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Emergency Nursing Care For Mr. S With Cardiovascular System Disorder Medical Diagnosis St-Elevation Myocardial Infarction (STEMI) at Vita Insani Hospital Pematangsiantar

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Abstract

ST-Elevation Myocardial Infarction (STEMI) is a state of cardiac ischemia characterized by the presence of persistent ST-segment elevation on an ECG waveform. The WHO (2021) reported that cardiovascular diseases cause approximately 17.9 million deaths per year worldwide. This descriptive study utilized a case study approach focusing on a single respondent. Nursing care was provided over a 3-day hospitalization period (May 4 – May 6, 2026) in the Intensive Care Unit (ICU) of Vita Insani Hospital, Pematangsiantar. After 3x24 hours of nursing care, three nursing diagnoses were identified: decreased cardiac output, ineffective breathing pattern, and fluid volume excess. The evaluation results showed that decreased cardiac output was partially resolved, characterized by stable blood pressure, warm extremities, resolved cyanosis, and improved consciousness. The diagnosis of ineffective breathing pattern was resolved, met by the criteria of regular breathing and the absence of gurgling sounds. The diagnosis of fluid volume excess was resolved, indicated by reduced edema and increased urine output.: The implementation of comprehensive critical nursing care through constant hemodynamic monitoring, airway management (suctioning), and fluid restriction proved effective in stabilizing the STEMI patient's condition. Nurses are expected to consistently integrate strict hemodynamic monitoring and sterile suctioning techniques partially. Families are expected to support the care plan and adhere to the recommendations of healthcare professionals during the treatment period.

Keywords: Emergency Nursing Care, Cardiovascular System, STEMI, Decreased Cardiac Output, Ineffective Breathing Pattern, Fluid Volume Excess

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INTRODUCTION

Nursing emergency emergency is service health care provided to patients who experience threatening situation soul and need handling immediately. Nursing This focused on management condition I either caused by physical trauma and condition non-trauma medical nursing emergency emergency covers evaluation fast, retrieval the right decisions, and interventions that prioritize safety patients (Polit & Beck, 2022). STEMI is gathering from signs clinical manifestations that appear in a way together so that can perceived as manifestation clinical features typical of ischemia myocardial and there is relatedness with The elevation found in the ECG image is persistent in the ST segment and is also accompanied by release of biomarkers from myocardial necrosis (Karo & Baua, 2019). ST Elevation Myocardial Infarction (STEMI). Is a condition ischemia marked heart with existence wave ST segment elevation persistent on the ECG image. Accompanied by with complaint clinical typical chest pain infarction improvement enzyme heart that indicates existence necrosis myocardial (Demur et al., 2022). STEMI in the most severe form of ACS, in which the arteries coronary clogged completely (total), so that cause part from muscle heart No get supply blood. In STEMI, the ECG shows elevation persistent ST segment elevation in two adjacent tapping, which is sign typical from attack heart acute. STEMI requires intervention medical quick For open blocked arteries and restore flow blood (Kurniati, Siregar, et al., 2023). This action called with revascularization. Revascularization aim For return flow blood and reperfusion myocardial (Martini, 2024). Latest data from the World Health Organization (WHO) and reports supporters from institutions global health (such as the AHA/American Heart Association), as follows is summary about prevalence and statistics STEMI (ST-Elevation Myocard Infarction) disease (Kurniati, Pratama, et al., 2023): Globally, WHO records that disease cardiovascular disease (CVD) remains become reason death number one. STEMI is type attack the most fatal heart because involving total blockage of blood vessels blood Coronary. Proportion of cases from total cases Syndrome Coroner Acute (ACS) admission to House sick, around 30% to 38% are categorized as STEMI. WHO (Uhr, 2022) reported disease heart ischemic (including STEMI) is responsible answer on around 9 million deaths per year worldwide world (LeMone et al., 2024). Based on data from the North Sumatra Health Service throughout in 2023, his party take notes there is as many as 9,228 cases person with disabilities disturbance heart. Number most originate from Medan City, namely reaching 3,855 people (Moura et al., 2021).

Research results by Putri Widya Melli, et al., (2024) STEMI is something conditions that result in death cell myocytes heart Because lack supply blood to prolonged network consequence grafting coronary acute. Case study This aim For convey care nursing care for

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patients with ST elevation myocardial infarction (STEMI) in the room care heart of the Dr. Zainoel Abidin Regional General Hospital, Banda Aceh. Problem nursing that appeared in Mr. H covering painful acute, decline rainfall heart, cleaning airway is not effective, hypervolemia, and intolerance activities (Martini, 2024). The methods used that is do care nursing for 5 days. The results of care nursing, namely condition patient getting better and problems nursing resolved. Recommended to nurse education health For can optimizing the care process nursing with develop intervention nursing especially in cases of STEMI and it is hoped that to taker policy House Sick For can providing media leaflets, booklets, sheets back and poster for increase knowledge health to disease Heart in the Treatment Room heart (Doyle et al., 2020).

Researchers interested take title " Foster Care Nursing Emergency Emergency At Mr. S With ST Elevation Myocard Infarction (STEMI) at Vita Insani Hospital embankment Siantar " because want to examine in a way in-depth care process nursing emergency emergency given to patient Stemi, start from assessment until evaluation (Medicine, 2025). In addition, the selection title This is also based on the height number incident disease heart in Indonesia, including Stemi, who became reason main death and disability, so important for nurse For increase skills and knowledge in give care fast, precise, and comprehensive nursing care.

METHOD

The research design used in this study is descriptive qualitative research with a case study approach. Moleong (Ju et al., 2018) defines qualitative research as "research that produces descriptive data in the form of written or spoken words from people and observable behavior." Moleong explains that this research is very useful in understanding behavioral patterns and social interactions in depth. This study uses a case study approach that aims to describe the picture of Emergency Nursing Care for patients with Cardiovascular system disorders due to STEMI at Vita Insani Hospital, Pematangsiantar (Hegney et al., 2019). This research will be conducted in the ICU room of Vita Insani Hospital, Pematangsiantar and will be implemented in the period from March to May 2026. The determination of the location of this research is based on the researcher's considerations regarding the disease that will be studied by the researcher (Nia Khusniyati et al., 2025), namely patients with ST Elevation Myocard Infarction (STEMI).

Conceptual Definition

Conceptual definition means that something has creative value if conceptually it meets certain criteria. Conceptual is a research element that explains the characteristics of a problem to be studied (Sümen & Öncel, 2021) Nursing care is the process of providing care carried out by

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nurses to meet the physical, emotional, social, and spiritual needs of patients, which involves assessment, diagnosis, intervention, implementation and evaluation. STEMI is a collection of clinical signs that appear simultaneously so that it can be perceived as a typical clinical manifestation of myocardial ischemia and there is a relationship with the elevation found in the persistent ECG image in the ST segment also accompanied by the release of biomarkers from necrotic myocardium. Data analysis is the analysis of data that has been obtained so that the results are more easily understood by the reader (Nurulhuda & Jannah, 2024). Data analysis includes information from data processing, grouping the results of data processing, and summarizing the results to form research conclusions (Nasrabadi et al., 2021). Data presentation is an important part of the research process, especially in preparing research reports. Data presentation is necessary to provide information about research results presented in tables or graphs (Borges et al., 2014).

RESULTS

This case study research was conducted at Vita Insani Hospital Pematangsiantar located at Jl. Merdeka No. 329, Pahlawan, East Siantar District, Pematang Siantar City, North Sumatra 21132. Vita Insani Hospital is fully accredited, the highest accreditation pass rate given by hospital accreditation (KARS). Its scope includes a 24-hour Emergency Room (IGD), specialist polyclinics, inpatient care, to medical support facilities such as ICU, PICU, laboratory and pharmacy (Shi et al., 2023).

This case study was conducted at Vita Insani Hospital in Pematangsiantar over a 3-day period, covering assessment, diagnosis, intervention, and implementation of treatment for a patient with cardiovascular disease (STEMI) (Agustina, 2022). The patient received treatment from May 4, 2026, to May 6, 2026, in the ICU.

Assessment

Basic Data

Table 1. Client identity

Patient Identity	Patient
Name	Mr. S
Age	53 Years
Gender	Man
Religion	Islam
Address	Sibogat Elementary School Camp

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Marital status	Marry
Work	civil servant
Education	High School
Resources	Wife
Person responsible	Wife
Entry Date/Time	May 4, 2026 / 05.47 WIB
Assessment date/ Time	May 4, 2026 / 10:19 WIB
No. MR	445017
Medical Diagnosis	STEMI

Supporting examination results

Table 2. Hematology Examination

Hematology Examination	Results	Normal Values	Unit
Routine hematology			
Hemoglobin	16.6	Hb for men 13–18 g/dL, for women 12–16 g/dL	G/dl
Leukocytes	21800	4,500-10,000	Mm3
Erythrocytes	5.77	3.80-5.80	Jt/mm3
Hematocrit	48.7	35.0-50.0	Vol%
Platelets	324000	150,000-390,000	Mm3
PCT	0.270	0.100-0.500	%
MCV	84	82.0-97	Fl
MCH	28.7	26.5-33.5	Pg
MCHC	34.0	31.5-37.0	g/dl
RDW	12.0	10.5-17.7	%
MPV	8.3	4.3-11.0	Fl
PDW	16.0	10.0-18.0	%
Eosinophils	0	1-4	%
Basophils	0	0-1	%
Neutrophils	79	40-80	%

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Lymphocytes	12	20-40	%
Monocytes	9	4-8	%
Blood sugar check			
Inspection	Results	Normal values	Unit
Random blood sugar	**157**	80-160	Mg/dl

Table 3. ECG Examination

Based on the 12-lead ECG recording performed on patient Mr. Samsul Bahari on May 4, 2026 at 06:00 WIB, it was found that results interpretation as following : Heart rhythm show Normal Sinus Rhythm with frequency pulse Heart rate of 81 beats per minute. Duration QRS wave is located in The normal limit is 102 ms, with PR/RR intervals of 821/741 ms respectively, and a QT/QTc interval of 404 ms. Analysis morphology wave show existence abnormalities meaningful in the form of elevation prominent ST segment (ST-elevation) in the inferior leads (II, III, and aVF). This accompanied by with existence change reciprocal (reciprocal changes) in the form of depression ST segment (*ST-depression*) in high lateral leads, especially in lead aVL and lead I, and depression mild ST segment palpitations in the anterior precordial area (V2–V3). Based on the findings electrocardiography said, can concluded that patient experiencing Acute Inferior Myocardial Infarction or Acute Inferior STEMI.

Data analysis

Table 4. Data Analysis

No.	Data	Etiology	Problem
1.	DS: 1. The family said the patient had complained of chest pain and shortness of breath before losing consciousness. DO :	Decreased myocardial contractility ↓	Decreased Cardiac Output

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	1. BP 90/80 mmHg 2. cold acral 3. cyanosis 4. The ECG examination results showed arrhythmia + ST elevation in leads V1, V2 and V3. 5. GCS 6 (E4: spontaneous eye opening, V1: No verbal response, M1: No motor response	The electrical transmission line is disturbed ↓ Uncoordinated heart pumping ↓ Decreased stroke volume	
2.	DS : 1. The family said the patient had shortness of breath before losing consciousness. DO : 1. RR 25x/minute 2. irregular breathing 3. retraction of accessory respiratory muscles 4. gurgling breath sounds with ETT ventilator attached 5. Tachypnea	Accumulation of airway secretions and use of ETT ventilator ↓ O2 supply is not balanced with the body's needs ↓ Increasing demand for 02 ↓ Tachypnea	Ineffective breathing pattern
3.	DS:- DO : 1. Edema of the right and left lower extremities 2. cold acral **3.** there is congestion (rhonchi are heard)	Decreased blood flow to the kidneys ↓ Decreased urine production ↓ Na and water retention, Potassium excretion	Excess Fluid Volume

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Nursing Diagnosis

Decreased Cardiac Output related to decreased myocardial contractility is characterized by the Family said the patient had complained of chest pain and shortness of breath before becoming unconscious, BP 90/80 mmHg, cold extremities, cyanosis, extremity edema GCS 6 (E4: spontaneous eye opening, V1: No verbal response, M1: No motor response ECG examination results showed arrhythmia + ST elevation in leads V1, V2 and V3 Ineffective breathing pattern related to respiratory effort obstruction and increased airway secretions. characterized by the Family said the patient was short of breath, RR 25x/minute, irregular breathing, retraction of accessory respiratory muscles, gurgling breath sounds attached to an ETT ventilator

Excess fluid volume related to decreased blood flow to the kidneys is characterized by edema of the right and left lower extremities, cold acral, congestion (rhonchi heard on auscultation)

DISCUSSION

After the researcher conducted emergency nursing care for 3 days of research on Mr. S at Vita Insani Hospital, Pematangsiantar, in this case the researcher will discuss several gaps between the theoretical review of nursing and the case review in the application in the field, which consist of: Based on the results of the assessment conducted on May 4, 2026 on Mr. S (53 years old), found the main clinical data in the form of a sudden decrease in consciousness with a GCS score of 6 (E4: spontaneous eye opening, V1: No verbal response, M1: No motor response categorized as a severe coma. Before losing consciousness, the patient complained of chest pain typical of severe myocardial infarction accompanied by severe shortness of breath. From the primary survey, problems were found in the Airway component in the form of an inpatent airway due to occlusion/obstruction of thick secretions characterized by the discovery of additional gurgling breath sounds. In the Breathing component, an irregular breathing pattern, tachypnea (RR: 25x/minute), and chest muscle retraction were found. In the Circulation component, a state of shock was found with a blood pressure of 90/80 mmHg (even touching 75/81 mmHg), cold palpable extremities, CRT prolonged by 3 seconds, cyanosis (bluish skin), and pitting edema was found in both lower extremities. Condition (Alqahtani et al., 2024).

This clinical condition correctly places the patient in the red triage category, which is a life-threatening emergency condition that requires immediate treatment in the intensive care unit. Theoretically, ST Elevation Myocardial Infarction (STEMI) occurs due to total occlusion of the coronary artery (for example in the Left Anterior Descending or Right Coronary Artery) due to plaque rupture followed by the formation of a transmural thrombus (Anisah & Willa, 2025).

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This total blockage suddenly stops blood flow to the heart muscle (myocardium), resulting in widespread transmural ischemia and myocyte cell death (necrosis). The massive decrease in myocardial contractility in the left ventricle drastically reduces stroke volume, thus triggering a decrease in global cardiac output and manifesting as cardiogenic shock, characterized by severe hypotension and peripheral tissue hypoperfusion (cold acral, CRT > 3 seconds, and cyanosis) (Andre et al., 2023).

This is in line with a comparative journal from Putri et al. (2022) in their study on the Hemodynamic Characteristics of Acute Coronary Syndrome Patients, which states that massive acute coronary occlusion has a direct impact on reduced peripheral perfusion characterized by a decrease in systolic blood pressure <90 mmHg, cold extremities, and decreased consciousness due to intermittent cerebral hypoxia. This clinical similarity proves that (Basit et al., 2022).

CONCLUSION

After it is done care nursing emergency emergency on Mr. S with disease *ST-Elevation Myocard Infarction* (STEMI) for 3 days start May 4–6, 2026 at Vita Insani Hospital Pematangsiantar, Researcher do care nursing care for Mr. S for 3 days, obtained three diagnosis nursing that is decline rainfall heart, breathing pattern is not effective, and excess fluid volume. At diagnosis breathing pattern is not effective done intervention management airway through monitoring frequency, depth, and effort of breathing, monitoring sputum characteristics, maintenance semi-fowler position, action suction mucus (*suction*) periodically with technique sterile not enough from 15 seconds on the ETT ventilator tube and mouth For guard patent airway, ensuring oxygenation facilitated constant via mechanical ventilator, as well as collaboration giving injection antibiotics *Ceftriaxone.* Evaluation results show improvement quality excellent ventilation, client 's breathing pattern become regular with depth consistent, respiratory rate improves (RR: 25x/ minute), muscle negative breath sounds, additional breath sounds *gurgling* disappear Because the airway has been clean completely, and saturation oxygen adequate (Spo 2 100 %) so that problem stated resolved. In the diagnosis excess fluid volume done intervention management hypervolemia through inspection signs excess fluids, restrictions intake maximum total fluid 1500 cc/24 hours, elevation head place sleep, and collaboration giving therapy diuretic *Furosemide* intravenous injection. Evaluation results show increasing fluid volume circulation marked circulation with smooth and increased urine output via catheter, *pitting edema* in the extremities lower part right and left client Already reduce real / deflated, balance fluid balanced going to negative light, and clear breath sounds so that

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