



# Managing Nutrition needs at different stages of MND

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# Motor Neuron Disease

- It is a progressive neurological disease with high risk of malnutrition.
- May need frequent diet modification
- Feeding difficulties can lead to deprivation of proteins, calories and vitamins very quickly
- Good nutrition plays vital role in maintaining energy level



# MND Symptoms and Nutritional Health

- Weight loss
- Constipation
- Swallowing Difficulties
- Reduced hand function
- Loss of appetite
- Fatigue



# Evaluation of the symptoms of dysphagia

- Normal Eating Habits
- Early eating problem
- Dietary consistency changes
- Tube feeding
- Nothing by Mouth



# Normal Eating Habits

- Early and frequent nutrition assessment and intervention is essential.
- It is right time to start educating patient before development of speech and swallowing difficulties.
- Assessing pattern of normal chewing and swallowing is important.
- It is important to maintain balanced diet and proper hydration.



# Early eating problem

- Difficulty in chewing and swallowing starts at this stage.
- Coughing while eating results in unusually long meal times.

## Dietary Intervention:

- Modification like smaller bite size can be helpful.
- Avoiding thin liquids.
- Inclusion of foods those are easier to chew and swallow will help.



# Dietary consistency changes

- Eating dry food becomes difficult
- difficulty in drinking thin liquids especially water



# Dietary consistency changes

## Dietary Intervention

- Mechanically soft food
- Soft cooked food
- pureed foods
- Use of thickeners
- Serve at right temperature
- Small and frequent meals
- Vitamin and mineral supplementation
- High calorie protein supplement





# Dietary consistency changes

- Special considerations:
- Sitting in upright position with head in chin down position will help safe swallowing
- Avoid environmental distractions and conversation during mealtime



# Tube feeding

- As dysphagia and feeding problems progress providing adequate nutrition orally becomes difficult.
- PEG (Percutaneous endoscopic gastrostomy) Tube placement can be considered at this stage.
- It is better to put PEG tube once signs of weight loss and dehydration seen than putting it later when malnutrition and respiratory distress progress.
- Patients can continue to eat orally even after tube is placed.
- Through tube additional nutritional support can be provided.



# Nothing by Mouth

- When final level of dysphagia is reached patients cannot eat anything orally
- Feeding tube will help meet nutritional need at this stage
- Tube feeding is permanent at this stage



# Aim of Nutrition therapy is:

- To supply nutritional needs for all stages of disease progression.
- Minimize protein catabolism.
- Ensure oral feeding and indicate early nutritional support.

Diet should be High calorie, high protein, normal lipids, high fiber and balanced in all nutrients.



# Calorie dense food

- Energy/ calories:
- sheera, custards, puddings, milkshakes, smoothies, fruit pulps, creamy soups
- Cereal pulse combination along with some vegetable is given at mealtime e.g. Mix vegetable Khichdi , Soft rice with lentil & vegetable stew.



# Protein

- Needed for tissue growth and minimize catabolism.
- Eating difficulties lead to poor oral intake and hence less protein intake.
- High biological value protein
- Condensed milk can be included addition of powdered dry fruits will make it calorie dense.
- Protein supplements can be added whenever needed (seek advice from dietician before addition of any supplement)



# Fiber

- Due to dysphagia fiber intake is restricted.
- It is important to add modified consistency fiber rich food to patient's diet.
- Include cereals in porridges.
- Include vegetables, pulses in boiled and mashed form.
- Include fruit puree like papaya, oranges.
- When it becomes difficult to meet fiber requirement orally fiber supplement can be added.



# Fluid

- Risk of dehydration
- Include fruit juice, fruit and vegetable puree, smoothies





# Vitamins and Minerals:

- Reduces Free radicals and oxidative stress
- All fresh fruits and vegetables & Nuts are rich sources vitamins and minerals and therefore important to include in diet.



# Vitamin D & calcium

- A neuroprotective role for vitamin D
- exposure to sunlight is essential
- Vitamin D rich food like egg yolk, liver, oily fish can be included
- Vitamin D Supplementation may be helpful.
- Calcium rich food



# Vitamin B12

- Vitamin B12 could help regenerate nerves
- Food sources of Vitamin B12 include milk & milk products, meats, cheese, eggs, fish etc



# Vitamin E

- Vitamin E is potent antioxidant
- Sources of Vitamin E includes almonds, Hazel nuts, sunflower seeds, sunflower oil, safflower oil



# Vitamin C

- Role in transmission of signals between neurons.
- Vitamin C supplementation may help against protect respiratory dysfunction.
- Sources include orange, sweet lime, guava, papaya, amla



# Special considerations

- Try to include food from all food groups.
- Try and modify consistency of food as per patient's tolerance.
- Give enough time to chew and swallow then only feed next bite.
- Make sure patient is well hydrated.
- Consult your dietitian at intervals.
- Nutritional assessment at intervals is necessary to check for any malnutrition and need for tube placement.
- Give small and frequent meals.



# Some foods to avoid

- Avoid spicy or acidic food as it causes further respiratory issues.
- Avoid crispy, deep fried or dry food as the oral muscles are affected which causes chewing difficulty.
- Avoid tough meats and chewy foods.
- Avoid sticky foods like liquid cheese.



# Some Do's and Donts:

DO'S	DON'T'S
Have small and frequent meals	Do not skip meals
Meals should be well balanced with all the nutrient components in it	Do not compromise on nutrition and concentrate on just one nutrient.
Complex carbohydrates like fruits are recommended	Avoid simple carbohydrates like sugars carbonated bevarages.
Water intake should be sufficient for proper digestion.	Avoiding water intake can lead to dehydration and various gut issues.
Consume the texture of food that is easily chewable and swallowing is easy.	Force feeding a particular food texture can lead to aspiration and chocking.
Food should be given with the right seasoning and temperature.	Avoid overly seasoned food that are spicy or in extreme temperatures.
Include fiber like fruits, vegetables, soups, sprouts to improve gut health	Avoid deep fried or preserved foods or anything with food coloring.
Eat the quantity you can digest	Overeating can lead to further gastric issues.





# Thank You

