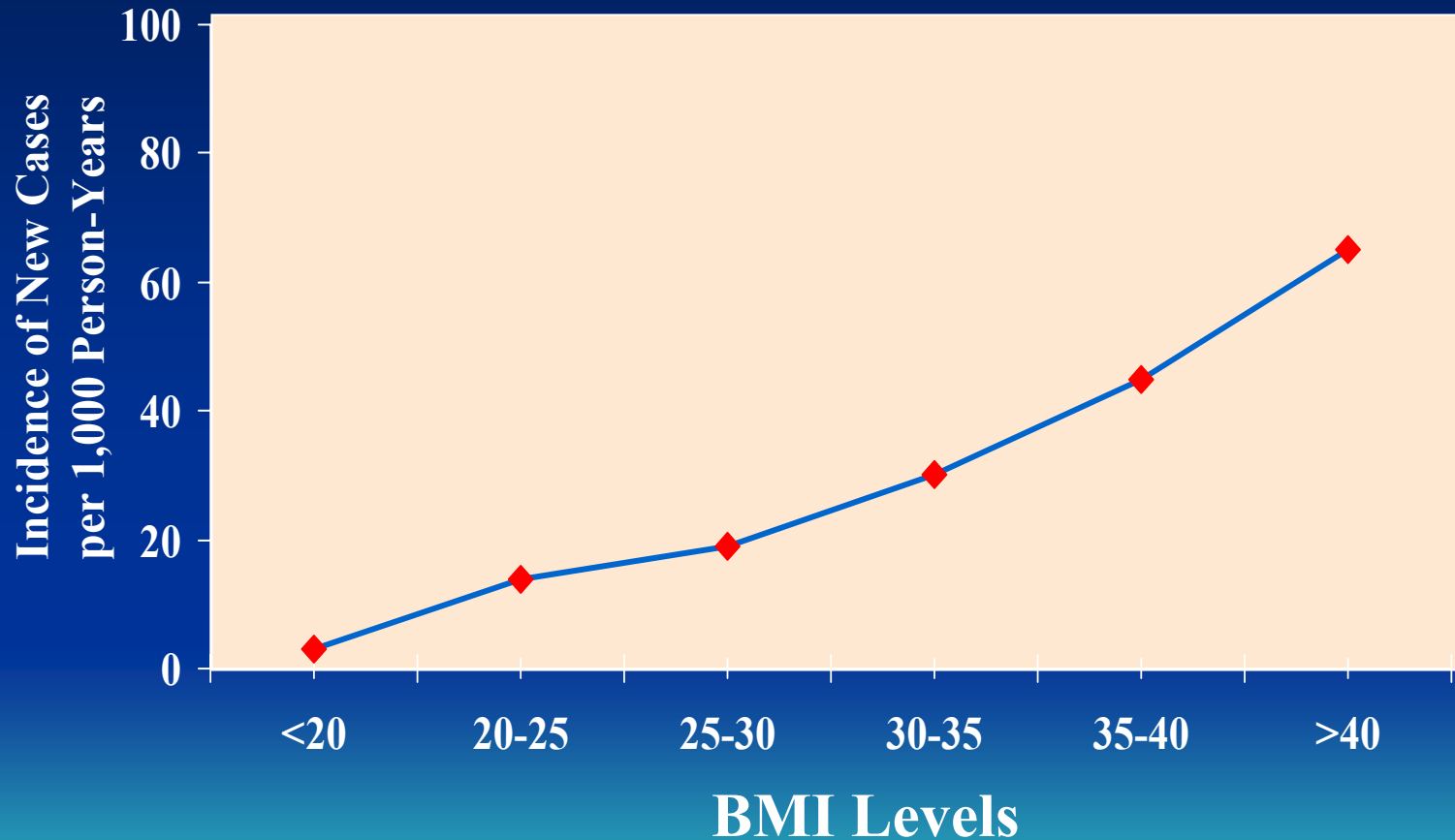
Knowler WC et al. *Am J Epidemiol* 1981;113:144-156.

Causes of <u>Death</u> in People With Diabetes

Bar chart titled "% of Deaths" showing:
- Ischemic Heart Disease: 40
- Other Heart Disease: ~15.5
- Diabetes: ~13.5
- Cancer: ~13
- Stroke: ~10
- Infection: ~4.5
- Other: ~5.5
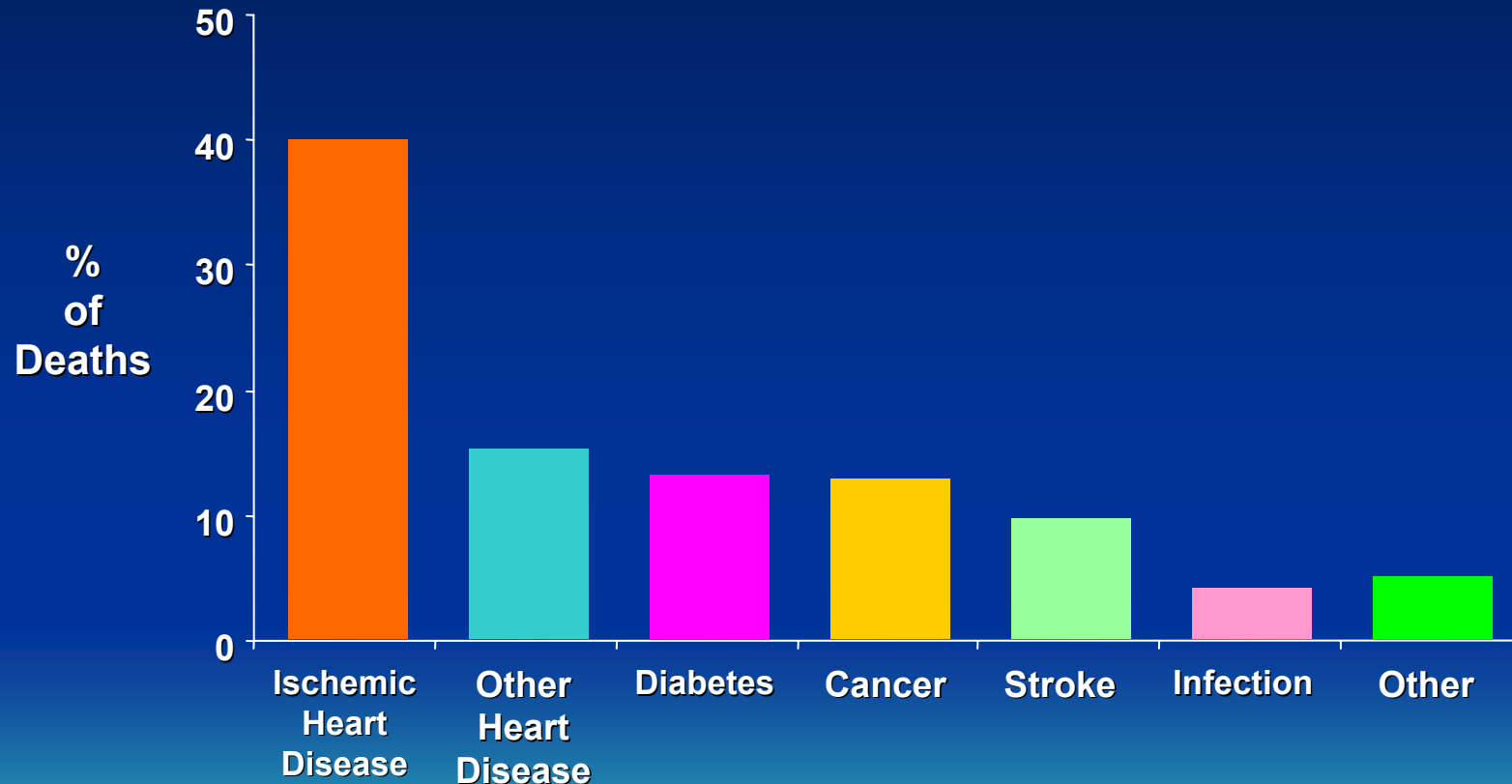
Geiss LS, et al. In: *Diabetes in America*, 2nd ed. 1995. Bethesda, MD: National Institutes of Health; 1995:chap 11.

The Bottom Line:
Years of Life Lost due to Obesity

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Reno Veterans Affairs Medical Center   JAMA, January 8, 2003. Vol 289, No. 2.
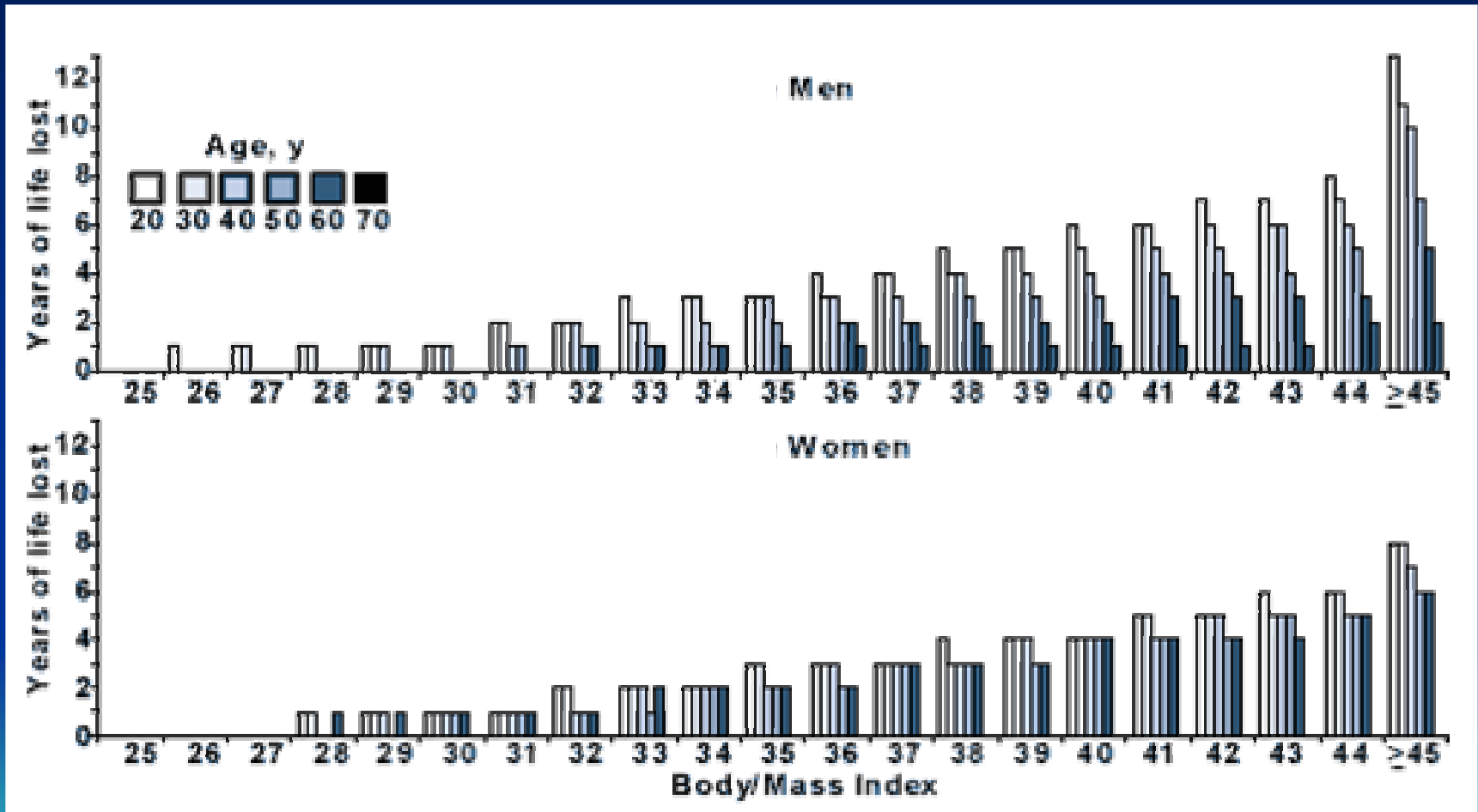
Obesity Treatment Pyramid

Surgery

Pharmacotherapy

Lifestyle Modification

Diet   **Physical Activity**

Kushner R.
Courtesy of S. Klein.

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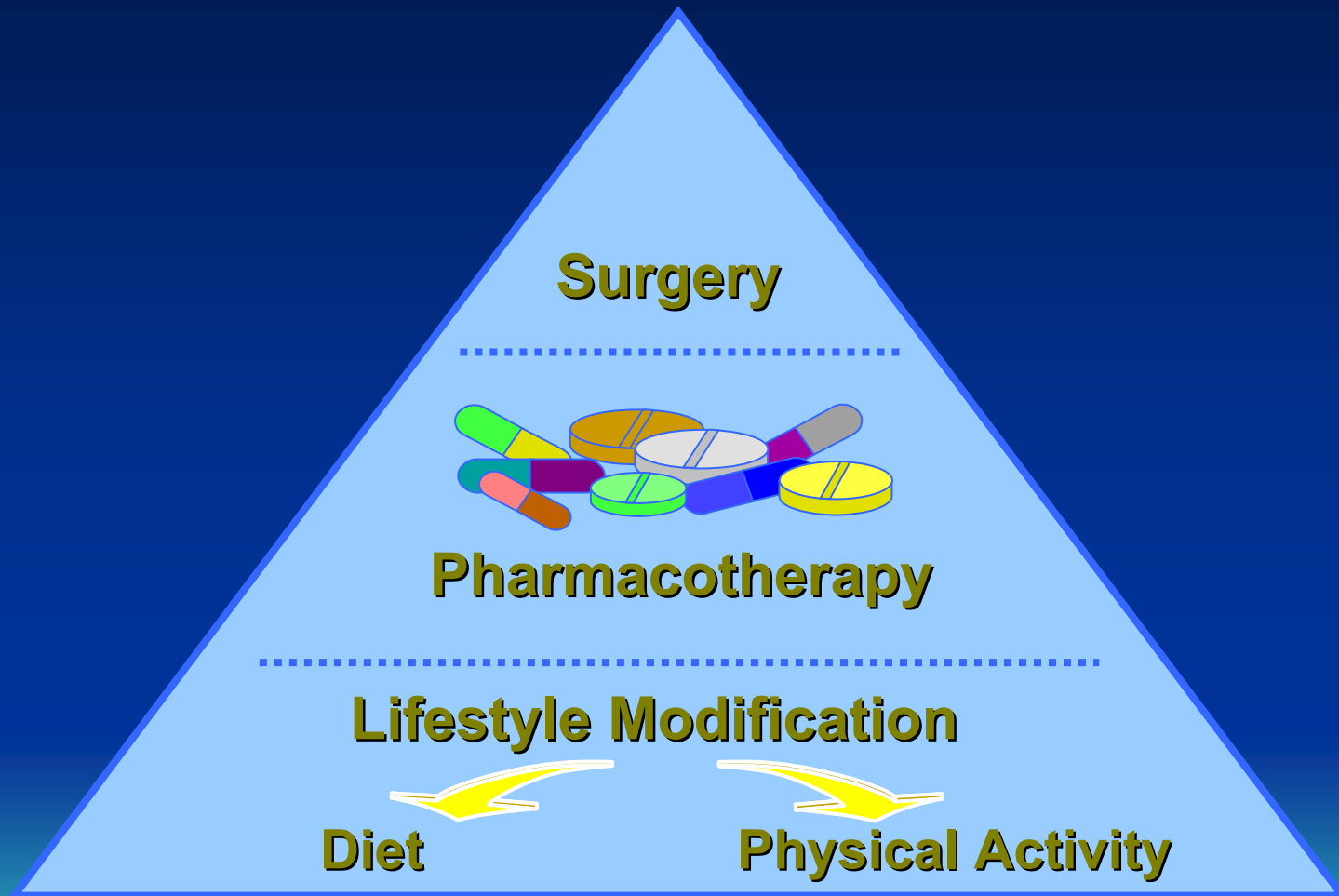
Goals of for the Treatment for Obesity

- Prevent further weight gain

- Reduce weight
  - 5% to 10% of baseline weight

- Improve metabolic health

- Improve general medical health

- Improve lifestyle factors

- Improve quality of life & general well being

- Long-term results (maintenance of weight lost)

Adapted from The Practical Guide: Identification, Evaluation, and Treatment of Overweight and Obesity. Bethesda, Md: National Institutes of Health. 2000.

Intake vs Output

- Walking= 5 kcal/minute
- 100 calories = a mile
- 1 mile = ~ 2000-2500 steps

- Burger King Whopper = 640 Calories(kcal)

  To walk off a Whopper 640/5 = 128 minutes (6 miles)

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"The *Super Size* it Society!"

Double Quarter-Pounder with Cheese	**760 kcal**
+ Chocolate Shake 32 fl. oz.	**1150 kcal**
+ Super Size Fries	**610 kcal**
+ 2 packets (2 tbsp's) ketchup	**30 kcal**

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+ 2 packets (2 tbsp's) ketchup	<u>30 kcal</u>
	Total: 2550 (kcal) = 26 miles !

"State of the art" treatment program:

- Personalized assessment
- Medical assessment/referral
- Resting metabolic rate ("burn rate")
- Body composition
- Physical measurements
- Body Mass Index (BMI) & Risk Assessment
- Dietary intake analysis
- Physical activity assessment
- Behavioral assessments
- Laboratory assessments
- Individualized treatment options
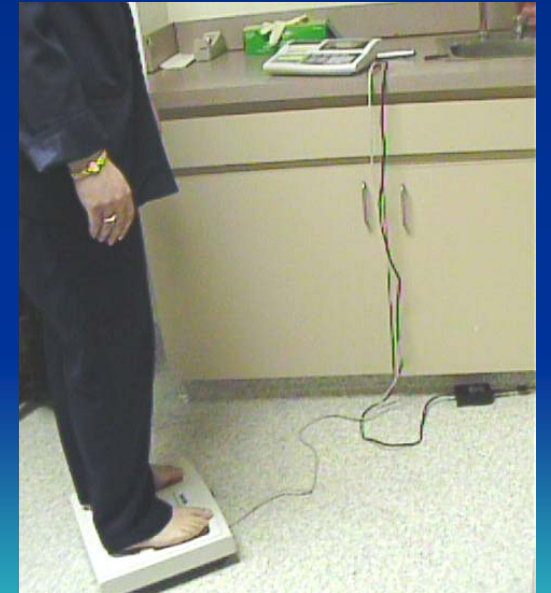
Spectrum of Care for the Treatment of Obesity *

Self-Help

Commercial Programs

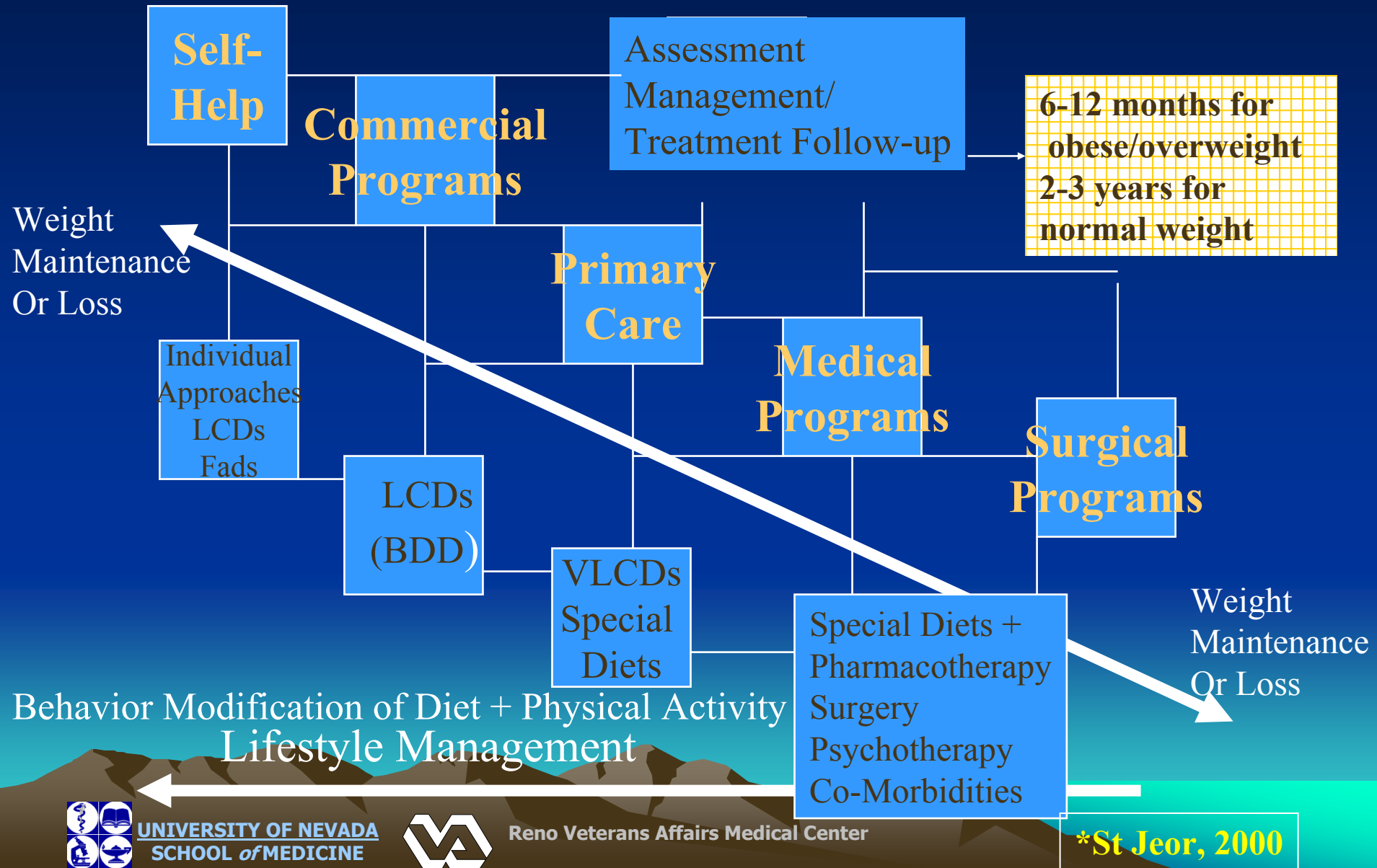Assessment Management/ Treatment Follow-up

6-12 months for obese/overweight 2-3 years for normal weight

Weight Maintenance Or Loss

Individual Approaches LCDs Fads

Primary Care

Medical Programs

Surgical Programs

LCDs (BDD)

VLCDs Special Diets

Special Diets + Pharmacotherapy Surgery Psychotherapy Co-Morbidities

Weight Maintenance Or Loss

Behavior Modification of Diet + Physical Activity
Lifestyle Management

*St Jeor, 2000

Matching Individuals with Treatment*

- **Individual Factors:**
  - Weight
  - Reasonable weight
  - Dieting history
  - Metabolic complications
  - Body Composition
  - Eating Patterns
  - Degree of dysphoria

- **Program Factors**
  - Group Vs. Individual
  - Dietary counseling
  - Structured exercise
  - Supervised exercise
  - Professional vs.lay
  - Meeting frequency
  - Prepackaged foods
  - Dietary supplements
  - Cost and convenience
  - Program length
  - Severity of diet
  - Therapy component
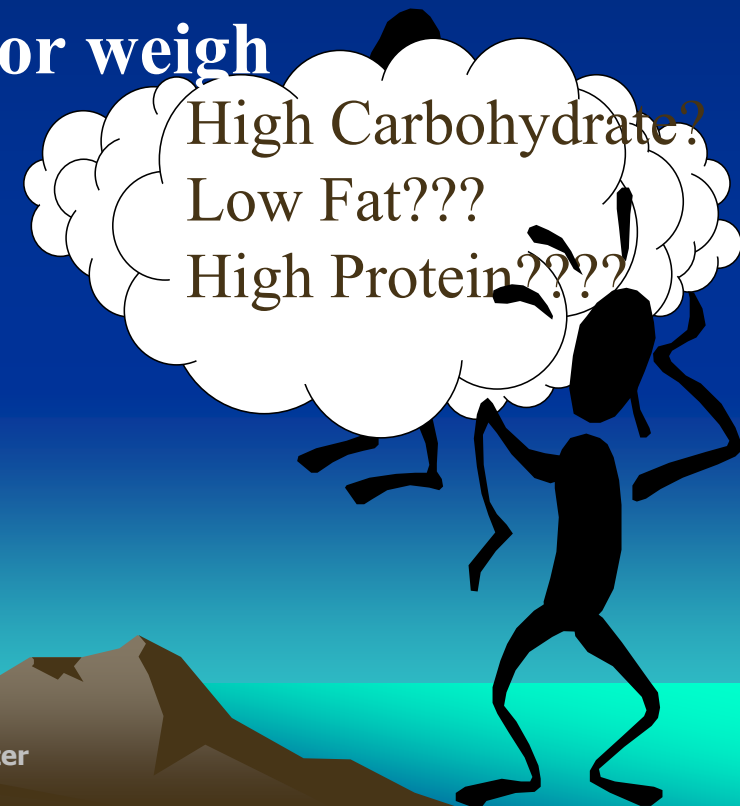 - Behavioral Component

*Brownell, et al.

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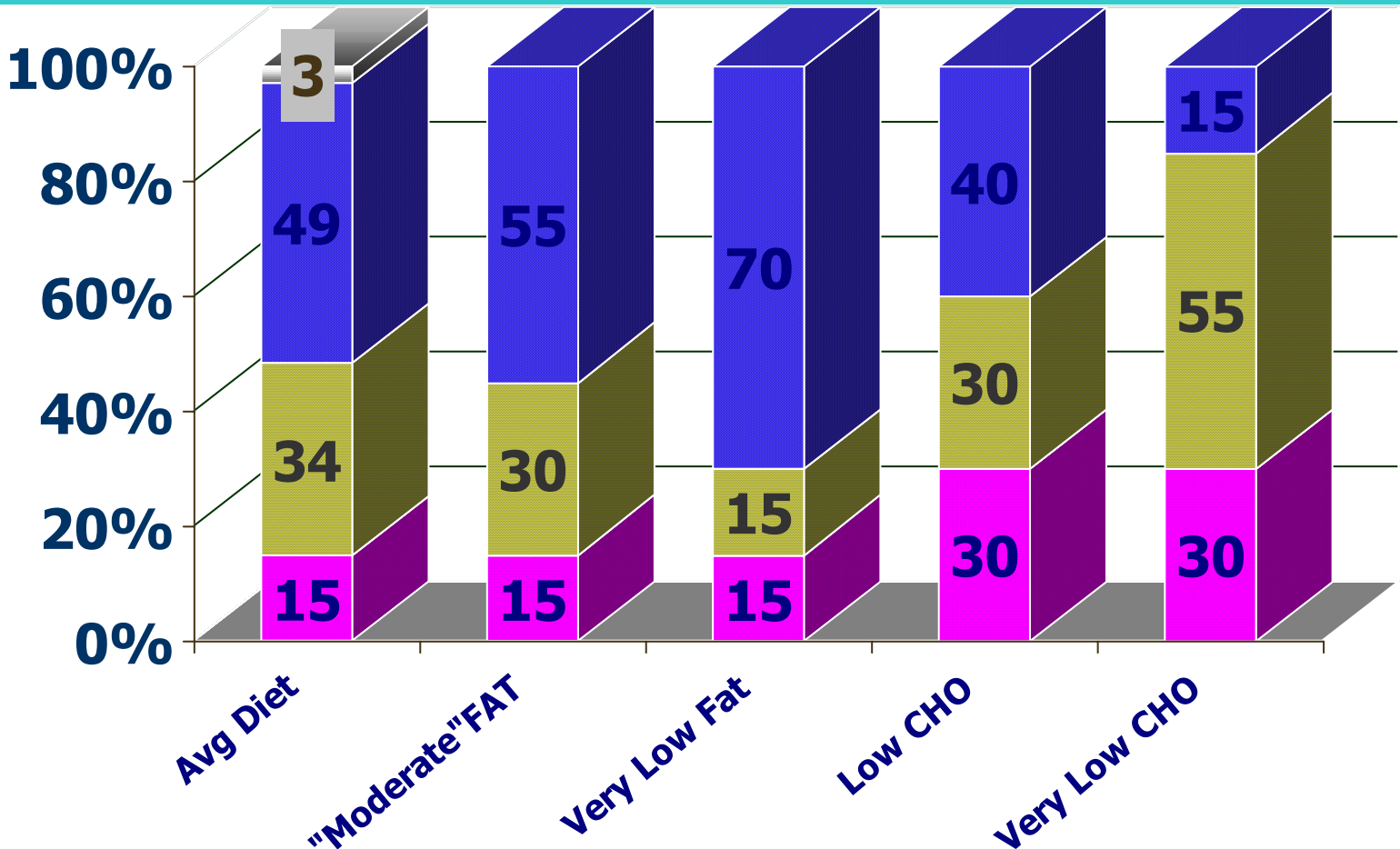Reno Veterans Affairs Medical Center

Is There an Ideal Diet???

- **Easy**
- **Fast**
- **Totally satisfying**
- **Not restrictive (What, When, Where)**
- **Don't have to count, measure or weigh**
- **Guarantees weight losses**
- **Guarantees good health**
- **Guarantees longevity**
- **Corrects health problems**
- **Enjoyable and tastes good**

High Carbohydrate?
Low Fat???
High Protein????

Macronutrient Composition of Various Diets*

	Avg Diet	"Moderate" FAT	Very Low Fat	Low CHO	Very Low CHO
ETOH (%kcal)	3				
CHO (% kcal)	49	55	70	40	15
FAT (% kcal)	34	30	15	30	55
PRO (% kcal)	15	15	15	30	30

Legend: PRO (% kcal) · FAT (% kcal)) · CHO (% kcal) · ETOH (%kcal)

Energy Balance Example*:

*From Plodkowski and St. Jeor, Diet in the treatment of Obesity, Endocrinology and Metabolism Clinics of North America (in press)

Patient: Female, Age 38 years, ht = 60", wt= 180 lbs., BMI=35.2

Intake:

7 Day Food Record shows 2100 kcal/day average intake.   **+2100 kcal/d**

Output:

1. **REE : Mifflin-St. Jeor Equation for REE [*] (or measured Resting Metabolic Rate)**

    REE (Female) = 10 Wt(kg) + 6.25 Ht(cm) – 5 age (y) –161
           = 10 (82kg) + 6.25 (152.4 cm) –5(38 years) – 161
           = 820 + 952.5 – 190 – 161
           = 1421 (or approximately ~ **-1400** kcal/d)

2. **Physical activity (PA):**

    REE X Physical Activity Factor for sedentary activity (office worker)
           REE X 1.3 = 1400 X 1.3 = ~ **-1800** kcal/d
           Intentional Physical Activity: Pedometer = ~ **-100** kcal per day

    TEE = REE (1400) X 1.3 = 1800 + Intentional PA (100) =~ **-1900** kcal/d. -1900 kcal/d

    _____

                                     Total   **+200 kcal/d**

Recommendation for <mark>WEIGHT MAINTENANCE</mark> (kcal/d):

To maintain current weight this patient must decrease intake by -200 kcal/day from the current intake of 2100 kcal/d yielding a 1900 kcal/day diet.

Recommendation for <mark>WEIGHT REDUCTION</mark> (kcal/d):

To lose 1 pound per week, a 500 kcal per day deficit is needed

In this patient:
   (-200 kcal/day deficit to maintain weight)

+ (-500 kcal/day deficit to lose 1 pound per week)
_____
 = -700 kcal/day total deficit needed to lose 1 lb/week

Decrease 2100 kcal/d intake by -700 kcal/d. = 1400 kcal/d dietary intake

RESEARCH GRANTS

- RENO Diet Heart Study (NIH)
  - 500 Normal and Overweight Individuals
- HOPSCOTCH (NIH)
  - 50 Overweight Mothers and preschool Children
- Nutrition Academic Award (NIH)
- DOTM:Diabetes/Obesity Treatment Module , (Nevada State Health Dept. & CDC)
- Physician Extension Model (USDA, pending)

Center for Nutrition and Metabolic Disorders

at the

UNR School of Medicine

Division of Medical Nutrition

Specializing in Weight Management,

Medical Nutrition Therapy, and Metabolic Research

(775) 784-4474 x16

New Paradigm???

- Weight maintenance Vs weight loss
- <u>Prevention</u> of weight gain Vs. regain
- <u>Prevention</u> of obesity and/or exacerbation of the obese state
- Decrease or delay morbidity and mortality
- Improve health profiles/reduce risk
- Long-term strategies
- Smaller, simpler interventions
- Incremental, additive steps
- REIMBURSEMENT – Document outcomes!
- NEED STATE INITIATIVES!