


VANDERBILT UNIVERSITY  School of Nursing

## Need to Know: Nutrition Basics for Busy Providers


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### Disclosures

► Melissa Davis, DNP, CNM, FNP has no financial relationships with commercial interests to disclose


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Nutrition Basics for Busy Providers 


### Objectives

► After attending this presentation:


- Identify the role nutrition plays in relation to chronic disease prevention, management, and treatment.
- Describe a basic understanding of possible nutritional deficits related to bariatric surgery, common “fad” diets, and changes in nutrition in relation to agriculture/climate.
- Identify at least 2 ways to assess nutritional status and how to apply nutrition knowledge to make recommendations for dietary changes in relation to individual patient needs.

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### Test your knowledge



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### Informal quiz question one:

► In general, what effect does a low-fat diet have on triglycerides?

- A. Increase
- B. Decrease
- C. No change
- D. Don't know

Makowski & Feinman, 2005

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### Informal quiz question two:

► The dietary change that is most likely to increase the risk of cardiovascular disease:

- A. Unsaturated fat → saturated fat (that is, replace unsat with sat)
- B. Unsaturated fat → carbohydrate
- C. Carbohydrate → unsaturated fat
- D. Saturated fat → carbohydrate
- E. Saturated fat → unsaturated fat

Makowski & Feinman, 2005

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**Informal quiz question three:**

- ▶ What type of dietary fiber is helpful in lowering the blood cholesterol level?
  - A. Cellulose
  - B. Insoluble fiber
  - C. Soluble fiber
  - D. Wheat bran

Temple, 2009

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**Informal quiz question four:**

- ▶ Which nutrient is protective against hypertension?
  - A. Alcohol
  - B. Chloride
  - C. Iron
  - D. Potassium

Temple, 2009

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**Informal quiz question five:**

- ▶ The number of kilocalories in one gram of fat is:
  - A. 2
  - B. 4
  - C. 7
  - D. 9

Temple, 2009

**The basics**

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**The basics**

- ▶ Nutrients
  - Macro= needed in larger quantities (g/day)
  - Micro= smaller quantities needed (mg/day or µg/day)
- ▶ Explanation of macronutrients
  - Carbohydrates 4kcal/g
    - Various degrees of complexity
    - Dietary fiber
  - Fat 9 kcal/g
    - Type of fat matters
  - Protein 4 kcal/g
    - Sources-Animal vs plant based

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**The basics**

- ▶ The effects each can have on the body:
  - Carbohydrates- source of fuel
    - Too much vs too little
  - Fats
    - Unsaturated vs saturated
  - Proteins
    - Kidney function

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### The basics

- ▶ Carbohydrates
  - Types- Simple and complex
  - Food sources- grains, rice, fruit, potatoes, pastas
- ▶ Fats
  - Types- Saturated vs. unsaturated
  - Food sources- oil, shortening/lard, butter, dairy/cream
- ▶ Proteins
  - Types- Animal vs plant
  - Food sources- meats, eggs, soy, nuts, legumes

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### The basics- micronutrients

- ▶ Vitamins
  - ▶ Fat soluble → A, D, E, K
  - ▶ Water soluble → B, C
- ▶ Minerals
  - ▶ Calcium, phosphorus, sodium, chloride, potassium, magnesium, iron, zinc, copper, manganese, iodine, selenium

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### The basics

- ▶ Vitamin sources
  - A: liver, meat, milk/dairy, eggs, oily fishes; orange, red, & green veggies
  - D: dairy products, liver, eggs, and fortified products (cereal, OJ, baby food, milk-based drinks)
  - E: nuts, seeds, poultry, fish, green leafies, vegetable oils, liver
  - K: green leafies, broccoli, liver, vegetable oils
  - C: fruits, green vegetables, tomatoes, peppers

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### The basics

Vitamin sources- **the Bs**

- ▶ B1= thiamin (beans, seeds/nuts)
- ▶ B2= riboflavin (milk, milk products, eggs, dark-green veggies)
- ▶ B6= pyridoxine (peanuts, walnuts, meats, potatoes)
- ▶ Niacin (legumes, seafood, veggies, peanuts)
- ▶ B7= biotin (fish, milk, milk products, yeast, veggies)
- ▶ Pantothenic acid (meat, eggs, milk)
- ▶ Folate (green leafies, peanuts, citrus foods/juices, potatoes)
- ▶ B12= Cobalamin (only in foods of animal origin!)

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### The basics


- ▶ The “major” mineral sources
  - Calcium: milk/dairy, fish with small bones, dried fruit; hard water
  - Phosphorus: meat, poultry, fish, eggs, processed foods
  - Magnesium: whole grains, legumes, nuts, seafood
  - Sodium: Natural food sources contain small amounts; almost all processed foods have large amounts of sodium
  - Potassium: bananas, kiwi, avocados, spinach, meat, fish
  - Sulphur: eggs, milk proteins, many food additives

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### The basics

- ▶ The “minor” mineral sources
  - Iron- meat, fish, liver; cereals, legumes, vegetables
  - Zinc- seafood, eggs, dairy, meat
  - Copper- cereal products, shellfish, nuts, seeds, bananas
  - Iodine- seafoods, iodized salt, milk
  - Selenium- brazil nuts, dairy, cereals, fish
  - Manganese- legumes, tea, nuts
  - Fluoride- seafoods, tea, water
  - Chromium- beef, whole grains, legumes, dried fruit

# Energy requirements



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## Energy requirements

- ▶ How are caloric needs calculated?
- ▶ Schofield
- ▶ Harris-Benedict equations
- ▶ Considerations:
  - Thermal effect of food
  - Body size
  - Gender

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## Energy requirements

The Harris-Benedict Equation for Estimating Resting Metabolic Rate (RMR):

MEN:  $88.362 + (4.799 \times \text{ht in cm}) + (13.397 \times \text{wt in kg}) - (5.677 \times \text{age})$

WOMEN:  $447.593 + (3.098 \times \text{ht in cm}) + (9.247 \times \text{wt in kg}) - (4.33 \times \text{age})$

Multipliers: 1.4 sedentary work  
 1.6 walk & stand more than sit  
 1.8 highly active work


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## Energy requirements, continued

A quick and easy way:

Salazar's formula:  $35 \times \text{ideal body wt (kg)} = \text{Recommended daily intake}$

# Food labels and serving sizes



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## Reading food labels

- ▶ reading food labels and what the most common “claims” indicate
- ▶ Serving sizes and calories
- ▶ % daily values
- ▶ Ingredient list

**Nutrition Facts**

8 servings per container

**Serving size 2/3 cup (55g)**

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**Amount per serving**

**Calories 230**

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	% Daily Value*
<b>Total Fat</b> 8g	<b>10%</b>
Saturated Fat 1g	5%
Trans Fat 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 160mg	<b>7%</b>
<b>Total Carbohydrate</b> 37g	<b>13%</b>
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	<b>20%</b>
<b>Protein</b> 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

\*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

<https://pubmed.ncbi.nlm.nih.gov/20101010/>

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### Serving sizes

- ▶ Rice and pasta: 1 cup (cooked)
- ▶ Bread: 2 thin slices
- ▶ Potatoes: 1 medium
- ▶ Dry flake cereal: 1 cup
- ▶ Milk: 1 cup/8 oz
- ▶ Small fruits: 2 clementines, 2 kiwis
- ▶ Medium fruits: 1 apple, 1 orange
- ▶ Large fruits: ½ grapefruit, 1 slice cantaloupe, 2 slices of mango
- ▶ Berries: 6 strawberries, 10 grapes/cherries
- ▶ Veggies: ½ cup cooked
- ▶ Meat: 50-75g or “half your palm”
- ▶ Fish: 100g
- ▶ Beans, peas, lentils: ¾ cup cooked
- ▶ Eggs: 1-2 depending on size
- ▶ Cheese: 2 “thumbs” or 25g
- ▶ Oils: 1 tsp
- ▶ Butter/margarine: 1 “pat”

Food	20 Years Ago	Today
Bagel	140 calories (3" diameter)	350 calories (6" diameter)
Muffin	210 calories (1.5 oz)	500 calories (4 oz)
Cheeseburger	333 calories	590 calories
Pasta (spaghetti & meatballs)	500 calories	1025 calories
French Fries	210 calories (2.4 oz)	610 calories (6.9 oz)
Soda	85 calories (6.5 oz)	250 calories (20 oz)
Theater Popcorn	270 calories (5 cups)	630 calories (1 tub)
Turkey Sandwich	320 calories	820 calories
Pizza	500 calories (2 slices)	850 calories (2 calories)

<http://www.yourweightmatters.org/wp-content/uploads/2016/04/Chart-for-Calorie-Changes.jpg>

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### Serving sizes

- ▶ Veggies 2.5 cups/day
- ▶ Fruits 2 cups/day
- ▶ Dairy 3 cups (choose low-fat)
- ▶ Grains 6 oz
- ▶ Meat/beans 5.5 oz

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4129491/pdf/10.1007/978-1-4939-9811-2\\_10.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4129491/pdf/10.1007/978-1-4939-9811-2_10.pdf)

### Disease-specific information, special populations, and assessment

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### Disease-specific information

- ▶ Diabetes
  - Carb counting, importance of fiber
- ▶ Hypertension & heart disease
  - Blood pressure is influenced by potassium, sodium, calcium, and magnesium
- ▶ Metabolic syndrome/ insulin resistance
- ▶ Obesity
  - Multifactorial issue (obesity leads to disease states, which can worsen inactivity → continued obesity)
- ▶ Cancer
  - Difficult to track due to length of time, but known relationships exist

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### Diving deeper- special considerations

- ▶ Nutritional deficiencies?
  - Obesity
  - Bariatric surgeries
  - Food deserts
  - Malabsorption
- ▶ Pregnancy
  - NOT eating for two
  - GDM considerations
- ▶ Adolescence
  - Increased caloric needs
  - Dietary protein, fat- importance of
- ▶ Elderly
  - Common deficiencies to watch for
  - Need for supplementation?

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### Assessment methods

- ▶ Clinic time restraints
- ▶ Consider multi-visit approach
- ▶ Tailor to specific needs of patient
- ▶ Socioeconomic factors
- ▶ DASH scoring
- ▶ General Nutrition Knowledge Questionnaire
- ▶ Mini nutrition assessment (MNA)

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### Assessment methods

- ▶ nutritional assessment vs nutritional counseling in a clinic setting
- ▶ motivational interviewing of patients regarding their current nutrition knowledge, dietary habits, and willingness to make adjustments in their diets
- ▶ interviewing and counseling the patient while involving the individual in health care decision making
- ▶ ways to evaluate patients for nutritional deficiencies
  - Meds can lead to deficiencies/nutritional issues- remember to check your pharmacology!

## Food for thought

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### Climate change?

- ▶ potential issues related to changes in U.S soil and the effects it will have on fruit and vegetable crops
- ▶ Soil- impacts selenium content in foods

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### Trending diets you'll hear about in clinic

- ▶ Gluten free- foods often low in fiber, iron, folate
- ▶ Low carb/high protein- low in thiamine and folic acid
- ▶ Vegan and vegetarian- at risk for B12, iron, zinc, calcium, D deficiencies
- ▶ Intermittent fasting
- ▶ High protein

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### Tools for assessment and education

- ▶ <https://www.fda.gov/food/nutrition-education-resources-materials/health-educators-nutrition-toolkit-setting-table-healthy-eating>
- ▶ <https://www.choosemyplate.gov/resources/toolkits/StartSimpletoolkit>
- ▶ [https://fns-prod.azureedge.net/sites/default/files/archived\\_projects/MiniPoster.pdf](https://fns-prod.azureedge.net/sites/default/files/archived_projects/MiniPoster.pdf)

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### Quiz review

- ▶ **Question one:** In general, what effect does a low-fat diet have on triglycerides?  
A. Increase  
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C. No change  
D. Don't know
- ▶ **Question two:** The dietary change that is most likely to increase the risk of cardiovascular disease:  
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### Quiz review continued

- ▶ **Question three:** What type of dietary fiber is helpful in lowering the blood cholesterol level?  
A. Cellulose  
B. Insoluble fiber  
C. Soluble fiber  
D. Wheat bran
- ▶ **Question four:** Which nutrient is protective against hypertension?  
A. Alcohol  
B. Chloride  
C. Iron  
D. Potassium

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### Quiz review continued

- ▶ **Question five:** The number of kilocalories in one gram of fat is:  
A. 2  
B. 4  
C. 7  
D. 9

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### Wrap up & Contact information

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### Recommendations

- ▶ Highly recommend the **Nutrition Action Newsletter**- it gives you just enough information. Never boring, easy to read format, and would be great to have in your waiting room.  
<https://www.nutritionaction.com/>
- ▶ This **textbook** is super slim, easy to use, and great to have on your shelf:  
Barasi, M. & Sharma, S. (2016). *Nutrition at a Glance, 2<sup>nd</sup> edition*. John Wiley & Sons.

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### References

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### Surgical Weight Loss Information

- ▶ <https://www.vanderbilthealth.com/weightloss/>
- ▶ [Vanderbilt Center for Surgical Weight Loss Diet Packet](http://www.mc.vanderbilt.edu/documents/surgicalweightloss/files/Bariatric%2520diet%2520packet%2520-%2520updated%2520MC4040%2520Update%2520Jan%25202016%2520b.pdf)  
<http://www.mc.vanderbilt.edu/documents/surgicalweightloss/files/Bariatric%2520diet%2520packet%2520-%2520updated%2520MC4040%2520Update%2520Jan%25202016%2520b.pdf>
- ▶ [Vanderbilt Center for Surgical Weight Loss Recipe Book](http://www.mc.vanderbilt.edu/documents/surgicalweightloss/files/SWL_recipes_reduced.pdf)  
[http://www.mc.vanderbilt.edu/documents/surgicalweightloss/files/SWL\\_recipes\\_reduced.pdf](http://www.mc.vanderbilt.edu/documents/surgicalweightloss/files/SWL_recipes_reduced.pdf)

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### Image References

- ▶ Food label  
[https://upload.wikimedia.org/wikipedia/commons/e/e9/FDA\\_Nutrition\\_Facts\\_Label\\_2016.png](https://upload.wikimedia.org/wikipedia/commons/e/e9/FDA_Nutrition_Facts_Label_2016.png)
- ▶ 20 years and now  
<http://www.yourweightmatters.org/wp-content/uploads/2016/04/Chart-for-Calorie-Changes.jpg>