

# WELCOME !

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The ALS Association  
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## Nutritional Considerations in ALS

Guest Speaker:  
Michelle Mc Donagh, RD, CD  
Froedtert & The Medical College of WI ALS Clinic

# Nutritional Considerations in ALS

Michelle McDonagh, RD, CD  
Froedtert & MCW, Milwaukee, Wisconsin

# Why is Food so Important?

- Social
- Emotional
- Culture
- Religion
- Physical



# Why is Nutrition Important in ALS?

- Nutrition: independent risk factor for disease progression
  - Calories to maintain weight. Resting energy expenditure known to be higher in ALS.
  - Adequate nutrition necessary to maintain highest possible level of function



# Why is Nutrition Important in ALS?

- Improved endurance
- Protect body from infection and illness
- Preserve enjoyment of food and maintain socialization



# ALS COSMOS Study

- Amyotrophic Lateral Sclerosis Multicenter Cohort Study of Oxidative Stress
- 302 patients
- Modified Block Food Frequency Questionnaire,
- Function was measured using the ALS Functional Rating Scale–Revised (ALSFRS-R)
- Respiratory function was measured using percentage of predicted forced vital capacity (FVC).

# ALS COSMOS

- Macronutrient intake did not impact ALSFRS-R score or percent FVC
- Milk was negatively associated with ALSFRS-R and FVC BUT milk based supplements slowed functional decline/stabilized weight in another study. \*
- Regression analysis of “good food groups” showed that eggs, fish, poultry, nuts and seeds, beneficial oils, fruits and vegetables in general were positively associated with ALSFRS-R scores and percent FVC.



[\\*Silva LB, Mourao LF, Silva AA, et al. Effect of nutritional supplementation with milk whey proteins in amyotrophic lateral sclerosis patients. Arq Neuropsiquiatr. 2010;68\(2\):263-268.](#)

# ALS COSMOS

- Good micronutrient intake was positively associated with ALSFRS-R scores and percent FVC.
- Key micronutrients:
  - Carotenes- carrots, pumpkin, sweet potato, broccoli, spinach
  - Lycopene-strong antioxidant properties. It's the pigment that gives red and pink fruits, such as tomatoes, watermelons and pink grapefruit.
  - Fiber from vegetables and grains.



# ALS COSMOS

- Omega-3 fatty acids-oily fish, tuna, mackerel, herring, nuts and seeds (walnuts, chia seeds, flaxseeds), oils (flaxseed oil, canola oil) and fortified eggs, milk, soy milks.
- Omega-6 fatty acids-soybean, corn, safflower, sunflower oil, nuts, seeds, meat poultry, fish, eggs.
- Isoflavones- **Soy** and its products, and legume seeds (lentils, beans, peas) are the richest sources of isoflavones, and fiber from vegetables and grains.



# Fatigue and Poor Appetite

- Six small meals-reduce fatigue at meals and fuel body throughout the day
- Select foods that are easy to chew and swallow
- Drink supplements between meals
- Eat your favorite foods
- Cook aromatic foods/presentation/company
- Select calorie-dense foods

# Fat calories can be Fab calories

- Protein – 4 kcal/g. Important to help maintain muscle mass.
- Carbohydrate – 4 kcal/g. Major source of energy in the average diet.
- Fat-9 kcal/g. Most calorie-dense nutrient. Increased circulating cholesterol may have neuro-protective benefits.
- Kasarskis equation [Maintaining Adequate Nutrition: A Continuing Challenge in ALS | The ALS Association](#)
- My Data Helps app, search for ALS Nutrition

# Calorie-Dense Foods

- Add calories without volume with butter, cheese, gravy, cream, mayo, peanut butter, dressing, dips
- Whole fat dairy
- Ice-cream –yum!
- Casseroles
- Calorie containing beverages
- “Healthy”- olive oil, olives, nuts, nut butters, seeds, avocado, dried fruit



# Food Preparation

- Occupational therapist recommends assistive devices/feeding assistance for those with UE weakness.
- Convenience meals
- Batch cook meals and freeze single serving portions
- Caregivers setting up snacks/beverages where they are accessible
- Meals on wheels



# Protein Foods

- Protein requirements 1.2-1.5 g/kg
  - Meat
  - Fish
  - Eggs
  - Dairy (cottage cheese, Greek yogurt)
  - Nuts and nut butters
  - Seeds
  - Beans



# Oral Nutrition supplements

- Ensure / Equate / Boost PLUS has 100 extra calories per serving
- Carnation Instant Breakfast
- Kate Farms / Enu
- Ensure Clear (juice)
- Lutrish shakes
- Benecalorie
- Homemade shakes



# Brain Power Smoothie

- Ingredients:
- 2 cups blueberries
- 1 cup pomegranate juice (or any berry juice)
- 1 cup ice cubes
- 1 Tbsp. chia seeds
- 1 ripe banana, peeled
- half of an avocado, peeled and pitted
- <http://www.gimmesomeoven.com/brain-power-smoothie-blueberry-avocado-smoothie-recipe/>
- Nutrition: 620 calories, 8 g protein, 20 g fat, 117 g carbohydrate, 22 g fiber

# Dysphagia

- Coughing and/or choking on food or liquid while swallowing
- A wet or gurgling-sounding voice immediately after swallowing food or liquid
- Difficulty chewing
- Food escaping out of the mouth during chewing or liquid spilling from the lips
- Prolonged mealtimes
- The need for smaller bites and/or sips
- Difficulty managing saliva
- Shortness of breath during meals

# Ways to Manage Dysphagia

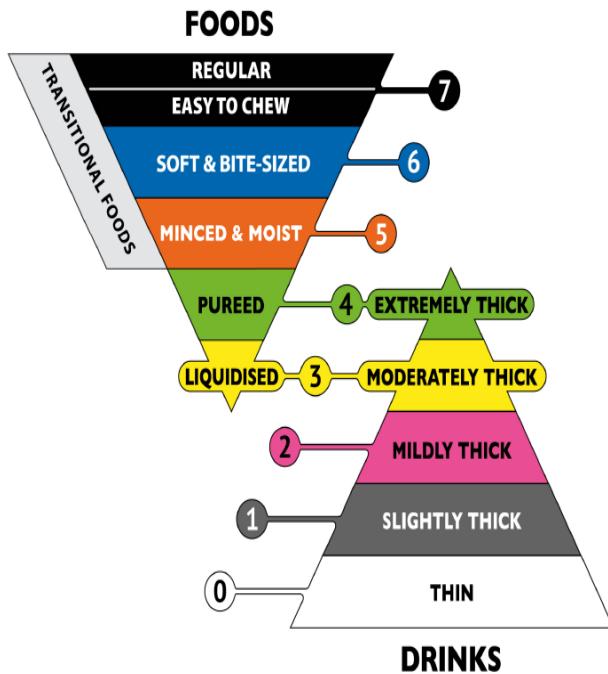
- Swallow strategies under guidance of the Speech Therapist, Video Swallow Study
- Diet modification
- Dietary supplements
- Feeding tube placement



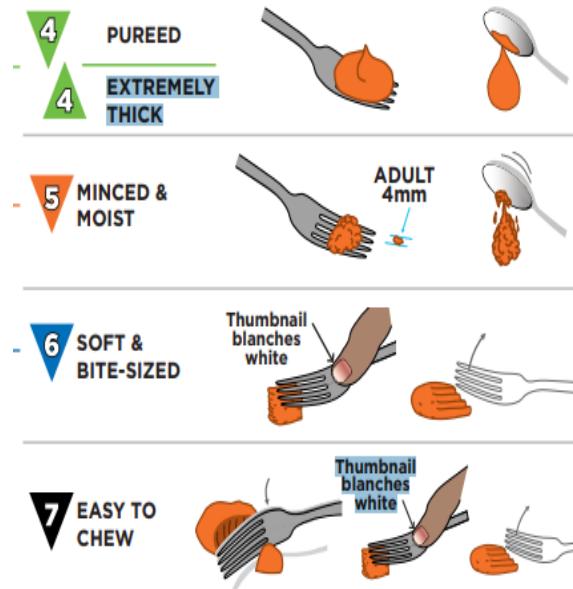
# Diet Modification

Diet Level	Examples of Food
Level 1: Pureed	Pudding, pureed oatmeal, bread, meats, hummus, pureed fruit and vegetables
Level 2: Mechanical Soft	Scrambled eggs, meatloaf, well-cooked vegetables, pancakes, mashed potatoes, canned/cooked fruit
Level 3: Advanced	Bread slices, muffins, pasta, casseroles, baked potatoes, soft/ripe fruits, fish
Level 4: Regular	No food avoidances or restrictions
Nectar Thickened Liquids	Slightly thicker than water
Honey Thickened Liquids	Consistency of honey at room temperature

# Diet Modification



## FOOD TEST INSTRUCTIONS



Copyright: The International Dysphagia Diet Standardisation Initiative 2016  
@ <https://iddsi.org/framework/>

# Regular Diet

- Sample Menu provides:
  - 1700 calories, 82 g protein, 25 g fiber
  - 20% of calories as protein
  - 53% of calories as carbohydrate
  - 27% of calories as fat

## **Breakfast**

1 egg  
1 cup bran cereal  
1 cup skim milk  
5 prunes

## **Lunch**

4 oz salmon  
1 cup brown rice  
1 cup broccoli

## **Dinner**

2 oz deli turkey  
1 oz cheddar cheese  
1 slice wholegrain bread  
Side garden salad (1.5 cups)  
1 T Italian dressing  
1 cup grapes

## **Snacks**

1 medium apple  
1 low fat yogurt

## **Beverages**

34 oz Water  
8 oz coffee with 2 oz skim milk

# Pureed Diet

- Sample Menu provides:
  - 1750 calories, 85 g protein, 15 g fiber
  - 20% of calories as protein
  - 53% of calories as carbohydrate
  - 27% of calories as fat
- Note ↓ dietary fiber and ↑ saturated fat intake increased in order to meet calorie needs

## **Breakfast**

1 egg pureed with 0.5 oz cheese  
1 cup cream of wheat with 8 oz whole milk and cinnamon  
6 oz prune juice

## **Lunch**

3 oz salmon pureed  
1/2 cup pureed rice with ¼ cup chicken broth  
1/2 cup broccoli pureed with 1 tsp olive oil

## **Dinner**

1 cup canned mashed sweet potato with 2 T butter and 1 T brown sugar

## **Snacks**

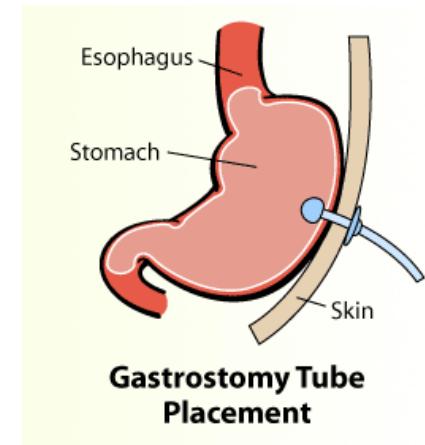
1 cup Cottage cheese with ½ cup peaches and ½ cup fruit juice pureed

## **Beverages**

34 oz Thickened (Nectar Thick) Water  
6 oz coffee with 2 oz whole milk (Nectar thick)  
Ensure Plus (350 kcal, 13 g protein)

# Feeding Tube

- Indications for feeding tube placement:
  - Weight loss
  - Chewing/swallowing difficulties –Eating has become a burden
  - Prolonged mealtimes
  - Fatigue after meals
  - No appetite/no interest in food
  - Decline in respiratory function
- Maintain/supplement nutrition, hydration, alternate route for medications.



# Benefits

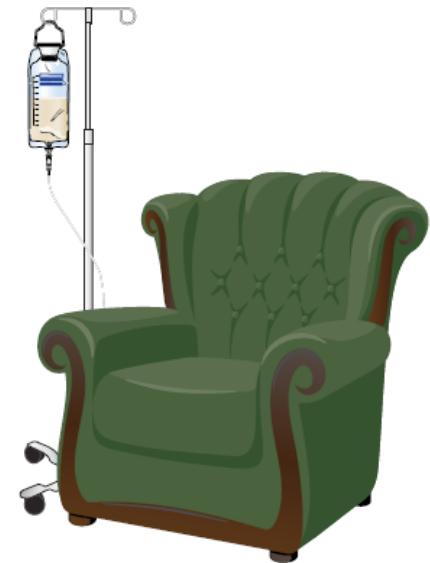
- Promotes adequate intake of:
  - Calories, protein & fluid
  - Weight stabilization
- Decreased risk of aspiration
  - No choking, chewing & swallowing problems
- Improve quality of life
- Easy medication administration
- Feeding times=simple, shorter
  - Energy saved for other activities

# Things to Consider....

- Placement
  - Sedation necessary
  - Infection risk
- After placement
  - Clogging may occur
  - Infection at feeding tube site
  - Replacement of tube
  - Daily care
  - Intolerance to tube feeding formula

# How is it used?

- Syringe feeding
  - Gravity feeding (IV pole and bags)
  - Pump assisted feedings.
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- Orders generally through DME provider.
  - Insurance coverage varies.



# *Tell Your Patients About*

# The Oley Foundation



- FREE information and support for patients on home tube or IV feedings
- [www.oley.org](http://www.oley.org)
- (800) 776-OLEY
- [www.feedingtubewarneness.org](http://www.feedingtubewarneness.org)

# Hydration

- Increased risk for dehydration due to dysphagia and limited mobility
- Monitor urine concentration, bowel function
- Eat foods with a high water content e.g. canned and fresh fruit/ vegetables, drinkable yogurt, pudding, juice, purees, cream soups, smoothies, nectars
- Straw, long straw, nosey cup



# Constipation

- Inactivity, weakened abdominal muscles, insufficient fiber and fluid intake
- Increase fiber –fruit, vegetables, whole grains
- Increase fluids
- Prune Juice
- Laxatives and stool softeners

# Move It!

- 1 Cup Unprocessed Bran (Store in freezer)
- 1 Cup Apple Sauce
- $\frac{1}{2}$  Cup Prune Juice
- Mix together well-store in refrigerator (1-2 tablespoons per day – adjust as necessary)

# Vitamin Supplements

- Vitamin D –study showed association between low levels and ALS. Screening for deficiency\*.
  - Multi-vitamin with minerals for general health. Should have the approval of US Pharmacopeial Convention
  - Coconut Oil
  - [www.ALSuntangled.com](http://www.ALSuntangled.com)
- \* Camu W, Tremblier B, Plassot C, Alphandery S, Salsac C, Pageot N, Juntas-Morales R, Scamps F, Daures JP, Raoul C. Vitamin D confers protection to motoneurons and is a prognostic factor of amyotrophic lateral sclerosis. *Neurobiol Aging*. 2014 May;35(5):1198-205. doi: 10.1016/j.neurobiolaging.2013.11.005. Epub 2013 Nov 13. PMID: 24378089.



# Resources

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