

## PATIENT SYSTEMATIC INTENSIVE CARE IN POST-OPERATIVE CARDIAC

Cuidados intensivos sistematizados ao paciente  
em pós-operatório cardíaco

Patient systematic intensive care in post-operatório cardiac

*Laércio Deleon de Melo<sup>1</sup>, Daniella Andrade Silva<sup>2</sup>, Juliana Silva Jeremias<sup>3</sup>*

### How to quote this article:

Melo LD, Silva DA, Jeremias JS. Patient systematic intensive care in post-operative cardiac. Rev Fund Care Online. 2021 jan/dez; 13:467-476. DOI: <http://dx.doi.org/10.9789/2175-5361.rpcfo.v13.7932>

### ABSTRACT

**Objective:** to know the current state of the art regarding the Systematization of Nursing Care in the intensive care to the patient in Post-operative Cardiac. **Methods:** integrative review of indexed data as of 2012 in accordance with the Protocol Reporting of Qualitative Research Studies. **Results:** eligible 08 articles from 40 pre-selected with denser evidence capable of responding to the objective in research. **Discussion:** to perceive the surgical patient in the scope of their physical, emotional, spiritual and social needs, the Intensive Nurse's demand constant theoretical and methodological update to base a practice based on Diagnoses and Prescriptions of Nursing Interventions able to meet the demands of the patient. **Conclusion:** the structure of care in which the Nursing Assistance Systematization methodologically supports the application of knowledge as an enabler of the Nursing Process allows the performance of an intensive care differentiated to the Patient in the Cardiac Post-operative.

**Descriptors:** Nursing; Post-operative Care; Cardiology; Intensive Care Unit.

<sup>1</sup> Nursing graduate by the Faculdade de Ciência Médicas e da Saúde de Juiz de Fora (FCMS-JF), Specialist' Degree in Neonatal and Adult Intensive Care by the FCMS-JF, MSc in Nursing by the Universidade Federal de Juiz de Fora (UFJF), Professor at Centro Universitário Estácio de Juiz de Fora.

<sup>2</sup> Nursing graduate by the FCMS-JF, Specialist' Degree in Neonatal and Adult Intensive Care by the FCMS-JF, Nurse at Estratégia de Saúde da Família.

<sup>3</sup> Nursing graduate by the FCMS-JF, Specialist' Degree in Clinical and Cultural Psychoanalysis by the Centro Universitário Celso Lisboa, Intensive Care Nurse at Centro Ortopédico Tjutrauma Clínica e Hospital.

## RESUMO

**Objetivo:** conhecer o estado da arte atual a respeito da Sistematização da Assistência de Enfermagem nos cuidados intensivos ao paciente em Pós-operatório Cardíaco. **Métodos:** revisão integrativa de dados indexados a partir de 2012 em conformidade com o Protocolo *Reporting of Qualitative Research Studies*. **Resultados:** elegíveis 08 artigos de 40 pré-selecionados com adensamento de evidências capazes de responder ao objetivo de investigação. **Discussão:** perceber o paciente cirúrgico no escopo de suas necessidades físicas, emocionais, espirituais e sociais, demanda do Enfermeiro Intensivista constante atualização teórica e metodológica para fundamentar uma prática baseada em Diagnósticos e Prescrições das Intervenções de Enfermagem capazes de suprir as demandas do paciente. **Conclusão:** a estruturação do cuidado no qual a Sistematização da Assistência de Enfermagem alicerça metodologicamente a aplicação dos conhecimentos como viabilizadores do Processo de Enfermagem permite a realização de um cuidado intensivo diferenciado ao Paciente em Pós-operatório cardíaco.

**Descritores:** Enfermagem; Cuidados pós-operatórios; Cardiologia; Unidade de terapia intensiva.

## RESUMEN

**Objetivo:** Conocer el estado del arte actual respecto a la Sistematización de la Asistencia de Enfermería en los cuidados intensivos al paciente en Post-operatorio Cardíaco. **Métodos:** Revisión integrativa de datos indexados a partir de 2012 de conformidad con el Protocolo de informes de expertos en investigación. **Resultados:** Elegibles 08 artículos de 40 preseleccionados con adensamiento de evidencias capaces de responder al objetivo de investigación. **Discusión:** Percibir al paciente quirúrgico en el alcance de sus necesidades físicas, emocionales, espirituales y sociales, demanda del Enfermero Intensivista constante actualización teórica y metodológica para fundamentar una práctica basada en Diagnósticos y Prescripciones de las Intervenciones de Enfermería capaces de suplir las demandas del paciente. **Conclusión:** La estructuración del cuidado en el que la Sistematización de la Asistencia de Enfermería fundamenta metodológicamente la aplicación de los conocimientos como viabilizadores del Proceso de Enfermería permite la realización de un cuidado intensivo diferenciado al Paciente en Post-operatorio cardíaco.

**Descriptores:** Enfermería; Cuidados postoperatorios; Cardiología; Unidad de terapia intensiva.

## INTRODUCTION

Cardiovascular Diseases (CVDs) account for one-third of all deaths worldwide, being considered a major cause of morbidity and mortality rates and a major public health problem. They account for 65% of the mortality rate of people within the age group from 30 to 69 years old, and about 20% of mortality of people aged  $\geq 30$  years old.<sup>1,2,3</sup>

The incidence of deaths is increasing among males (15.3%) and females (12.8%) progressively and independently.<sup>2,4,5</sup> Statistical trends in Brazil indicate that mortality rates of some CVDs have been gradually decreasing, justified by improvements in the confrontation favorable to the prognosis of the disease, inclusion of new technologies and modernized treatments. On the other hand, the demand for hospital care at all levels of health care services is increasing.<sup>3</sup>

The document “Innovative Care for Chronic Conditions” of the World Health Organization (WHO) states that people with CVD need planned care that can predict basic needs and provide comprehensive and specialized health care.<sup>1</sup>

From the different morbidity factors, the development of CVD may result in some intervention of surgical nature depending on whether it is acute, chronic or congenital.<sup>4</sup> When compared to only clinical treatment, the increased probability of improving the lifespan and quality of life of the patient after cardiac surgery is an essential factor for surgical treatment.<sup>3</sup>

Heart surgery is complex and has organic repercussions, changing physiological mechanisms and hemodynamic stability of the patient. This justifies the demand for intensive maintenance and rehabilitation while delivering postoperative care, which results in rapid recovery and early discharge.<sup>3,5</sup>

The complexity of the intensive care required by these patients, whose health condition may change at any moment, requires nursing care based on a systematized method, which favors decision making based on standardized and updated technical-scientific knowledge. This intensive care aims to prevent, detect and treat complications arising from the anesthetic and surgical act and the patient’s critical condition to promote the Nursing Care Systematization (NCS).<sup>1</sup>

The sustainability of nursing as a health science is based on a broad theoretical, scientific, methodological and clinical practice structure in which the NCS as part of the Nursing Process (NP) represents the tool for structuring and applying the framework of scientific knowledge to clinical practice. Also, it is regarded as a systematized and procedural method for solving problems focusing on holistically meeting the patient’s needs.<sup>6,7</sup>

Hence, the following research question was developed: “What are the possible Nursing Diagnoses and Interventions for patients receiving cardiac postoperative care in Intensive Care Units (ICUs)?” This study is justified by the importance of the NCS in the promotion of significant and effective intensive care to meet the patients’ demands. The objective of this study was to describe the current state of the art of the NCS for patients receiving cardiac postoperative care.

## METHODS

This Integrative Literature Review with thematic analysis was performed by searching articles published from 2012 onwards in accordance with the Standards for Reporting Qualitative Research (SRQR). The time and the method chosen enabled an approach capable of allowing the search, critical evaluation, synthesis of evidence and identification of updated contributions available in the critical literature regarding the object of investigation.<sup>8</sup>

In order to maintain the scientific rigor of the integrative review, the following steps were followed: 1) identification of the theme and development of the research question; 2) definition of inclusion and exclusion criteria; 3) identification of the

pre-selected and selected investigations; 4) categorization of the selected investigations; 5) analysis and interpretation of the results; and 6) presentation of the review and knowledge synthesis (Figure 1).<sup>8</sup>

The inclusion criteria were scientific articles in Portuguese, English and Spanish available online in full. Publications that did not answer the research question were excluded.

The data collection was performed through searching the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE); Scientific Electronic

Libray Online (SciELO) and *Literatura Latino-americana em Ciências da Saúde* (LILACS) [Latin American and Caribbean Health Sciences Literature]. The descriptors “Enfermagem”, “Cuidados Pós-operatórios”, “Cardiologia” and “Unidade de Terapia Intensiva”, as well as their respective translations according to the *Descritores em Ciências da Saúde* (DeCS) [Health Sciences Descriptors], were used with the Boolean Operator AND as a research resource associated with the “exact term” option. This option allowed the articles indexed in more than one database to be considered only once.

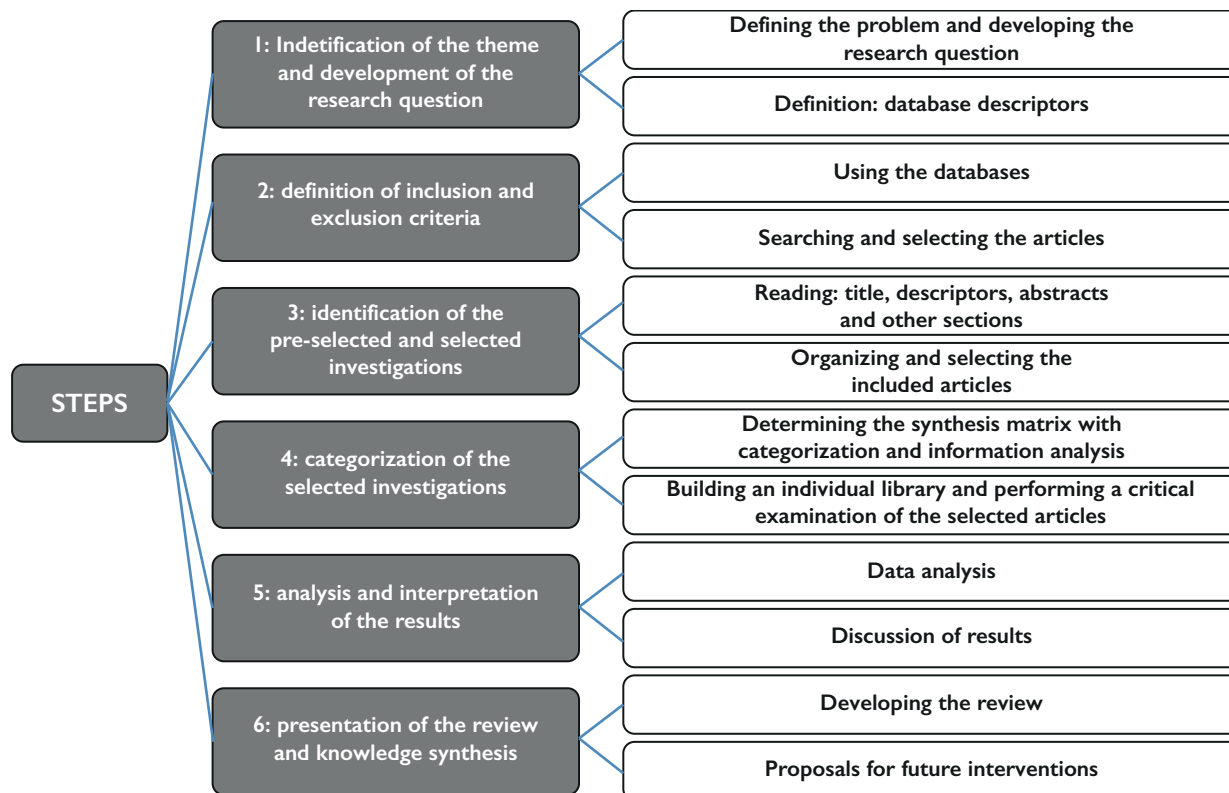


Figure 1 – Stages of the Integrative Literature Review.

The instrument for data collection was developed by using the Microsoft® Office Word® 2016. The instrument featured the following variables: year, authors, journal, and title of the article. For the evaluation and selection of the included articles, two researchers read them in full. Forty studies were pre-selected and eight were eligible to integrate the review.

The categorization of selected studies was performed by developing and using a synthesis matrix. It allowed categorizing and analyzing information, formulating an individual library using Microsoft® Office Word® 2016 for critical data analysis and interpretation of results, and organizing and tabulating data by carefully reading each article considering the contributions presented in response to the objective of this investigation.

During the presentation of the review, the data were compared and grouped by content similarity through textual discursive analysis, a technique developed by using an integrated

process of analysis and synthesis based on an exhaustive and in-depth reading. This technique makes it possible to describe and interpret the meanings and phenomena found, organizing the findings to understand the results.<sup>8</sup>

## RESULTS

The eight articles eligible for this review are summarized in Table 1. It is worth mentioning that two articles were selected from the *Revista Brasileira de Enfermagem* [Brazilian Journal of Nursing] and only one was selected from each of the other journals. This finding can be understood as growing dissemination of the state of the art on the subject across different databases. The number of authors per article varied between one and six. As for the year of publication, two articles were published in 2016 and two in 2017 (Table 1).

**Table 1** – Summary of the publications selected to compose this Integrative Literature Review.

Author	Objectives	Method	Sample	Main Results	Conclusions/ Outcome
Duarte et al. (2012) <sup>9</sup>	Describing the needs of postoperative cardiac surgery patients identified by nurses and discussing nursing care based on these needs.	Descriptive, exploratory study with a qualitative approach.	There were 21 nurses working in the ICU for ≥6 months.	The nursing team was concerned with the technical care at the bedside; however, there was a lack of greater interaction between the patient and his/her family.	The full adoption of the NP as a working methodology will contribute to an improved quality of care based on the necessary guidelines for each case and to better information on care among patients, relatives, and nursing team.
Erdmann et al. (2013) <sup>26</sup>	Understanding the view of patients undergoing coronary artery bypass grafting surgery about the process of living after this procedure and constructing a theoretical explanatory model.	Data-Based Theory.	They interviewed 33 subjects (patients, health care professionals and relatives), distributed in four sample groups.	The theoretical explanatory model was composed of 11 categories and the central phenomenon. The reference service and the cardiac rehabilitation program formed the context. The discovery of heart disease and the feelings experienced during the perioperative period were the cause and intervening conditions during the process of living after the coronary artery bypass grafting surgery. The strategies found were family support, faith, hope and participation in the rehabilitation program. Facing the changes and consequent limitations, difficulties, and adaptations associated with the new lifestyle after the surgery was the main consequence of this process.	The process of living after undergoing a coronary artery bypass grafting surgery is viewed as an opportunity for the maintenance of the patient's life associated with the need for facing significant lifestyle changes.
Amorim et al. (2014) <sup>12</sup>	Evaluating, in light of the Transpersonal Care Theory, the meanings of the therapeutic interpersonal relationship between nurses and users in relation to the preoperative nursing appointment after experiencing the surgical process.	Case study	A convenience sample consisting of three nurses and three users from an institution in which surgeries of high cardiovascular complexity were performed, totaling nine combinations of therapeutic interactions.	Three clusters were identified concerning the users' understanding of the significance of the preoperative appointment and five clusters concerning nurses' view in having this clinical experience.	By identifying the meanings of the therapeutic interpersonal relationships, it was possible to point out that 1) the forms based on the theoretical/ philosophical referential were able to identify the users' needs during the preoperative nursing appointment; 2) the nurses had the support to establish the therapeutic route in an individualized way when faced with situations emerging from the collected information, allowing clinical judgment and the application of diagnostic reasoning; 3) the diagnoses identified and the interventions implemented were viewed by the users as favorable to face the surgical process during the trans and postoperative period of cardiac surgery; and 4) that the nurses evaluated the use of Watson's theoretical reference and North American Nursing Diagnosis Association (NANDA)-Nursing Interventions Classification (NIC)-Nursing Outcomes Classification (NOC) taxonomy as positive measures, permitting them to have visibility, scientificity, and autonomy regarding their clinical practice.

(Continue)

(Continuation)

Ribeiro et al. (2015) <sup>3</sup>	Identifying the nursing diagnoses in postoperative cardiac surgery patients.	Descriptive, cross-sectional study.	There were 26 postoperative heart surgery patients admitted to an ICU.	Fifteen risk nursing diagnoses and 34 actual diagnoses were identified, the most frequent being related to safety and protection.	Identifying the nursing diagnoses in postoperative cardiac surgery patients helped nursing care and made it possible to carry out appropriate interventions according to individual needs. The reason is that patients in these conditions require immediate and accurate interventions.
Barreiros et al. (2016) <sup>25</sup>	Identifying the postoperative cardiac surgery patients' profile and causes of readmission.	Retrospective, descriptive study.	Sixty-two patients who underwent coronary artery bypass grafting surgery or had a heart valve prosthesis with subsequent readmission.	The readmission rate was 5.9%. Surgical site infection was the main cause of readmission in 87.5% of patients who underwent coronary artery bypass grafting surgery and in 12.5% of those having heart valve prosthesis ( $p < 0.001$ ). Surgical site infection was associated with obesity ( $p = 0.05$ ) and dyslipidemia ( $p = 0.007$ ).	Identifying patients at risk of surgical site infection may minimize readmission rates and decrease the costs associated with care. Furthermore, it demands careful planning of multiprofessional actions.
Carvalho et al. (2016) <sup>1</sup>	Identifying the nursing diagnoses according to NANDA-International Taxonomy II; identifying the nursing interventions according to the Nursing Intervention Classification (NIC) based on the diagnoses found; presenting the expected results according to the Nursing Outcomes Classification (NOC) based on the planned interventions.	Case report with a qualitative approach.	A postoperative heart surgery patient admitted to the ICU.	The nursing diagnoses found were risk of infection, risk of constipation, risk of fall, damage to skin integrity, willingness under an increased therapeutic regimen control, risk of electrolytic imbalance, risk of imbalance in body temperature and impaired bed mobility. The nursing diagnoses were grouped according to health promotion, nutrition, elimination and exchange, activity and rest, and safety/protection.	The patient's diagnostic profile, based on his/her needs, provided a basis for determining the nursing interventions according to the NIC, resulting in effective actions for solving problems.
Sales et al. (2016) <sup>6</sup>	Determining the epidemiological profile of women undergoing coronary artery bypass grafting surgery and identifying the main nursing diagnoses in these patients.	Descriptive-exploratory study, cross-sectional study with a quantitative approach.	There were 30 female patients who had coronary artery bypass grafting surgery.	It was identified that 83% of the women did not practice physical activities before surgery. Also, the main nursing diagnoses found were acute pain and risk of infection (related to the surgical procedure), ineffective breathing pattern, insomnia, and anxiety with frequencies of 60%, 50%, and 43% respectively.	The nursing diagnosis is one of the main steps that ensure efficient nursing care and should be explored in the field of cardiovascular care.
Machado et al. (2017) <sup>2</sup>	Elaborating and validating a nursing care protocol for patients with a ventricular assist device.	Descriptive study with a quantitative approach for methodological instrument validation.	Board of experts consisting of nurses working in the ICU.	Based on the content validation, a care protocol for patients with a VAD was created and assessed by Spanish experts. Of the 15 items evaluated by means of the content validity index (CVI), 10 presented solid evidence of validation, with Kappa ranging between 0.87 and 1.	The method enabled the validation of interventions that will contribute to qualified and standardized care for patients with a VAD.

The objectives of each publication included in this review were similar as can be seen in **Table 1**. As for their methodology, four had a qualitative approach and four a quantitative one.

## DISCUSSION

The risk and aggravating factors of CVD's are related to life habits and include poor nutrition, sedentarism, lack of hypertension and diabetes control, irregular use of medications, and use of drugs.<sup>5,9</sup> In this context, prevention is an essential therapeutic and life-saving measure.<sup>10</sup>

However, cardiac surgery constitutes a definitive therapy even if some obstructive process with the impossibility of effective recovery from myocardial tissue perfusion takes place or if the first choice of therapeutic intervention such as clinical-pharmacological treatment and procedures that increase coronary permeability (angioplasties, use of balloons and intravascular stents) are not being effective.<sup>23</sup> Surgical intervention is based on the possibility of prolonging life when clinical-pharmacological treatment has become ineffective in promoting healing and/or improving the patient's quality of life.<sup>11</sup>

Cardiovascular surgeries can be grouped into three types: corrective surgeries (angioplasty and use of balloons and stents); reconstructive surgeries (coronary artery bypass grafting), and substitutive surgeries (heart valve prosthesis implantation and transplants).<sup>5,12</sup>

Despite the evident success of angioplasties, reconstructive surgeries, especially coronary artery bypass grafting when there is occlusion of the coronary arteries, and surgeries aiming at the treatment of valve diseases (for example, heart valve prosthesis implantation) are the most performed

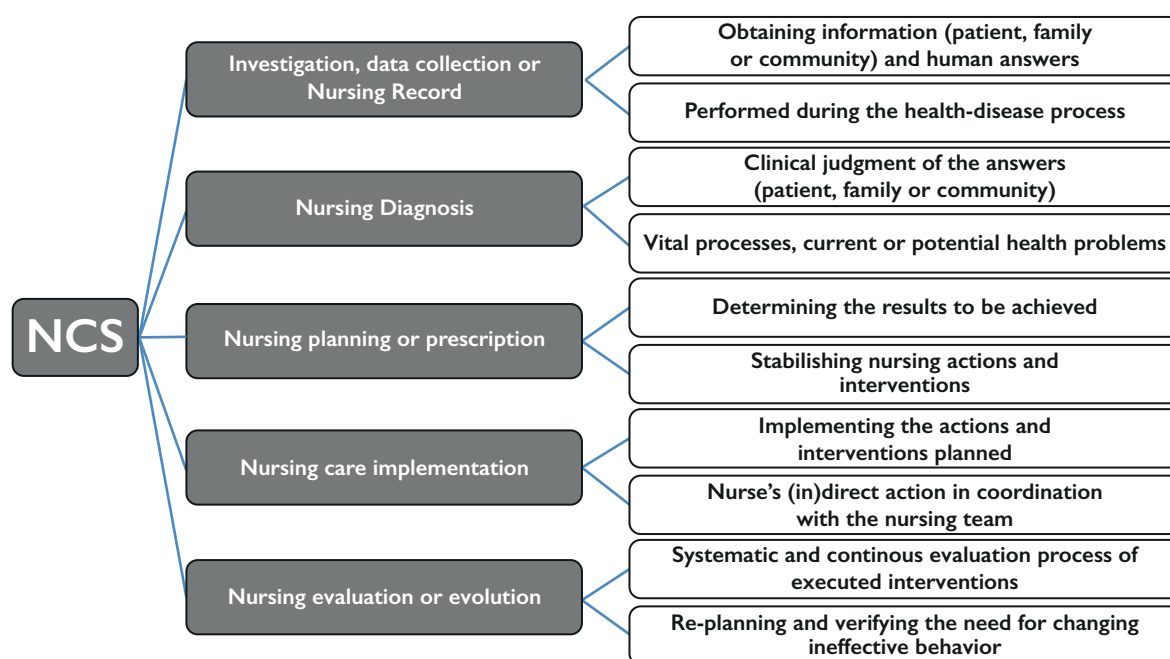
procedures. These interventions present high complexity and require adequate treatment in all surgery phases.<sup>2,5,10</sup>

The need for transferring postoperative cardiac surgery patients to the ICU is based on the classification of this sector as a critical area of the hospital for the care of critically ill patients. These patients require specialized and continuous inter-disciplinary care, specific materials and health care technologies necessary for diagnosis, monitoring and therapy for rehabilitation, and stabilization or cure of diseases and illnesses.<sup>13,14</sup>

The intensive care nursing team is composed only of intensive care nurses and nurse technicians, who represent approximately 70% of the professionals in the health care area according to the Brazilian legislation. They provide 24-hour assistance and are present during the entire process of delivering intensive care.<sup>11,15</sup>

In this context, the nurse assumes the role of the leader of the nursing team and manager of the ICU, in which each patient's needs can be satisfied by implementing a logical structure of actions. Consequently, nursing interventions capable of providing quality of life to patients and contributing to their therapy can be made. Thus, the methodological instrument capable of guiding professional care and documenting professional practice must be organized according to five interrelated and interdependent stages and articulated in a synergic manner, establishing the NCS as a facilitator of the NP (**Figure 2**).<sup>16</sup>

Among the different theoretical models, the Nursing Taxonomies with greater visibility in NCS are North American Nursing Diagnosis Association (NANDA), Nursing Interventions Classification (NIC), and Nursing Outcomes Classification (NOC). They share a universal, standardized, sequential, interrelated and common language.<sup>17,18,19</sup>



**Figure 2** – Steps of the NCS.

In this perspective, the nurse should consider the surgical risks and possibilities of complications arising from the surgical act. The success of the surgery and intensive care will depend on the interdisciplinary team members' skill, and the patient's general condition and response to each therapy performed.<sup>26,20</sup>

The nurses' work begins with the preparation of the bed to receive the intensive care patient. The ICU must have a) an automatic bed; b) a complete multi-parameter monitor with an assembled system for online Central Venous Pressure (CVP) and Invasive Blood Pressure (IBP); c) a mechanical ventilator and suction system; d) Continuous Infusion Pumps (CIPs); e) a screen for displaying the following parameters: oxygen, compressed air, and vacuum; f) a glucometer; g) an emergency cart (EC) storing lifesaving supplies, which includes material for Orotracheal Intubation, a defibrillator/cardioverter, and a pacemaker kit; and h) an Electrocardiogram.<sup>14,18,22</sup>

The Nursing Report, which is performed at admission, should address the following variables through interviews and physical examination: a) patient identification (name, age, weight, height, body mass index (BMI)); b) type of surgery, time of surgery, time of cardiopulmonary bypass (CPB) and stapling of the aorta considering any interurrences; c) Previous Pathological History (PPH): Pre-existing diseases, medication for continuous use, medication allergy, use of drugs; d) record of vital signs and capillary blood glucose; e) evaluation of functionality and location of arterial and venous catheters; f) presence of pacemaker; g) evaluation of pleural and mediastinum drains h) presence of enteral, gastric, and bladder probes, as well as drainage systems and/or other devices; i) medications administered by using a BIC, syringe pump or venoclysis; j) assessment of consciousness level and presence of pain according to standard scales; k) use of anesthetics, sedatives and painkillers; l) Mechanical Ventilation (MV), oxygen therapy and need for aspiration; j) evaluation of surgical incision: sternotomy, radiectomy or saphenectomy and dressing conditions; k) number of blood transfusions and their type, as well as additional blood component supplies; and l) data from the complete physical cephalocaudal examination.<sup>14,16,21</sup>

The Nursing Diagnosis is carried out through clinical reasoning about data available from the Nursing Report. It is defined as a clinical judgment of the individual, family or community responses to vital processes, as well as current or potential health problems. It provides the basis for selecting nursing interventions to achieve expected results.<sup>16,17</sup>

According to the NANDA, the Nursing Diagnoses that are a priority in postoperative heart surgery patients and constitute the basis for selecting actions or interventions, with which the results are aimed to be achieved, are described as follows:

1. Health Promotion: sedentary lifestyle, lack of adherence, risk-prone health behavior, ineffective health control, ineffective family health control,

improved health control willingness, ineffective health maintenance and ineffective protection.<sup>17</sup>

2. Nutrition: impaired swallowing, unbalanced nutrition (insufficient for meeting the body needs), willingness for improved nutrition, risk of unstable glycemia, risk of electrolyte imbalance and willingness for improved fluid balance.<sup>17</sup>
3. Elimination and exchange: impaired urinary elimination, risk of constipation and impaired gas exchange.<sup>17</sup>
4. Activity and rest: impaired sleep pattern, improved sleep mood, impaired physical mobility and risk of disuse syndrome.<sup>17</sup>
5. Perception and cognition: risk of acute confusion, unstable emotional control, poor knowledge, willingness to improve knowledge, impaired verbal communication and willingness to improve communication.<sup>17</sup>
6. Self-perception: hopelessness, willingness to improve hope and risk of low situational self-esteem.<sup>17</sup>
7. Roles and relationships: risk of tension while playing the role of caregiver, dysfunctional family processes, willingness to improve family processes and impaired social interaction.<sup>17</sup>
8. Sexuality: ineffective sexuality pattern.<sup>17</sup>
9. Coping with and tolerating stress: risk of stress syndrome due to changes, risk of a post-trauma syndrome, anxiety, fear, compromised family coping, ineffective coping and improved willingness to carry out coping strategies.<sup>17</sup>
10. Life principles: risk of spiritual suffering.<sup>17</sup>
11. Security/protection: risk of infection, risk of delayed surgical recovery, risk of aspiration, ineffective airway clearance, risk of bleeding, risk of shock, risk of peripheral neurovascular dysfunction, risk of vascular trauma, damaged skin integrity, risk of impaired tissue integrity, risk of injury from perioperative positioning, risk of the impaired oral mucosa, risk of pressure injury, risk of fall, risk of allergic response, risk of perioperative hypothermia and risk of body temperature imbalance.<sup>17</sup>
12. Comfort: impaired comfort, willingness to improve comfort, acute pain, and nausea.<sup>17</sup>
13. Obstacles to development/growth: there are no nursing diagnoses for adults.<sup>17</sup>

The profile of Nursing Diagnostics for each patient, elaborated from the real health needs from the Nursing Report respecting the hierarchy of priorities, offers grounds for the Prescription of Interventions and implementation of structured assistance.<sup>14,17</sup>

Interventions should be defined and prescribed focusing on the reduction and management of risks to the patient, control and maintenance of hemodynamic balance, ventilatory support, prevention and monitoring of possible complications, promotion of comfort, and maintenance of aseptic care techniques.<sup>4,6,18</sup>

The prescriptions for the health promotion diagnostics group (domain one) must contain health education activities performed by the nursing team in all perioperative phases, aiming at adaptation to the health condition, adherence to treatment, the stimulus to self-care and understanding of its restrictions and limitations. Consequently, lifestyle changes can be promoted through the adoption of guidelines regarding the management, clinical and surgical treatment of CVDs, regular use of medications, the practice of physical activities, weight control, and healthy eating.<sup>14,18</sup>

The domain five, which refers to cognitive perception and coping strategies, and domain nine, which refers to tolerance toward stress, deserve to be highlighted. The nurse can have an educational, guiding, welcoming behavior toward the patient and his/her relatives, providing emotional and psychological support to them.<sup>1,5,7</sup>

The domains two, three, four, six, seven and 12 refer to nutrition, elimination and exchange, activity and rest, self-perception, roles and relationships, and comfort, respectively. They represent the daily work instrument of the nursing team, referring to the continuous care for the body, the stimulus to perform self-care, engagement of the patient/family/caretaker in the process of health recovery, aiming at an expanded health context.<sup>9,14,18</sup>

The nutritional aspect present in domain two must be approached by giving prescriptions stating the right moment to return due to a diet, texture and its restrictions, swallowing evaluation, and strict glycemic control. In the first six hours after the surgery, the postoperative patient is going on a total fast, being hemodynamically unstable and needing glycemic control every hour according to the institutional protocol for necessary corrections. The patient will return to be on the oral diet after hemodynamic stabilization.<sup>9,14,18</sup>

The control and recording of the water balance, which are the aim of the prescriptions referring to domain three, as well as elimination and exchange, are grouped according to three main groups: gas exchange with adequate oxygen offer and evaluation of arterial gasometry at admission and every four, 12, 24 and 48 hours after admission to the ICU or whenever necessary; monitoring and control of urinary output with administration of liquids and/or diuretics; monitoring and recording of intestinal elimination with intervention in case of diarrhea or constipation as prescribed.<sup>9,14,18</sup>

The domain four, which is related to activities and rest, must be present in nursing prescriptions for preserving favorable sleep conditions, making the resting environment tranquil and noiseless or else the patient's anxiety may increase leading to insomnia.<sup>9,14,18</sup> These interventions are also applicable to domain 12, focusing on comfort involving daily assessment of the patient's potential for mobilization; reduction or elimination of possible environmental stressors and/or situations that may cause discomfort for the patient; maintenance of high bed grids; helping the patient's bed movement after the period of greater instability that usually lasts the first six hours after ICU admission.<sup>9,14,18</sup>

Another important care regarding this area is the control of signs and symptoms such as nausea and vomiting, intervening by using drugs as prescribed. Furthermore, acute pain is important in postoperative heart care, which has various levels. In this case, it is recommended the use of measurement scales and painkillers as prescribed.<sup>9,14,18</sup>

For domains five and six, it is necessary to evaluate perception and cognition by establishing verbal and nonverbal means of communication in an effective manner, such as the impossibility of speaking using facial, bodily, and written gestures, clarification of all doubts presented, guidance on the surgical process and rehabilitation, and measures to preserve comfort and stimulate the presence of family members according to the daily visit routine in the ICU.<sup>9,14,18</sup>

The nurse should also evaluate the possibility of having a humanized bed whenever possible, inserting family members and caregivers in the context of the patient's health and rehabilitation, who can be the link between family and caregiver and a positive influence on roles and relationships according to the demands presented in domain seven. It is also important to mention the importance of patient visits by nurses and other visitors in the ICU, removing doubts about treatment, recovery, and demands of private care to this patient; such action provides the family members with contact with health professionals in addition to the physician to remove their doubts and worries. This contact sometimes can be made in a language more understandable and accessible to them.<sup>9,14,18</sup>

Regarding domain nine (Coping with and tolerating stress), the focus of interventions is to control fear and anxiety, which may compromise the therapy and the patient's recovery. Psychological support must be offered to reduce damage and aggravation. Also, requesting psychology follow-up should be done if necessary.<sup>14,18,24</sup>

Domain 10 can include care regarding the respect for the different beliefs, religiosity, and spirituality of the patient and their relatives. It involves the permission to keep objects of religious nature, such as the bible, photos, representative objects and images, close to the patient's bed, in addition to the permission to receive religious visits scheduled by the institution.<sup>9,14,18</sup>

Domain 11 is the most predominant among the priority diagnosis. It is related to patient safety and the breaking of protective barriers in the postoperative heart surgery period, which has to be highlighted and receive focus from the prescriptions.<sup>14,18,23</sup>

The areas of intervention present measures to prevent infection, such as hand washing before and after correctly delivering patient care; use of gloves according to standard precaution requirements; ensure aseptic handling of all intravenous (IV) medication; ensure the use of adequate techniques for delivering care for surgical wound patients and techniques in drainage systems; among others.<sup>9,14,18</sup>

Preventing aspiration involves proper hygiene of the oral cavity, proper bed positioning with bedside normally



at 30° and ≥45° during water intake or feeding; aspiration of upper airways (UAs) secretions and use of Orotracheal Tube (OT) whenever necessary; and maintenance of proper Cuff pressure.<sup>9,14,18</sup>

Maintenance of skin integrity and prevention of Pressure Injury (PI) involves the use of pneumatic, egg box, pyramidal or gel mattresses; keeping bony prominences free of pressure; use of cushions with water according to the institution protocol; change of bed position every two hours after the patient obtains clinical stability; care for possible injuries from dressings adequate for the characteristics of the injuries; cleaning and dressing the surgical wound with care; and evaluation of circulation and peripheral perfusion.<sup>9,14,18</sup>

Managing the risk of bleeding and/or shocks involves the following actions: monitoring the functionality of all intensive monitoring equipment; preventing possible obstructions of drainage systems; controlling vital signs, pulse oximetry, cardiac output (CO), CVP and IBP, infusion of drugs through CIP with continuous volume adjustment according to medical prescription; monitoring urinary output; administering prophylactic antibiotic therapy; strict control of water balance; assistance in collecting and sending laboratory test samples; and the continuous management of the risk of an allergic response and/or drug interaction.<sup>9,14,18</sup>

The risk of falls involves measures such as keeping the bed rails elevated, assistance while moving the bed patient; use of physical restraint as needed in cases of delirium, mental confusion, psychomotor agitation or end of sedation. It is worth mentioning that this procedure should be used after failure to enforce verbal, psychological and drug restraint, as well as after medical prescription scheduled, evaluated and, checked by the nursing team every hour.<sup>9,14,18</sup>

The risk of imbalance in body temperature involves interventions such as monitoring the temperature every hour or before, whenever necessary; administering antipyretic drugs in the presence of fever; and especially preventing perioperative hypothermia by adequately warming the patient.<sup>9,14,18</sup>

The risk of vascular trauma requires care regarding puncture sites and maintenance of vascular access devices with monitoring of phlogistic signals; applying proper dressings periodically; control of permeability and recommended permanence time for each device; and aseptic care while handling them.<sup>9,14,18</sup>

After an explanation of the main diagnoses and interventions, the nurse must change the ineffective interventions. The nurse must also ensure the patient's nursing record is included on his/her chart and ensure the NCS stages are being carried out through the Nurse's Evolution and nursing technical notes. This provides theoretical, methodological, ethical, legal support for nurses.<sup>15,16,19</sup>

The NCS is viewed by Nurses as an essential value to their practice, which allows a scientific approach while providing care and ensuring a common language to be used by the whole team. Therefore, considering the physical,

emotional, spiritual and social needs of postoperative heart surgery patients demands constant training in NCS from these professionals.<sup>9,14,18</sup>

## CONCLUSIONS

Structuring care based on the NCS methodologically makes it possible to carry out the Nursing Process and provide unique intensive care for postoperative heart surgery patients.

The current knowledge of the subject led to the identification of the advances regarding the structuring and organization of the Nursing Process. The NCS and knowledge of cardiology were regarded as facilitators in this process, allowing the Nurse to interpret and deliver intensive care based on the Nursing Diagnoses capable of influencing the patient's therapy by employing a universal language.

Some essential actions need to be performed by Nurses and nursing teams, such as training, health education, institution of care protocols, the definition of team members' roles and applicability of the NCS as an expression of the Nurse's autonomy. Hence, further research is suggested to broaden the knowledge on the subject, especially interventionist investigations with a quantitative approach.

## REFERENCES

1. Carvalho IM, Ferreira DKS, Nelson ARC, Duarte FHS, Prado NCC, Silva RAR. Sistematização da assistência de enfermagem no pós-operatório mediato de cirurgia cardíaca. *Revista Online de Pesquisa Cuidado é Fundamental*, 2016; 8(4): 5062-67.
2. Machado RC, Gironés P, Souza AR, Moreira RSL, Von Jakitsch CB, Branco JNR. Nursing care protocol for patients with a ventricular assist device. *Rev Bras Enferm* 2017; 70(2): 335-41.
3. Ribeiro CP, Silveira CO, Benetti ERR, Gomes JS, Stumm EMF. Diagnósticos de enfermagem em pacientes no pós-operatório de cirurgia cardíaca. *Revista Rene* 2015; 16(2): 159-67.
4. Clemente EM, Silva BCO da, Souza Neto VL, Dantas SC, Albuquerque AV, Silva RAR. Diagnósticos de enfermagem no pós-operatório de cirurgia cardíaca: revisão integrativa. *Revista enfermagem UFPE on line* 2016; 10(7): 2679-86.
5. Barretta JC, Auda JM, Barancelli MDC, Antonioli D. Pós-operatório em cirurgia cardíaca: refletindo sobre o cuidado de enfermagem. *Revista Online de Pesquisa Cuidado é Fundamental*, 2017; 9(1): 259-264.
6. Sales PC, Silva SMMB, Rocha FA. Diagnóstico de enfermagem em mulheres submetidas à revascularização do miocárdio. *Persp. Online: biol. Saúde, Campos dos Goytacazes* 2016; 20(6): 45-53.
7. Colaço da Silva HV, Souza VP de, Silva PCV. Sistematização da Assistência em Enfermagem perioperatória em uma unidade de recuperação pós-anestésica. *Rev enferm UFPE online. Recife* 2016; 10 (10): 3760-7.
8. Botelho LLR, Cunha CCA, Macedo M. O método da revisão integrativa nos estudos organizacionais. *Gestão e sociedade*, 2011; 5(11): 121-36.
9. Duarte SCM, Stipp MAC, Mesquita MGR, Silva MM. O cuidado de enfermagem no pós-operatório de cirurgia cardíaca: um estudo de caso. *Esc Anna Nery (impr.)* 2012; (4): 657-65.
10. Ribeiro KRA. Pós-operatório de revascularização do miocárdio: complicações e implicações para enfermagem. *Rev Fund Care Online* 2018; 10(1):254-259.
11. Silva WLAV, Barros ATL, Santos RD, Silva LA, Miranda LN. Cirurgias cardíacas: assistência de enfermagem a portadores de cardiopatia no período perioperatório. *Ciências Biológicas e de Saúde Unit Alagoas* 2017; 4(2): 323-336.

12. Amorim TV, SenaI CA, AlvesI MS, SalimenaI AMO. Cuidado sistematizado em pré-operatório cardíaco: Teoria do cuidado Transpessoal na perspectiva de enfermeiros e usuários. *Revi. Bras. Enferm* 2014; 67(4): 568-74.
13. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Resolução - RDC nº 7, de 24 de Fevereiro de 2010. . . URL: [http://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2010/res0007\\_24\\_02\\_2010.html](http://bvsms.saude.gov.br/bvs/saudelegis/anvisa/2010/res0007_24_02_2010.html).
14. Gualandro DM, Yu PC, Caramelli B, Marques AC, Calderaro D, Luciana S. Fornari LS et al. 3ª Diretriz de Avaliação Cardiovascular Perioperatória da Sociedade Brasileira de Cardiologia. *Arq Bras Cardiol* 2017; 109 (3 Supl.1): 1-104.
15. Conselho Federal de Enfermagem. LEI N 7.498/86, de 25 de Julho de 1986. Dispõe sobre a regulamentação do exercício da enfermagem e dá outras providências. URL: <http://cofen.gov.br>.
16. Conselho Federal de Enfermagem. Resolução COFEN-358/2009. Dispõe sobre a Sistematização da Assistência de Enfermagem e a Implementação do Processo de Enfermagem em ambientes, públicos ou privados, em que ocorre o cuidado profissional de Enfermagem, e dá outras providências. URL: <http://cofen.gov.br>. Acessado em: Maio 30, 2018.
17. Herdman TH, Kamitsuru S. Diagnósticos De Enfermagem Da NANDA-I - Definições E Classificação. 11 ed: Artmed; 2018 p.01-488.
18. Bulechek GM, Butcher HK, Docteman JM, Wagner CM. *Nursing Interventions Classification (NIC)*. 6 ed: Mosby;2012; p. 01-640.
19. Moorhead S, Johnson M, Maas MI, Swanson E. *Classificação dos resultados de enfermagem (NOC)*. 4ª ed. Rio de Janeiro: Editora Elsevier; 2010; p. 01-906.
20. Costa KAU, Dias RS, Azevedo PR, Silva LDC. A Importância das Orientações de Enfermagem no Cuidado ao Paciente Submetido à Cirurgia Cardíaca: revisão integrativa. *Vita et Sanitas*, 2016; 9 (2): 3-9.
21. Santos APA, Camelo SHH, Santos FC, Leal LA, Silva BR. O enfermeiro no pós-operatório de cirurgia cardíaca: competências profissionais e estratégias da organização. *Revista Escola Enfermagem USP* 2016; 50(3): 474-481.
22. Pio FDSCG, Azevedo DM, Marques LF, Santiago LC. Assistência de enfermagem no transplante cardíaco: revisão integrativa. *Revista de Enfermagem UFPE online*, 2016 10 (5): 1857-65.
23. Barreiros BRN, Bianchi ERF, Turrini RNT, Poveda VB. Causas de readmissão hospitalar após cirurgia cardíaca. *Rev. Eletr. Enf* 2016; 18:1-8.
24. Erdmann AL, Lanzoni GMM, Callegaro GD, Baggio MA, Koerich C. Compreendendo o processo de viver significado por pacientes submetidos à cirurgia de revascularização do miocárdio. *Rev. Latino-Am. Enfermagem* 2013; 21(1):01-08.

Received on: 12/07/2018

Reviews required: 13/12/2018

Approved on: 15/02/2019

Published on: 05/01/2021

---

**Corresponding author:**

Laércio Deleon de Melo

**Address:** Rua Doutor Dirceu de Andrade 201/apt.305.

Bairro Dom Bosco, Juiz de Fora/MG, Brazil.

**Zip code:** 36.025-330.

**Telephone number:** +55 (32) 9 9184-2957

---

**Disclosure: The authors claim to have no conflict of interest.**