

Clinical Nutrition



Presented By:
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Learning outcomes

- Upon completion of this lecture, students will be able to
- 1. explain nutrition assessment methods.
- 3. Explain Anthropometric measurement for nutritional assessment why an alternative term to “diet” is useful.
- 2. Demonstrate how nurses can facilitate client and family teaching of nutrition therapy.

Introduction



Nutrition is a basic human need that changes throughout the life cycle and along the wellness–illness continuum.

Food provides nutrition for both the **body** and the **mind**.

Eating has evolved from **being simply a necessity**—it may be a source of pleasure, a recreation, a social event, a political statement, a religious symbol, a cultural symbol, or **an integral component of medical treatment**.

As such, food, eating, and nutrition take on different meanings to different people, and **changing a person's eating behaviors may be a difficult and slow process**.

Principles of Nutrition



- The science of nutrition is the study of how food nourishes the body.
- It encompasses the study of **nutrients** and how they are handled by the body as well as the impact of human behavior and environment on the process of nourishment.
- As such, this discipline involves physiology, psychology, and socioeconomics.

Nutrients



Nutrients are specific biochemical substances used by the body for growth, development, activity, reproduction, lactation, health maintenance, and recovery from illness or injury.

The metabolic processes involved in these functions are complex. Subsequently, **most nutrients work better together than they do alone.** [e.g., vit c in fruits helps absorption of Iron in meat].

Also, nutrient needs change throughout the life cycle in response to changes in body size, activity, growth, development, and state of health.

Some nutrients are considered essential because either they are not synthesized in the body or are made in insufficient amounts.



Essential nutrients must be provided in the diet or through supplements

Essential nutrients that supply energy and build tissue (such as carbohydrates, fats, and protein) are referred to as **macronutrients**.

Micronutrients, such as vitamins and minerals, are required in much smaller amounts to regulate and control body processes.

Nutritional assessment



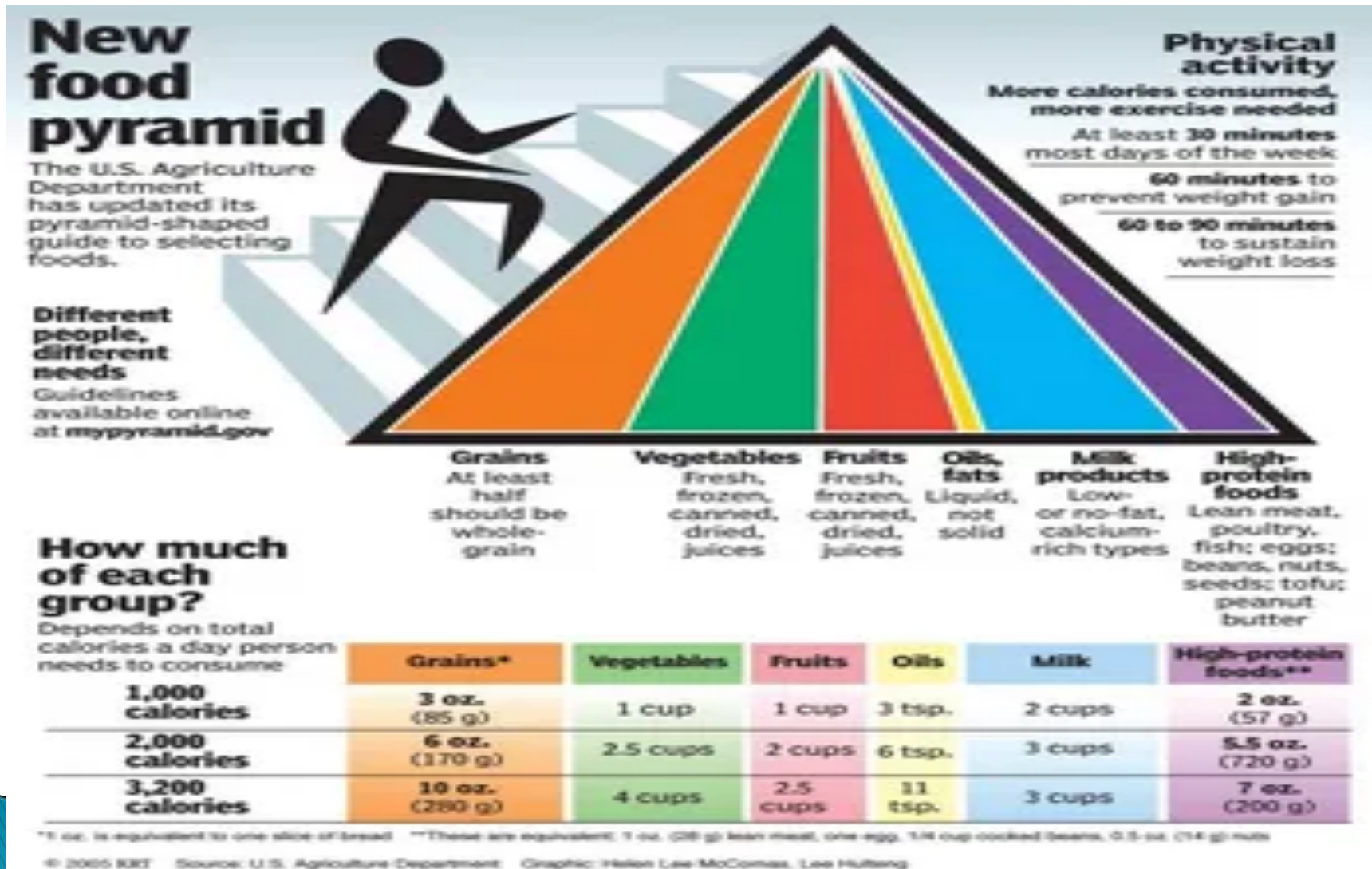
- Nutritional assessment is an extremely useful **tool** to collect **Dietary data** for the application of nutritional therapy.
- **Dietary data may be collected** from the patient or family and can be evaluated according to the *Dietary Guidelines*, **RDA** (Recommended Dietary Allowances), or the **MyPyramid Food Guide**, **depending on the purpose of the assessment.**

- Discussion continues among health experts about the most effective method to assess for the risk for nutritionally related complications.
- Some nutritionists state that a thorough **physical assessment and nutritional history** can more accurately determine the presence of **malnutrition** than a series of laboratory test results.

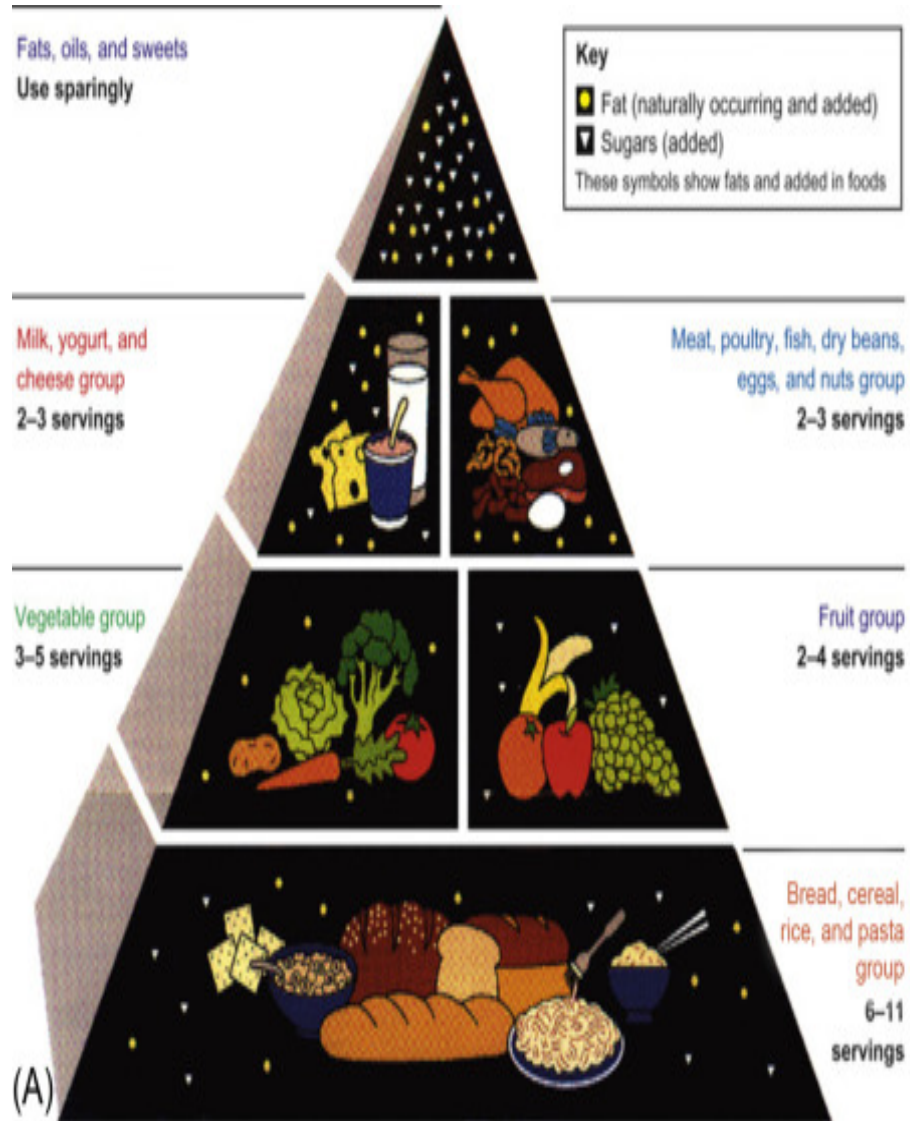
Recommended Dietary Allowances

Nutrients	RDA
Energy	2000 kcal
Added Sugar	50 g
Total Fat	67 g
Saturated Fat	22 g
Trans Fat	2 g
Sodium	2000 mg (5 g salt)

MyPyramid Food Guide



MyPyramid Food Guide





MyPyramid

For Moms

Based on the information you provided, these are your recommended amounts from each food group. For more information, go to MyPyramid.gov.

GRAINS

Make half your grains whole

VEGETABLES

Vary your veggies

FRUITS

Focus on fruits

MILK

Get your calcium-rich foods

MEAT & BEANS

Choose lean with protein

1st Trimester
Dec - Feb

Based on a 2200
calorie pattern*

7 ounces a day

Aim for at least 3½ ounces of
whole grains a day

3 cups a day

Aim for this much weekly:
Dark green veggies - 3 cups
Orange veggies - 2 cups
Dry beans & peas - 3 cups
Starchy veggies - 6 cups
Other veggies - 7 cups

2 cups a day

Eat a variety of fruit

Go easy on fruit juices

3 cups a day

Go low-fat or fat-free when
you choose milk, yogurt, or
cheese

6 ounces a day

Choose low-fat or lean meats
and poultry. Vary your protein
routine—choose more fish,
beans, peas, nuts, and seeds.

2nd Trimester
Mar - May

Based on a 2600
calorie pattern*

9 ounces a day

Aim for at least 4½ ounces of
whole grains a day

3½ cups a day

Aim for this much weekly:
Dark green veggies - 3 cups
Orange veggies - 2½ cups
Dry beans & peas - 3½ cups
Starchy veggies - 7 cups
Other veggies - 8½ cups

2 cups a day

Eat a variety of fruit

Go easy on fruit juices

3 cups a day

Go low-fat or fat-free when
you choose milk, yogurt, or
cheese

6½ ounces a day

Choose low-fat or lean meats
and poultry. Vary your protein
routine—choose more fish,
beans, peas, nuts, and seeds.

3rd Trimester
Jun - Sep

Based on a 2600
calorie pattern*

9 ounces a day

Aim for at least 4½ ounces of
whole grains a day

3½ cups a day

Aim for this much weekly:
Dark green veggies - 3 cups
Orange veggies - 2½ cups
Dry beans & peas - 3½ cups
Starchy veggies - 7 cups
Other veggies - 8½ cups

2 cups a day

Eat a variety of fruit

Go easy on fruit juices

3 cups a day

Go low-fat or fat-free when
you choose milk, yogurt, or
cheese

6½ ounces a day

Choose low-fat or lean meats
and poultry. Vary your protein
routine—choose more fish,
beans, peas, nuts, and seeds.

* These are only estimates of your needs. Check with your health care provider to make sure you are gaining weight appropriately.

The calories and amounts of food you need change with each trimester of pregnancy. Your plan may show different amounts of food for different months, to meet your changing nutritional needs. Changing the amount of calories you eat each trimester also helps you gain weight at the correct rate.

Know your limits on fats, sugars, and sodium

	OILS Aim for this much:	EXTRAS Limit extras (solid fats and sugars) to this much:
1st Trimester	6 teaspoons a day	290 calories a day
2nd Trimester	8 teaspoons a day	410 calories a day
3rd Trimester	8 teaspoons a day	410 calories a day

Nutritional assessment

For complete and effective nutritional assessment, you should include the following aspect:

- 1- **Clinical examination**
- 2- **Dietary history** (dietary data): (Food record, 24-hour recall, Diet or food diary (calories count))
- 3- **Anthropometric measurement** & body composition (height, weight, BMI, waist/hip ratio, percentage of body fat).
- 4- **Biochemical assessment** (e.g., blood sample for glucose)
- 5- **Social and medical history**
- 6- **Cultural and religious considerations, Lifestyle & medication intake**

Life style

1. Clinical examination

Comprehensive physical exam may reveal several signs of malnutrition:

- 1- **Delayed growth and development** as values on growth charts;
- 2- **Pallor of the skin, mucous membranes** of the mouth and eyes, nail beds or palm surfaces (signs of malnutrition);
- 3- Protein-calorie malnutrition signs such as changes occurring in **body appearance as edema**.



2. Dietary history(dietary data)

Many different methods can be used to assess actual dietary intake (4 methods).

A. 24-Hour Recall Method

The easiest way to collect dietary data is to obtain a **24-hour recall** of all food and beverages (drinks) the patient normally consumes during an average day.

It involves asking the patient to recall details related to nutritional intake from the prior 24 hours.

This method includes the patient's portion sizes, meal and snack patterns, meal timing, and location where food is eaten.

Because this method relies on memory and accurate interpretation of portion sizes, the information may not be reliable.

2. Dietary history(dietary data)

B. Food Frequency Record

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- Food frequency records give a general picture of nutritional consumption. Patients are asked questions to elicit an average number of times certain foods or food groups are consumed in a given period of time: **per day, per week, or per month.**
- For example, a patient may be asked, “How many times in the last week have you eaten fresh fruit or fish?” or “How many times in the last week have you had a glass of milk?”

2. Dietary history(dietary data)

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C. Food diaries and calorie

Food diaries and calorie counts **require** documentation of actual intake for a specified period of time.

In an outpatient setting, the patient is asked to record everything he has had to eat or drink, including portion size, over a set period of time.

In the hospital setting, documentation is usually completed by the nursing staff.

These tools may provide a better overall picture of nutrient intake because all food and beverages consumed in a specified period, **usually 3 to 7 days, are recorded.**

2. Dietary history(dietary data)

D. Diet History

- A more comprehensive approach to diet assessment is a full diet history.
- In addition to a 24-hour food recall, calorie counts/ food diaries, and food-frequency record, **interview questions are geared to provide information on past and present food intake and habits.**

interview.
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3. Anthropometric measurement

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- **Anthropometric** measurements are used to determine body composition (dimensions).
- **In children**, anthropometric measurements are used to assess **growth rate (height, weight, head circumference)**.
- **In adults**, they can give indirect measurements of body protein and fat stores (**BMI, waist/hip ratio, percentage of body fat, skin-fold measurements should be taken from several body sites**).
- For the data to be **accurate and reliable, standardized equipment and procedures must be used**, and the data must be compared with the appropriate reference standards for the patient's age and sex.

Skin fold measurement



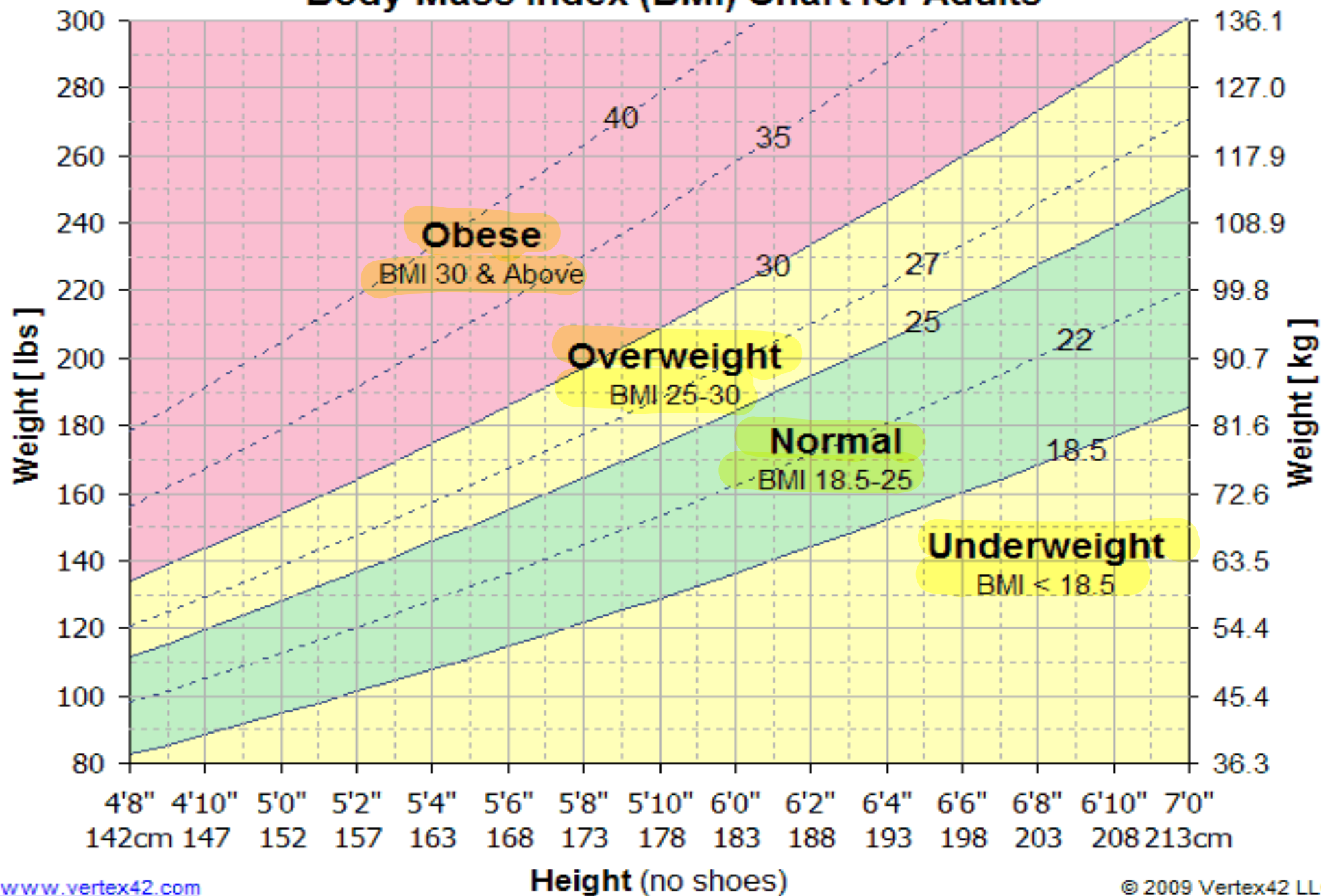
3. Anthropometric measurement

A. Body Mass Index (BMI)

- Body Mass Index (BMI) is used to **determine who is overweight.**
- $$\text{BMI} = \frac{703 \times \text{weight in pounds}}{\text{height in inches}^2} \text{ OR } \frac{\text{weight in Kg}}{\text{height in metres}^2}$$

Handwritten example: $\frac{50}{(1.63)^2} = \frac{31}{15.625}$
- **A Body Mass Index of (18.5–24.9) is normal**
- A Body Mass Index of **25 or more** is considered **overweight.**
- A Body Mass Index of **30 or more** is considered **obese.**

Body Mass Index (BMI) Chart for Adults



3. Anthropometric measurement

B. Weight

- ▷ A significant intentional or unintentional change in the patient's weight can also indicate poor nutritional status and/ or health problems.
- ▷ Significant weight change is determined by how much weight is lost per unit of time.
- ▷ To calculate the percent of weight change, use the following formula:
$$\frac{(\text{Usual weight} - \text{present weight})}{\text{usual weight}} \times 100$$
- ▷ **Weight loss** is considered significant if it falls into the following guidelines (Dudek, 2006):
 - 1% to 2% in 1 week
 - 5% in 1 month
 - 7.5% in 3 months
 - 10% in 6 months

Significant weight

3. Anthropometric measurement

C. Skin-fold measurements

- **Triceps skin-fold measurements**, a measure of subcutaneous fat stores; midarm circumference, a measure of skeletal muscle mass; and midarm muscle circumference, **a measure of both skeletal muscle mass and fat stores**

**Body Fat Percent Norms
for Men and Women**

Description	Women	Men
Essential Fat	10-13%	2-5%
Athletes	14-20%	6-13%
Fitness	21-24%	14-17%
Acceptable	25-31%	18-24%
Obesity	>32%	>25%



3. Anthropometric measurement

D. Waist circumference, Waist/hip ratio:

Waist circumference is measured by placing a measuring tape snugly around the patient's waist.

This measurement is a good indicator of abdominal fat.

Abdominal fat also provides an estimation of relative risk for diseases such as heart disease, diabetes, and hypertension. This risk increases with a waist measurement of over 40 inches in men and 35 inches in women.

3. Anthropometric measurement

Waist/Hip Ratio (WHR):

- A WHR of 0.9 for men and 0.7 for women has been shown to correlate strongly with a general status of healthy.
- while values of WHR over 1.0 for men and over 0.8 for women are indicative of the presence of central obesity and increased risk of related diseases (associated with higher risk of diabetes and hypertension).
- WHRs above 0.95 for men or 0.8 for women indicate a heightened risk of heart attack

Waist Hip Ratio



WHAT YOUR WAIST-TO-HIP RATIO MEAN

Women	Health Risk	Body Shape
0.80 or below	Low	Pear
0.81 to 0.85	Moderate	Avocado
0.85+	High	Apple

Men	Health Risk	Body Shape
0.95 or below	Low	Pear
0.96 to 1.0	Moderate	Avocado
1.0+	High	Apple

Waist to Hip Circumference Ratio Standards for Men and Women

		Disease Risk Related to Obesity			
	Age (years)	Low	Moderate	High	Very High
MEN	20-29	<0.83	0.83-0.88	0.89-0.94	>0.94
	30-39	<0.84	0.84-0.91	0.92-0.96	>0.96
	40-49	<0.88	0.88-0.95	0.96-1.00	>1.00
	50-59	<0.90	0.90-0.96	0.97-1.02	>1.02
	60-69	<0.91	0.91-0.98	0.99-1.03	>1.03
WOMEN	20-29	<0.71	0.71-0.77	0.78-0.82	>0.82
	30-39	<0.72	0.72-0.78	0.79-0.84	>0.84
	40-49	<0.73	0.73-0.79	0.80-0.87	>0.87
	50-59	<0.74	0.74-0.81	0.82-0.88	>0.88
	60-69	<0.76	0.76-0.83	0.84-0.90	>0.90

(Adapted from Heyward VH, Stolarczyk LM: Applied Body Composition Assessment. Champaign IL, Human Kinetics, 1996, p82.)

4. Biochemical assessment

Serum albumin and globulin

Serum transferrin

Retinol [Vit. A1-binding protein]

Electrolytes (minerals)

Hemoglobin

Vitamin A and carotene

Vitamin C

Urine tests

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بالدم

NOTE: Low serum albumin level (below 3.5 g/dL) as well as low Hb level may be a reflection of the aging process rather than a nutritional risk factor. Albumin synthesis declines with age.

TABLE 5-1**General Guidelines for Interpreting Albumin and Prealbumin Levels**

Interpretation	Albumin (g/dL)	Prealbumin (mg/dL)
Normal	3.5–5.5	23–43
Mild depletion	2.8–3.4	10–15
Moderate depletion	2.1–2.7	5–9
Severe depletion	<2.1	<5

From Dudek, S. G. (2006). *Nutrition essentials for nursing practice* (5th ed.). Philadelphia: Lippincott Williams & Wilkins.

5. Medical and Socioeconomic Data



- Medical, social, and economic factors, as well as cultural and psychological influences, **require evaluation for their impact on nutritional requirements and food choices.** A nutritional assessment should also include the following information:

GI system  

5. Medical and Socioeconomic Data

A. Medical data

- Current illness as well as medical and surgical history
- Past and current drug history
- History of drug dependence or abuse
- **Ability to chew and swallow, including condition of mouth, missing teeth, or dentures**
- **Appetite, food intolerance and allergies, and bowel habits**

5. Medical and Socioeconomic Data

- **B. Socioeconomic data**
 - Age, gender, family history, lifestyle (eg, those at extremes in age are most at risk)
 - Educational background
 - Information about occupation, exercise, and sleep patterns
 - Religious affiliation, cultural, and ethnic background
 - Use of alcohol and tobacco
- **Economic Data**
 - Source of income
 - Food budget

Signs of Poor Nutritional Health

- The acronym **DETERMINE** can be used to screen for warning signs of poor nutritional health.
- **Disease:** Any disease, illness or chronic condition that causes a change in the way a person eats or makes it hard to eat.
- **Eating poorly:** Eating too little or too much; skipping meals; eating the same foods all the time.
- **Tooth loss/mouth pain:** Missing, loose, or rotten teeth or dentures that don't fit well or cause mouth sores make it hard to eat



Continue.. DETERMINE

- **Economic hardship:** Having less or choosing to spend less on food makes it difficult to eat the foods needed to stay healthy.
- **Reduced social contact:** Being with people has a positive effect on eating and well-being.
- **Multiple medicines:** The more medicines taken, the greater the risk for side effects, such as increased/decreased appetite, change in taste, constipation, weakness, drowsiness, diarrhea, and nausea. Vitamins or minerals taken in large doses act like drugs and can cause harm.

Continue.. DETERMINE

- **Involuntary weight loss/gain:** A large weight loss or gain can be a sign of serious health problems.
- **Needs assistance in self-care:** Difficulty walking, shopping, purchasing, and cooking food interferes with the ability to meet nutrition needs.
- **Elder years above age 80:** As age increases, risk of frailty and health problems increase.

مع زيادة العمر
تزيد المشاكل الغذائية.

Any Questions??

