**Module 7 Questions – Neurological Disorders**

**I. Definitions**

**TIA**- A ministroke is also known as a transient ischemic attack (TIA). It occurs when part of the brain experiences a temporary lack of blood flow. This causes stroke-like symptoms that resolve within 24 hours. Unlike a stroke, a TIA doesn’t kill brain tissue or cause permanent disabilities.

**Glascow coma scale**- The Glasgow coma scale is used to assess patients in a coma. The initial score correlates with the severity of brain injury and prognosis. The Glasgow Coma Scale provides a score in the range 3-15; patients with scores of 3-8 are usually said to be in a coma.

**Aphasia**- Aphasia is an impairment of language, affecting the production or comprehension of speech and the ability to read or write. Aphasia is always due to injury to the brain-most commonly from a stroke, particularly in older individuals. But brain injuries resulting in aphasia may also arise from head trauma, from brain tumors, or from infections.

**FEEST**- is a comprehensive endoscopic assessment of the sensory and motor components of a swallow.

**Modified barium swallow**- A modified barium (BARE-ee-um) swallow, or cookie swallow, is an X-ray test that takes pictures of your child’s mouth and throat while he or she swallows various foods and liquids.

**Aspiration**- Aspiration means you’re breathing foreign objects into your airways. Usually, its food, saliva, or stomach contents when you swallow, vomit, or experience heartburn. This is common in older adults, infants, and people who have trouble swallowing or controlling their tongue.

**II. Pathophysiology**

For each of the following, describe the etiology, clinical symptoms and nutritional management.

**- Multiple sclerosis**- Multiple sclerosis (MS) is a nervous system disease that affects your brain and spinal cord. It damages the myelin sheath, the material that surrounds and protects your nerve cells. This damage slows down or blocks messages between your brain and your body, leading to the symptoms of MS. No one knows what causes MS.

**Symptoms:** Visual disturbances, Muscle weakness, Trouble with coordination and balance, Sensations such as numbness, prickling, or pins and needles, thinking and memory problems. nutritional management people with MS need a balanced for fish and nut-based fat sources such as olive oil, avocado oil and almond butter, which are rich in omega-3s, low-fat and high-fiber diet. Unprocessed or naturally processed foods are preferred to processed foods. This is similar to the Mediterranean diet, diet low in saturated fats and supplemented with omega-3 fatty acids.

**- Parkinson’s disease**- Parkinson's disease is a progressive disorder of the nervous system that affects movement. It develops gradually, sometimes starting with a barely noticeable tremor in just one hand. But while a tremor may be the most well-known sign of Parkinson's disease, the disorder also commonly causes stiffness or slowing of movement. In Parkinson's disease, certain nerve cells (neurons) in the brain gradually break down or die.

**Symptoms:**

* **Tremor.** A tremor, or shaking, usually begins in a limb, often your hand or fingers. You may notice a back-and-forth rubbing of your thumb and forefinger, known as a pill-rolling tremor. One characteristic of Parkinson's disease is a tremor of your hand when it is relaxed (at rest).
* **Slowed movement (bradykinesia).** Over time, Parkinson's disease may reduce your ability to move and slow your movement, making simple tasks difficult and time-consuming. Your steps may become shorter when you walk, or you may find it difficult to get out of a chair. Also, you may drag your feet as you try to walk, making it difficult to move.
* **Rigid muscles.** Muscle stiffness may occur in any part of your body. The stiff muscles can limit your range of motion and cause you pain.
* **Impaired posture and balance.** Your posture may become stooped, or you may have balance problems as a result of Parkinson's disease.
* **Loss of automatic movements.** In Parkinson's disease, you may have a decreased ability to perform unconscious movements, including blinking, smiling or swinging your arms when you walk.
* **Speech changes.** You may have speech problems as a result of Parkinson's disease. You may speak softly, quickly, slur or hesitate before talking. Your speech may be more of a monotone rather than with the usual inflections.

**Nutritional Management**. Constipation is common in Parkinson's disease. Increased fluid and fiber consumption can help maintain regularity. Aim to drink six to eight 8 ounce glasses of water per day. Warm liquids, especially in the morning, can stimulate bowel movements. Dietary sources of fiber consist of fruits (with the peel), vegetables, legumes, whole grain breads and cereals. Most of these are high in antioxidants as well.

Low blood pressure is a symptom of Parkinson's and a side effect of some medications. Raising fluid and salt intake will boost blood pressure. Increase cold fluids water, Gatorade, V8 juice to five 8 ounce glasses per half day. Limit caffeinated beverages, hot liquids and alcohol as these encourage dehydration and low blood pressure. Eating frequent, small meals can also smooth blood pressure fluctuations.

Swallowing problems can present as coughing, choking or a sensation of food feeling "stuck." A speech therapist can prescribe appropriate, individualized dietary modifications and adaptive strategies. These may include adding foods with increased "sensory input" (e.g., seasoned, cold, sour or carbonated items) or altering the consistency of solids and/or liquids.

**- Huntington’s disease** - Huntington’s disease (HD) is a fatal genetic disorder that causes the progressive breakdown of nerve cells in the brain. It deteriorates a person’s physical and mental abilities during their prime working years and has no cure. HD is known as the quintessential family disease because every child of a parent with HD has a 50/50 chance of carrying the faulty gene.

**Symptoms Include**: Personality changes, mood swings & depression, Forgetfulness & impaired judgment, unsteady gait & involuntary movements (chorea), Slurred speech, difficulty in swallowing & significant weight loss.

**Nutritional Management**

Consume a diet rich in vitamin B12 which is found in animal foods (meat, dairy, eggs, poultry, etc.). B12 keeps the body’s nerve and blood cells healthy and helps make DNA. Antioxidants protect your cells from free radicals (“bad” cells) in the body. COLOR is important when choosing foods with antioxidant properties foods with deep, rich color tend to be higher in antioxidants. Omega 3 fatty acids are helpful in reducing inflammation throughout the body. They also can reduce triglycerides .Other healthy fats include olive oil, nut butters, and avocados.

**- Alzheimer’s disease**- which affects some older people, is different from everyday forgetting. It is a condition that permanently affects the brain. Over time, the disease makes it harder to remember even basic stuff, like how to tie a shoe. There is no one reason why people get it. Older people are more likely to get it, and the risk increases the older the person gets. In other words, an 85-year-old is more likely to get it than a 65-year-old. And women are more likely to get it than men.

**Symptoms:**

**Cognitive:**mental decline, difficulty thinking and understanding, confusion in the evening hours, delusion, disorientation, forgetfulness, making things up, mental confusion, difficulty concentrating, inability to create new memories, inability to do simple math, or inability to recognize common things

**Behavioral:**aggression, agitation, difficulty with self-care, irritability, meaningless repetition of own words, personality changes, restlessness, lack of restraint, or wandering and getting lost

**Mood:**anger, apathy, general discontent, loneliness, or mood swings

**Psychological:**depression, hallucination, or paranoia

**Also common:**inability to combine muscle movements, jumbled speech, or loss of appetite

**Nutritional Management** - Try to provide healthy foods such as fruits and vegetables, whole grains, low-fat dairy products, and lean protein. If having a hard time getting loved one to eat enough, prepare favorite foods. Staying hydrated also can be a problem for people with Alzheimer's disease. Offer small cups of water or other liquids throughout the day and foods with high water content, such as fruit, soups, milkshakes and smoothies. Cut food into bite-sized portions. Finger foods are even easier but avoid foods that can be tough to chew and swallow, such as nuts, popcorn and raw carrots. Don't rush mealtimes. Remind loved one to chew and swallow carefully, and allow him or her as much time as necessary.

**- ALS**- Lou Gehrig's disease is a disorder that's also called amyotrophic lateral sclerosis. ALS damages motor neurons in the brain and spinal cord. Motor neurons are nerve cells that control muscle movement. Upper motor neurons send messages from the brain to the spinal cord, and lower motor neurons send messages from the spinal cord to the muscles. Motor neurons are an important part of the body's neuromuscular system.

Symptoms

**Muscular:**muscle weakness, problems with coordination, stiff muscles, loss of muscle, muscle spasms, or overactive reflexes

**Speech:**difficulty speaking, vocal cord spasm, or impaired voice

**Whole body:**fatigue or feeling faint

**Also common:**difficulty swallowing, drooling, lack of restraint, mild cognitive impairment, severe constipation, severe unintentional weight loss, shortness of breath, or difficulty raising the foot.

**Nutritional Management**- ALS is a progressive disease, eating a well-balanced diet with proper calories, protein, vitamins and minerals can improve your strength and well-being. Even more importantly, adequate nutrition will improve your endurance. Include plenty of fruits and vegetables. To make swallowing easier, choose canned and cooked fruits and vegetables; peel tough skins and avoid fruits with seeds. Try adding fiber supplements (like wheat bran, Metamucil, or Citrucel) to foods and fluids. Fiber will help you prevent constipation. Cook vegetables longer to make them softer. Cook fruit to make it soft. Top with whipped cream or ice cream. Drink (8 ounce) glasses of fluid daily for proper hydration and body function.

**III. Nutritional Management**

**A. How does the pathological state of swallowing (dysphagia) differ from the normal swallowing function?** The swallowing process is commonly divided into oral, pharyngeal, and esophageal stages according to the location of the bolus. The movement of the food in the oral cavity and to the oropharynx differs between eating solid food and drinking liquid. Dysphagia can result from a wide variety of functional or structural deficits of the oral cavity, pharynx, larynx or esophagus. **What conditions commonly lead to dysphagia:** neurodegenerative disease, head trauma or someone with upper esophageal inflammation.

**What are the signs and symptoms of dysphagia?** Oral leaking or drooling, Choking or gagging, Pocketing food (capturing it in the cheeks),Taking longer than 10 seconds to swallow, Weakness, poor motivation ,Poor chewing ability, which may lead to choking on food.

**What are some of the nutritional problems associated with dysphagia?** Including poor nutritional status and dehydration, loss of appetite and subsequent weight loss, less enjoyment in eating, and the possibility of food entering the airway and leading to aspiration pneumonia.

**Describe the optimal eating conditions for the patient with dysphagia.** Eat from a variety of food groups to ensure that the patient’s nutritional needs are being met. Be creative – many foods can be put in a blender to provide a nutritious meal. Eat small, frequent meals, especially if they are not able to eat large meals. Serve both hot and cold foods to provide a variety of temperatures in their diet and to avoid food contamination.

**B. When would a tube feeding be the selected method of nutrition support for a patient with a neurological deficit?** If there is a chance of aspiration and patients unable to intake oral nutrition, enteral nutrition support is appropriate. NG-tube is appropriate for short-term nutrition support.

**What ethical issues may be involved?** Patients may not be able to participate in decision making, but they may have previously expressed strong preferences related to tube feeding. Clinicians must work together with the family to establish a treatment plan that is respectful of the person's previous wishes, yet mindful of the flaws in advance care planning. Although ethical issues cannot be avoided, clinicians can reduce uncertainty by understanding current ethical and legal views on these challenging issues.

**Sources**

Signs and Symptoms of Ministroke. <https://www.healthline.com/health/stroke/signs-symptoms-tia-mini-stroke> Retrieved June 10, 2018

Glasgow Coma Scale. https://biau.org/about-brain-injuries/what-to-expect/coma-patient-score-glasgow/ Retrieved June 10, 2018

Caring for a loved one with Alzheimer's? Understand what causes eating problems and how you can encourage good nutrition. https://www.mayoclinic.org/healthy-lifestyle/caregivers/in-depth/alzheimers/art-20047918?p=1 Retrieved June 10, 2018

Modified Barium Swallow (Cookie Swallow)http://www.chp.edu/our-services/radiology/patient-procedures/modified-barium-swallow/ Retrieved June 10, 2018

Diet-Nutrition. https://www.nationalmssociety.org/Living-Well-With-MS/Diet-Exercise-Healthy-Behaviors/Diet-Nutrition Retrieved June 10, 2018

Matsuo K, Palmer JB. Anatomy and Physiology of Feeding and Swallowing – Normal and Abnormal. Physical medicine and rehabilitation clinics of North America. 2008; 19(4):691-707. doi:10.1016/j.pmr.2008.06.001.