

Nursing diagnoses in pre-hospital care of SAMU advanced life support

Abstract

Objective: to determine the nursing diagnoses that can be used in the context of Mobile Prehospital Care of advanced life support ambulances based on the NANDA-I Classification System 2024-2026.

Methodology: descriptive, methodological research with a quantitative approach, carried out in the city of Curitiba, Paraná, with data from incident reports, from August 1, 2018 to July 31, 2019, attended by the Advanced Life Support of the Emergency Medical Service. The sample consisted of 388 incident reports.

Results: changes in vital signs and airway characteristics listed three affected domains, elimination and exchange, activity and rest, safety and protection, and 21 nursing diagnosis titles were determined.

Conclusion: it is believed that the results facilitate the implementation of a stage of the nursing process in prehospital care, improving decision-making by the nurse.

Key words: Nursing diagnosis, pre hospital care, emergency, emergency medical services, nursing care

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Introduction

In Brazil, since 2003, the Mobile Emergency Care Service (SAMU) began to be the Pre-hospital Service (APH) of the Unified Health System (SUS), assuming an important role for Brazilian public health.¹ SAMU, regulated by Ordinance MS/GM No. 1,010, of May 21, 2012, is the component of the emergency care network that aims to organize the flow of care and provide early care and adequate, fast and effective transportation to victims suffering from health problems of a clinical, surgical, gynecological-obstetric, traumatic and psychiatric nature, by sending vehicles manned by a trained team, with the purpose of reducing morbidity and mortality.^{1,2}

Ambulances are classified into six categories:

Type A – Transport

Type B - Basic Support

Type C – Rescue

Type D - Advanced Support

Type E - Medical Transport Aircraft

Type F - Medical Transport Vessel.

The unit Advanced Support Unit (USA) is intended for the care and transportation of high-risk users in pre-hospital emergencies and transportation between institutions, who require intensive care. In addition, it must be composed of specific materials and equipment for critical patients, and a health team composed of a doctor, nurse and rescue driver.^{1,3} In this context, the nurse is an active participant within the USA team, playing a fundamental role in the care of critically ill patients within the APH. Among their duties is direct patient care, through nursing interventions aimed at assessment, stabilization and reassessment, from the initial care until the end of transport.^{4,5} In order to establish comprehensive care centered on patient priorities, nurses must develop the Nursing Process (NP) among their duties, providing quality care to patients,^{6,7} as determined

in the Resolution of the Federal Nursing Council (COFEN) No. 736/2024, which describes the implementation of the NP in all nursing care environments for patients.⁸ The NP is carried out in 5 interrelated, interdependent, recurring and cyclical stages, which are: Assessment; Nursing Diagnosis; Planning; Implementation; Nursing Assessment and Evolution. Among these stages, we highlight in this study the Nursing Diagnosis. This represents the clinical judgment of the information obtained about the needs of Nursing care and health of the person, family, community or special groups.⁸ The question arises: What are the Nursing Diagnoses, in the context of Pre-hospital Care, of the Advanced Support Units of the Mobile Emergency Care Service? The present study aimed to determine the Nursing Diagnoses that can be used in pre-hospital care in Advanced Support Units of the Mobile Emergency Care Service based on the NANDA-I 2024-2026 Classification System.

Material and methods

This is a descriptive research, of the methodological type and quantitative approach. The research was carried out in the city of Curitiba, Paraná, which is responsible for the Regional Metropolitan SAMU-PR. Data collection was carried out by searching for information in the occurrence records of the SAMU USA services. The inclusion criteria were the occurrence records attended by the SAMU Regional Metropolitan USAs, from August 1, 2018 to July 31, 2019. The temporality was established because it was the last complete period of cataloged records and ready for verification, excluding the years of the Covid-19 pandemic. Occurrence records filled out with illegible handwriting or damaged were excluded. The total number of US visits from August 2018 to July 2019 was 30,951. In order to obtain a sample with 95% confidence, a margin of error equal to 5% and for a finite population size (30,951), according to the statistical data, the sample consisted of 388 medical records in total. The following information was extracted: age, sex, pre-existing comorbidities, heart rate, respiratory rate, O₂ saturation, airway changes, blood pressure and axillary temperature. To achieve the proposed objective, this study was based on the empirical indicators

of Basic Human Needs (BHN) by Wanda Aguiar Horta (1979)⁹ through data collected in incident reports. Thus, signs and symptoms were considered as empirical indicators in this study. After collection, the data were grouped and the main Nursing Diagnosis (ND) titles were determined taking into account the Basic Human Needs (BHN) of the individuals, using the diagnostic reasoning proposed by Gordon (1987), which describes the stages of analysis and synthesis of the collected data. The nursing problems were divided into domains and the ND titles were formulated according to the *North American Nursing Diagnosis Association International NANDA-I* taxonomy (2024-2026).¹⁰ We considered the following BHN for this study: vascular regulation, oxygenation and thermal regulation, which are perceived by vital signs (VSV). The data were tabulated and coded in the Microsoft Office Excel® 2018 program, using descriptive statistical analysis procedures with the results expressed in simple and absolute frequency (%). This research was approved by the Human Research Ethics Committee of the Municipal Health Department of Curitiba with CAAE: 26483119.2.0000.0101 and opinion no. 3,764,811.

Results

The sample consisted of 388 medical records of patients who received care from a USA in Curitiba or the Metropolitan Region. Among the 388 medical records, 55.9% (n=217) were male and 40.5% (n=157) were female; in addition, 3.6% (n=14) were not completed. Regarding age, the mean was 54.3 years and the mode was 69 years. Regarding clinical history and pre-existing comorbidities, 134 forms were filled out, of which 51.5% (69) patients had only one previous comorbidity, 30.6% (41) patients had two, 17.9% (24) patients had 3 or more. The main ones described in the files were Systemic Arterial Hypertension (SAH) 51.5% (n = 69), Diabetes Mellitus (DM) 46.3% (n = 62), Heart Disease 20.1% (n = 27), Previous Stroke (CVA) 9.7% (n = 13), Alcoholism 8.2% (n = 11), Frequent Seizures 6.7% (n = 9), Drug Addiction 9.7% (n = 9), Kidney Disease 5.2% (n = 7), Respiratory Disease 4.5% (n = 6), Mental Illness 3% (n = 4), Human Immunodeficiency Syndrome (AIDS) 0.7% (n = 1), Chronic Obstructive Pulmonary Disease (COPD) 0.7% (n = 1), Other Diseases 9.7% (n = 13). Regarding heart rate (HR) parameters, 363 forms were filled out, 14.6% (n=53) were bradycardic (<60 bpm), of which 29 were in cardiorespiratory arrest (0 bpm), 26.4% (n=96) were tachycardic (>100 bpm), with an average of 122 bpm. and 59% (n=214) were normocardial. For systemic arterial pressure (SAP), 343 forms were filled out, SAP ranged from inaudible 9.3% (n=32) to 270x100 mmHg, with 32.1% (n=110) presenting hypertension, 54.5% (n=187) normal pressure, 4.1% (n=14) hypotension. Regarding respiratory function, for respiratory rate (RR) 296 forms were filled out, 10.8% (n=32) were bradypneic, 29 in cardiorespiratory arrest, 12.5% (n=37) were tachypneic, with an average of 29 bpm and 76.7% (n=227) were eupneic. To measure oxygen saturation (SatO₂), 356 forms were filled out, among which one was described as unmeasurable, 17.1% (n=61) had SatO₂ <92%, and 82.9% (n=295) had adequate saturation. Regarding axillary temperature, only 118 forms were filled out, of which 37.3% (n=44) had a temperature description that indicated that the patient was hypothermic (<35.5°C), among these 29 had unmeasurable temperatures, 7.2% (n=9) were described as hyperthermic, with the highest temperature reaching 41°C, and 55.1% (n=65) were normothermic. The changes recorded were classified according to the domains presented in NANDA-I 2024-2026. The affected domains were: elimination and exchange, activity and rest, safety and protection. After identifying the nursing problems, the nursing diagnoses were listed. In total, 21 ND statements were described, as shown in Table 1 and Table 2. Table 1 presents the relationship between

the DE statements and three NHBs scored in this work in the context of pre-hospital care in USA.

Table 1 Affected domains in patients attended by SAMU USAs. Curitiba, Paraná, 2024

Affected domain	Nursing problem	Nursing diagnosis
Elimination and exchange	Low O ₂ saturation	Impaired gas exchange
	IoT	Impaired gas exchange
	Bronchoaspiration	Impaired gas exchange
	Glottic edema	Impaired gas exchange
	Tachycardia	Impaired gas exchange
	Tachypnea	Impaired gas exchange
Activity and rest	Bradypnea	Impaired gas exchange
		Decreased cardiac output; Risk of decreased cardiac output
	Bradycardia	Ventilation spontaneous impaired
	Tachycardia	Standard respiratory ineffective
	Bradypnea	Standard respiratory ineffective
	Tachypnea	Standard respiratory ineffective
	IoT	Impaired spontaneous ventilation; Risk of decreased cardiac output
	Hypertension	Risk of ineffective cerebral tissue perfusion; Ineffective peripheral tissue perfusion; Risk of ineffective peripheral tissue perfusion; Risk of impaired cardiovascular function
	Low O ₂ saturation	Impaired spontaneous ventilation; ineffective peripheral tissue perfusion; ineffective breathing pattern
		Risk of shock; Risk of falls in adults; Risk of falls in children; Hyperthermia; Ineffective thermoregulation
Safety and security	Hypotension	Impaired skin integrity; Risk of impaired skin integrity; Risk of shock; Ineffective thermoregulation
	Hypertension	Impaired skin integrity; Risk of impaired skin integrity; Ineffective thermoregulation; Risk of shock; Decreased body temperature
	Hypothermia	Hyperthermia ; Risk of shock
	Hyperthermia	Ineffective airway clearance
	Glottic edema	Risk of dry eyes
	IoT	Risk of shock; impaired skin integrity
	Low O ₂ saturation	Risk of accidental suffocation; Risk of aspiration

Table 2 List of NANDA-I 2024-2026 nursing diagnosis statements, selected according to three basic human needs Curitiba, Paraná, 2024

Basic human needs	Nursing diagnosis
regulation (n=10)	Decreased cardiac output; Risk of decreased cardiac output; Risk of ineffective cerebral tissue perfusion; Ineffective peripheral tissue perfusion; Risk of ineffective peripheral tissue perfusion; Risk of shock; Risk of falls in adults; Risk of falls in children; Risk of dry eyes; Risk of impaired cardiac function.
Oxygenation (n=6)	Impaired gas exchange; Impaired spontaneous ventilation; Ineffective breathing pattern; Ineffective airway clearance; Risk of aspiration; Risk of accidental suffocation.
Regulation thermal (n=5)	Hyperthermia; decreased body temperature; Ineffective thermoregulation; Impaired skin integrity; Risk of impaired skin integrity.

Discussion

The objective of this research was to identify the main nursing diagnoses that can be used in the care provided by SAMU's APH units. It is important to emphasize that, in the context of APH, the nurse needs to be agile in identifying hemodynamic changes that can compromise the patient's life and, in addition, be qualified to perform the necessary and applicable interventions at the time. Through several studies, it is evident that the identification of these diagnoses helps the nurse to act more precisely within these units and maintain with greater emphasis the quality of care in the services provided.³ In this study, it was possible to identify, through hemodynamic changes, the main affected domains of patients treated by SAMU USAs: "elimination and exchange", "activity and rest" and "safety and protection". As well as, the most evident nursing diagnoses: impaired gas exchange, ineffective respiratory pattern, impaired skin integrity and risk of impaired skin integrity.

The data corroborate the results of a study conducted in São Paulo, in a university hospital, by seven professionals specialized in the care of adult patients in emergency situations. This study found that the main nursing diagnoses that obtained a consensus of more than 70% belonged to the NANDA-I domains of "safety and protection", "activity and rest" and "elimination and exchange".¹¹ This study had similarities with a study carried out in Minas Gerais with patients treated in an emergency room. The sample consisted of 87 medical records, in which nursing diagnoses were identified in patients classified as Manchester priority level I and II. Among the 11 nursing diagnoses found, those related to respiratory function were prevalent: ineffective breathing pattern was present in 45% of patients and impaired gas exchange in 40% of cases.¹² When comparing the findings of this research with the results of the study that identified and analyzed the nursing diagnoses that constitute risk factors for death in trauma victims in the emergency setting in the city of São Paulo, a similarity is observed. In the aforementioned study, the most identified diagnoses were impaired skin integrity, impaired gas exchange and ineffective breathing pattern.¹³ The body's need to obtain oxygen for breathing through ventilation is characterized by the need for oxygenation, a basic condition for human beings to survive and stay alive. The BHNs highlighted in this study, as seen previously in Table 1, corroborate the empirical indicators of the BHNs affected in pre-hospital care, as evidenced in the research carried out at SAMU in

Curitiba between 2014 and 2015 by Pizzolato et al.¹⁴ Just like oxygen, the need for circulation and a regular vascular condition are essential. It is through circulation that we can maintain homeostasis, ensuring that our body's metabolism regulates body fluids and contributes to the proper functioning of the body.

Thermal regulation, mentioned in the study, is a basic human need that must always be maintained within normal standards. It is through thermal regulation that the body remains in normal conditions and develops its functions adequately, as a body temperature above or below normal can cause serious dysfunctions in the body. In a study conducted in an Emergency Unit of a Hospital in Belo Horizonte, Minas Gerais, Brazil, with the objective of identifying the profile of NDs prepared for patients treated in the emergency environment, conducted with 30 patients, 67 diagnostic titles were listed and were similar to the data of the present study. Among the five most frequent, ineffective breathing pattern and impaired spontaneous ventilation were present in 40% and 36.6%, respectively. The most represented domains were activity and rest, safety and protection, corroborating the present study. However, the elimination and exchange domain is evidenced in a smaller percentage, differentiating the data presented, which was listed as one of the three main domains represented by the BHN.¹⁵ The NANDA-I (2024-2026)¹⁰ taxonomy is divided into 13 domains that are useful for identifying the 277 available NDs. The domains highlighted in this study were selected due to the analysis focused on the basic human needs of circulation, oxygenation and thermal regulation, assessed by collecting SSVV signals from the patients treated. This focus is essential, since the service prioritizes urgent and emergency care, with the nursing team emphasizing the physiological needs of patients.

Conclusion

With this research it was possible to identify 21 titles of Nursing Diagnoses related to the Basic Human Needs of circulation, oxygenation and thermal regulation. It is believed that the contribution of this study facilitates the use of nursing diagnoses within Mobile APH services, in order to facilitate and speed up the adherence of NP in the care of critical patients. Finally, a shortage of research on this topic was observed. There are studies on nursing diagnoses applied within the context of PHC, but the current number of research publications on this subject is still limited, highlighting the importance of conducting more studies on the subject.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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