



“Nurses at the Frontline: Early Recognition and Management of Myocardial Infarction-A Narrative Review”

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Abstract: Background: Myocardial infarction (MI) remains a leading cause of mortality and disability worldwide. Early recognition and timely intervention are crucial for improving survival and clinical outcomes. Nurses play a central role in identifying symptoms, initiating emergency care, coordinating multidisciplinary management, and educating patients and families.

Objective: To review current evidence on the role of nurses in the early recognition and management of MI.

Methods: A narrative review of studies, clinical guidelines, systematic reviews, and nursing literature published between 2019 and 2025 was conducted using PubMed, Scopus, CINAHL, Google Scholar, and the Cochrane Library.

Results: Evidence shows that rapid nursing assessment, early electrocardiography, recognition of atypical symptoms, timely evidence-based interventions, effective communication, medication administration, hemodynamic monitoring, psychological support, and patient education significantly reduce treatment delays and improve outcomes following myocardial infarction.

Keywords: Myocardial infarction; Acute coronary syndrome; Emergency nursing; Cardiac nursing; Early recognition; Electrocardiography; Cardiac biomarkers; Nursing assessment; Evidence-based practice; Patient education.

Introduction

Cardiovascular diseases (CVDs) continue to represent the leading cause of death globally, accounting for approximately one-third of all deaths each year. Among these conditions, myocardial infarction (MI), commonly known as a heart attack, remains one of the most serious cardiovascular emergencies requiring immediate recognition and intervention. According to the World Health Organization (WHO), cardiovascular diseases are responsible for nearly 18 million deaths annually, with ischemic heart disease constituting the largest proportion of these fatalities. Despite significant improvements in diagnostic technologies, pharmacological therapies, and reperfusion strategies, myocardial infarction continues to impose a substantial burden on healthcare systems worldwide due to its high mortality, recurrent hospitalizations, and long-term disability. Myocardial infarction occurs when coronary blood flow is abruptly interrupted, resulting in prolonged myocardial ischemia and irreversible necrosis of cardiac muscle tissue.

The underlying mechanism most commonly involves rupture or erosion of an atherosclerotic plaque followed by thrombus formation within a coronary artery. The extent of myocardial damage depends largely on the duration of ischemia, emphasizing the well-established principle that "time is muscle." Every minute of delayed treatment results in progressive myocardial cell death, reduced cardiac function, increased risk of heart failure, and poorer long-term survival. Advances in emergency cardiovascular care have dramatically improved patient outcomes during the past two decades. Early diagnosis using electrocardiography (ECG), rapid measurement of cardiac biomarkers such as high-sensitivity cardiac troponins, prompt reperfusion through primary percutaneous coronary intervention (PCI), and guideline-directed medical therapy have substantially reduced mortality among patients presenting with acute myocardial infarction. However, these benefits are realized only when patients are recognized quickly and appropriate interventions are initiated without delay.



Within this context, nurses occupy a uniquely important position in the continuum of cardiovascular care. In many healthcare settings, nurses are the first clinicians to evaluate patients presenting with chest pain or other symptoms suggestive of acute coronary syndrome. Their responsibilities extend far beyond routine patient assessment. Nurses perform rapid triage, obtain detailed histories, assess vital signs, recognize warning symptoms, acquire and interpret electrocardiograms, facilitate laboratory investigations, administer emergency medications, monitor patient responses, communicate critical findings to physicians, and coordinate multidisciplinary care.

The nursing role has evolved considerably with advances in evidence-based cardiovascular practice. Modern cardiac nurses function as autonomous clinicians who employ clinical reasoning to identify subtle signs of myocardial ischemia, especially among patients presenting with atypical symptoms. Older adults, women, individuals with diabetes mellitus, and patients with chronic kidney disease frequently experience atypical manifestations such as dyspnea, fatigue, nausea, syncope, epigastric discomfort, or unexplained weakness rather than classical crushing chest pain. Failure to recognize these atypical presentations often contributes to delayed diagnosis and increased mortality. Consequently, nurses require advanced assessment skills and continuous professional development to accurately identify patients at risk.

The significance of nursing assessment extends beyond the emergency department. Community health nurses, primary care nurses, ambulance nurses, coronary care nurses, intensive care nurses, and rehabilitation nurses all contribute to different phases of myocardial infarction management. Community nurses promote cardiovascular risk reduction through health education and screening programs, whereas emergency nurses initiate life-saving interventions during the acute phase. Critical care nurses continuously monitor hemodynamic parameters and detect complications such as arrhythmias, cardiogenic shock, and acute heart failure. Rehabilitation nurses facilitate recovery through patient education, lifestyle modification, medication adherence, and psychosocial support.

Rapid nursing assessment has been identified as one of the strongest predictors of reduced treatment delay. International cardiovascular guidelines recommend that patients presenting with symptoms suggestive of myocardial infarction

receive a 12-lead electrocardiogram within 10 minutes of first medical contact. Nurses frequently play a central role in achieving this benchmark by prioritizing high-risk patients during triage and expediting diagnostic evaluation. Studies consistently demonstrate that nurse-driven chest pain protocols significantly reduce door-to-electrocardiogram and door-to-balloon times, thereby improving clinical outcomes.

In addition to technical competencies, nurses provide holistic patient-centered care during one of the most psychologically distressing events in a patient's life. Acute myocardial infarction often provokes intense anxiety, fear of death, uncertainty regarding prognosis, and emotional distress among both patients and their families. Therapeutic communication, reassurance, emotional support, and clear explanation of procedures contribute significantly to reducing psychological stress, which itself may exacerbate myocardial oxygen demand.

The increasing prevalence of cardiovascular risk factors further emphasizes the importance of nursing interventions. Population aging, obesity, diabetes mellitus, hypertension, tobacco use, sedentary lifestyles, unhealthy dietary habits, dyslipidemia, chronic stress, and environmental factors continue to contribute to rising incidence rates of myocardial infarction across both developed and developing countries. Nurses actively participate in preventive cardiology by promoting smoking cessation, blood pressure control, diabetes management, physical activity, weight reduction, dietary modification, and medication adherence. These preventive efforts substantially reduce recurrent cardiovascular events and improve long-term survival.

Technological innovations have also transformed nursing practice in cardiovascular care. Portable ECG devices, telemedicine, wearable cardiac monitoring systems, artificial intelligence-assisted ECG interpretation, electronic health records, and remote patient monitoring have enhanced nurses' ability to detect myocardial infarction promptly and coordinate timely interventions. Nevertheless, technology complements rather than replaces the clinical judgment, observational skills, and compassionate care provided by nurses.

Although considerable research has focused on medical and interventional management of myocardial infarction, the expanding role of nurses throughout the patient care pathway warrants comprehensive examination. Understanding the evidence supporting nursing assessment, rapid recognition,



emergency management, interdisciplinary collaboration, and patient education is essential for improving cardiovascular outcomes and ensuring delivery of high-quality evidence-based care.

Therefore, this narrative review aims to examine current evidence regarding the frontline role of nurses in the early recognition and management of myocardial infarction. Specifically, the review discusses the epidemiology and pathophysiology of myocardial infarction, summarizes contemporary evidence on early clinical recognition and nursing assessment, explores evidence-based nursing interventions during the acute phase of care, and highlights the importance of patient education and secondary prevention. By synthesizing current literature, this review seeks to provide nursing professionals, educators, and healthcare policymakers with practical insights that strengthen nursing practice and improve patient outcomes in the management of acute myocardial infarction.

Methodology of the Narrative Review

This narrative review was conducted to provide a comprehensive overview of the current evidence regarding nurses' roles in the early recognition and management of myocardial infarction. Unlike systematic reviews, a narrative review allows the integration of findings from diverse study designs and clinical guidelines to provide a broad understanding of contemporary nursing practice.

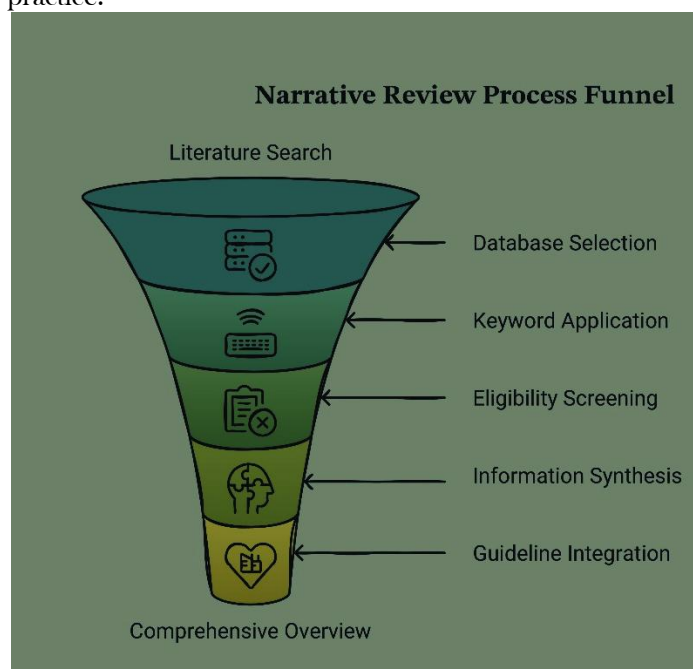
A literature search was undertaken using electronic databases, including PubMed, CINAHL, Scopus, Google Scholar, ScienceDirect, and the Cochrane Library. Searches focused on publications from 2019 to 2025, while seminal guidelines and landmark studies published earlier were included when they remained foundational to clinical practice.

The search strategy employed combinations of keywords and Medical Subject Headings (MeSH), including: Myocardial infarction; Acute coronary syndrome; ST-elevation myocardial infarction; Non-ST-elevation myocardial infarction; Emergency nursing; Cardiac nursing; Early recognition; Nursing assessment; Electrocardiography; Cardiac biomarkers; Evidence-based nursing; Reperfusion therapy.

Eligible publications included international clinical practice guidelines, systematic reviews, meta-analyses, randomized controlled trials, observational studies, expert consensus statements, and peer-reviewed nursing research published in English. Articles focusing exclusively on highly specialized

interventional cardiology techniques without nursing implications were excluded.

Information from the selected literature was synthesized into thematic sections covering epidemiology, pathophysiology, nursing assessment, early recognition, emergency management, multidisciplinary collaboration, patient education, and future perspectives. Emphasis was placed on recommendations from leading organizations such as the American Heart Association (AHA), American College of Cardiology (ACC), European Society of Cardiology (ESC), and the World Health Organization (WHO) to ensure clinical relevance and alignment with current evidence-based practice.

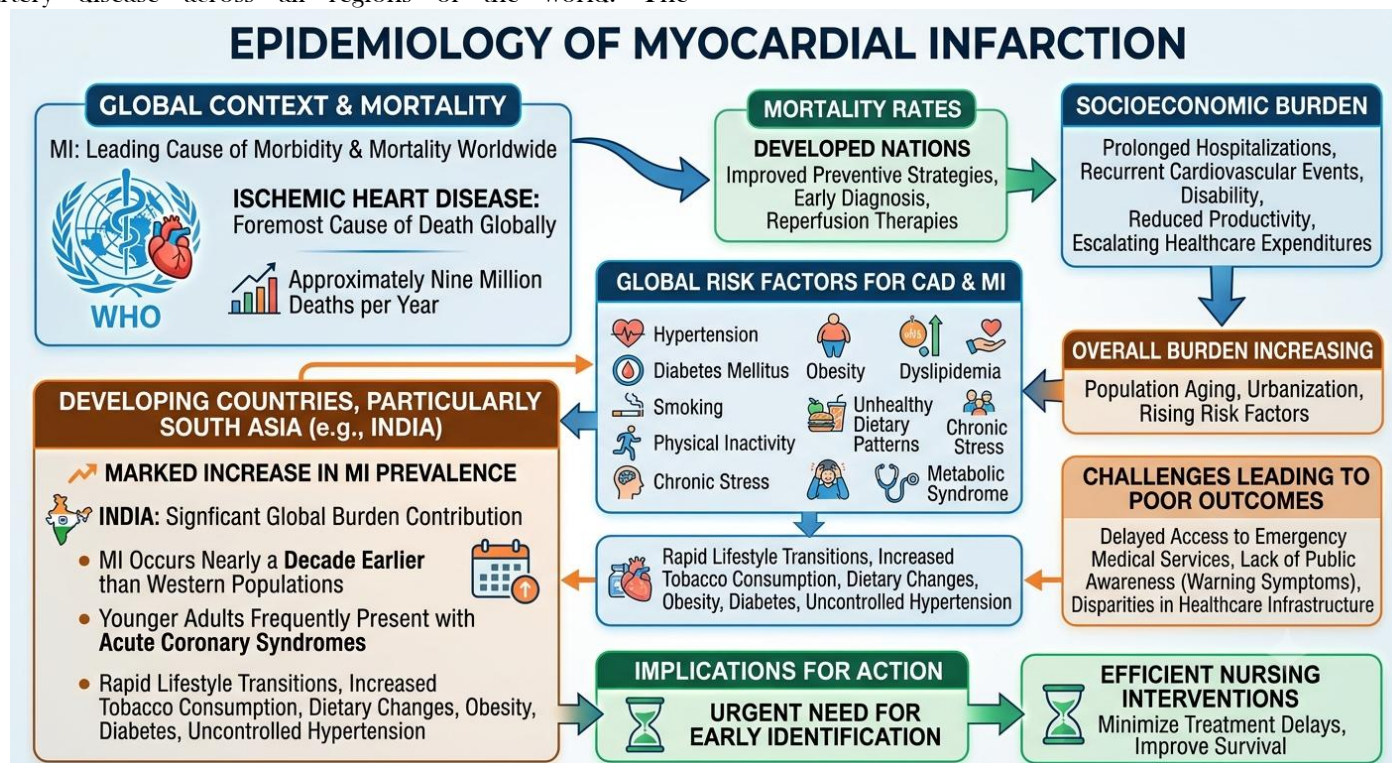


Epidemiology of Myocardial Infarction

Myocardial infarction (MI) remains one of the leading causes of morbidity and mortality worldwide despite significant advances in cardiovascular prevention and treatment. According to the World Health Organization (WHO), ischemic heart disease is the foremost cause of death globally, accounting for approximately nine million deaths each year. Although mortality rates have declined in many developed nations because of improved preventive strategies, early diagnosis, and timely reperfusion therapies, the overall burden of myocardial infarction continues to increase due to population aging, urbanization, and the rising prevalence of

cardiovascular risk factors. Hypertension, diabetes mellitus, obesity, dyslipidemia, smoking, physical inactivity, unhealthy dietary patterns, chronic stress, and metabolic syndrome have collectively contributed to the growing incidence of coronary artery disease across all regions of the world. The

socioeconomic burden of myocardial infarction is substantial, resulting in prolonged hospitalizations, recurrent cardiovascular events, disability, reduced productivity, and escalating healthcare expenditures.



Developing countries, particularly those in South Asia, have experienced a marked increase in the prevalence of myocardial infarction over the past two decades. India contributes significantly to the global cardiovascular disease burden, with myocardial infarction occurring nearly a decade earlier than in many Western populations. Younger adults in India frequently present with acute coronary syndromes owing to rapid lifestyle transitions, increased tobacco consumption, dietary changes, obesity, diabetes, and uncontrolled hypertension. Furthermore, delayed access to emergency medical services, lack of public awareness regarding warning symptoms, and disparities in healthcare infrastructure often contribute to poor clinical outcomes. These epidemiological trends underscore the urgent need for early identification of myocardial infarction and efficient

nursing interventions aimed at minimizing treatment delays and improving survival.

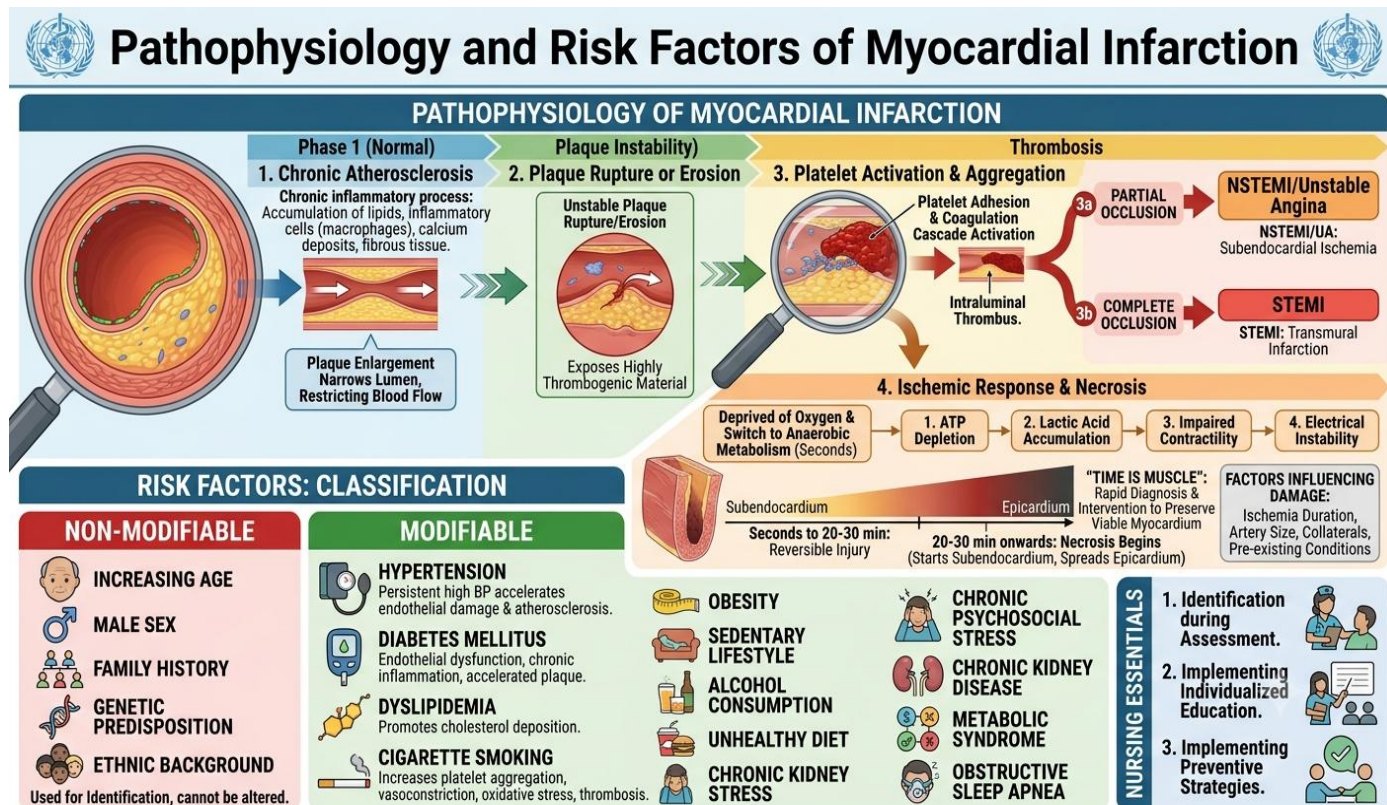
Pathophysiology of Myocardial Infarction

Myocardial infarction develops when the oxygen supply to the myocardium becomes insufficient to meet its metabolic demands, resulting in ischemic injury and eventual necrosis of cardiac muscle. In the majority of cases, myocardial infarction is precipitated by rupture or erosion of an unstable atherosclerotic plaque within a coronary artery. Atherosclerosis is a chronic inflammatory process characterized by the accumulation of lipids, inflammatory cells, calcium deposits, and fibrous tissue within the arterial wall. As plaques enlarge over time, they narrow the coronary lumen and restrict blood flow to the myocardium. Plaque rupture exposes highly thrombogenic material to circulating blood, triggering platelet activation, aggregation, and activation of the coagulation cascade. Consequently, an

intraluminal thrombus forms rapidly, causing either partial or complete occlusion of the affected coronary artery. Complete occlusion typically results in ST-elevation

emphasizing the critical importance of rapid diagnosis and immediate intervention to preserve viable myocardium.

Risk Factors for Myocardial Infarction



myocardial infarction (STEMI), whereas partial occlusion usually causes non-ST-elevation myocardial infarction (NSTEMI) or unstable angina. Within seconds of coronary artery obstruction, myocardial cells are deprived of oxygen and switch from aerobic to anaerobic metabolism. This metabolic shift leads to depletion of adenosine triphosphate (ATP), accumulation of lactic acid, impaired myocardial contractility, and electrical instability. If coronary perfusion is not restored promptly, irreversible myocardial cell death begins within approximately 20 to 30 minutes and progressively extends from the subendocardium toward the epicardium. The magnitude of myocardial damage depends upon several factors, including the duration of ischemia, the size of the affected coronary artery, collateral circulation, patient age, and pre-existing cardiovascular conditions. The principle that "time is muscle" accurately reflects the pathophysiological progression of myocardial infarction,

Identification of cardiovascular risk factors is an essential component of nursing assessment because many myocardial infarctions can be prevented through effective risk modification. Risk factors are generally classified as non-modifiable and modifiable. Non-modifiable risk factors include increasing age, male sex, family history of premature coronary artery disease, genetic predisposition, and certain ethnic backgrounds. Although these factors cannot be altered, they assist healthcare professionals in identifying individuals at higher cardiovascular risk.

Modifiable risk factors are responsible for the majority of myocardial infarctions worldwide and represent important targets for preventive nursing interventions. Hypertension remains the single most significant modifiable risk factor because persistent elevation of blood pressure accelerates endothelial damage and atherosclerosis. Diabetes mellitus contributes to endothelial dysfunction, chronic inflammation,

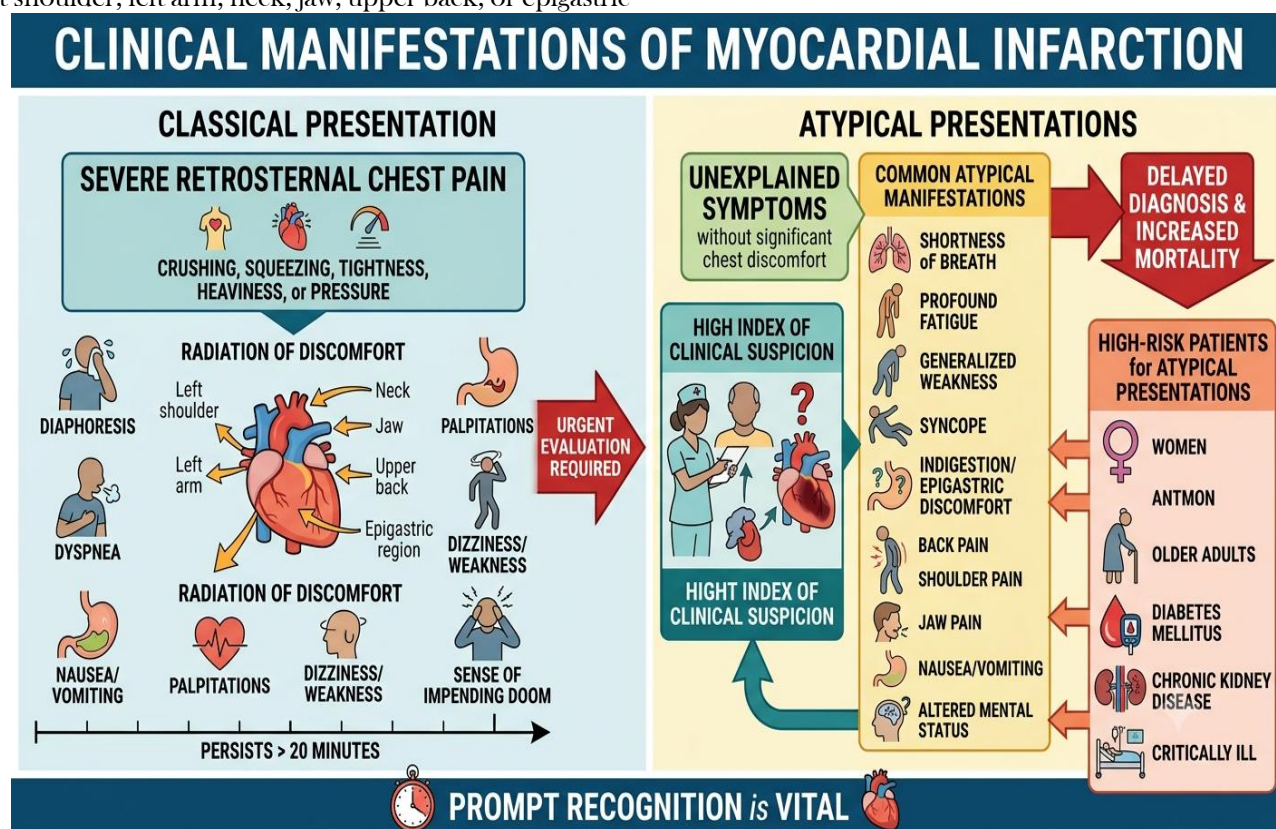
and accelerated plaque formation, while dyslipidemia promotes cholesterol deposition within coronary arteries. Cigarette smoking substantially increases platelet aggregation, vasoconstriction, oxidative stress, and thrombus formation. Additional modifiable factors include obesity, sedentary lifestyle, excessive alcohol consumption, unhealthy dietary

habits, chronic psychosocial stress, chronic kidney disease, metabolic syndrome, and obstructive sleep apnea. Nurses play an essential role in identifying these risk factors during patient assessment and implementing individualized education and preventive strategies aimed at reducing future cardiovascular events.

Clinical Manifestations of Myocardial Infarction

Prompt recognition of myocardial infarction relies heavily on identifying its clinical manifestations. The classical symptom is severe retrosternal chest pain described as crushing, squeezing, tightness, or pressure. The discomfort usually persists for more than 20 minutes and may radiate to the left shoulder, left arm, neck, jaw, upper back, or epigastric

region. Patients frequently report associated symptoms such as diaphoresis, dyspnea, nausea, vomiting, palpitations, dizziness, weakness, and an overwhelming sense of impending doom. These characteristic symptoms should immediately raise suspicion of acute coronary syndrome and prompt urgent evaluation.



However, not all patients present with typical chest pain. Atypical manifestations are particularly common among women, older adults, individuals with diabetes mellitus, patients with chronic kidney disease, and critically ill individuals. These patients may present with unexplained shortness of breath, profound fatigue, generalized weakness,

syncope, indigestion, epigastric discomfort, back pain, shoulder pain, jaw pain, nausea, vomiting, or altered mental status without experiencing significant chest discomfort. Such atypical presentations often contribute to delayed diagnosis and increased mortality. Therefore, nurses must maintain a high index of clinical suspicion whenever high-risk patients



present with unexplained symptoms that could indicate myocardial ischemia.

Role of Nurses in Early Recognition of Myocardial Infarction

Nurses occupy a pivotal position in the early recognition of myocardial infarction because they are frequently the first healthcare professionals to assess patients presenting with chest pain or other symptoms suggestive of acute coronary syndrome. Their clinical expertise enables rapid identification of warning signs, prioritization of critically ill patients, and initiation of evidence-based emergency interventions. Early nursing recognition significantly reduces delays in diagnosis, reperfusion therapy, and definitive treatment, ultimately improving patient survival and reducing complications.

Effective nursing assessment begins at the point of first contact through rapid triage and systematic evaluation of presenting symptoms. Nurses assess the onset, duration, location, radiation, quality, and severity of chest pain while simultaneously evaluating associated symptoms and cardiovascular risk factors. Recognition of atypical presentations is particularly important because delayed identification frequently results in poorer clinical outcomes. Continuous patient observation, prompt communication with physicians, activation of chest pain protocols, and coordination of emergency investigations represent essential nursing responsibilities during this critical phase. Numerous studies have demonstrated that nurse-led chest pain pathways significantly reduce door-to-electrocardiogram, door-to-needle, and door-to-balloon times, thereby improving overall patient outcomes.

Comprehensive Nursing Assessment

Comprehensive nursing assessment provides the foundation for timely diagnosis and individualized management of myocardial infarction. A focused history should be obtained immediately upon presentation using a systematic approach. The OPQRST mnemonic remains one of the most effective methods for assessing chest pain. Nurses determine the onset of symptoms, precipitating or relieving factors, the quality of pain, radiation to other body regions, severity using standardized pain scales, and the duration and progression of symptoms. Simultaneously, associated symptoms including dyspnea, diaphoresis, nausea, vomiting, palpitations, dizziness, and syncope should be carefully documented.

Past medical history provides valuable information regarding previous myocardial infarction, angina, hypertension,

diabetes mellitus, dyslipidemia, cerebrovascular disease, heart failure, chronic kidney disease, and prior coronary interventions. Medication history should include current use of antiplatelet agents, anticoagulants, nitrates, beta-blockers, statins, antihypertensive drugs, and antidiabetic medications, as these may influence immediate treatment decisions. Nurses must also assess drug allergies, particularly hypersensitivity to aspirin, heparin, contrast media, or other medications commonly used during emergency cardiac care. Physical examination focuses on identifying signs of cardiovascular compromise. General observation includes assessment of pallor, diaphoresis, cyanosis, anxiety, respiratory distress, and altered level of consciousness. Continuous monitoring of vital signs—including heart rate, blood pressure, respiratory rate, oxygen saturation, and temperature—is essential because abnormalities may indicate cardiogenic shock, arrhythmias, or heart failure. Cardiovascular examination includes auscultation for abnormal heart sounds, murmurs, gallops, and assessment of peripheral pulses, capillary refill, and jugular venous pressure. Respiratory examination evaluates the presence of tachypnea, pulmonary crackles, wheezing, or signs of pulmonary edema. Continuous reassessment enables early identification of clinical deterioration and facilitates prompt intervention.

Electrocardiography in Early Diagnosis

The 12-lead electrocardiogram (ECG) remains the single most important diagnostic investigation during the initial evaluation of suspected myocardial infarction. International guidelines recommend that an ECG be performed and interpreted within 10 minutes of first medical contact. Nurses play a crucial role by ensuring rapid acquisition of a high-quality ECG, verifying correct lead placement, recognizing significant abnormalities, and immediately communicating critical findings to the healthcare team.

Characteristic electrocardiographic findings in ST-elevation myocardial infarction include persistent ST-segment elevation, hyperacute T waves, reciprocal ST-segment depression, and the subsequent development of pathological Q waves. In contrast, patients with non-ST-elevation myocardial infarction may demonstrate ST-segment depression, T-wave inversion, or non-specific ST-T wave abnormalities. Importantly, an initial ECG may appear normal despite ongoing myocardial ischemia, necessitating serial ECG recordings when clinical suspicion remains high. Nurse-initiated ECG protocols have consistently



demonstrated significant reductions in treatment delays and improved adherence to international quality benchmarks for acute myocardial infarction management.

Cardiac Biomarkers and Risk Stratification

Measurement of cardiac biomarkers complements clinical assessment and electrocardiographic findings in confirming myocardial infarction. High-sensitivity cardiac troponins (hs-cTnI and hs-cTnT) are currently regarded as the gold-standard biomarkers because of their excellent sensitivity and specificity for myocardial injury. Troponin concentrations typically begin to rise within two to four hours following symptom onset, peak between 12 and 24 hours, and may remain elevated for up to two weeks. Nurses are responsible for timely blood sample collection, ensuring adherence to serial testing protocols, monitoring laboratory results, and correlating biomarker trends with the patient's clinical condition.

Following diagnosis, risk stratification is essential for determining prognosis and guiding subsequent management. Nurses contribute significantly by continuously monitoring hemodynamic stability, recurrent chest pain, electrocardiographic changes, oxygen saturation, urine output, neurological status, and the development of complications such as arrhythmias or heart failure. Standardized risk assessment tools, including the TIMI Risk Score, GRACE Risk Score, and HEART Score, assist clinicians in identifying patients who require urgent invasive management or intensive monitoring. Through vigilant assessment and continuous monitoring, nurses ensure that deterioration is recognized promptly and appropriate interventions are initiated without delay.

Evidence-Based Nursing Management of Myocardial Infarction

Following early recognition and diagnosis of myocardial infarction, prompt implementation of evidence-based nursing interventions is essential to restore myocardial perfusion, prevent complications, and improve patient outcomes. Nurses serve as key members of the multidisciplinary cardiac care team and play a central role in coordinating emergency treatment, monitoring patient responses, and ensuring adherence to clinical guidelines. The immediate priorities include relieving myocardial ischemia, reducing cardiac workload, maintaining hemodynamic stability, preventing further myocardial damage, and preparing the patient for definitive reperfusion therapy.

Upon confirmation or strong suspicion of myocardial infarction, nurses initiate emergency protocols and ensure continuous monitoring of vital signs, oxygen saturation, cardiac rhythm, and level of consciousness. Intravenous access is established promptly to facilitate medication administration and emergency interventions. Although supplemental oxygen was previously administered routinely to all patients with myocardial infarction, current evidence recommends oxygen therapy only for patients with oxygen saturation below 90%, respiratory distress, or signs of hypoxemia. Nurses are responsible for assessing oxygen requirements and monitoring the effectiveness of therapy.

Pain management remains a critical component of acute myocardial infarction care. Persistent chest pain increases sympathetic nervous system activity, resulting in tachycardia, elevated blood pressure, and increased myocardial oxygen demand. Nurses assess pain regularly using standardized pain scales and administer prescribed medications to achieve adequate symptom relief. Nitroglycerin is commonly administered to reduce myocardial oxygen demand by dilating coronary arteries and decreasing cardiac preload. However, careful monitoring of blood pressure is required because hypotension may occur. Morphine may be used in selected patients with severe persistent pain, although recent guidelines recommend cautious use due to potential adverse effects. Nurses continuously evaluate pain relief and monitor for medication-related complications.

Administration of antiplatelet therapy is a cornerstone of myocardial infarction management. Aspirin should be administered as early as possible unless contraindicated, as it significantly reduces mortality by inhibiting platelet aggregation and limiting thrombus formation. Additional antiplatelet agents such as clopidogrel, ticagrelor, or prasugrel may be prescribed as part of dual antiplatelet therapy. Nurses verify medication orders, assess contraindications, monitor for bleeding complications, and educate patients regarding the importance of medication adherence. Anticoagulant therapy, including unfractionated heparin or low-molecular-weight heparin, may also be initiated to prevent further thrombus propagation, requiring vigilant monitoring for signs of hemorrhage.

Reperfusion Therapy and Nursing Responsibilities

Rapid restoration of coronary blood flow is the most effective strategy for limiting myocardial damage and improving survival in patients with acute myocardial infarction.



Reperfusion therapy can be achieved through primary percutaneous coronary intervention (PCI) or fibrinolytic therapy when PCI is unavailable within recommended time frames. Nurses play a vital role in facilitating timely reperfusion by ensuring efficient coordination among emergency departments, catheterization laboratories, cardiologists, and critical care teams.

Primary PCI is considered the preferred reperfusion strategy for patients with ST-elevation myocardial infarction when it can be performed promptly. Nurses prepare patients for the procedure by obtaining informed consent when appropriate, ensuring intravenous access, reviewing laboratory investigations, administering prescribed medications, and providing emotional support. Continuous monitoring during patient transfer and preparation helps identify clinical deterioration and ensures patient safety.

When primary PCI is unavailable within the recommended timeframe, fibrinolytic therapy may be administered to dissolve the occluding thrombus. Nurses are responsible for assessing eligibility criteria, identifying contraindications, administering fibrinolytic agents safely, and monitoring for complications such as bleeding, allergic reactions, hypotension, and reperfusion arrhythmias. Careful observation during and after thrombolytic administration is essential because early identification of adverse events significantly improves patient outcomes.

Monitoring and Management of Complications

Despite advances in treatment, myocardial infarction remains associated with several potentially life-threatening complications. Continuous nursing surveillance is essential for early detection and management of these complications. Cardiac arrhythmias represent one of the most common complications, particularly during the first 24 to 48 hours after infarction. Ventricular tachycardia, ventricular fibrillation, atrial fibrillation, and heart block may develop due to myocardial ischemia and electrical instability. Nurses continuously monitor cardiac rhythms, recognize abnormal patterns, initiate emergency protocols, and assist with interventions such as medication administration, cardioversion, or defibrillation when required.

Heart failure may occur when extensive myocardial damage impairs ventricular function. Nurses assess for signs such as dyspnea, pulmonary crackles, peripheral edema, fatigue, reduced oxygen saturation, and decreased exercise tolerance. Accurate monitoring of fluid balance, daily weight, urine

output, and respiratory status facilitates early recognition of worsening cardiac function. Appropriate positioning, oxygen therapy, medication administration, and communication with the healthcare team contribute to effective management.

Cardiogenic shock is one of the most serious complications of myocardial infarction and is associated with high mortality. It results from severe impairment of myocardial contractility leading to inadequate tissue perfusion. Clinical manifestations include hypotension, altered mental status, oliguria, cold extremities, and metabolic acidosis. Nurses play a crucial role in early identification of shock, initiation of supportive measures, hemodynamic monitoring, and coordination of advanced therapies such as mechanical circulatory support when indicated.

Other complications requiring vigilant nursing assessment include recurrent ischemia, reinfarction, pericarditis, thromboembolic events, ventricular septal rupture, papillary muscle dysfunction, and cardiac tamponade. Early recognition and prompt intervention are essential for minimizing morbidity and mortality.

Nursing Care in the Coronary Care Unit

Patients admitted to coronary care units require comprehensive and continuous nursing management. Nurses perform detailed cardiovascular assessments, monitor hemodynamic parameters, administer medications, and evaluate responses to treatment. Frequent assessment of blood pressure, heart rate, respiratory status, oxygen saturation, pain levels, and neurological status enables early identification of clinical deterioration.

Psychological support constitutes an important aspect of coronary care nursing. Many patients experience anxiety, fear, uncertainty, and emotional distress following myocardial infarction. Concerns regarding survival, future disability, family responsibilities, and lifestyle changes can significantly affect recovery. Through therapeutic communication, active listening, reassurance, and patient education, nurses help alleviate anxiety and promote emotional well-being. Family involvement should also be encouraged because social support positively influences recovery and adherence to treatment.

Patient safety remains a primary consideration throughout hospitalization. Nurses implement fall prevention strategies, monitor for medication-related adverse effects, maintain infection control practices, and ensure adherence to clinical protocols. Effective communication within the



multidisciplinary team enhances coordination of care and contributes to improved patient outcomes.

Patient and Family Education

Education is a fundamental nursing responsibility that extends throughout the continuum of myocardial infarction care. Effective patient education empowers individuals to participate actively in their recovery and reduces the risk of recurrent cardiovascular events. Nurses provide individualized information regarding the nature of myocardial infarction, treatment procedures, medications, lifestyle modifications, warning signs of complications, and follow-up care requirements.

Medication education is particularly important because long-term adherence to prescribed therapies significantly improves outcomes. Patients should understand the purpose, dosage, potential side effects, and importance of medications such as antiplatelet agents, beta-blockers, statins, angiotensin-converting enzyme inhibitors, and other prescribed treatments. Nurses assess patient understanding and address misconceptions that may hinder adherence.

Lifestyle modification forms a cornerstone of secondary prevention. Nurses educate patients regarding smoking cessation, heart-healthy dietary practices, regular physical activity, weight management, blood pressure control, lipid management, diabetes control, and stress reduction. Counseling should be tailored to the individual's cultural background, educational level, and personal preferences to maximize effectiveness.

Family education is equally important because family members often provide ongoing support following discharge. Teaching family members to recognize warning signs of recurrent ischemia, medication complications, and emergency situations enhances patient safety and facilitates timely medical attention when necessary.

Cardiac Rehabilitation and Secondary Prevention

Cardiac rehabilitation is a comprehensive, multidisciplinary intervention designed to improve physical, psychological, and social functioning following myocardial infarction. Nurses play a central role in coordinating rehabilitation services and encouraging patient participation. Rehabilitation programs typically include supervised exercise training, cardiovascular risk factor modification, nutritional counseling, psychological support, and education regarding self-management strategies. Exercise-based cardiac rehabilitation has been shown to improve functional capacity, reduce cardiovascular mortality,

enhance quality of life, and decrease hospital readmissions. Nurses assess patients' readiness for activity, monitor responses to exercise, and provide guidance regarding safe progression of physical activity. Individualized exercise prescriptions are developed in collaboration with physicians, physiotherapists, and other healthcare professionals.

Secondary prevention focuses on reducing the likelihood of recurrent cardiovascular events. Effective management of hypertension, diabetes mellitus, dyslipidemia, obesity, and smoking significantly decreases future cardiovascular risk. Nurses support long-term adherence to treatment plans through counseling, regular follow-up, motivational interviewing, and reinforcement of healthy behaviors. Community-based nursing interventions and telehealth programs have further expanded opportunities for ongoing patient monitoring and support.

Future Directions in Cardiac Nursing

Advances in technology and healthcare delivery continue to transform the role of nurses in myocardial infarction management. Telecardiology, wearable monitoring devices, remote patient monitoring systems, artificial intelligence-assisted ECG interpretation, and electronic health records have enhanced early detection and continuity of care. These innovations enable nurses to identify clinical deterioration more rapidly and facilitate timely interventions.

The growing complexity of cardiovascular care highlights the need for ongoing professional development and specialized cardiac nursing education. Advanced practice nurses increasingly contribute to cardiovascular assessment, management, patient education, and research. Future nursing practice should emphasize evidence-based care, interdisciplinary collaboration, quality improvement initiatives, and patient-centered approaches that address both clinical and psychosocial aspects of recovery.

Research focusing on nursing interventions, patient outcomes, health literacy, rehabilitation adherence, and technology-assisted care will continue to strengthen the evidence base supporting nursing contributions to myocardial infarction management. Investment in nursing education and workforce development remains essential for improving cardiovascular outcomes worldwide.

Conclusion

Myocardial infarction remains a major global health challenge requiring rapid recognition and timely intervention to minimize myocardial damage and improve survival. Nurses



occupy a central position in the continuum of care and are often the first healthcare professionals to assess patients presenting with symptoms of acute coronary syndrome. Through comprehensive assessment, early recognition of clinical manifestations, prompt electrocardiographic evaluation, timely initiation of emergency interventions, and effective coordination of multidisciplinary care, nurses significantly influence patient outcomes.

Evidence demonstrates that nursing interventions contribute substantially to reducing treatment delays, improving adherence to clinical guidelines, preventing complications, and enhancing recovery. Beyond acute management, nurses play a crucial role in patient education, cardiac rehabilitation, psychosocial support, and secondary prevention. Their commitment to evidence-based practice and patient-centered care remains fundamental to improving survival, reducing recurrent cardiovascular events, and enhancing quality of life among individuals affected by myocardial infarction.

As cardiovascular disease continues to pose significant healthcare challenges globally, strengthening nursing competencies, promoting continuous professional development, and integrating emerging technologies into clinical practice will be essential for advancing the quality of myocardial infarction care. The frontline role of nurses in recognizing and managing myocardial infarction underscores their indispensable contribution to contemporary cardiovascular healthcare.

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