Unit 7: PROGRESSIVE NEUROLOGICAL DISEASES

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PROGRESSIVE NEUROLOGICAL DISEASES DEFINITION & ETIOLOGY

DEFINITION

Progressive neurological disorders are conditions characterized by a gradual decline in a person's abilities and functioning. This deterioration may happen slowly over many years or even decades, or it can progress more rapidly over weeks and months. These types of disorders tend to be lifelong conditions that the individual will continue to experience and manage for the rest of their life (Progressive neurological disorders information, n.d.).

ETIOLOGY

According to Hamberley (n.d.)., there are several causes to progressive neurological disorders:

Genetic factors:

- Inherited genetic mutations or defects can lead to progressive neurological deterioration. Family history often indicates increased susceptibility to specific conditions.

Age-related changes:

- Natural cellular aging processes lead to declining repair mechanisms and damaged proteins accumulate over time, leading to gradual neurodegeneration.

Metabolic Issues:

- Disrupted cellular energy production and nutrient processing can gradually impair nervous system function.

Autoimmune processes:

- The immune system attacking and damaging the nervous system can cause progressive neurological problems.

Abnormal protein accumulation:

- The buildup of abnormal proteins in the brain and nervous system can disrupt normal function over time.

Vascular issues/Stroke related:

- Compromised blood supply and oxygen delivery to the brain can contribute to progressive neurological decline. Ischemic (blocked blood vessels) or Hemorrhagic (bleeding in brain).

Neurodegeneration:

- The gradual loss or damage of nerve cells and their connections in the brain and spinal cord can underlie progressive neurological diseases.

Environmental factors:

- Exposure to toxins such as heavy metals, pesticides, and industrial chemicals.
- Exposure to infections such as viral infection, bacterial infections and prion diseases.

Alcohol consumption:

- Alcohol consumption can accelerate neurodegeneration by directly damaging nerve cells and disrupting essential brain functions. In people with existing neurological conditions, alcohol can worsen symptoms and speed up disease progression by interfering with medication effectiveness and increasing inflammation in the nervous system.

Tumor:

- Brain tumors (primary or metastatic) or spinal cord tumors which can apply direct pressure on nervous tissue or disrupt normal brain function.

PREVALENCE & INCIDENCE

LOCAL	INTERNATIONAL
• The Philippines has seen a 27.8% increase in age-standardized rates of multiple sclerosis between 1990 and 2016, higher than the global prevalence change of 10.4% (Ignacio et al., 2020). • Parkinson's disease deaths in the Philippines account for 0.09% of total deaths, with an age-adjusted death rate of 0.92 per 100,000 population (Parkinson's Disease in Philippines, n.d.). • The estimated dementia incidence in the Philippines was 16 per 1,000 in 2021, with Alzheimer's disease being the most common subtype (Anlacan et al., 2024).	• A total of 2.8 million people are estimated to live with MS worldwide. The pooled incidence rate across 75 reporting countries is 2.1 per 100,000 persons/year, and the mean age of diagnosis is 32 years. Females are twice as likely to live with MS as males (Walton et al., 2020). • In the United States, nearly 7 million Americans are living with Alzheimer's, and this number is expected to rise to 6.9 million by 2024 (Alzheimer's Disease facts and figures, n.d.). • The number of Americans living with Parkinson's disease is expected to increase from nearly 1 million to 1.2 million by 2030 (Parkinson's Foundation, n.d.).

SIGNS, SYMPTOMS, PATHOPHYSIOLOGY

Cleveland Clinic (2024), Kohli (2023), Kouzani & Sillitoe (2019)

SIGNS			
TYPES	**PHYSICAL**	**NEUROLOGICAL**	**COMMUNICATION**
Alzheimer's Disease *(Type of Dementia)*	• Changes in gait • Difficulty with coordination • Incontinence • Weight loss	• Memory problems • Attention deficits • Reasoning impairments	• Difficulty understanding and producing language • Struggle recalling names • Decreased ability to generate words • Difficulty comprehending written text and expressing thoughts in writing

Vascular Dementia *(Type of Dementia)*	• Focal neurological signs, such as weakness on one side of the body or visual field disturbances, can occur depending on the area of the brain affected by vascular damage.	• Memory problems • Attention deficits • Executive function impairments	• Language impairment (varying based on location of vascular damage) • Speech difficulties (if motor areas are affected) • Swallowing problems (if relevant brain areas are impacted)
Lewy Body Dementia *(Type of Dementia)*	• Individuals may experience fluctuations in their motor symptoms, similar to Parkinson's disease, with periods of stiffness and slowness alternating with more mobile periods. • Autonomic dysfunction, such as problems with blood pressure regulation and bowel/bladder control, can also occur.	• Varying levels of alertness • Cognitive function fluctuations • Visual hallucinations	• Speech and voice changes similar to Parkinson's disease
Frontotemporal Dementia *(Type of Dementia)*	• Physical signs can vary widely depending on the specific type of FTD and the brain regions affected. Some individuals may develop motor neuron disease-like symptoms, while	• Personality changes • Behavior alterations	• Language difficulties

	others might experience changes in eating habits and weight gain.		
Parkinson's Disease	• Tremors • Rigidity • Postural instability • Reduced facial expressions (masked facies) • Shuffling gait • Stooped posture • Micrographia (small handwriting)	• Loss of reflexes • Cognitive impairments	• Soft, monotonous speech, decreased ability to convey emotions through facial expressions. • Hoarseness and breathiness • Difficulties with attention, processing speed, and executive functions. • Swallowing difficulties
Myasthenia Gravis	• Muscle weakness (fluctuating) • Eye movements (causing drooping eyelids and double vision) • Facial expressions • Swallowing • Limb movement	• Fluctuating muscle weakness • Loss of reflexes	• Speech alterations • Language difficulties • Swallowing difficulties
Amyotrophic lateral sclerosis	Early physical signs can be subtle and often begin in one limb or area of the body: • Muscle twitches (fasciculations) • Cramping • Stiffness • Slurred speech • Difficulty swallowing • Muscle weakness • Paralysis	• Respiratory failure	• Gradually worsening speech clarity • Progressive difficulty swallowing • Possible issues with executive functions and language

Multiple sclerosis	Depends on the location of the lesions in the central nervous system. Common signs include: • Fatigue • Numbness or tingling sensations • Weakness • Visual disturbances • Coordination problems	• Unpredictable relapses with possible progressive disability • Issues with memory, attention, and information processing	• Unclear speech (due to muscle weakness or incoordination) • Possible swallowing difficulties • Language problems (if MS lesions occur in language-related brain areas)
Huntington's disease	• Involuntary jerking or writhing movements (chorea) • Muscle problems, such as rigidity or dystonia • Slow or abnormal eye movements • Impaired gait, balance, and posture	• Cognitive disorders • Psychiatric disorders	• Speech alterations • Language difficulties
Muscular dystrophy	• Difficulty walking • Frequent falls • Enlarged calf muscles • Muscle pain and stiffness • Progressive scoliosis (curvature of the spine)	• Muscle weakness • Loss of reflexes • Movement abnormalities	• Speech alterations • Swallowing difficulties
Ataxia	• Impaired coordination and balance	• Impaired coordination • Balance problems • Abnormal gait	• Slurred speech • Slow or irregular speech rate • Changes in voice quality

TYPES	SYMPTOMS	PATHOPHYSIOLOGY
Alzheimer’s Disease *(Type*	• Gradually increasing difficulty understanding and producing language.	• Buildup of beta-amyloid

of Dementia)	• Struggle to recall names of objects or people. • Decreased ability to generate words in a given category. • Difficulty comprehending written text and expressing thoughts in writing. • Problems with memory, attention, and reasoning affecting communication.	plaques and tau tangles in the brain.
Vascular Dementia *(Type of Dementia)*	• Language impairment that varies depending on where the vascular damage occurred • Problems with memory, attention, and executive function • Difficulty speaking if the motor areas of the brain are affected • Problems swallowing if relevant brain areas are impacted	• Reduced blood flow is often due to strokes.
Lewy Body Dementia *(Type of Dementia)*	• Varying levels of alertness and cognitive function. • Visual hallucinations • Changes in speech and voice that are similar to the changes experienced by people with Parkinson's disease.	• Abnormal protein deposits
Frontotemporal Dementia *(Type of Dementia)*	• Changes in personality, behavior, and language.	• Degeneration of the frontal and temporal lobes of the brain.
Parkinson’s Disease	• Quiet, monotonous speech due to reduced movement of speech muscles. • Decreased ability to convey emotions through facial movements. • Hoarseness and breathiness due to rigidity of the laryngeal muscles. • Difficulties with attention, processing speed, and executive function. • Difficulties swallowing, which worsen as the disease progresses. • Patients may notice changes in their own physical and cognitive abilities. • Patients may experience difficulty performing tasks. • Patients may notice changes in their appearance and movements.	• Death of neurons in the brain that produce dopamine, leading to tremors, rigidity, and slow movement.

	• Patients may recognize signs of disease progression through their own observations and experiences.	
Myasthenia Gravis	• Muscle weakness that fluctuates, worsening with activity and improving with rest. • Loss of reflexes • Changes in speech • Difficulties with language • Difficulties swallowing • Patients may notice changes in their own physical and cognitive abilities • Patients may experience difficulty performing tasks. • Patients may notice changes in their appearance and movements. • Patients may recognize signs of disease progression through their own observations and experiences.	• Impairs communication between nerves and muscles, causing fluctuating muscle weakness.
Amyotrophic lateral sclerosis	• Speech that becomes progressively less clear due to muscle weakness. • Difficulties swallowing become progressively worse. • Possible difficulties with executive function and language.	• Muscle weakness, paralysis, and respiratory failure.
Multiple sclerosis	• Unclear speech due to muscle weakness or difficulty coordinating muscles. • Difficulties with memory, attention, and information processing. • Possible difficulties swallowing depending on which areas of the brain are affected. • Language problems if MS lesions occur in areas of the brain that are related to language.	• Immune system attacks the myelin sheath that covers nerve fibers, disrupting communication between the brain and body.
Huntington's disease	• Changes in speech • Difficulties with language	• Progressive breakdown of nerve cells in the brain, leading to movement, cognitive, and psychiatric disorders.
Muscular	• Muscle weakness	• Progressive muscle

dystrophy	• Loss of reflexes • Movement abnormalities • Changes in speech • Difficulties swallowing	degeneration and weakness.

Ataxia	• Impaired coordination
	• Problems balancing
	• An abnormal gait
	• Changes in speech
	• Patients may notice changes in their own physical and cognitive abilities.
	• Patients may experience difficulty performing tasks.
	• Patients may notice changes in their appearance and movements.
	• Patients may recognize signs of disease progression through their own observations and experiences.
	• Back pain, Neck pain, Muscle pain, Joint pain, Chronic headaches.
	• Numbness, or partial or complete loss of sensation.
	  ○ Patients may not feel touch, pain, vibration, or temperature.
	  ○ Numbness can lead to difficulty balancing, coordinating movements, walking, driving, and performing other physical tasks.
	• Difficulties sleeping (Insomnia or Hypersomnia).
	• Partial or complete loss of vision.
		• Degeneration of the cerebellum
		• General changes include:
		  ○ Congenital abnormalities
		  ○ Genetic disorders
		  ○ Infections
		  ○ Brain injuries
		  ○ Spinal cord damage
		  ○ Nerve injuries
		  ○ Malnutrition

POSSIBLE SPEECH-LANGUAGE PROBLEMS ASSOCIATED WITH THE CONDITION

Language	**A. Dementia**
	• **Alzheimer's Disease:**
	  ○ Word-Finding Difficulties: Struggles to recall names of objects, people, or places.
	  ○ Category Fluency Impairments: Difficulty generating words within specific categories (e.g., naming animals).
	  ○ Written Language Issues: Trouble with reading comprehension and expressing thoughts in writing.
	• **Vascular Dementia:**
	  ○ Aphasia: Impaired language comprehension or expression, depending on the location of vascular lesions.
	• **Lewy Body Dementia:**

	○ Fluctuating Verbal Abilities: Varies with changes in cognitive function. ○ Speech Pattern Changes: Resembling Parkinson's Disease, including reduced clarity or vocal quality. ● **Frontotemporal Dementia:** ○ Primary Progressive Aphasia: Profound deficits in speaking, understanding, and reading. ○ Pragmatic Difficulties: Loss of social language skills, leading to inappropriate or poorly modulated communication. **B. Parkinson's Disease** ○ Sentence Production: Difficulty organizing sentences due to reduced executive function. ○ Reduced Intelligibility: Voice changes and monotone delivery hinder clear communication. **C. Myasthenia Gravis (MG)** ○ Word-Finding Challenges: Fatigue can impact the ability to retrieve words accurately. **D. Amyotrophic Lateral Sclerosis (ALS)** ○ Slurred Speech: Language clarity deteriorates due to weak articulation muscles. **E. Multiple Sclerosis (MS)** ○ Word-Finding and Verbal Fluency Deficits: Challenges generating or retrieving words in conversation. ○ Complex Sentence Comprehension Issues: Difficulty processing lengthy or grammatically intricate sentences. **F. Huntington's Disease (HD)** ○ Imprecise Word Use: Difficulty selecting appropriate words due to executive dysfunction. **G. Muscular Dystrophy (MD)** ○ Reduced Verbal Output: Progressive weakening of articulatory muscles affects ability to speak fluently. **H. Ataxia** ○ Speech Organization: Difficulty forming coherent or well-sequenced sentences due to disrupted motor planning.
Cognition	**A. Dementia** ● **Alzheimer's Disease:** ○ Memory loss, especially short-term, impacting conversational relevance. ○ Attention deficits, leading to reduced focus during interactions. ● **Vascular Dementia:** ○ Impaired executive functions, affecting the ability to initiate or follow through with communication. ○ Memory lapses that disrupt conversational flow. ● **Lewy Body Dementia:** ○ Fluctuating attention and cognitive alertness, altering communication consistency. ○ Visual hallucinations interfering with interpretation of context or conversation. ● **Frontotemporal Dementia:** ○ Loss of reasoning and decision-making abilities, leading to inappropriate communication.

	B. Parkinson's Disease ○ Slowed processing speed affecting conversational timing. ○ Reduced ability to manage complex topics due to diminished executive functioning. **C. Myasthenia Gravis (MG)** ○ Cognitive function typically intact; fatigue may reduce focus in extended interactions. **D. Amyotrophic Lateral Sclerosis (ALS)** ○ Cognitive impairments in some cases, such as difficulty with planning and sequencing thoughts. **E. Multiple Sclerosis (MS)** ○ Declines in memory, attention, and processing speed impacting conversational engagement. **F. Huntington's Disease (HD)** ○ Severe executive function deficits impair reasoning and conversational relevance. **G. Muscular Dystrophy (MD)** ○ Cognition remains unaffected in most cases. **H. Ataxia** ○ Cognitive abilities generally intact; coordination deficits may indirectly impact participation.
Speech	**A. Dementia** • **Alzheimer's Disease:** ○ Reduced vocal volume and clarity in later stages. • **Lewy Body Dementia:** ○ Monotone or hoarse voice resembling Parkinsonian symptoms. • **Frontotemporal Dementia:** ○ Gradual loss of speech precision due to muscle control decline. **B. Parkinson's Disease** ○ Hypokinetic Dysarthria: Soft, monotone speech due to reduced range of muscle movement. ○ Hoarseness and breathiness caused by laryngeal muscle rigidity. **C. Myasthenia Gravis (MG)** ○ Dysarthria characterized by slurred or weak speech that worsens with prolonged speaking. **D. Amyotrophic Lateral Sclerosis (ALS)** ○ Mixed spastic-flaccid dysarthria: Harsh voice, imprecise articulation, and hypernasality. **E. Multiple Sclerosis (MS)** ○ Dysarthria due to weakened or uncoordinated speech muscles. **F. Huntington's Disease (HD)** ○ Hyperkinetic Dysarthria: Involuntary vocal fluctuations and slurred speech. **G. Muscular Dystrophy (MD)** ○ Hypophonia and imprecise articulation due to progressive weakening of respiratory and speech muscles. **H. Ataxia** ○ Ataxic Dysarthria: Irregular speech rhythm and stress patterns due to poor motor coordination.
Swallowing	**A. Dementia**

	• **Alzheimer's Disease**
	  ○ Difficulty chewing and swallowing in advanced stages due to cognitive and motor decline.
	• **Lewy Body Dementia**
	  ○ Progressive swallowing problems leading to aspiration risks.
	• **Frontotemporal Dementia**
	  ○ Dysphagia due to weakening of oropharyngeal muscles.
	B. Parkinson's Disease
	  ○ Impaired oral and pharyngeal phase coordination, leading to aspiration risks.
	C. Myasthenia Gravis (MG)
	  ○ Fatigue-induced dysphagia affecting all swallowing stages.
	D. Amyotrophic Lateral Sclerosis (ALS)
	  ○ Severe dysphagia due to progressive weakening of oral and pharyngeal muscles.
	E. Multiple Sclerosis (MS)
	  ○ Dysphagia varies with lesion location, impacting oral and pharyngeal stages.
	F. Huntington's Disease (HD)
	  ○ Choking risks due to uncoordinated swallowing and involuntary movements.
	G. Muscular Dystrophy (MD)
	  ○ Swallowing difficulties caused by weakened pharyngeal and esophageal muscles.
	H. Ataxia
	  ○ Uncoordinated swallowing actions increase the risk of aspiration.

TYPES, DISEASE COURSE, PROGNOSIS

Types	Definition
Dementia	A group of conditions characterized by progressive cognitive decline affecting memory, reasoning, and social abilities
Alzheimer's Disease *(Type of Dementia)*	A neurodegenerative disorder marked by progressive memory loss and cognitive decline due to beta-amyloid plaques and tau tangles in the brain
Vascular Dementia *(Type of Dementia)*	Cognitive impairment caused by reduced blood flow to the brain, often due to strokes
Lewy Body Dementia *(Type of Dementia)*	A form of dementia caused by abnormal protein deposits (Lewy bodies) in the brain, affecting cognition, movement, and sleep
Frontotemporal Dementia (FTD) *(Type of Dementia)*	A group of disorders caused by progressive degeneration of the frontal and temporal lobes of the brain, affecting personality, behavior, and language

Parkinson's Disease	A movement disorder caused by the death of dopamine-producing neurons in the brain, leading to tremors, rigidity, and slow movement
Myasthenia Gravis	An autoimmune disorder impairing nerve-muscle communication, causing fluctuating muscle weakness
Amyotrophic Lateral Sclerosis (ALS)	→ Often called Lou Gehrig's disease after the baseball player who was diagnosed with it A progressive disease affecting motor neurons, causing muscle weakness, paralysis, and respiratory failure
Multiple Sclerosis	• An autoimmune disorder • The immune system attacks the protective sheath (myelin) covering nerve fibers, disrupting communication between the brain and the body
Huntington's Disease	An inherited disorder causing the progressive breakdown of nerve cells in the brain, leading to movement, cognitive, and psychiatric disorders
Muscular Dystrophy	A group of genetic disorders characterized by progressive muscle degeneration and weakness
Ataxia	A group of disorders that affect coordination and balance, often due to degeneration of the cerebellum

Progression of the Condition	
Early Stage	Initial, mild symptoms such as subtle cognitive decline, muscle weakness, coordination difficulties, or fatigue. These may be episodic or intermittent.
Moderate Stage	Progression of symptoms leading to noticeable impairments in motor function, cognition, communication, and daily activities. More frequent and severe manifestations.
Severe Stage	Significant disability with loss of independence, severe motor, cognitive, or functional impairment. Patients often require assistance with most activities of daily living.
End-Stage/ Terminal	Complete dependence, with severe deterioration of physical or cognitive abilities. The condition is typically life-threatening, leading to complications such as respiratory failure, infections, or organ failure.

Outcome Left Treated/Untreated	
Treated	• Symptoms can often be managed, improving quality of life. • Disease progression may slow for many conditions, extending lifespan and reducing disability in some cases. • Supportive therapies, medications, and lifestyle modifications can enhance functional independence and alleviate symptoms.

Untreated	• Conditions typically worsen more rapidly, leading to significant disability, severe functional limitations, and dependency. • Life expectancy is often reduced significantly, with complications such as infections, respiratory failure, or severe neurological decline being common causes of death

MANAGEMENT

HEALTHCARE RESOURCES AVAILABLE FOR PROGRESSIVE NEUROLOGICAL DISEASES

CATEGORY	HEALTHCARE RESOURCE

Medical Surgical	• **Neurological Consultations**
	  - Specialized evaluations by neurologists, movement disorder specialists, or neuropsychologists.
	• **Deep Brain Stimulation (DBS)**
	  - For Parkinson's Disease to manage motor symptoms in advanced stages.
	• **Ventriculoperitoneal Shunting**
	  - For normal pressure hydrocephalus that can mimic dementia symptoms.
	• **Feeding Tubes**
	  - For ALS or advanced neurodegenerative diseases to address swallowing difficulties.
	• **Respiratory Support**
	  - Use of non-invasive ventilation (e.g., BiPAP) or tracheostomy for ALS and advanced muscular dystrophy.
	• **Electromyography and Nerve Conduction Studies**
	  - Diagnostic tools for conditions like ALS and Myasthenia Gravis.
	• **Genetic Testing and Counseling**
	  - For Huntington's Disease, muscular dystrophies, and familial forms of progressive neurological diseases.
	• **Neurosurgical Interventions**
	  - For severe cases, such as excision of masses causing secondary progressive neurological symptoms.

Medications	• **Cholinesterase Inhibitors**
	  - For Alzheimer's Disease and Dementia with Lewy Bodies (e.g., donepezil, rivastigmine) to manage cognitive decline.
	• **NMDA Receptor Antagonists**
	  - Memantine for moderate to severe Alzheimer's Disease.
	• **Dopaminergic Medications**
	  - Levodopa and dopamine agonists (e.g., pramipexole) for Parkinson's Disease.
	• **Muscle Relaxants**
	  - Baclofen or tizanidine for spasticity in ALS, MS, and muscular dystrophies.

	• **Immunosuppressants**
	  - For MS and Myasthenia Gravis, including corticosteroids, methotrexate, or azathioprine.
	• **Biologic Therapies**
	  - Monoclonal antibodies like ocrelizumab for relapsing-remitting MS.
	• **Anticonvulsants**
	  - For conditions with associated seizures or nerve pain, such as MS or ALS (e.g., gabapentin, pregabalin).
	• **Antidepressants and Antipsychotics**
	  - For mood and behavioral symptoms in Huntington's Disease, FTD, and dementia.
	• **Riluzole and Edaravone**
	  - Approved for ALS to slow disease progression.
	• **Acetylcholinesterase Inhibitors**
	  - For Myasthenia Gravis (e.g., pyridostigmine) to enhance nerve-muscle communication.
	• **Anticoagulants and Antiplatelet Drugs**
	  - For Vascular Dementia to prevent further strokes (e.g., aspirin, clopidogrel).

Rehabilitation Treatment	• **Physical Therapy**
	  - Focus on maintaining mobility, managing spasticity, and preventing contractures.
	• **Occupational Therapy**
	  - Assist with adapting daily activities, mobility aids, and home modifications.
	• **Speech Therapy**
	  - Address speech clarity, cognitive communication, and swallowing difficulties for conditions like ALS, Parkinson's, and FTD.
	• **Respiratory Therapy**
	  - For ALS and advanced stages of muscular dystrophy, including airway clearance techniques.
	• **Psychological Support and Counseling**
	  - Address mood disorders, caregiver support, and patient coping mechanisms.
	• **Support Groups and Advocacy**
	  - Community programs for patients and caregivers tailored to conditions like Alzheimer's, Parkinson's, and MS.
	• **Adaptive Equipment Training**
	  - For mobility aids like wheelchairs, walkers, and communication devices for advanced conditions.

Areas for Evaluation	
Speech	Evaluate articulation, intelligibility, and motor speech skills. - Assess motor planning and motor execution for speech

Language	Evaluate receptive and expressive language (comprehension, vocabulary, and sentence formulation).
Cognitive Communication	Assess cognitive functions impacting communication (attention, memory, problem-solving, executive functioning).
Swallowing	Evaluate the oral, pharyngeal, and esophageal phases of swallowing.
Voice	Evaluate vocal quality, pitch, loudness, resonance, and breath support.
Social Communication	Assess social interaction skills: pragmatics, turn-taking, topic maintenance, and the ability to interpret nonverbal cues.
Fluency	Assess speech fluency for stuttering or cluttering that may arise with neurological conditions.
Hearing and Auditory Processing	Screen for hearing loss and evaluate auditory processing disorders. - Relevant for patients who experience both hearing impairments and neurological communication issues
AAC	Assess the need for AAC devices or strategies for those with severe speech impairments (e.g., ALS, advanced dementia)

Evaluation Materials	
Speech	● Frenchay Dysarthria Assessment (FDA) - Evaluates the severity and type of dysarthria, focusing on articulation, phonation, prosody, and speech intelligibility. ● Assessment of Intelligibility of Dysarthric Speech (AIDS) - Measures speech intelligibility in various speaking contexts. ● Perceptual Rating Scale for Dysarthria - A subjective rating scale to assess the severity of dysarthria based on perceptual features. ● Acoustic Analysis - Uses software to measure acoustic parameters of speech, such as frequency, intensity, and duration.
Language	● Boston Diagnostic Aphasia Examination (BDAE) - A comprehensive assessment of language abilities, including fluency, comprehension, naming, and repetition. ● Western Aphasia Battery (WAB) - Another comprehensive language assessment that provides a detailed profile of language abilities. ● Minnesota Test for Differential Diagnosis of Aphasia (MTDDA) - Assesses specific language impairments to aid in differential diagnosis. ● Clinical Evaluation of Language Fundamentals (CELF) - Evaluates a wide range of language skills, including receptive and expressive language.
Cognitive	● Frontal Assessment Battery (FAB)

Communication	- Assesses executive functions, such as planning, problem-solving, and attention. ● Mini-Mental State Examination (MMSE) - A brief cognitive screening tool to assess orientation, memory, attention, and language. ● Montreal Cognitive Assessment (MoCA) - A more comprehensive cognitive assessment tool that includes tasks related to attention, memory, language, visuospatial skills, and executive functions. ● Functional Communication Measures (FCM) - Evaluates communication skills in real-life situations, such as requesting, informing, and social interaction.
Swallowing	● Modified Barium Swallow Study (MBSS) - A radiographic study to visualize the swallowing process and identify any swallowing difficulties. ● Fiberoptic Endoscopic Evaluation of Swallowing (FEES) - A direct endoscopic examination of the pharynx and larynx during swallowing to assess pharyngeal function. ● Manometry - Measures the pressure generated by the pharyngeal and esophageal muscles during swallowing. ● Clinical Swallow Evaluation - A bedside clinical assessment to identify potential swallowing difficulties and determine the need for further instrumental evaluation.
Voice	● Computerized Speech Lab (CSL) - Measures acoustic parameters of voice, such as fundamental frequency, intensity, and vocal quality. ● Perceptual Rating Scale for Voice Quality - A subjective rating scale to assess the severity of vocal quality impairments, such as hoarseness, breathiness, and strain. ● Stroboscopy - A visual examination of the vocal folds to assess vocal fold vibration and identify any abnormalities. ● Electroglottography (EGG) - Measures vocal fold contact and vibration patterns.
Social Communication	● Pragmatic Language Assessment - Evaluates social communication skills, such as turn-taking, topic maintenance, and nonverbal communication. ● Social Skills Rating Scales - Assess social skills in various contexts, including school, home, and community. ● Direct Observation - Observing the individual's social interactions in natural settings. ● Interview with Caregivers - Gathering information about the individual's social communication skills and behaviors.
Fluency	● Stuttering Severity Instrument (SSI-4)

	- Measures the frequency, duration, and physical concomitants of stuttering. • Stuttering Severity Rating (SSR) - A global rating of stuttering severity. • Fluency Shaping Therapy - A direct therapy approach that focuses on modifying speech behaviors to reduce stuttering.
Hearing and Auditory Processing	• Pure Tone Audiometry - Measures hearing sensitivity at different frequencies. • Speech Audiometry - Assesses speech perception and understanding in different listening conditions.
AAC	• Communication Matrix - A tool to assess the individual's current communication abilities and identify potential AAC systems. • Functional Communication Assessment - Evaluates the individual's communication needs in various contexts. • AAC Device Trials - Trying out different AAC devices to determine the best fit for the individual's needs and abilities.

Treatment Strategies	
Speech	• Articulation and Phonological Therapy: Targeting speech sound production errors. • Oral Motor Exercises: Improving lip, tongue, and jaw strength and coordination. • Prosodic Training: Enhancing intonation, stress, and rhythm of speech.
Language	• Language Stimulation: Using techniques to stimulate language production and comprehension. • Cognitive-Linguistic Therapy: Targeting cognitive skills that underlie language, such as attention, memory, and problem-solving.
Cognitive Communication	• Cognitive Rehabilitation: Training cognitive skills such as attention, memory, and problem-solving. • Communication Strategies Training: Teaching strategies to compensate for cognitive deficits and improve communication.
Swallowing	• Oral Motor Exercises: Improving lip, tongue, and jaw strength and coordination. • Postural Techniques: Adjusting head and body position to facilitate swallowing. • Swallowing Maneuvers: Using specific swallowing techniques to improve swallowing safety and efficiency. • Dietary Modifications: Adjusting food texture and consistency to improve swallowing.

Voice	• Vocal Hygiene: Educating patients on vocal hygiene practices. • Vocal Exercises: Targeting specific vocal parameters, such as pitch, loudness, and quality. • Respiratory Training: Improving respiratory support for voice production.
Social Communication	• Social Skills Training: Teaching social skills, such as initiating conversations, maintaining eye contact, and taking turns. • Pragmatic Language Training: Targeting social use of language, including understanding and using nonverbal cues. • Role-Playing and Simulation: Practicing social interactions in simulated situations.
Fluency	• Fluency Shaping: Directly teaching fluent speech behaviors, such as reduced speech rate and smooth transitions. • Stuttering Modification: Focusing on reducing the physical and emotional components of stuttering. • Cognitive Behavioral Therapy: Addressing the psychological aspects of stuttering, such as anxiety and negative self-perception.
Hearing and Auditory Processing	• Auditory Training: Improving auditory processing skills through specific exercises and activities. • Hearing Aid Fitting and Counseling: Providing appropriate hearing aids and counseling on their use. • Assistive Listening Devices: Using assistive devices to enhance auditory input.
AAC	• AAC Assessment: Identifying the individual's communication needs and selecting appropriate AAC systems. • AAC Training: Teaching the individual and their caregivers how to use AAC effectively. • Environmental Modifications: Adjusting the environment to support communication, such as using visual supports and communication boards.

EDUCATIONAL

- **Education and Awareness**
  - Educate clients and caregivers about the specific disorder, including symptoms, progression, and available treatments
  - Provide information on local and national support organizations and resources
  - Conduct community outreach to increase awareness and reduce stigma
- **Care Coordination**
  - Assist with finding and accessing appropriate medical specialists and healthcare providers
  - Coordinate communication between the client, family, and various members of the healthcare team
  - Help navigate insurance coverage and financial assistance programs
- **Rehabilitation Services**
  - Refer clients to physical, occupational, and speech therapists to address mobility, cognition,

communication, and swallowing issues
- Ensure clients receive necessary assistive devices and adaptive equipment
- Provide training for clients and caregivers on using rehabilitation strategies and equipment

➢ **Supportive Services**
- Connect clients to counseling and support groups to cope with the emotional impact of the disorder
- Assist with advance care planning, including power of attorney and living wills
- Provide respite care and caregiver education to prevent burnout

➢ **Continuous Monitoring and Adjustment**
- Regularly assess clients' needs and adjust care plans accordingly
- Monitor for changes in symptoms and complications, and promptly address them
- Provide ongoing education and support to clients and caregivers as the disorder progresses

CRITICAL MEMBERS OF THE MANAGEMENT TEAM	
Members	**Roles**
Neurologist	• Diagnoses the specific neurological disease and monitors progression • Develops and adjusts treatment plans, including medication management • Coordinates with other specialists and educates patients and families
Speech-language Pathologist	• Assesses and treats communication disorders and swallowing difficulties • Implements communication strategies and trains caregivers • Provides cognitive stimulation exercises
Occupational Therapist	• Improves patients' ability to perform daily activities and maintain independence • Recommends adaptive equipment and home modifications • Addresses fine motor skills and cognitive abilities through functional activities
Physical Therapist	• Assesses and treats mobility, gait, and balance issues • Develops exercise programs and trains in the use of mobility aids • Provides strategies for fall prevention and pain management
Primary Care Physicians	• Manages overall health and co-existing medical conditions • Coordinates care between specialists • Provides continuity of care throughout disease progression
Psychologists or Psychiatrist	• Assesses and treats mental health issues and cognitive changes • Provides counseling and coping strategies • Supports patients and families in adjusting to life changes

Social Worker	• Connects patients and families with community resources and support services. • Provides counseling for psychosocial issues and helps navigate financial challenges. • Facilitates access to long-term care or home health services when needed.
Respiratory Therapist	• Evaluates and manages breathing difficulties, often seen in advanced stages of progressive neurological diseases. • Provides therapies such as non-invasive ventilation or oxygen therapy. • Educates patients and families on managing respiratory symptoms and equipment use.
Neurology Nurse (Nurse specific to PND)	• Monitors symptoms and provides hands-on care tailored to the needs of individuals with progressive neurological diseases. • Educates patients and families about medication management, symptom monitoring, and disease progression. • Collaborates with the healthcare team to ensure holistic care and addresses acute concerns during disease progression.

MEDICAL PRECAUTIONS REGARDING SPEECH-LANGUAGE THERAPY		
Actions an SLP should take to protect oneself and the client:		
• Stay updated on the client's current medical status and disease progression • Be aware of fatigue levels and adapt therapy accordingly • Ensure proper positioning to prevent falls or discomfort • Be prepared for medical emergencies (e.g., choking, seizures) • Use appropriate assistive devices for communication and swallowing		
Preventive Measures:		
Before: • Review recent medical reports • Prepare a safe, accessible therapy environment • Ensure necessary assistive devices are available • Check baseline vital signs to ensure the client is stable before starting therapy.	During: • Monitor for signs of fatigue or distress • Take frequent breaks as needed • Adapt activities to the client's current abilities • Regularly monitor vital signs throughout the session to identify any sudden changes that may indicate distress or the need to pause therapy.	After: • Document changes in function, performance, or any new concerns observed during the session. • Communicate with other team members about observations • Provide clear instructions for home practice, considering safety • Recheck vital signs post-session to confirm stability and identify any delayed responses to therapy.

SUPPORT SYSTEMS

Philippine Neurological Association - organizes public education campaigns to raise awareness about neurological conditions, provides continuing medical education opportunities for neurologists to stay updated with the latest advancements, and actively advocates for improved neurological care policies.	**The Parkinson's Foundation** - funds research to improve treatments and find a cure, provides educational resources for patients and healthcare providers, and offers a helpline for information and support.
Department of Health (DOH) - The primary responsibility of the DOH is to develop policies and guidelines for local government units. The program aims to achieve this objective by offering preventive, curative, and promotive healthcare services to Filipinos throughout their lives.	**The Multiple Sclerosis International Federation** - supports MS organizations globally, advocates for improved access to treatment and care, and facilitates international research collaborations.
The Alzheimer's Disease Association of the Philippines - offers support groups for patients and caregivers, provides education and awareness programs about Alzheimer's disease, and collaborates with international organizations for research and best practices.	**Alzheimer's Disease International** - supports Alzheimer's organizations worldwide, publishes the World Alzheimer Report annually, and organizes a global conference on Alzheimer's disease.
Parkinson's Disease Society Philippines - organizes support groups and educational seminars, provides information on managing Parkinson's disease, and raises awareness while advocating for better care for Parkinson's patients.	**The Brain & Behavior Research Foundation** - funds research on various neurological and psychiatric disorders, provides educational resources and webinars, and offers grants for innovative neurological research.

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