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Nursing care plan in a minor patient with altered basic needs secondary to endocarditis and probable cerebral hemorrhage, based on Virginia Henderson's model

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Keywords

Virginia Henderson,
NANDA,
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infant,
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Abstract

Introduction: Currently nursing is based on a theoretical structure and the nursing process , which is an evidence-based method for nursing care to be carried out. . The nursing process consists of a series of steps: data collection, nursing diagnosis, planning, execution and evaluation, which are individualized in each patient for care through a focus of the solution of the problems that are based in theories and conceptual models of nursing. **Objective:** To identify and apply the process of nursing care in a younger infant with endocarditis based on the Virginia Henderson model. **Methodology:** The choice of an infant was made at the National Institute of Cardiology "Ignacio Chávez " in the pediatric cardiac service . S and requested informed parental consent for further mind get the data through an interview, performed physical examination and assessment through the format of the 14 basic needs of Virginia Henderson, thus formulating the nursing diagnoses according to the NANDA where nursing interventions were established and the evaluation of these through the NIC and NOC. **Conclusions:** The process of nursing care is an instrument which guarantees the quality of care offered by the nurse as it promotes a greater and better interaction between the nurse, the patient and the family, promoting research for the realization of individualized plans . It has also been seen that there is social recognition on the part of the patients , helping the nurse to demand adequate remuneration for the services she provides, as well as being legally supported.

Introduction

The knowledge base of modern nursing raises its foundations in the nursing process (PE), the scientific method applied to care. In addition to applying a method of systematic work, nurses need to define their field of action. The development of models of nursing care allows for a conceptualization or a grounded vision of nursing, defining its nature, mission and objectives, focusing thought and action from a vision of the finished or conceptual framework (Bellido, 2010).

One of the models of care that has greater acceptance in our environment is Virginia Henderson. There are several reasons that have led to its adoption and validity in our days and that are particularly important to clinical nurses. The Virginia Henderson model is fully compatible with PE, an essential issue for application in practice (Bellido, 2010).

Theoretical Maco

Bacterial endocarditis (BS) is a condition that is often poorly diagnosed in neonates and infants (N and L) with problems in diagnostic suspicion, in bacteriology and with the different treatments available.

Infective endocarditis (IE) is an inflammatory, exudative and proliferative disease of the endocardium, which most frequently affects the leaflets, produced by a wide variety of microorganisms. The most frequent lesions are warts or vegetations that form and grow through the colonization by germs of aggregates of fibrin and platelets, the so-called fibrinoplaquetary thrombus . In the vast majority of cases, these phenomena originate from small lesions of the endothelium caused by hemodynamic alterations or presence of intracavitary foreign material (prosthesis, etc.). Bouillaud used the terms of endocardium and endocarditis in 1835, but it was Osler, from 1835, who studied the disease extensively. In 1940, the first patient with penicillin was treated, and since then improvements have been made in the clinical, microbiological, diagnostic and therapeutic aspects, with an improvement in the prognosis of the disease. Mortality, in the active phase of EI on native valve is 12%, with a survival of 81% at 10 years. In late prosthetic EI, mortality is less than 5% if it is caused by streptococci, and it can be 50% if they are staphylococci (Vallés, 2000)

Pathogenesis: A lesion in the endothelium is the inducer of a thrombogenesis that causes bacteria to adhere and form a vegetation. In children with cardiac malformations and with turbulence or abnormal flow, lesions in the endothelium can easily occur. Catheters can traumatize the endocardium. During a bacteremia, if enough bacteria survive in the blood, they can spread and attach to the endocardium. During platelet thrombogenesis , deposits of platelets, fibrin, blood cells and aseptic thrombi form. The bacteria adhere to the aseptic thrombus and above these organisms are deposited platelets, fibrin and inflammatory cells, which causes an increase in the size of the vegetation. Microorganisms trapped in vegetation are protected against phagocytic cells and defense mechanisms (Melendo , 2016).

Frequently, neonatal endocarditis occurs in the right ventricle of the newborn. The origin of bacteremia in the newborn are cutaneous or mucosal lesions, endotracheal suction, parenteral feeding and umbilical or peripheral catheters (Melendo , 2016).

Main microorganisms that cause endocarditis: *Strepotococcus bovis, Streptococcous pneumoniae, Staphilococcus aureus, Enterococcus* or even gram-negative bacteria **,** which meet under the acronym HACEK. Since its growth is slow and n blood cultures, interpretation of susceptibility testing is not always easy (Santalauria Tomas, 2014)

Clinical presentation: It can be acute, in the form of sepsis, or subacute (with greater frequency). The manifestations are very variable depending on the causative organism, the presence or not of any pre-existing heart disease, the presence or absence of prosthetic valves or cardiac devices and the location (Santalauria -Tomas, 2014).

The most frequent are:

- Prolonged fever (90-99%): Weeks or months of duration. It can be accompanied by myalgia, arthralgia or arthritis (up to 25% of children), headache and poor general condition.
- General malaise (55%), anorexia / weight loss (30%).
- Heart failure (CI) (9-30%): New onset or exacerbation of the pre-existing.
- Heart murmur (by 90%): Only in 21-25% will be a new or different breath from the pre-existing one.
- Embolic complications (28-50%): In brain (20%), lung or spleen (especially in staphylococcal infections).
- Skin lesions: Mainly petechiae (21%) (in buccal mucosa, conjunctival and extremities).
- Classical signs (5-7%): Roth's retinal spots, Osler's nodules, Janeway's lesions and "splinter" hemorrhages (uncommon in the pediatric age). They look in subacute forms.
- It is plenomegaly (55-70%): Common in the subacute form with activation of the immune system.
- Other: Thoracic pain (mainly due to mialgia, rarely due to pulmonary embolism), meningitis, osteomielitis, arthritis, immunocomplex nephritis, infarction or splenic abscess (Melendo, 2016)

Exams: The blood culture is the most important technique for diagnosis, so that its realization helps detect the germ among numerous possibilities and exclude skin contamination. Samples should be of a volume of 1 to 3 mL in infants and young children, and 5 to 7 mL in older children. Three samples should be obtained for culture in different punctures in the first 24 hours. If the germ does not grow after 2 days of incubation, 2 more are made, carefully preparing the puncture site, and regardless of the phase of the febrile cycle, since the bacteraemia is continuous.

The bacteriological and histological examination of surgical pieces is also important for the diagnosis. In them are useful methods of DNA detection of infectious agents by C-reactive protein (PCR), especially against repeatedly negative blood cultures. If concomitant infection is suspected, culture should be performed on other samples (urine, sputum, cerebrospinal fluid, synovial fluid, bone marrow or lymph nodes), which can guide in case of blood culture failure. Serological diagnosis may be necessary (Olivera Avezuela , 2017)

Image: The echocardiographic findings form, along with blood cultures, the basic pillars on which the clinical diagnosis of endocarditis is based. Although the routine use of echocardiography in any child with unexplained fever is not correct, a complete study should be performed urgently when the disease is suspected. Ultrasound can determine the location and extent of lesions, the dimensions of the cardiac chambers and ventricular function, initially and evolutionarily. In addition to the vegetations, it detects the perianular extension of the infection (abscesses, pseudoaneurysms , fistulas) and other intracardiac complications (cord rupture, pericardial effusion, etc.). Together with Doppler, it assesses valvular, native or prosthetic dysfunction, before its clinical manifestation, as well as its hemodynamic repercussion. Study the morphological and dynamic aspects of vegetation and its relationship with embolism (Santalauria -Tomas, 2014).

Treatment of endocarditis

Table 1: Treatment of EI without / with prostheses by *S.viridans, S. bovisor Enterococcus*

Germen	Antibiotic	Dosage iv	Semanas
Streptococcus susceptible to penicillin (MIC <0.1 µg / mL) Alternative (or prosthesis)	Penicillin G or ceftriaxone	50,000 U / kg / 6 h 100 mg / kg / 24 h	4 4
Streptococcus susceptible to penicillin (MIC <0.1 µg / mL) Alternative (or prosthesis)	Penicillin, ampicillin and ceftriaxone with or without gentamicin		4 (6) 4 (6) 4 (6) 2 (2)
Streptococcus relatively resistant to penicillin (MIC> 0.1-0.5 µg / mL) (prosthesis):	Penicillin G or ceftriaxone plus gentamicin	50,000 U / kg / 4 h 100 mg / kg / 24 h 1 mg / kg / 8 h	4 (6) 4 (6) 2 (2)
Enterococcus, S. viridans, Abiotrophia sp., Streptococcus resistant to penicillin (MIC> 0.5 µg / mL) (prosthesis)	Penicillin G, ampicillin or ceftria x ona plus gentamicin	50.000 U/kg/4 h 1 mg/kg/8 h	4-6 (6) 4-6 (6)

Complications: The manifestations of IE are very variable. It can appear acutely and severely, such as shock or sepsis, or in a subacute and insidious form, delaying the diagnosis for several weeks or months. Most patients have a history of an underlying cardiac defect, sometimes ignored (bicuspid aortic valve and others), or are in the situations mentioned above. The most common symptom is prolonged fever for weeks or months, exceptionally absent, not very high and without a specific pattern. It can be accompanied by general malaise, anorexia, weight loss, fatigue, pallor, myalgias, headaches and sleep disorders. In almost 25% of children there are arthralgias or arthritis. Less frequently, there are digestive symptoms: nausea,

vomiting, and nonspecific abdominal pain. Congestive heart failure (in 30%of cases) or exacerbation can be reached in children with congenital or rheumatic lesions who already had it and were stabilized with treatment. Less frequent are the symptoms of pericardial involvement. There are embolic complications up to 50%.20% of children have neurological alterations due to embolisms, brain abscesses and hemorrhages, more associated with staphylococcal infections and left side defects, such as aortic or mitral valvulopathy or cyanotic heart disease, or mycotic aneurysms, with acute hemiplegia, seizures, ataxia, aphasia, focal disorders, loss or reduction of level of consciousness, meningism, symptoms of intracranial hypertension and changes in behavior (Melendo, 2016).

Presentation of the case:

GGTH. Female infant, product of a 31-year-old mother with adequate prenatal control, 8 consultations, 4 USG reported as normal, intake of vitamins and folic acid at the 2nd month, abdominal birth path, Apgar 8/9, Silverman 0.The mother reports that since the beginning of pregnancy, she was close to the father who uses drugs (marijuana).

He began his condition two months ago with thermal rises reaching 38 C and during that event he presented two convulsive events. She was taken to the emergency department of a clinic near her home, where she was evaluated and auscultate murmur, performing an echocardiogram, finding evidence of thickening of the valves of the aorta and a mass of mobile pedunculated 4X3X3 at the level of the valve,fevi70%, so that income is indicated, to which the mother refuses, and 15 days later she re-enters the private clinic for continuing with fever, presenting seizures, which is why she moves to the National Institute of Cardiology "Ignacio Chávez", for treatment specialized the value was observed irritable, saturation 85% without support of oxygen, 98% with oxygen by nasal 2lts per minute, FC 120, FR 45, TEMP 36.8, TA 70/50 Weight 11,200 kg, height 65 cm tips, height percentile for age below the P3 Percentile and weight percentile for age abovethe7thpercentile.

Generalized paleness of teguments, semi-hydrated oral mucous membranes, without cyanosis, normocephalic cranium, symmetrical eyes, symmetrical nasal bridge, permeable nostrils, normal auricular pavilions, normolynous thorax, rhythmic heart sounds with systolic murmur, semiglobose abdomen, genitalia according to age, skin with the presence of petechiae on extremities and trunk, extremities with the presence of spasticity.

Table 2: Nursing Assessment according to the needs of Virginia Henderson:

Need for oxygenation	GG TH presents FR of 45 per minute, transparent bronchial secretions with difficulty to expectorate, auscultation rales, with O2 supplement through nasal tips at 2 liters per minute, with slight generalized paleness of teguments. FC 120 per minute, MT 70/5 0 mmHg , with normal carotid pulse, 3 "capillary refill.
Need for Food / Hydration.	Altered nutritional status, with a weight of 11,200 kg, size 65 cm , height percentile for age below Percentile P3 and weight percentile for age above the 7th percentile . Parenteral nutrition to 8ml / h r, c formulated to 120 ml / 4 hrs through oral catheter semihidratadas oral mucous.
Need elimination	It does not present alterations in this need.
Need activity Mobility	It presents limitations in mobility when presenting generalized spasticity.
Dream need/Break	Shows crying and irritability when presenting difficulty to fall asleep due to multiple procedures and noises in the room.
Need Perception / Cognition / Development.	It does not present alteration of this need.

Necessity Emotional State.	The emotional state of the mother is affected, due to fear of the evolution of her process and the possible complications her daughter presents.
Need Relationship	The relationship in the family nucleus is altered due to the concern that the evolution of the process produces and only the mother is the one who shows interest in the health of her daughter.
Need Segurity	GG TH. Presents left subclavian central venous catheter for pharmacological treatment and invasive treatments. Presents morning hyperthermia of 38 C
Health Care Need.	The family requires information about the pathological process , and care derived from it.

Table 3: Nursing intervention plan

Nursing Diagnosis No 1.
Ineffective Airway R / C retention secretions M / P excessive secretions, abnormal heart rate.
NANDA code: 00031
Altered need01: Breathe normally
Domain 11: Security / Protection
Class 02: Physical injury
Objective: Maintain ventilated fields clean and free of secretions through nursing interventions.

Nursing Interventions:

Aspirationof theairways:
- Aspirate nasopharynx by means of a suction device
-Arguise respiratory sounds before and after aspiration

Determine the need for oral aspiration
- Help ventilation
-Assist frequent changes of position.
-Value respiratory muscle fatigue

Evaluation:

Evaluation (NOC)		
Maintain the respiratory state with the patency of the respiratory tract.	Target score: 15	
Indicators	Pre-intervention	Post intervention
Breathing frequency	2	4
Respiratory rhythm	1	5
Accumulation of secretions	3	4

Measurement scale	1 = Severe deviation of the normal rhythm.	2 = Substantial deviation from the normal range.	3 = Moderate deviation from the normal range.	4 = Mild deviation from the normal range.	5 = Without deviation from the normal range.

Table 4: Nursing intervention plan

Diagnosis of Nursing No 2.
Risk of ineffective brain tissue perfusion: left renal, lower pulmonary, cerebral and splenic related to embolization of valvular vegetations R / C vegetation in aorta .
NANDA Code: 00201
Altered need 01: Breathe normally
Domain 04: Activity / rest
Class 04: Cardiovascular / pulmonary responses
Objective: To opportunely identify complications derived from periods of systemic embolization .

Nursing Interventions:
-Value signs and symptoms of systemic embolization
-Vigilar signs of cerebral embolism (headache, paralysis, hemiplegia)
-Observe the extremities to detect edema nodules, erythema, decrease or absence of pulses, interdependent cold dependence total dependence and decrease of capillary refill
-Management of oxygen through nasal tips at 2 liters per minute, place the patient in an interdependent position comfortable and flattering total dependence (semifowler).

Evaluation:

Evaluation (NOC)		
Maintain tissue perfusion.	Target score: 20	
Indicators	Pre-intervention	Post intervention
Ease of breathing	3	4
Function and respiratory frequency.	3	5
Rhythm and apical heart rate.	3	5
Systolic and diastolic blood pressure	3	5
Oxygen saturation.	4	5
Determination of blood gases in arterial blood.	4	5

Measurement scale	1 = Seriously compromised	2= Substantially committed	3= Moderately committed	4 = Slightly compromised	5 = Not committed

Table 5: Nursing intervention plan

Diagnosis of Nursing No3.
Deterioration of swallowing R / C neurological deficit M / P difficulty swallowing, spasticity
NANDA Code: 00 103
Altered Need 02: Eat and drink
Domain02: Nutrition
Class 01: Ingestion
Objective: Maintain adequate nutrition and hydration in the patient, maintain a safe swallowing (decrease the risk of serious complications.)

Nursing Interventions:

Precautions to prevent aspiration
- Place the patient at 30 degrees
-Oral nutrition by orogastric tube
-Keep the suction equipment available
- Airway aspiration
-Management of nutrition

Evaluation:

Evaluation (NOC)		
Maintain the respiratory state with the patency of the respiratory tract.	Target score: 15	
Indicators	Pre-intervention	Post intervention
Breathing frequency	3	4
Respiratory rhythm	1	5
Accumulation of secretions.	2	5

Measurement scale	1 = Severe deviation of the normal rhythm.	2= Substantial deviation from the normal range.	3= Moderate deviation from the normal range.	4 = Mild deviation from the normal range.	5 = No deviation from the normal range.

Table 6: Nursing intervention plan

Nursing Diagnosis No 4.
Hyperthermia R / C disease (endocarditis) M / P skin warm to the touch, tachycardia, irritability.
NANDA code: 00007
Altered Need 02: Nutritional / metabolic
Domain 11: security / protection
Class 06: thermoregulation
Objective: Q ue the patient decrease your body temperature in a range of 36.5-over a period of 20 minutes after nursing interventions as

Nursing Interventions:

Treatment of fever
-Take the temperature every 2 hours until the control of it.
-Observe the color of the skin.
- Check blood pressure, pulse and breathing.
- Monitor presence of signs and symptoms of decreased level of consciousness.
-Administration of antipyretic drugs by medical prescription.
-Thermal control by physical means
- Give warm bath, if it is in conditions.

Security surveillance
-Vigilar vital signs .
-Vigilar neurological state.
-Observe if there are signs and symptoms of fluid and electrolyte imbalance.
-Register the human responses and the results obtained with therapeutics, procedures and treatments, in the format of clinical records and nursing notes.

Evaluation:

Evaluation (NOC)		
Keep the temperature in normal figures (thermoregulation)	Target score: 20	
Indicators	Pre-intervention	Post intervention
Hyperthermia	4	3
Headache	1	1
Muscle pain	1	2
Changes in skin color.	4	4

Measurement scale	1 = Never shown	2 = Rarely demonstrated	3 = Sometimes shown	4 = Frequently shown	5 = Always proven

Table 7: Nursing intervention plan

Diagnosis of Nursing No 3.
Impairment of physical mobility R / C central nervous system alteration by cerebral vascular event, M / P spasticity .
NANDA code: 00085 .
Altered Necessity 04: Move .
Domain 04: Activity / rest .
Class 02: Activity / exercise .
Objective: To improve the corporal mobility, to grant rehabilitation in upper extremities, to be able to diminish the risk of ulcers by pressure .

Nursing Interventions:

Change of position
-Place the patient on a suitable therapeutic mattress / bed
-Provide a firm mattress
- monitor the oxygenation status before and after a change of position
-Include the family to perform therapeutic exercises

Evaluation:

Evaluation (NOC)		
Maintain the respiratory state with the patency of the respiratory tract.	Target score: 20	
Indicators	Pre-intervention	Post intervention
Breathing frequency	2	4
Respiratory rhythm	1	5
Accumulation of secretions.	2	5

Measurement scale	1 = Severe deviation of the normal rhythm.	2= Substantial deviation from the normal range.	3= Moderate deviation from the normal range.	4= Mild deviation from the normal range.	5 = Without deviation from the normal range.

Table 8: Nursing intervention plan

Nursing Diagnosis No5.
Anxiety (caregiver) R / C Change in health status and death threat (infant). M / P Expression of concern about the health status of her daughter.
NANDA code: 00085
Altered Necessity 04: Moving
Domain 09: Coping / Tolerance to stress
Class 02: Coping responses
Objective: Help the family to reduce anxiety by providing adequate information about the health status of their daughter, as well as her pathology.

Nursing Interventions:

Decreased anxiety
-Use a serene approach to safety.
-It is motivated to try to understand the perspective of the patient about his current health crisis. -Provide objective information regarding diagnosis, treatment and prognosis.
-To encourage family members to stay with the child
-To reinforce knowledge about the disease (implement the activities mentioned in the diagnosis of poor knowledge).

Increase coping
-Value the patient's ability to make decisions.
-To encourage the manifestation of feelings, perceptions and fears.
-To encourage the patient to develop relationships with his cubicle partners and health personnel.
- Provide an acceptance environment.
-Use the serene approach of reaffirmation.
-To encourage the acceptance of its limitations.

Evaluation:

Evaluation (NOC)		
Acceptance of the crisis, and state of health	Target score: 15	
Indicators	Pre-intervention	Post intervention
Recognition of the reality of the health situation	2	4
Express feelings about your state of health	1	5
It adapts to the change in health status.	1	5

Measurement scale	1 = Never shown	2 = Rarely demonstrated	3 = Sometimes shown	4= Frequently shown	5 = Always proven.

Table 9: Nursing intervention plan

Nursing Diagnosis No6.
Fear (caregiver) R / C with the period of hospitalization (infant). M / P He comments feeling scared by his daughter's state of health.
NANDA Code: 00 148
Altered Need 09: Avoid dangers / safety
Domain 09: Coping / stress tolerance
Class 02: Coping responses
Objective: Help the family to reduce anxiety by providing adequate information about the health status of their daughter, as well as her pathology .

Nursing Interventions:

Toemotional support .
-Carn the emotional experience with the family member and support him in what he needs so that he feels calm and safe due to the health situation of his daughter
-Give the family support samples.
-Provide that the family member express their feelings of anxiety, worry, anger or sadness. -Listen to the expressions of feelings and beliefs.

Teaching procedure / treatment
-Explain step by step the procedure or treatment and how it will be done.
-Use simple and clear words according to their cultural level.
-Teaching the family member how they can cooperate during the treatment.
-Explain to the family member how he can help during his recovery.

Evaluation:

Evaluation (NOC)		
Self control of fear	Target score: 15	
Indicators	Pre-intervention	Post intervention
Look for information to reduce fear.	2	4
Use relaxation techniques to reduce fear	1	5
Control the response of fear.	1	5

Measurement scale	1 = Never shown	2 = Rarely demonstrated	3 = Sometimes shown	4= Frequently shown	5 = Always proven

Table 10: Nursing intervention plan

Nursing Diagnosis No7.
Risk of deterioration of skin integrity R / C hyperthermia, physical immobilization
NANDA code: 00046
Altered Need 08: Hygiene / skin
Domain 11: Security / protection
Class 02: Physical injury
Objective: Prevent injuries and pressure ulcers

Nursing Interventions:

skin monitoring
-Observe its color, heat, pulses, texture, edema or ulcerations, drainage in some part of the body or redness, extreme heat in membranes or mucous membranes
-Observe if there is loss of integrity of the skin, areas of pressure or friction
-Check the temperature of the skin.
-Make the bath at a pleasant temperature of the water

Cambios of position
-Make change of position every 2 hrs
-Make the appropriate changes as indicated by the state of the skin. Provide proper care to the skin.
-Inspect during the changes of position the presence of redness, extreme heat, drainage in the skin or mucous membranes.

Evaluation:

Evaluation (NOC)		
Tissue integrity of skin and mucous membranes	Target score: 20	
Indicators	Pre-intervention	Post intervention
Skin temperature	2	4
Sensitivity.	2	5
Hydration.	2	5
Tissue perfusion.	2	5

Measurement scale	1= Seriously compromised	2= Substantially committed	3= Moderately committed	4 = Slightly compromised	5 = Uncommitted

Conclusions

The completion and implementation of nursing care plans will provide an opportunity to share knowledge and experience, where you can apply the different models according to nursing theories.

The elaboration of nursing plans is based on knowledge that includes sciences and humanities, thus seeing the patient as a whole, also stimulating the nursing staff to keep up to date as it is necessary to search for information and specialized sources for its preparation and foundation of said care.

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