

**I HAD A STROKE,
NOW WHAT DO I EAT?**

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DIETITIAN CONSULT DURING ACUTE STROKE

- What do we do?
 - Assess patient's baseline
 - Pre-existing conditions
 - Normal oral intake
 - Usual body weight
 - Determine nutritional needs
 - Does stroke change energy needs?
 - 125% higher net energy expenditure during balance tasks
 - Prescribe diet and supplements
 - Assess nutrition status



STROKE AND NUTRITION STATUS

- Strong evidence supports that a large proportion of stroke patients do not meet their estimated energy requirements
 - South London study showed intake during hospital stay was only 61% of estimated energy needs
 - Cohort study of 100 acute stroke patients showed 33% of patients met <50% of estimated energy needs, with only 10% of patients meeting 100% of nutritional needs
 - Study comparing energy intake in regular, dysphagia, and enteral tube diets found intake ranged from 80.3% to 90.9% of needs, with enteral tube diets providing the most

DYSPHAGIA

- 78% of stroke patients experience dysphagia
- Stroke can affect oral, pharyngeal, and esophageal phases of swallowing
- May initially require enteral nutrition
- Altered consistency diets and thickened liquids determined by Speech Language Pathologist
- Common problems include:
 - Poorly coordinated tongue movements
 - Weakened lip muscles
 - Inability to completely seal lips, form a seal around a cup, or suck through a straw
 - Drooling, which may cause embarrassment

DYSPHAGIA AND NUTRITION STATUS

- Concerns include:
 - Anorexia and weight loss given dislike of altered texture of food and/or fatigue from eating
 - Hospitalized stroke patients with dysphagia consume significantly less calories than stroke patients with no dysphagia
 - 25 kCal/kg considered adequate intake
 - Dysphagia: 8.6 +/- 5.0 kCal/kg
 - No Dysphagia: 16.1 +/- 5.4 kCal/kg
 - Only 8.3% of patients with no dysphagia met energy recommendations
 - Dehydration
 - Hospitalized stroke patients who receive thin liquids consume significantly more fluid than those who received thickened liquids however majority of both groups did not consume 1500 ml per day
 - Thin Liquids: 1237 +/- 442 ml/day
 - Thick Liquids: 947 +/- 144 ml/day
 - Community Dwelling Elders: 1961 +/- 529 ml/day

IMPROVING INTAKE ON DYSPHAGIA DIET

- Obtain preferences when able
- Increase flavor with seasonings, sauces, and gravies
- Offer more than water as a hydration option
- Small frequent meals
- Assistance with meals
- Limit diet restrictions as able



ORAL NUTRITION SUPPLEMENTS

- Used to help patients meet caloric and protein needs if not able to consume enough through food alone
- Is nutritional supplementation associated with better validated stroke outcomes?
 - Beneficial in malnourished stroke patients

Number of Patients	Supplementation Type	Stroke Outcome
48	250 kCal, 20 g protein daily	Improved MMSE score
42	250 kCal, 20 g protein daily	Improved NIHSS score
116	127 kCal, 5 g protein TID vs 240 kcal, 11 g protein TID	Improved FIM, 2 minute, and 6 minute walk tests in intensive group

- No benefit seen in well nourished patient
 - Feed Or Ordinary Diet (FOOD) Trial 1 found no absolute benefit of supplementation in risk of death or poor outcomes as measured by Modified Rankin Scale at 6 month follow up

DIET AFTER STROKE

- Goal: identify and treat risk factors to prevent further cardiovascular events
- Individualize
- Common Diets
 - Mediterranean
 - Dietary Approaches to Stop Hypertension (DASH)

MODIFIABLE NUTRITION RELATED RISK FACTORS

- Modifiable Risk Factors:
 - Hypertension
 - Hyperlipidemia
 - Uncontrolled Diabetes
 - Obesity
- How does what we eat or don't eat increase the risk of stroke?
 - Excess sodium intake → Hypertension
 - Excess trans fat and/or saturated fat → Hyperlipidemia
 - Soluble fiber intake can help lower LDL cholesterol

MEDITERRANEAN DIET

- Emphasizes intake of a variety of fruits and vegetables and healthy fats while minimizing intake of high fat meats and added sugar.

Table. Components of the Mediterranean Diet

Food	Meta-Analysis: First Author, Year, Reference	+ (Inverse Association With Stroke Risk)/ – (Association With Stroke Risk)
Fruits and vegetables	Hu et al, 2014 ¹⁶	+
Fish	Chowdhury et al, 2012 ¹⁷ Xun et al, 2012 ¹⁸ Larsson et al, 2011 ¹⁹	+
Olive oil	Martinez-Gonzalez et al, 2014 ²⁰	+
Tree nuts and peanuts	Afshin et al, 2014 ²¹	Not statistically significant
Legumes	Afshin et al, 2014 ²¹	Not statistically significant
Red and processed meat	Kaluza et al, 2012 ²²	–
White meat	Bernstein et al, 2012 ^{23*}	+
Alcohol	Zhang et al, 2014 ²⁴	–
Dairy	Soedamah-Muthu et al, 2011 ^{25†} Hu et al, 2014 ^{26‡}	Not statistically significant +

*Pooled analysis found substituting red meat for white meat was associated with decreased stroke risk.

†Examined the association between milk consumption and stroke.

‡Total dairy consumption was inversely associated with stroke, but associations between different types of dairy products and stroke varied.

Mediterranean Diet Pyramid

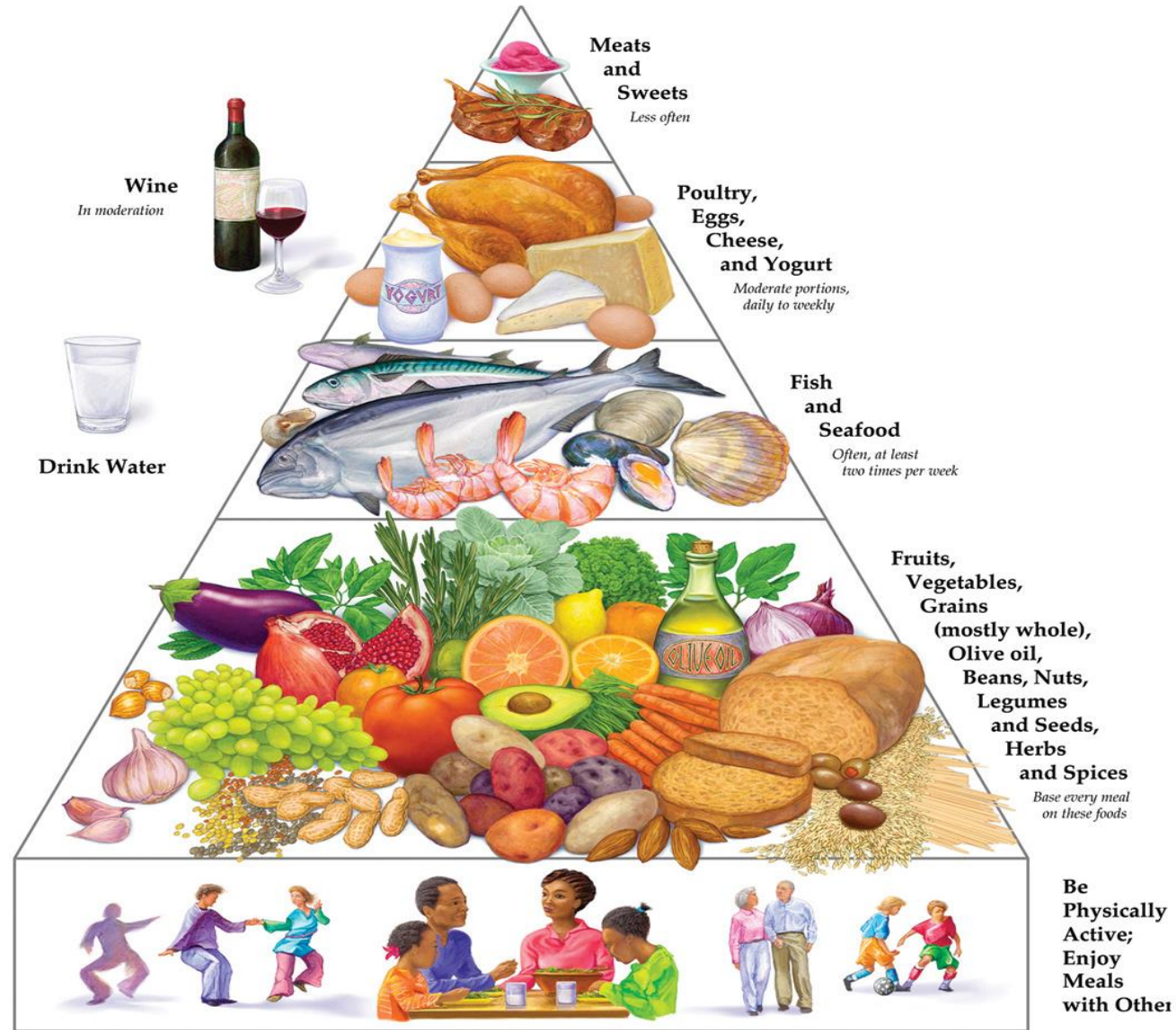


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DASH DIET

- **Dietary Approaches to Stop Hypertension (DASH) Diet**

- Focuses on fruit, vegetable, fat-free/low fat dairy, whole grains, nuts, and legumes
- Limits saturated fat, cholesterol, red and processed meats, sweets, added sugar, salt, and sugar sweetened beverages
 - Maximum amount of 2300 mg of sodium recommended per day with note that 1,500 mg of sodium per day can reduce HTN even further

Food Group	Daily Servings
Grains	6-8
Meat, Poultry, and Fish	6 or less
Vegetables	4-5
Fruit	4-5
Low fat or fat free dairy	2-3
Fats and oils	2-3
Sodium	2,300 mg *1,500 mg
Nuts, seeds, dry beans, and peas	4-5

FAD DIETS

- What are the key components or recommendations on the diet?
- Is the diet backed by research?
- When in doubt, consult or refer patient to Dietitian



CONCLUSION

- Majority of stroke patients do not meet nutritional needs
- Patients with dysphagia are at higher risk for dehydration and inadequate energy intake
- Diets need to be individualized based on swallowing function, nutritional needs, and risk factors with a focus on reducing sodium, saturated fat, and trans fat intake

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