



## Nursing Care According to NANDA-I Diagnoses, NIC Interventions, and NOC Outcomes in a Patient with Autoimmune Encephalitis: A Case Report

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### Abstract

Encephalitis, defined as inflammation of the brain tissue, is an uncommon yet serious condition that can lead to severe brain damage. Nursing care is critical in increasing the effectiveness of treatment in patients with encephalitis. In the case presented here, care was planned and implemented based on nursing diagnoses by field in the NANDA-I classification, NIC interventions, and NOC outputs. The patients' nursing diagnoses were identified as ineffective health management, imbalanced nutrition: less than body requirements, fluid volume deficit, constipation, impaired physical mobility, impaired verbal communication, hopelessness, impaired social interaction, ineffective sexuality, risk for impaired psychological health, risk for ineffective activity planning, risk for impaired independent decision making, hyperthermia, chronic pain, and risk for delayed development. The care plan for four of these diagnoses is presented.

**Keywords:** Encephalitis, Nursing Process, Nursing Diagnoses

### 1. Introduction

Encephalitis is defined as the inflammation of brain tissue. This disease can occur worldwide and at any age. It is considered a significant condition due to its potential to cause damage to the brain and the increasing prevalence globally (1-3). Encephalitis arises from infectious agents in the brain (viral, bacterial, fungal, or parasitic) or from autoimmune diseases. In the early stages of the disease, serious, acute, and potentially fatal symptoms, such as brain damage, are commonly observed. Although the severity of brain damage varies from person to person, it is often permanent (1,2). In 2021, encephalitis-related deaths worldwide were reported to be 91,947, with 242 cases in our country. The prevalence of encephalitis in 2021 was reported as 4,643,564 globally and 17,138 in our country (3). Initially presenting with a silent progression, it typically begins with a few days of malaise, myalgia, and headache. Fever is observed in 90% of patients. Nausea, vomiting, meningeal irritation, deterioration in consciousness, and increased intracranial pressure may also occur. Behavioral and speech disturbances can be seen (1-3). In treatment, especially in cases of viral encephalitis, antiviral agents should be initiated urgently. It is crucial to start treatment quickly to reduce the risk of long-term complications. Symptomatic treatment should also be included, with antipyretics for fever and antiepileptic medications for seizures (1-6).

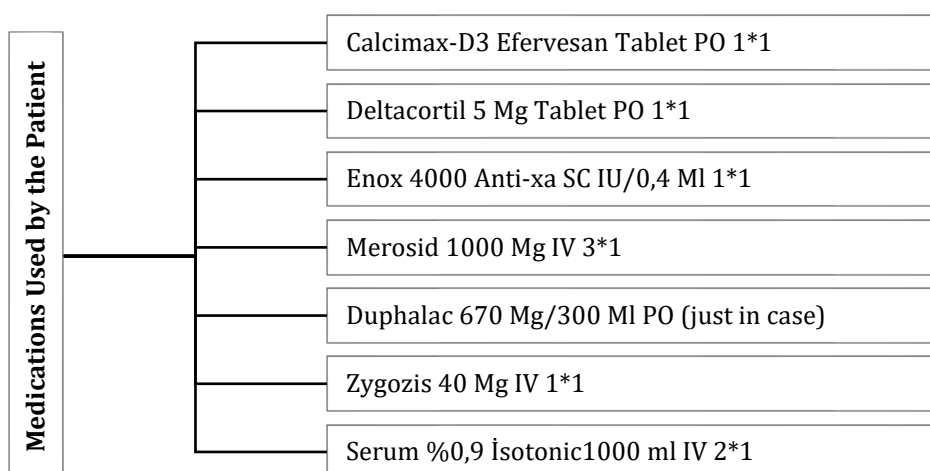
The primary aim of nursing care is to alleviate the symptoms of the existing illness, maintain fluid and electrolyte balance, ensure balanced nutrition, evaluate the implementation and effects of treatment, increase activity levels, prevent complications related to the disease, and enhance the knowledge level of the individual and their family. Nursing care should be delivered holistically to the patient and family considering health patterns. The systematic presentation of nursing care employs nursing processes and classification systems that facilitate the achievement of targeted outcomes and provide

organization. The North American Nursing Diagnosis Association (NANDA) Taxonomy II is one of the classification systems used for this purpose, comprising three levels that include areas, classes, and nursing diagnoses. As of the 2018 update, this structure consists of a total of 13 areas, 47 classes, and 244 nursing diagnoses. Utilizing the interventions specified in the Nursing Interventions Classification (NIC) for nursing diagnoses determined by NANDA has proven effective in achieving correct care outcomes. The Nursing Outcomes Classification (NOC) system is employed in the evaluation of the interventions specified by NIC, with each outcome having its definition and code number within the classification (7-8). This case presentation has been deemed necessary due to the limited number of care plans in the literature for patients diagnosed with encephalitis and the scarcity of care plans prepared using NIC-NOC interventions. Data have been collected and adapted according to Gordon's Functional Health Patterns Model.

## 2. Case Presentation

M.A., a 47-year-old single male patient, is currently unemployed. In 2021, he was diagnosed with autoimmune encephalopathy due to LGI1 antibody positivity at an external center and received treatment. At the time of diagnosis, the patient experienced complaints of dropping objects with his hands, jerking movements in his arms, kicking with his right foot, and oral twitching. No anomalies were detected in the electroencephalography and magnetic resonance imaging performed during that period. Following a leftward head deviation and the development of generalized tonic-clonic seizures, a lumbar puncture was performed. The lumbar puncture results showed no cells. The patient presented to the emergency department with complaints of hiccups, fever, chills, and speech disturbances. He was admitted to the Neurology Clinic with a preliminary diagnosis of encephalitis. The patient was evaluated on the second day of admission. Data were collected through physical examination, interviews, medical history, and demographic information.

During the physical examination, the patient's skin appeared dry, and his temperature was measured at 37.6 °C during the initial assessment; the anticipated rise in temperature was monitored frequently, at least every four hours. The patient's blood pressure was recorded at 135/88 mm Hg, and his pulse was 89 beats per minute, with a normal sinus rhythm observed on the electrocardiogram. The patient's consciousness was clear, cooperative, and oriented, although he was somewhat hesitant during communication. Lung sounds were normal, but intermittent coughing was noted. Auscultation of bowel sounds revealed a total of five bowel sounds in all four quadrants. The medications the patient was using (Figure 1) and the nursing diagnoses established on 21.09.2023 (Figure 2) were shared. The patient was informed about the case presentation, and verbal and written consent was obtained.



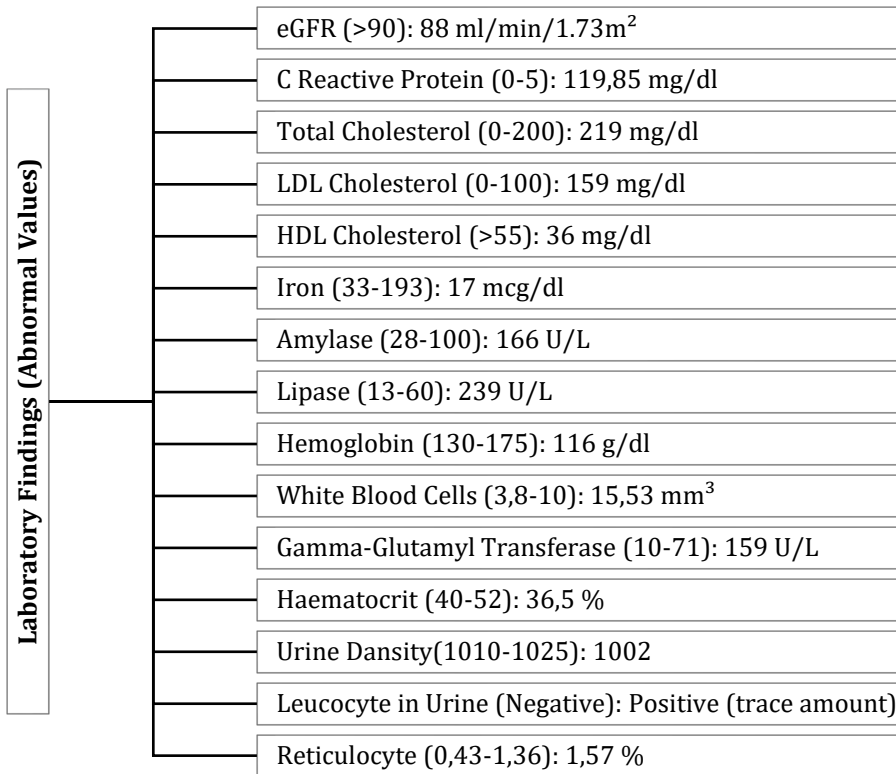
**Figure 1.** Medications Used by the Patient

<b>Domain 1. Health Promotion</b>	<ul style="list-style-type: none"> <li>• Ineffective Health Management*</li> </ul>
<b>Domain 2. Nutrition</b>	<ul style="list-style-type: none"> <li>• Imbalanced Nutrition: Less than Body Requirements*</li> <li>• Fluid Volume Deficit</li> </ul>
<b>Domain 3. Elimination and Gas Exchange</b>	<ul style="list-style-type: none"> <li>• Constipation*</li> </ul>
<b>Domain 4. Activity/Rest</b>	<ul style="list-style-type: none"> <li>• Impaired Physical Mobility</li> <li>• Disturbed Sleep Pattern</li> </ul>
<b>Domain 5. Perception/Cognition</b>	<ul style="list-style-type: none"> <li>• Impaired Verbal Communication</li> </ul>
<b>Domain 6. Self-Perception</b>	<ul style="list-style-type: none"> <li>• Hopelessness</li> </ul>
<b>Domain 7. Role Relationship</b>	<ul style="list-style-type: none"> <li>• Impaired Social Interaction</li> </ul>
<b>Domain 8. Sexuality</b>	<ul style="list-style-type: none"> <li>• Ineffective Sexuality</li> </ul>
<b>Domain 9. Coping/Stress Tolerance</b>	<ul style="list-style-type: none"> <li>• Risk for Impaired Psychological Health</li> <li>• Risk for Ineffective Activity Planning</li> </ul>
<b>Domain 10. Life Principles</b>	<ul style="list-style-type: none"> <li>• Risk for Impaired Independent Decision-Making</li> </ul>
<b>Domain 11. Safety/Protection</b>	<ul style="list-style-type: none"> <li>• Hyperthermia*</li> </ul>
<b>Domain 12. Comfort</b>	<ul style="list-style-type: none"> <li>• Chronic Pain</li> </ul>
<b>Domain 13. Growth/Development</b>	<ul style="list-style-type: none"> <li>• Risk for Delayed Development</li> </ul>

\*The marked diagnoses are shown in the care plan tables (Tables 1-4).

**Figure 2.** NANDA-I Diagnoses and Domains Based on Nursing Needs for a Patient Diagnosed with Autoimmune Encephalitis (7)

Abnormal values from the laboratory results dated 20.09.2023 related to the case are shared in Figure 2. The abnormal values observed in the findings indicate an increase in infection parameters (CRP, WBC, and positive leukocyte in urine), and treatment with Meropenem 1000 mg IV three times daily was initiated. The elevation of amylase and lipase was due to an autoimmune process. The individual exhibited low levels of hemoglobin, hematocrit, and iron, with no signs of bleeding noted during the physical examination. The estimated glomerular filtration rate (eGFR) was found to be slightly low, approaching the lower limit. The identified infection and autoimmune response were thought to be related. The low urine specific gravity was considered potentially infection related. The elevated reticulocyte count is indicative of erythrocyte insufficiency due to anemia, which is often associated with low hemoglobin, hematocrit, and iron levels. The increased total cholesterol and LDL cholesterol levels suggest the possibility of hyperlipidemia (the individual has no known diagnosis of cholesterol-related disease). The elevated Gamma GT also raises concerns about potential liver dysfunction (no abnormalities were found in the ALT and AST values) (Figure 3).



**Figure 3.** Laboratory Findings

**Table 1.** Nursing Care Plan-1 for a Patient Diagnosed with Autoimmune Encephalitis

Nursing Diagnosis 1. Ineffective Health Management		Domain: 1	Class: 2	Concept: Health Management	Diagnosis Code: 00078
Related Factors: Conflicts in decision-making, complexity of the treatment regimen, weakness, intra-family conflict.					
Expected Patient Outcomes					
<ol style="list-style-type: none"> <li>1. The individual will adhere to the recommended treatment program and perform daily living activities as advised.</li> <li>2. The individual will organize the health program as directed by health professionals.</li> </ol>					
NIC Interventions					
<p><b>Facilitating Learning:</b> Communication was established with the individual through eye contact. When expressing himself or asking questions, the individual was encouraged to articulate words one at a time, allowing for self-expression.</p> <p><b>Support for Self-Change:</b> The importance of adherence to treatment for health status was explained to the individual. It was emphasized that questions directed to the companion (his mother) should be answered by the patient himself, as providing answers on his behalf does not facilitate his process but rather diminishes his self-confidence.</p> <p><b>Mutual Goal Setting:</b> The significance of mobilization was discussed. With the individual expressing feelings of fatigue, a goal was set for a ten-minute walk within the room each time. It was explained that pain is a possible occurrence during the disease process, and the individual was instructed to report any pain experienced.</p>					
NOC Outcome Measurement	Selected Indicators	(20.9.23)	(23.9.23)	Evaluation: As a result of the interventions implemented, the individual's participation in treatment has increased. It was observed that the individual is willing to improve his health status. The care score was elevated from 19 to 28.	
1: Never	-Implements the recommended treatment program.	4	5		
2: Rarely	-Monitors response to treatment.	3	4		
3: Sometimes	-Performs daily living activities as recommended.	2	4		
4: Often	-Expresses himself when experiencing pain.	3	5		
5: Always	-Attempts to understand and respond to directed questions.	4	5		
Care Score	-Reports a decrease in pain experience.	3	5		
		19	28		

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**Table 2. Nursing Care Plan-2 for a Patient Diagnosed with Autoimmune Encephalitis**

Nursing Diagnosis 2. Imbalanced Nutrition: Less than Body Requirements		Domain: 2	Class: 1	Concept: Nutritional Intake	Diagnosis Code: 00002
Related Factors: Loss of appetite, inadequate nutrient intake, lack of basic nutrition knowledge.					
Expected Patient Outcomes					
<ol style="list-style-type: none"> <li>The individual will express willingness to maintain the planned dietary regimen.</li> <li>The individual will report feeling more energetic and adhere to the planned dietary program and complete meals.</li> </ol>					
NIC Interventions					
<p><b>Nutritional Therapy:</b> Fluid replacement was provided during times when the patient could not eat. The freedom of consume preferred foods (with physician’s approval) was granted.</p> <p><b>Nutritional Counseling:</b> The importance of nutrition for a quicker resolution of the inflammatory process was explained. It was noted that decreased activity and inadequate nutrition could lead to skin integrity issues. The individual was motivated while taking meals.</p> <p><b>Monitoring Nutrition:</b> The possibility of experiencing loss of appetite due to illness was explained. The amount of food consumed after meals was inquired about. Environmental factors were managed by removing unpleasant odors before meals, and an appropriate setting was provided. It was explained that consuming food at a warm temperature. Protein-rich oral supplements were given three times a day after meals with physician oversight.</p>					
NOC Outcome Measurement	Selected Indicators	(20.9.23)	(23.9.23)	Evaluation: As a result of the interventions, the individual’s knowledge about the importance of nutrition has increased, and he has shown diligence and willingness in consuming meals. The care score has decreased from 18 to 9.	
1: Always	-Tries to consume meals to recover health.	4	2		
2: Often	-Strives not to skip meals.	4	2		
3: Sometimes	-Performs daily living activities as recommended.	3	2		
4: Rarely	-Knows which foods are beneficial for him.	3	2		
5: Never	-Pays attention to the organization of the environment before meals.	4	1		
Care Score		18	9		

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**Table 3.** Nursing Care Plan-3 for a Patient Diagnosed with Autoimmune Encephalitis

Nursing Diagnosis 3. Constipation		Domain: 3	Class: 2	Concept: Gastrointestinal Function	Diagnosis Code: 00011
Related Factors: Inadequate nutrition, sedentary lifestyle, polypharmacy, environmental changes.					
Expected Patient Outcomes					
<ol style="list-style-type: none"> <li>1. The individual will express that he does not have constipation by rating it (1-5: always, often, sometimes, rarely, never).</li> <li>2. The individual will state that there is no blood or pain during defecation.</li> <li>3. The individual will describe his stool as soft and formed.</li> </ol>					
NIC Interventions					
<p><b>Bowel Management:</b> The state of distension, elimination habits, and activity level were evaluated. Regular bowel elimination was targeted (fiber intake was increased, adequate hydration was ensured, and the individual was encouraged to sit on the toilet at the same time each day). An enema was applied when there was no defecation.</p> <p><b>Fluid Management:</b> The importance of fluid intake in preventing constipation was explained to the individual and family.</p> <p><b>Enema Administration:</b> Information about enemas was provided to the individual and family. An enema was administered on 21.09.23, and there was no need for it on subsequent care days. The individual was instructed not to strain during defecation. Pain assessment was conducted. The importance of movement for bowel elimination was discussed, and the individual was encouraged to move within the room and in bed.</p>					
NOC Outcome Measurement	Selected Indicators	(20.9.23)	(23.9.23)	Evaluation: As a result of the interventions, an increase in bowel movements was observed. The care score decreased from 19 to 9.	
1: Always	- Successfully performs bowel elimination.	5 (21.9.23 laxative)	2		
2: Often	- Reports increased appetite.	4	3		
3: Sometimes	- Reports a decrease in discomfort.	5 (bowel sound:59)	2 (bowel sound: 9)		
4: Rarely	- Reports a decrease in pain.	3	1		
5: Never	- States feeling comfortable.	3	1		
Care Score		19	9		

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**Table 4.** Nursing Care Plan-4 for a Patient Diagnosed with Autoimmune Encephalitis

Nursing Diagnosis 4. Hyperthermia		Domain: 11	Class: 6	Concept: Thermoregulation	Diagnosis Code: 00007
Related Factors: Illness, dehydration					
Expected Patient Outcomes					
<ol style="list-style-type: none"> <li>The skin temperature and sweating will demonstrate effective thermoregulation according to severity (1-5: severe, serious, moderate, mild, no deviation from normal).</li> <li>The individual and family will identify methods to prevent and reduce body temperature elevation and recognize the signs and symptoms of hyperthermia.</li> </ol>					
NIC Interventions					
<p><b>Assessment:</b> The individual's skin turgor, mucous membranes, blood pressure, pulse, and respiration were evaluated. The appropriateness of clothing, room temperature, and bedding materials were assessed. The individual and family were informed not to significantly increase room temperature and to avoid thick clothing and heavy bedding materials. Body temperature was monitored regularly (at least every four hours and more frequently if needed).</p> <p><b>Education:</b> Signs of hyperthermia, such as shivering and sweating, were explained to the family. They were instructed to notify the nurse when these symptoms are observed. It was advised that the individual could take a lukewarm bath when body temperature rises. On 21.09.23, the individual had a fever of 37.9°C, and a lukewarm bath was administered. The individual was provided with 1500-2000 ml of fluids intravenously. In cases of persistent hyperthermia, antipyretic treatment was planned based on physician recommendations.</p>					
NOC Outcome Measurement	Selected Indicators	(20.9.23)	(23.9.23)	Evaluation: As a result of the interventions, the individual's body temperature was brought under control, and hydration was ensured. The care score improved from 11 to 18.	
1: Severe	- Effective thermoregulation (body temperature 36.5-37.5°C).	2	4		
2: Serious	- No changes in neurological status.	3	5		
3: Moderate	- Vital signs remain within normal ranges.	3	5		
4: Mild	- Adequate hydration is maintained (2000 ml fluid intake).	3	4		
5: No deviation from normal					
Care Score		11	18		

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### 3. Discussion

Within the scope of "Health Promotion" (Domain 1), the nursing diagnosis of "Ineffective Health Management" was addressed. The individual was responsive during communication, answering questions, but exhibited reluctance. It was explained that accepting the illness and being willing to express oneself could lead to a better sense of well-being, and that they should not hesitate to articulate their feelings. Time was given for the individual to express themselves, with an expectation to maintain eye contact while completing their sentences. Subsequently, the individual expressed that engaging in dialogue and having conversations with nurses made them feel better. Through the nursing interventions, it was observed that the individual became more willing to express themselves and behaved more comfortably. Literature indicates that individuals often cannot return to their pre-illness lifestyles due to the prognosis of the disease, which diminishes their quality of life and complicates coping mechanisms (1). Additionally, chronic pain is noted to complicate coping (9).

Regarding "Imbalanced Nutrition: Less Than Body Requirements" (Domain 2), it was observed that the individual disliked hospital food and had a reduced appetite due to their illness. The importance of nutrition in treatment success was communicated to the individual. It was noted that the individual ate more willingly when their preferred foods were available. Adequate time was allocated for meals, the room was ventilated, and attention was given to cleanliness and organization. Furthermore, it was emphasized that they needed to replenish fluids lost through excessive sweating (a condition they also experienced in their normal life). The individual was informed that their current lip dryness could be due to dehydration. They expressed difficulty with eating but stated that drinking mineral water was more beneficial. The nursing interventions resulted in the individual striving to consume their meals and demonstrating willingness to do so. One study emphasizes that inflammatory diseases can affect individuals' appetites, highlighting the need for risk factor identification and nursing intervention planning, calling for more research in this area (10).

In relation to "Constipation" (Domain 3), it was reported that the individual defecated approximately 2-3 times a week, with the last defecation occurring three days prior. Fluid intake was monitored, and the individual was encouraged to mobilize both in bed and outside of it. These nursing interventions increased the individual's bowel movements, although a laxative syrup was required for defecation afterward. The importance of mobilization and fluid intake was communicated one-on-one, and it was observed that the individual made efforts to remain mobile rather than staying in bed. The individual reported feeling better as they moved more. Research highlights that constipation can occur within the first three days of hospitalization (11).

Regarding "Hyperthermia" (Domain 11), the individual was educated about the infection and inflammation processes, and information was provided about abnormal laboratory values. Signs of fever (shivering, sweating) were taught to the individual and their family. It was explained that these symptoms could arise due to the infection process. Body temperature monitoring was conducted at least every four hours, and more frequently if necessary. During care, the body temperature was measured at one point at 37.9°C, which was managed with lukewarm applications and antipyretic medication, bringing it back to a normal level (36.8°C). The nursing interventions observed an increase in comfort for the patient, who had previously been disturbed and anxious due to hyperthermia. Additionally, it was noted that both the patient and their relatives paid more attention to visitor restrictions, room ventilation, and hand hygiene. Hyperthermia can be seen in cases of encephalitis (2), and antipyretic treatment alongside physical cooling methods are identified as the most commonly used strategies in nursing care (12).

### 4. Conclusion and Recommendations

In conclusion, the implementation and monitoring of treatment for individuals diagnosed with encephalitis, education of the patient and family, monitoring of hemodynamic parameters, and provision of emotional support are fundamental components of nursing care. Proper management of the nursing process, considering these variables, is vital for delivering high-quality care and achieving optimal patient outcomes. The NIC interventions and NOC outcomes developed to strengthen nursing care and provide a systematic perspective demonstrate the success of interventions, outcomes, and evaluations through care scores. There is a need in the literature for nursing professionals and nursing students to learn better from care plans prepared with NIC interventions and NOC outcomes, to increase awareness and comprehension of their practice.

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