Neuro-cognitive Disorders Worksheet:

Neuro-cognitive Disorders	Answer	Matching Options
Delirium		A. A progressive neurodegenerative disorder marked by memory loss, language problems, and unpredictable behavior. Symptoms gradually lead to impaired cognitive and daily functioning.
Alzheimer's Disease		B. A chronic memory disorder caused by severe deficiency of thiamine (vitamin B1), most commonly due to alcohol misuse. Symptoms include persistent learning and memory problems.
Vascular Dementia		C. Cognitive decline caused by conditions that block or reduce blood flow to various parts of the brain, often following a stroke. Symptoms include problems with reasoning, planning, judgment, memory, and other thought processes.
Lewy Body Dementia		D. Impairment in cognitive functioning that can occur in people with HIV, involving at least two areas of cognitive processing, affecting concentration, memory, and problem-solving skills.
Frontotemporal Dementia		E. A rapid onset of confusion typically resulting from a reversible acute condition. Characterized by fluctuating cognitive impairments, disturbances in attention, awareness, and often a disrupted sleep-wake cycle.
Mixed Dementia		F. The inability to process sensory information despite having intact senses. Difficulty in recognizing objects, people, sounds, shapes, or smells.
Parkinson's Disease Dementia		G. A decline in thinking and reasoning that develops in many people living with Parkinson's disease after several years. Symptoms include memory lapses, impaired judgment, and difficulty with executive functions.
Normal Pressure Hydrocephalus		H. A condition featuring characteristics of more than one type of dementia, commonly Alzheimer's and vascular dementia, resulting in overlapping symptoms of both.
Creutzfeldt-Jakob Disease		I. A progressive degenerative disease of the brain found in people with a history of repetitive brain trauma. Symptoms include memory loss, confusion, impaired judgment, impulse control problems, depression, and progressive dementia.
Huntington's Disease		J. Involves progressive nerve cell loss in the brain's frontal or temporal lobes. Symptoms include changes in personality and behavior and difficulty with language.
Wernicke-Korsakoff Syndrome		K. A rare, degenerative, invariably fatal brain disorder. Symptoms include rapidly worsening dementia, muscle stiffness, twitching, and loss of coordination.
Traumatic brain injury		L. A genetic disorder causing the progressive breakdown of nerve cells in the brain. Symptoms include uncontrolled movements, emotional problems, and loss of cognition.
HIV-associated neurocognitive disorder (HAND)		M. Results from a violent blow or jolt to the head or body. Symptoms can be mild, moderate, or severe, ranging from confusion and headaches to a prolonged state of unconsciousness or amnesia.
Chronic traumatic encephalopathy		N. Distinguished by the presence of protein deposits in the brain, leading to symptoms like visual hallucinations, sleep disturbances, and parkinsonian motor symptoms.
Agnosia		O. Caused by the buildup of cerebrospinal fluid in the brain ventricles, leading to walking difficulties, urinary incontinence, and cognitive dysfunction.

Case Study Exercises

Case Study 1

A 73-year-old woman was brought to the clinic by her family due to her increasing forgetfulness and repetitive questioning. Over the past three years, she has also shown signs of mood swings and a noticeable decline in her problem-solving abilities. Recently, she has had difficulty recognizing familiar faces and places and often misplaces items in unusual locations. Her family reported that these changes have been gradual and persistent. She has a history of hypertension but no known strokes.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 2

A 42-year-old man presents with a history of depression and a progressive change in personality. He has sometimes become socially inappropriate and shows a lack of empathy towards others, which is uncharacteristic of his previous behavior. His speech has become less fluent, and his family notes a significant reduction in his vocabulary. He was previously very articulate. His work performance has declined, and he often neglects his personal hygiene.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 3

A 68-year-old retired male reports difficulties with balance, frequent falls, and complains of feeling as if his feet are stuck to the floor. His family has noticed that his memory has been declining and he frequently forgets recent conversations. A neurologist noted mild cognitive impairment and urinary incontinence. His symptoms have been gradually worsening over the past two years, with no history of alcohol abuse or head injury.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 4

A 60-year-old former professional boxer has been experiencing increasing memory lapses and episodes of confusion. His family has observed changes in his behavior and personality,

including aggression and depression. These symptoms have developed progressively over several years following his retirement from boxing. He has difficulty managing his finances and has made several poor decisions recently.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 5

A 50-year-old female with a history of alcohol abuse presents with severe memory problems. She cannot recall recent events and repeatedly asks the same questions. She seems unaware of her memory lapses. Physical examination revealed mild ataxia and nystagmus. She has been nutritionally deficient for a long period.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 6

A 55-year-old man with a known history of Huntington's disease in his family is examined for choreiform movements and difficulty with coordination. He has also shown changes in his behavior and mood, including irritability and depression. Cognitive testing reveals difficulty in organizing tasks and following plans. His condition has been progressively worsening over the past five years.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 7

An 80-year-old man exhibits rapid onset of confusion, fluctuating levels of consciousness, and vivid hallucinations. His medical history is notable for recent surgery under general anesthesia. He has been particularly disoriented during the evening hours, although slightly better in the mornings. His family describes this as a drastic change from his usual mental state.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 8

A 69-year-old woman with diabetes and a history of stroke is presenting with cognitive decline that is notably step-wise in its progression. She has difficulty following conversations and often pauses to find the right words. Her memory of past events remains relatively intact, but planning and organizing tasks have become challenging.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 9

A 76-year-old man with a history of Parkinson's disease is now showing significant memory problems. He forgets appointments and repeats questions frequently. His motor symptoms have been well controlled on medication, but his family is concerned about his worsening cognitive function. The cognitive decline has been noticeable for the past two years.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 10

A patient in their late 50s began experiencing difficulty recognizing everyday objects and their uses. Despite having clear vision, they could not identify common household items by sight, although they could describe their characteristics and functions verbally. This problem has been progressively worsening, leading to significant frustration.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 11

A 67-year-old man rapidly developed memory loss, disorientation, and muscle jerks. His family reports that he has always been healthy until recently. Over a period of a few months, he has declined to a state where he no longer recognizes family members or his environment. The progression of his symptoms has been alarmingly rapid and severe.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 12

A 30-year-old military veteran has experienced multiple concussions during service. He now suffers from persistent headaches, periods of confusion, and occasional seizures. Since his last deployment, his cognitive functioning has noticeably declined, and he has difficulty maintaining focus on tasks.

This is an example of which disorder: _____

What is your treatment plan: _____

Case Study 13

A 34-year-old man who has been living with HIV for ten years presents with complaints of difficulty concentrating, slowed thinking, and trouble with daily tasks that require planning and multitasking. His antiretroviral therapy has been consistent.

This is an example of which disorder: _____

What is your treatment plan: _____

Answers

Matching
E
A
C
N
J
H
G
O
K
L
B
M
D
I
F

Case Study 1: Alzheimer's Disease

Progressive memory loss, mood swings, and decline in cognitive function over several years are classic signs of Alzheimer's disease.

- **Pharmacological:** Acetylcholinesterase inhibitors (e.g., donepezil [Aricept], rivastigmine [Excelon], galantamine [Razadyne]) and NMDA receptor antagonists (e.g., memantine [Namenda]) are commonly prescribed to manage cognitive symptoms. Donepezil, rivastigmine, and galantamine work by slowing the breakdown of acetylcholine, a chemical important for memory and learning typically low in people with Alzheimer's. Memantine works differently by regulating the activity of glutamate, another important neurotransmitter in the brain, which can be toxic in excessive amounts.
- **Non-pharmacological:** Cognitive stimulation therapies, a structured environment, and regular physical activity can help manage symptoms.

Case Study 2: Frontotemporal Dementia (FTD)

Changes in personality and behavior, reduced language skills, and neglect of personal hygiene are indicative of frontotemporal dementia.

- **Pharmacological:** Selective serotonin reuptake inhibitors (SSRIs) have proven effective for many individuals. These include citalopram (Celexa); escitalopram (Lexapro); paroxetine (Paxil and Brisdelle); and sertraline (Zoloft). Antipsychotic medications, such as olanzapine (Zyprexa) and quetiapine (Seroquel), are also utilized to address behavioral symptoms associated with FTD. However, these medications must be prescribed with great caution in patients with dementia due to the potential for serious side effects, including an elevated risk of mortality.

- **Non-pharmacological:** Speech therapy for language symptoms and behavioral management strategies for behavioral changes.

Case Study 3: Normal Pressure Hydrocephalus

Symptoms of gait disturbance, cognitive decline, and urinary incontinence without a history of relevant trauma or substance abuse suggest normal pressure hydrocephalus.

- **Pharmacological:** There are no specific drugs; treatment mainly involves surgical intervention like ventriculoperitoneal shunting. For patients who are not suitable candidates for shunt surgery, an alternative treatment involving repeated lumbar punctures combined with acetazolamide (Diamox) may be considered. Triamterene (Dyrenium), a potassium-sparing diuretic, may also be used in cases where surgery is not possible to reduce fluid levels in the body to help manage the volume of cerebral spinal fluid, potentially alleviating symptoms.
- **Non-pharmacological:** Physical therapy to improve gait and balance, occupational therapy to assist with daily activities.

Case Study 4: Chronic Traumatic Encephalopathy

Progressive cognitive decline and behavioral changes following a history of repetitive brain trauma, typical in a professional boxer, point to chronic traumatic encephalopathy.

- **Pharmacological:** Treatment typically involves medications to manage specific symptoms, such as mood stabilizers, antidepressants, and cognitive enhancers or stimulants. Dopamine agonists like carbidopa/levodopa (Sinemet), pramipexole (Mirapex), amantadine (Gocovri, Symadine, and Symmetrel), and memantine (Ebixa, Nemdatine, and Valios) may treat apathy.
- **Non-pharmacological:** Cognitive rehabilitation therapies and psychological counseling.

Case Study 5: Wernicke-Korsakoff Syndrome

Memory problems and repetitive questioning, coupled with a history of long-term alcohol abuse and nutritional deficiencies, are characteristic of Wernicke-Korsakoff syndrome.

- **Pharmacological:** Immediate administration of thiamine is crucial to prevent progression and potentially reverse symptoms.
- **Non-pharmacological:** Long-term nutritional support and abstaining from alcohol; cognitive rehabilitation might be beneficial.

Case Study 6: Huntington's Disease

Choreiform movements, mood changes, and cognitive decline in a patient with a family history of Huntington's disease clearly match the symptoms of this genetic disorder.

- **Pharmacological:** Tetrabenazine (Xenazine) and deutetrabenazine (Austedo) are specifically approved by the Food and Drug Administration (FDA) to reduce the involuntary jerking and writhing movements known as chorea. Antipsychotic medications like haloperidol (Haldol) and fluphenazine (Prolixin) also help suppress these movements due to their side effects but may exacerbate symptoms such as dystonia, restlessness, and drowsiness. Other antipsychotics, such as olanzapine (Zyprexa) and aripiprazole (Abilify), may present fewer side effects, but caution is advised as they could potentially worsen symptoms as well. Antidepressants like citalopram (Celexa), escitalopram (Lexapro), fluoxetine (Prozac), and sertraline (Zoloft) are used not only to address mood but also to treat obsessive-compulsive behaviors associated with the disease. For mood stabilization, anticonvulsants such as divalproex (Depakote), carbamazepine (Tegretol, Carbatrol, Epitol), and lamotrigine (Lamictal) are utilized. Antipsychotic medications like quetiapine (Seroquel) and olanzapine (Zyprexa) can help control symptoms such as violent outbursts, agitation, and other manifestations of mood disorders or psychosis. However, these medications can also lead to various movement disorders as side effects.
- **Non-pharmacological:** Physical, speech, and occupational therapy are critical to maintaining functionality.

Case Study 7: Delirium

Rapid onset of confusion, fluctuating consciousness, and hallucinations following surgery suggest delirium, especially with clear temporal association with medical intervention.

- **Pharmacological:** Managing the underlying cause is primary; antipsychotics (e.g., haloperidol [Haldol]) may be used short-term for severe agitation or hallucinations.
- **Non-pharmacological:** Reorientation and cognitive engagement, maintaining a calm and well-lit environment, ensuring adequate hydration and nutrition.

Case Study 8: Vascular Dementia

A step-wise decline in cognitive function following a stroke, with specific impairments in language and executive function, is typical of vascular dementia.

- **Pharmacological:** Management of underlying conditions such as hypertension, diabetes, and cholesterol with appropriate medications; use of anti-dementia medications like those for Alzheimer's disease can be considered but are not approved by the FDA.
- **Non-pharmacological:** Cognitive rehabilitation, management of cardiovascular risk factors, and regular physical exercise.

Case Study 9: Parkinson's Disease Dementia

Memory issues developing several years after the diagnosis of Parkinson's disease, especially when motor symptoms are managed, indicate Parkinson's disease dementia.

- **Pharmacological:** Cholinesterase inhibitors (e.g., rivastigmine [Exelon] – the only FDA-approved treatment; donepezil [Aricept], galantamine [Razadyne], and memantine [Namenda]) are often used to adjust Parkinson's disease medications to optimize cognitive and motor function.
- **Non-pharmacological:** Cognitive enhancement therapy, regular physical activity, and occupational therapy.

Case Study 10: Agnosia

Difficulty in recognizing objects despite intact sensory abilities suggests agnosia, particularly when the patient can describe objects without recognizing their visual form.

- **Pharmacological:** There are no specific medications for agnosia; treatment generally focuses on managing underlying causes.
- **Non-pharmacological:** Cognitive rehabilitation and occupational therapy to help patients develop strategies to compensate for their sensory recognition deficits.

Case Study 11: Creutzfeldt-Jakob Disease

Creutzfeldt-Jakob disease is characterized by a rapid and severe decline in cognitive function, memory loss, and muscle jerks that develop quickly.

- **Pharmacological:** No effective treatments available; management focuses on symptomatic relief such as using anticonvulsants for myoclonus, antidepressants to help with anxiety and depression, and painkillers to relieve pain.
- **Non-pharmacological:** Supportive care, ensuring patient comfort, and safety interventions to prevent injuries.

Case Study 12: Traumatic Brain Injury

Persistent cognitive issues like confusion, headaches, and focus difficulties following multiple concussions suggest ongoing effects of traumatic brain injury.

- **Pharmacological:** Medications to manage symptoms such as anticonvulsants for seizures, antidepressants, and occasionally stimulants for cognitive impairment.
- **Non-pharmacological:** Cognitive rehabilitation therapy, physical therapy, and vocational therapy to assist in recovery and adaptation.

Case Study 13: HIV-associated Neurocognitive Disorder (HAND)

Cognitive impairments such as difficulty concentrating and managing daily tasks in a patient with a long-standing HIV diagnosis point to HIV-associated neurocognitive disorder.

- **Pharmacological:** Effective antiretroviral therapy is the cornerstone to prevent or mitigate HAND by controlling HIV replication. The FDA has approved numerous antiretroviral therapies (ARTs) for the treatment of HIV. These medications fall into several classes based on their mechanism of action against the virus. Here is a breakdown of the classes and some examples of drugs within each:

    1. **Nucleoside Reverse Transcriptase Inhibitors (NRTIs)**:

        - Abacavir (Ziagen)
        - Emtricitabine (Emtriva)
        - Lamivudine (Epivir)
        - Tenofovir disoproxil fumarate (Viread)
        - Tenofovir alafenamide (Vemlidy)
        - Zidovudine (Retrovir)

    2. **Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)**:

        - Efavirenz (Sustiva)
        - Rilpivirine (Edurant)
        - Doravirine (Pifeltro)
        - Etravirine (Intelence)
        - Nevirapine (Viramune)

    3. **Protease Inhibitors (PIs)**:

        - Atazanavir (Reyataz)
        - Darunavir (Prezista)
        - Lopinavir/ritonavir (Kaletra)
        - Fosamprenavir (Lexiva)
        - Saquinavir (Invirase)

    4. **Integrase Strand Transfer Inhibitors (INSTIs)**:

        - Dolutegravir (Tivicay)
        - Raltegravir (Isentress)
        - Elvitegravir (part of combination medications like Stribild)
        - Bictegravir (part of Biktarvy)

5. **Entry Inhibitors (also known as Fusion Inhibitors)**:
    - Enfuvirtide (Fuzeon)
    - Maraviroc (Selzentry)
6. **CCR5 Antagonist**:
    - Maraviroc (Selzentry) specifically targets the CCR5 co-receptor on the host cell.
7. **Pharmacokinetic Enhancers**:
    - Ritonavir (Norvir) and Cobicistat (Tybost) are used to boost the effectiveness of other HIV drugs by inhibiting liver enzymes that metabolize these drugs, thereby increasing their blood levels and effectiveness.

- **Non-pharmacological:** Cognitive rehabilitation exercises, mental health counseling, and HIV support groups.