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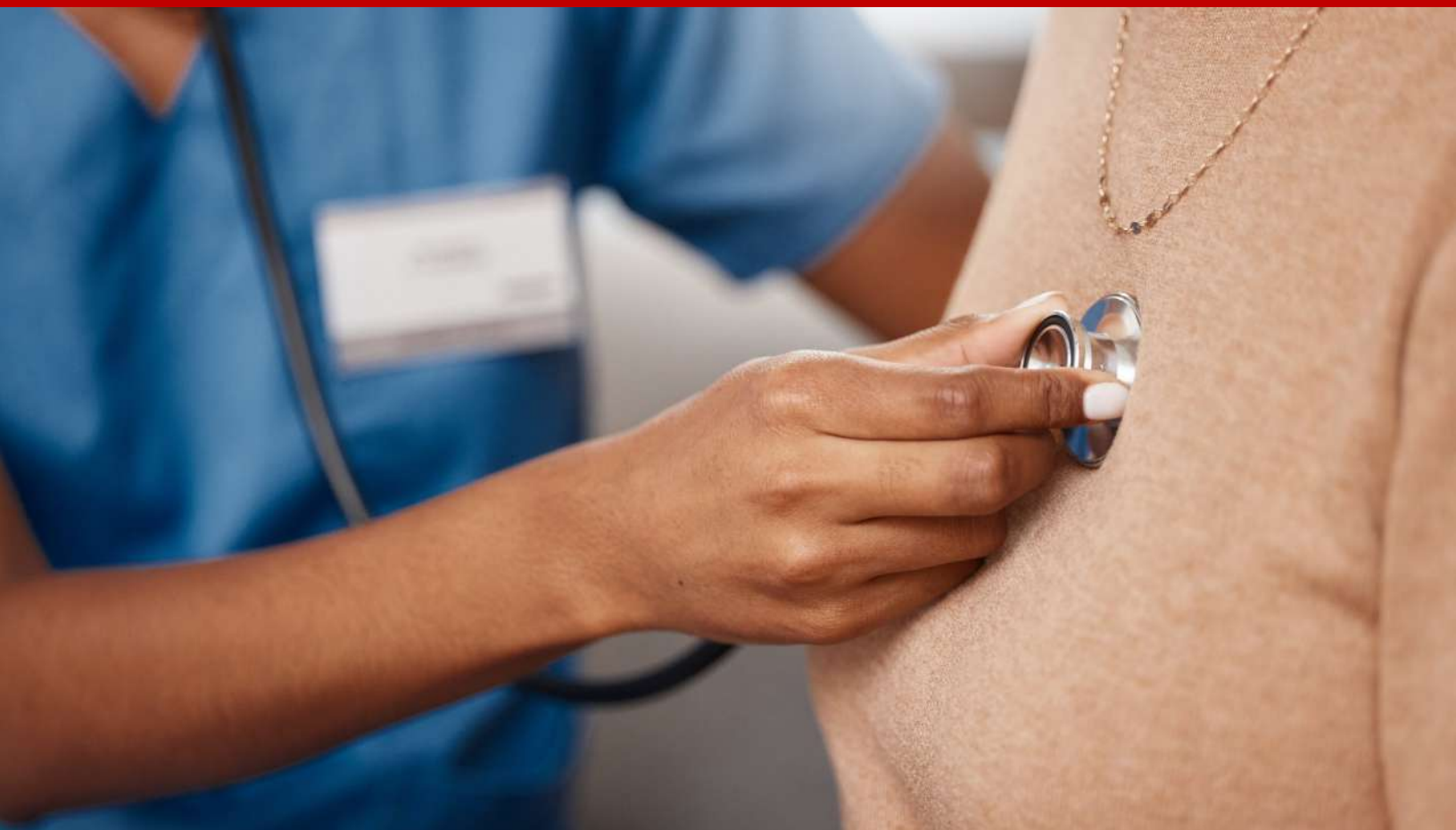
Identifying and Managing Pericarditis: Prevention to Recovery



Section 1: Introduction

Annually in the United States, almost 11 million people seek emergency medical care due to chest pain (Yukselen et al., 2024). Of these, approximately 5% of cases of chest pain that are not due to ischemic causes are determined to be the result of pericarditis. In most cases, patients experiencing pericarditis are treated and experience an optimal outcome; however, some can experience life-threatening complications (Cremer et al., 2024). In 2025, the American College of Cardiology (ACC) issued new guidelines on the diagnosis, treatment, and follow-up care of pericarditis. Given the prevalence of pericarditis, nurses must understand what this condition is, including its different types. They should also be able to identify risk factors for pericarditis. Nurses should be aware of best practices and current evidence-based guidelines for the diagnosis and treatment of pericarditis and understand their role in facilitating optimal outcomes for those diagnosed with this condition.

Section 2: What is Pericarditis?

The purpose of the pericardium is to hold the heart in place and protect it from infection. The pericardial sac consists of two thin layers of tissue, separated by a small amount of fluid that reduces friction between them (NHLBI, 2023). In a healthy individual, there is typically 15-20 mL of serous fluid in the space between the visceral layer that surrounds the epicardium and the parietal layer, which is well-innervated. This rich innervation makes the parietal layer of the pericardium more susceptible to inflammation (Dababneh & Siddique, 2025).

Pericarditis is an inflammatory heart disorder that can result from various infectious or non-infectious causes. The most common cause is a viral illness (Lazarou et al., 2022). When pericarditis occurs, the pericardium, or thin sac that

surrounds the heart, becomes inflamed, leading to sharp chest pain (Cleveland Clinic, 2025). When pericardial mesothelial cells are injured by viral infection, cardiac procedure, or immune disorder, a severe inflammatory response ensues, leading to the inflammation characteristic of pericarditis (Wang et al., 2025).

In some cases of pericarditis, fluid accumulates in the pericardial sac, causing a pericardial effusion. Depending on the cause of pericarditis, this fluid can be serous, hemorrhagic, or purulent. If the effusion accumulates slowly, the sac can enlarge over time, preventing compression of the cardiac chambers. If the effusion is large or the fluid collects rapidly, the cardiac chambers can become constricted, leading to hemodynamic instability and cardiac tamponade. When assessing the impact of a pleural effusion, the rate of fluid accumulation is often more hemodynamically significant than the volume of fluid. Pericarditis can also lead to pericardial thickening, resulting in restrictive pericarditis. Pericarditis can occur on its own or in conjunction with another pericardial illness. In about 30% of cases, patients will experience a recurrence of the condition (Dababneh & Siddique, 2025).

Pericarditis is often classified by its duration. The 2025 ACC guidelines clarified classification requirements for pericarditis based on duration. Acute pericarditis is defined as symptoms that last less than 4-6 weeks. Incessant pericarditis describes symptoms that persist for 4-6 weeks without improvement. Recurrent pericarditis occurs when an episode of pericarditis occurs and completely resolves with no symptoms for 4-6 weeks, followed by a new acute episode. Chronic pericarditis occurs when symptoms last for more than three months (Wang et al., 2025)

Pericarditis can also be classified as infectious or non-infectious (Dababneh & Siddique, 2025). Infectious pericarditis is the most common type, with 80-85% of all pericarditis cases being due to a viral infection. Viruses that can cause pericarditis include coxsackieviruses, echoviruses, herpesviruses, influenza viruses,

adenoviruses, hepatitis C virus, HIV, parvovirus B19, and SARS-CoV-2 (Lazarou et al., 2022). Pericarditis due to COVID-19 infection accounts for 1.5% of cases and is associated with a higher risk of complications. Research has found that pericarditis mortality due to COVID-19 was double that of other types of viral pericarditis (Dababneh & Siddique, 2025).

When a bacterial infection causes pericarditis, it typically results from direct spread of the organism to the pericardium from a heart valve, a lung infection, or a tear in the esophagus. Bacteremia can also cause pericarditis, especially when the infection is caused by *Staphylococcus* (LeWine, 2023). The most common causes of bacterial pericarditis include tuberculosis, accounting for 4-5% of cases, and *Coxiella burnetii* (Lazarou et al., 2022). Bacterial pericarditis is also commonly caused by *Streptococci*, *Staphylococci*, *Haemophiles*, *and Mycobacterium tuberculosis*. Though bacterial pericarditis is rare due to modern antibiotics, it tends to progress rapidly and is associated with a high mortality rate (Lee et al., 2024).

Other infectious types of pericarditis are rare. When pericarditis results from a fungal infection, organisms such as *Histoplasma*, *Coccidioides*, *Candida*, and *Blastomyces* are typically the causative agents. Parasitic infections that can cause pericarditis include *Echinococcus* and *Toxoplasma*. These infections are most often due to another condition, such as HIV, that leads to an immunocompromised state (Dababneh & Siddique, 2025).

Non-infectious causes of pericarditis make up 15-20% of all pericarditis cases and can be due to several different causes. Autoimmune conditions account for up to 10% of cases and include post-cardiac injury syndromes and systemic autoimmune and autoinflammatory diseases (Lazarou et al., 2022). In some patients with autoimmune diseases, pericarditis may be the first indication of an underlying autoimmune disorder, such as rheumatoid arthritis, systemic lupus

erythematosus, Sjogren's syndrome, systemic sclerosis, or vasculitis. For patients with autoimmune diseases, many may have asymptomatic pericarditis. One study found that over 50% of patients with systemic lupus erythematosus also had asymptomatic pericardial disease (Wassif et al., 2025).

In rare cases, certain medications can lead to pericarditis. Procainamide, hydralazine, and isoniazid have been associated with the onset of medication-induced systemic lupus erythematosus, which can lead to pericarditis. Checkpoint inhibitors, including ipilimumab and nivolumab, have been associated with myocarditis and pericarditis. Monoclonal antibodies used in oncology that specifically target specific antigens are also associated with cardiac toxicity. Research has also found that pericarditis can occur following an mRNA vaccine, including the COVID-19 vaccine. However, this occurrence is very rare (Dababneh & Siddique, 2025). Males between the ages of 12 and 17 are more likely to experience pericarditis and myocarditis as a result of this vaccine (Mayo Clinic Staff, 2024).

Neoplastic pericarditis is the cause of 5-7% of cases, though it is rarely due to a primary tumor. This condition typically results from secondary tumors (Lazarou et al., 2022). Lung cancer, breast cancer, lymphomas, and leukemias are more common causes of neoplastic pericarditis. It can also occur due to malignant melanoma or Kaposi sarcoma. Neoplastic pericarditis typically occurs when a tumor infiltrates the pericardium through direct invasion, metastases, or venous extension. Although a primary pericardial tumor is rare, it can be caused by pericardial mesothelioma, angiosarcoma, fibrosarcoma, pericardial lipoma, and fibroma (Feger et al., 2021). Pericarditis can be the first sign of pericardial malignancy, but it is most often associated with oncologic treatment. Immunosuppressed oncology patients may experience infectious pericarditis (Wang et al., 2025).

Cholesterol pericarditis, also known as xanthogranulomatous pericarditis, is a rare cause of pericardial effusion. It occurs when cholesterol crystals accumulate in the pericardium. This is most often due to hyperlipidemia, lipid metabolism abnormalities, and chronic inflammatory disorders (Alam & Zafar, 2025). This condition is chronic and is associated with large pericardial effusions that are rich in cholesterol. Cholesterol pericarditis has been associated with tuberculosis, rheumatoid arthritis, and hypothyroidism. Upon aspiration of fluid from the pericardium, observers will note the fluid has a characteristic “gold paint” appearance (Khawaja et al., 2022). Research on this type of pericarditis is limited due to the condition's rarity (Alam & Zafar, 2025).

Metabolic conditions that can lead to pericarditis include uremia and myxedema (Lazarou et al., 2022). In patients with severe renal dysfunction, especially those experiencing end-stage renal disease or marked azotemia, the pericardium can become inflamed (Rhabneh & Rout, 2025). Azotemia occurs when toxic metabolic byproducts, such as nitrogen and creatinine, accumulate in the blood (Cleveland Clinic, 2023). Uremia occurs with more severe kidney failure when wastes, including urea, accumulate to toxic levels that produce clinical symptoms (Cleveland Clinic, 2024). The accumulation of toxins triggers a systemic and local pro-inflammatory state, releasing proinflammatory markers that promote pericardial inflammation, activate fibroblasts, and contribute to fibrosis. In severe cases, effusions can occur. In addition to the buildup of toxins in the blood, fluid overload and electrolyte imbalances also contribute to the development of uremic pericarditis. Research suggests that increased nitrogen waste products have a proinflammatory effect, leading to pericarditis; however, other studies attribute the inflammation to changes in acid-base homeostasis, hypercalcemia, and hyperuricemia. Pericarditis due to uremia is known to be an uncommon but significant complication of end-stage renal disease. It has become less common due to advances in hemodialysis therapy, earlier initiation of renal replacement

therapy, more efficient dialyzers, and closer monitoring (Rhabneh & Rout, 2025). Left untreated, pericarditis due to uremia is fatal (Cleveland Clinic, 2024).

Trauma can lead to pericarditis. While this is most commonly due to a delayed inflammatory reaction, it can also occur shortly after an injury (Dababneh & Siddique, 2025). Trauma to the chest, such as the occurrence of a blunt injury during a car accident, can lead to pericarditis (Cleveland Clinic, 2025). Late post-myocardial infarction syndrome, also known as Dressler syndrome, can occur following acute coronary syndrome. This often occurs several weeks after the precipitating acute event and is due to a delayed inflammatory response. It is believed that this condition occurs due to the formation of antimyocardial antibodies following a myocardial infarction. The prevalence of this syndrome has decreased in recent years due to advancements in the management of acute coronary syndrome. Other sources of trauma that can lead to pericarditis include percutaneous surgical interventions, cardiac surgery, and blunt trauma (Dababneh & Siddique, 2025).

In developing countries, the primary causes of pericarditis differ from those found in more developed regions. In these developing countries, 70-80% of cases of pericarditis result from active tuberculosis infections (Lazarou et al., 2022). In developed nations where TB is not endemic, less than five percent of cases of pericarditis are due to tuberculosis (Lee et al., 2024).

By the time pericarditis is diagnosed, there is often no evidence of a viral illness; however, it is assumed to have resulted from an immune response to a viral infection. In the absence of a definitive cause, providers will diagnose idiopathic pericarditis; however, most of these cases are likely due to a viral infection that has since resolved (LeWine, 2023). This is incredibly common, and extensive testing to determine the source of the inflammation is rarely pursued unless there is specific clinical suspicion of a causative condition (Dababneh & Siddique, 2025)

Section 2 Personal Reflection

What are the benefits of the anatomy of the pericardial sac? How can this anatomy also contribute to inflammation? Why do you think viral pericarditis is the most common type in areas where tuberculosis is not endemic? Why do you think there is often no evidence of viral illness by the time pericarditis is diagnosed?

Section 3: Risk Factors

Pericarditis most commonly occurs in males between the ages of 16 and 65, but it can affect anyone (Cleveland Clinic, 2025). Certain health conditions can increase the risk of experiencing pericarditis. Individuals who have had a myocardial infarction, recent cardiac surgery, radiation therapy, or other cardiac procedures, such as cardiac catheterizations or radiofrequency ablation, are at increased risk for developing pericarditis (Cleveland Clinic, 2025).

Some patients are at increased risk for complications. These individuals include females, those with fever, immunocompromised patients, individuals on anticoagulant therapy, those who have experienced acute trauma, patients who do not respond to NSAID therapy after one week, individuals with a large pericardial effusion, pericardial tamponade, or constrictive pericarditis, and those with a reduced ejection fraction (Malik et al., 2024). Those diagnosed with incessant pericarditis, experiencing persistent symptoms for more than 4-6 weeks despite treatment, are possibly at increased risk for complicated pericarditis. Pericarditis complications include recurrences, cardiac tamponade, and constrictive pericarditis. Research continues to investigate how an incessant course of pericarditis affects the pericardium over the long term and which interventions may be necessary for these patients to prevent complications (Imazio et al., 2021).

In 2021, a predictive risk score was developed to determine a patient's individual risk for recurrence of pericarditis. The factors included in the risk score are patient age, effusion size, platelet count, reduced inferior vena cava collapse, in-hospital use of corticosteroids, and heart rate (Lazarou et al., 2021).

While pericarditis cannot be specifically prevented, prompt and appropriate treatment can prevent complications from occurring or worsening. Individuals can also take measures to avoid viral infection, the most common cause of pericarditis. Hand hygiene is recommended to prevent the spread of infections. Patients should remain up to date with recommended vaccines, including COVID-19, rubella, and influenza, as these infections are more likely to contribute to cardiac inflammation. Individuals should also avoid contact with those with known illnesses or flu-like symptoms (Mayo Clinic Staff, 2024).

Section 3 Personal Reflection

Why do you think those with a history of myocardial infarction or previous cardiac surgical procedure are at increased risk for pericarditis? What individuals are at increased risk for complications due to pericarditis? How can the development of a predictive risk score promote improved outcomes? Why is it not possible to specifically prevent the occurrence of pericarditis?

Case Study

Mr. Thomas is a 57-year-old male who reports to the emergency department with chest pain. He states he has chest pain. He does not have a previous history of myocardial infarction or cardiac surgery. He reports that he had COVID-19, but has recovered from those symptoms.

What are Mr. Thomas's risk factors for pericarditis? Select all that apply.

- Age
- Sex
- Medical history negative for cardiac disease
- Report of recent viral illness

Section 4: Signs, Symptoms, and Complications

Typically, the onset of pericarditis symptoms is sudden. Chest pain is the most common symptom and is often described as sharp and stabbing (Cleveland Clinic, 2025). Due to the innervation of the pericardium, pain in pericarditis can be severe and debilitating (Malik et al., 2024). Though less common, some individuals may report the pain as feeling dull, achy, or pressure-like. Most people report pain behind the breastbone or on the left side of the chest (Mayo Clinic Staff, 2024), and the pain may radiate to the back, neck, or left shoulder. The pain is exacerbated by coughing, swallowing, deep breathing, and lying supine. Patients often experience pain relief by sitting up and leaning forward. Relief of pain through repositioning in this way can provide valuable information to the healthcare team when determining whether the chest pain is due to infarction. Patients may also experience symptoms such as difficulty breathing when lying down, a dry cough, tachycardia, palpitations, fatigue, fever, and, in severe cases, lower-extremity edema (Cleveland Clinic, 2025).

When an individual presents with chest pain, nurses and other members of the healthcare team must be able to determine the most likely cause quickly. Unlike the pain experienced with pericarditis, ischemic chest pain is not alleviated by changing position, breathing, or palpation. Ischemic pain typically worsens with exertion or emotional stress and is relieved by rest or the use of nitroglycerin. Ischemic pain can present in atypical ways, making it challenging for the

healthcare team to determine the cause. Respiratory symptoms often accompany chest pain due to pleurisy, and the pain does not improve with sitting up. Lower chest pain that improves with leaning forward and occurs alongside food intake is more likely due to abdominal causes, such as esophagitis or acute pancreatitis (Dababneh & Siddique, 2025).

Upon auscultation, healthcare workers may note adventitious thoracic sounds that may indicate pericarditis. A left parasternal friction rub may be noted, typically characterized by a rasping, scratchy sound with three phases. These phases correspond to the friction of the pericardial layers during atrial systole, ventricular systole, and early ventricular diastole (Dababneh & Siddique, 2025). This is usually best heard at the left sternal border and is louder during inspiration (Malik et al., 2024). While not all patients will exhibit these heart sounds, they are present in 35-85% of patients with pericarditis at some point in their clinical course. It may be challenging to hear these sounds; therefore, the provider should auscultate the patient in various positions, across all breath phases, and multiple times. A pericardial friction rub sounds like a pleural rub; however, a pericardial friction rub will have the hallmark triphasic sound, while a pleural rub is a biphasic sound related to respiration. Sometimes these heart sounds are only present once a pericardial effusion resolves, since the additional fluid decreases the friction between the layers of the pericardium. While a pericardial friction rub may be challenging to detect, it is highly specific for acute pericarditis (Dababneh & Siddique, 2025).

Symptoms of pericarditis can vary depending on the age and sex of the patient. Older females with acute pericarditis often experience dyspnea rather than chest pain and may not have a pericardial rub upon auscultation. They also do not typically have a fever. They may have nonspecific ECG findings. This can complicate the determination of a diagnosis (Lazarou et al., 2022).

Acute pericarditis usually has a positive outcome and an uncomplicated clinical course; however, some complications can emerge. Symptoms that indicate a patient is at high-risk for secondary or complicated pericarditis include the presence of a fever, subacute symptom onset, a large pericardial effusion with or without signs of tamponade, poor response to treatment with NSAIDs after one week, the use of oral anticoagulant therapy, myopericarditis, trauma, and immunosuppression (Lazarou et al., 2022).

Pericardial effusion is one potential complication of pericarditis. A small amount of fluid between the layers of the pericardium is normal to reduce friction on the tissues. Pericardial effusion is defined as a fluid collection of 50mL or greater within the pericardial space. Post-viral infection is the most common cause of pericardial effusion in North America and Western Europe, while tuberculosis is the most common cause in places where tuberculosis is endemic. Malignancies can also lead to pericardial effusion (Wang et al., 2025).

Recurrent pericarditis occurs when there is a return of symptoms after the patient's previous case of pericarditis has been resolved for at least four to six weeks. Recurrent pericarditis is most likely due to an autoinflammatory cycle (Dababneh & Siddique, 2025). Recent research focuses on the use of machine learning models to prognosticate the risk of recurrent pericarditis (Wang et al., 2025).

Constrictive pericarditis occurs when there is a loss of elasticity in the pericardium (Wang et al., 2025). Constrictive pericarditis is a complication that can develop over time, though it is very rare in cases of acute pericarditis, occurring in less than 1% of patients who experience idiopathic pericarditis. However, when the source of pericarditis is determined to be bacterial or related to tuberculosis, the incidence of constrictive pericarditis can be as high as 30% (Dababneh & Siddique, 2025). In developed regions, the most common causes of constrictive pericarditis

include prior cardiac surgery, history of radiotherapy, connective tissue disease, malignancy, trauma, and advanced renal disease. In developing regions, tuberculosis pericarditis is the most common cause of constrictive pericarditis (Gillombardo & Hoit, 2024). Men are more likely than women to develop constrictive pericarditis, and this condition is extremely rare in children (Cleveland Clinic, 2022a).

When constrictive pericarditis occurs, the pericardium, which is usually flexible, becomes thick and stiff (Cleveland Clinic, 2022a) due to scarring and sometimes calcification. This decreases compliance and reduces the heart's ability to pump effectively. Symptoms of constrictive pericarditis include shortness of breath, fatigue, and peripheral edema. There are preventive strategies that can minimize the risk of developing constrictive pericarditis. An accurate and timely initial diagnosis and treatment of acute and recurrent pericarditis are the primary methods of prevention. If a purulent pericardial effusion is present, drainage using pericardiocentesis is necessary to prevent further infection and to reduce cardiac inflammation. The administration of colchicine is important in patients undergoing pericardiotomy to reduce the risk of developing post-pericardiotomy syndrome. Draining post-pericardiotomy pericardial effusions can also help reduce the risk of developing constrictive pericarditis (Gillombardo & Hoit, 2024).

Constrictive pericarditis can be chronic or transient, depending on the cause of the loss of elasticity. Chronic constrictive pericarditis typically requires surgical radical pericardiectomy, while transient constrictive pericarditis typically responds to anti-inflammatory treatments. Effusive constrictive pericarditis occurs when constrictive pathophysiology continues after the pericardial effusion has been drained. When this occurs, the right atrial pressure does not decrease after draining and is most often caused by marked inflammation of the visceral pericardium. This complication is typically diagnosed by echocardiography after drainage of the pericardial effusion (Wang et al., 2025).

Cardiac tamponade is a serious complication of pericarditis (AHA, 2024). Cardiac tamponade occurs when so much fluid accumulates in the pericardial sac that it compresses the heart, decreasing cardiac output and leading to shock. Since the fluid accumulation that occurs with pericarditis is gradual, patients are less likely to experience this complication than those who experience other causes of pericardial effusion. When someone experiences cardiac tamponade, they may report symptoms such as chest pain, palpitations, and shortness of breath. In severe cases, they may experience dizziness, syncope, altered mental status, or may present in cardiac arrest with pulseless electrical activity. Beck's triad is a cluster of symptoms that typically point to cardiac tamponade. These symptoms include hypotension, jugular venous distension, and muffled heart sounds. A patient may exhibit pulsus paradoxus, defined as a greater than 10 mmHg decrease in systolic blood pressure during inspiration. This finding often indicates the presence of a pericardial effusion caused by cardiac tamponade, which could be caused by pericarditis (Stashko & Meer, 2023). When cardiac tamponade occurs with pericarditis, the source of pericarditis is most likely malignancy or infectious causes (Dababneh & Siddique, 2025). Pericardiocentesis is performed when tamponade is present or impending and is performed with echocardiogram guidance (Wang et al., 2025).

Myopericarditis occurs when the inflammation associated with pericarditis extends into the myocardium. In diagnostic testing, troponin is usually elevated, and left ventricular systolic function remains greater than 55%. When left ventricular systolic function falls below this level, the condition is considered perimyocarditis, and the patient should be evaluated for myocarditis. Myopericarditis presents similarly to acute pericarditis (Malik et al., 2024).

Section 4 Personal Reflection

Why is chest pain the primary symptom of pericarditis? Why is it important for healthcare workers to be able to differentiate between the symptoms of myocardial infarction and non-infarction-related causes of chest pain? Why do you think a pericardial friction rub may not be able to be auscultated when a pleural effusion is present? How do complications from pericarditis affect systemic health?

Case Study

Mr. Thomas states he has been experiencing sharp chest pain on his left side today that is worse when he moves or lies down, but is improved when he is sitting up. He describes the pain as sharp. He has no respiratory symptoms. Upon auscultation, the nurse, Jackie, can hear a friction rub that does not coincide with respiration. Jackie is accompanied by a nursing student. What is the most appropriate explanation for the symptoms that are found upon assessment of Mr. Thomas?

a. Pain that improves with repositioning is likely due to myocardial infarction

b. Mr. Thomas likely has pleurisy because a friction rub can be heard with auscultation

c. Pain that improves with repositioning is not likely related to a myocardial infarction. They can expect labs and imaging to be ordered, but a friction rub that does not correlate with respirations likely indicates pericarditis.

d. The symptoms Mr. Thomas is experiencing are likely due to anxiety about COVID-19

What symptoms should Jackie advise the nursing student to assess for that could indicate a complication of pericarditis? Select all that apply.

- Jugular venous distension
- Hypertension
- Hemodynamic instability
- Leg cramps
- Pulsus paradoxus
- Fever
- Diaphoresis
- Altered Mental Status

Section 5: Diagnosis, Treatment, and Prevention

According to the 2025 guidelines released by the American College of Cardiology, chest pain, plus at least one additional sign of inflammation, is required for a diagnosis of pericarditis. This sign of inflammation can include a pericardial rub heard on auscultation, the presence of a pericardial effusion, changes on an ECG, elevated CRP, or swelling visualized on cardiac imaging. Updated testing guidelines continue to recommend echocardiogram, ECG, and blood work for initial diagnostic testing. The 2025 guidelines, however, highlight the growing value of cardiac MRI (CMR), which can specifically detect inflammation and help the healthcare team assess disease activity. CMR imaging is particularly helpful for cases of recurrent pericarditis (Wang et al., 2025).

The patient's history can provide valuable information when determining the cause of chest pain. In cases of viral pericarditis, patients often report recent flu-

like symptoms. Those with autoimmune and inflammatory causes of pericarditis may also have a history of rheumatoid arthritis, systemic lupus erythematosus, or uremia. Patients may also report a history of prior pericardial injury, which may produce symptoms days to weeks after the injury occurs (Dababneh & Siddique, 2025).

When auscultating, if the provider is unable to determine whether a friction rub is pericardial or pleural, it can be helpful to have the patient hold their breath, as the pericardial rub will persist even without respiratory movement. The absence of a pericardial friction rub does not rule out a diagnosis of pericarditis, but its presence is indicative of acute pericarditis (Dababneh & Siddique, 2025).

If acute pericarditis is suspected, there are certain diagnostic tests and imaging that should be completed to confirm the diagnosis and rule out other conditions, such as myocardial infarction. Patients should undergo an electrocardiogram (ECG), an echocardiogram, and a chest X-ray. Lab work should include myocardial inflammation and injury markers, as well as troponins. In regions where tuberculosis is not endemic, the source of pericarditis is usually idiopathic or viral-related, and further diagnostic tests to determine the source may not be necessary. However, if tuberculosis is common in the region, further investigation may be necessary to ensure appropriate treatment (Dababneh & Siddique, 2025).

In most patients with acute pericarditis, characteristic ECG changes are identifiable across four stages of the disease. During the first stage, there is concave ST-segment elevation and ST depression in the lead aVR. There can also be PR segment elevation in this lead. When present, it is a reliable differentiator between acute pericarditis and myocardial infarction. Pericarditis may present with ST elevations in only some leads, but these changes are more commonly diffuse. In stage II, the ST and PR segments normalize. This typically occurs within

the first week. Stage III exhibits widespread T-wave inversions, followed by stage IV, when the T waves normalize (Dababneh & Siddique, 2025).

To make an accurate diagnosis and distinguish acute pericarditis from myocardial infarction, healthcare workers should understand the key ECG differences. When there is an acute injury due to infarction, the ST elevation pattern appears localized and is concave down. In acute pericarditis, ST elevation is concave upward. In cases of infarction, there are also usually ST depressions in multiple leads, while in cases of pericarditis, these typically only occur in the aVR. In cases of myocardial infarction, Q waves also often emerge (Dababneh & Siddique, 2025).

Advanced imaging is often used as a diagnostic tool when pericarditis is suspected and can help to provide a definitive diagnosis. Transthoracic echocardiography is the recommended first-line imaging technique for evaluating pericarditis. This imaging can be used serially to monitor abnormal findings. CMR is used as a second-line imaging modality. It is also used to determine the risk of complications and to evaluate the response to therapy. It is typically used for patients with complicated, incessant, recurrent, or chronic pericarditis, especially when a definitive diagnosis is unclear or symptoms do not improve with treatment. Cardiac CT scan can aid in assessing pericardial thickness and in evaluating for calcifications or pericardial constriction. It is also used for preoperative planning (Wang et al., 2025).

In addition to myocardial inflammation markers, laboratory studies that are necessary when pericarditis is suspected include a complete blood count, basic metabolic panel, liver function tests, and thyroid-stimulating hormone levels. These tests can help determine a possible cause of pericarditis. In some patients, providers may also choose to order blood cultures, viral seromarkers, and tuberculosis testing. If there is a concurrent opportunistic infection, HIV testing

should be done. Providers may also order additional tests if systemic diseases are suspected. Lab results typically reveal elevated inflammatory biomarkers, including erythrocyte sedimentation rate, C-reactive protein, and leukocytosis (Dababneh & Siddique, 2025).

If malignant pericardial disease is suspected, pericardial fluid analysis with cytology will be ordered. Specific testing to confirm a viral source of acute pericarditis isn't necessary unless HIV or Hepatitis C is suspected (Dababneh & Siddique, 2025).

The 2025 ACC guidelines aimed to improve patient outcomes by providing updated evidence-based diagnostic and clinical management approaches. The primary difference between the 2025 ACC guidelines and the prior guidelines is the required criterion of chest pain, accompanied by symptoms of inflammation. Another significant difference in the updated guidelines is the inclusion of more specific clinical guidance on the likelihood of pericarditis based on the number of specific symptoms. According to the 2025 ACC guidelines, if chest pain is present, though no other signs of inflammation are present, it is unlikely that the pericarditis is the source of chest pain. If chest pain is present with one sign of inflammation, pericarditis should be considered. When chest pain plus two of the additional signs of pericardial inflammation are present, a diagnosis of pericarditis is definite. This diagnostic criterion is most appropriate for patients presenting with acute pericarditis but may also apply to cases of recurrent pericarditis (Wang et al., 2025).

There are multiple medications used to treat pericarditis. These include non-steroidal anti-inflammatory drugs (NSAIDs), colchicine, and proton pump inhibitors (Lazarou et al., 2022). According to the 2025 ACC guidelines, anti-interleukin-1 agents may also be used (Wang et al., 2025). The most prescribed NSAIDs for the treatment of pericarditis include ibuprofen 600-800 mg three times

daily, aspirin 1 g three times daily, naproxen 500 mg twice daily, and indomethacin 50 mg three times daily. If a patient is already taking aspirin due to another condition, such as coronary artery disease, they should use this medication as treatment for pericarditis. Indomethacin is effective as an anti-inflammatory but is frequently associated with gastrointestinal side effects; therefore, it is less commonly used, particularly in older patients and in patients with coronary artery disease (Lazarou et al., 2022).

There is currently no evidence-based data to support NSAID dose tapering; however, most experts strongly recommend this practice. When implementing dose tapering, the full dose is typically taken for the first 7-10 days, and tapering should progress for 3 to 4 weeks. This taper rate varies with the medication used and the patient's individual needs. When a patient experiences recurrent pericarditis, they may require a longer course of NSAIDs (Lazarou et al., 2022). Proton pump inhibitors are necessary for patients on NSAID therapy to prevent gastric complications (Malik et al., 2024).

Initial treatment of pericarditis should include an NSAID and colchicine (Wang et al., 2025). Colchicine is used for pericarditis and is effective at reducing the recurrences, with a recommended dose of 0.5-0.6 mg twice daily. In 10% of cases, patients may experience adverse gastrointestinal side effects, especially diarrhea, when taking colchicine. For patients older than 70 years or weighing less than 70 kg, a half-dose of Colchicine is often initiated to reduce the risk of side effects. Alterations in dosage may also be considered for patients with a history of chronic renal disease or altered hepatic function. Colchicine is typically administered for three months after the onset of acute pericarditis, or for at least six months in those who experience recurrent pericarditis (Lazarou et al., 2022). Sometimes colchicine is continued to reduce the risk of recurrence further, although evidence supporting this practice is not yet available (Wang et al., 2025).

If a patient does not respond to the use of NSAIDs and colchicine, second-line treatment options should be implemented, such as an anti-interleukin-1 (anti-IL1) agent. Anti-IL1 agents, including rilonacept, anakinra, and goflikicept, are second-line medications used for the treatment of inflammation. Clinical evidence supports the use of this type of medication when there is elevated CRP. Use of these medications has been shown to help patients achieve clinical remission, improve symptoms, reduce recurrences, and normalize inflammatory markers. Anti-IL1 agents are preferred over corticosteroids for patients with inflammatory pericarditis. Once established on this type of medication, other anti-inflammatory agents can be weaned. Further research is needed to determine the appropriate duration of anti-IL-1 therapy after acute pericarditis. Current evidence suggests a course of 18 months or more to reduce the risk of recurrence (Wang et al., 2025).

Glucocorticoids may be ordered as a second-line treatment for patients who are allergic or who cannot tolerate NSAIDs, have a recent gastrointestinal ulcer, are taking anticoagulant therapy, have chronic kidney disease with poor creatinine clearance, are pregnant beyond 20 weeks of gestation, have systemic inflammatory disease, or have possible post-cardiac syndromes (Lazarou et al., 2022). The 2025 ACC guidelines recommend using steroids judiciously. If used, steroids should be administered at the lowest effective dose and should be tapered very slowly. When steroids are stopped abruptly, there can be increased inflammation, weight gain, hyperglycemia, and bone loss (Wang et al., 2025). Glucocorticoids are not preferred due to potential side effects and safety concerns when taken long-term (Lazarou et al., 2022).

Research suggests that beta-blockers, when used in addition to anti-inflammatory medications, improve symptom control by lowering heart rate. When the heart rate is reduced, there is then less friction between the pericardial layers (Lazarou et al., 2022). Beta-blockers can also promote antioxidative effects and

downregulate proinflammatory cytokines, thereby reducing inflammation (Malik et al., 2024).

Patients who do not experience remission after use of corticosteroids and anti-IL-1 agents may be prescribed intravenous immunoglobulins (Wang et al., 2025). In cases of recurrent pericarditis, intracardial corticosteroid administration may be used to avoid adverse effects due to systemic corticosteroid use (Malik et al., 2024)

Draining fluid from the pericardial space through pericardiocentesis may be necessary in some cases of pericarditis. This procedure is performed with echocardiographic guidance. Pericardiocentesis is typically done if a pericardial effusion causes hemodynamic instability or if fluid needs to be aspirated due to suspicion of neoplastic or bacterial causes (Malik et al., 2024). A last resort treatment option is radical pericardiectomy, which must be performed under cardiopulmonary bypass (Wang et al., 2025). This surgical procedure involves removing the entire pericardium and is only performed rarely. Only about 20% of cases of constrictive pericarditis in the United States require pericardiectomy (Cleveland Clinic, 2022b). Medications targeted at reducing inflammation are typically used until surgery occurs in these cases (Wang et al., 2025).

In addition to medical treatment, recovery after pericarditis requires limiting physical activity, though it can sometimes include draining fluid through pericardiocentesis or surgery in severe cases (Cleveland Clinic, 2025). According to the 2025 ACC guidelines, rest from physical activity is defined as maintaining a heart rate below 100 beats per minute, regardless of the activity, until symptoms resolve. Increased heart rate increases the frequency of friction in the pericardium, which is not conducive to healing inflammation. Limiting physical activity is recommended for at least one month until symptoms resolve and CRP normalizes (Wang et al., 2025). Patients can return to competitive sports three

months after the onset of symptoms if their case of pericarditis has been uncomplicated. In cases of myopericarditis, patients should refrain from competitive physical activity for six months. This may be altered in cases of recurrent pericarditis, as strenuous physical activity may be even more delayed (Lazarou et al., 2022).

Treatment of pericarditis due to less common causes is specific for each etiology. When pericarditis occurs due to autoimmune disorders, the underlying systemic inflammatory condition must be addressed. Treatment for this type of pericarditis often focuses on the use of corticosteroids and immunosuppression. Antimicrobial therapy is the primary treatment for purulent pericarditis, in addition to pericardial drainage. Broad-spectrum antibiotics are used for patients who are immunocompromised or who are experiencing a nosocomial infection. Fluconazole is often used for antifungal coverage in patients who are severely immunocompromised. Once the microorganism causing the infection is identified, more targeted therapy can be implemented (Malik et al., 2024).

Recovery after pericarditis takes time and can be difficult for patients not used to refraining from physical exertion. Most individuals who experience acute pericarditis have a full recovery and return to normal function. The most optimal outcomes occur when diagnosis and treatment are prompt, and patients adhere to prescribed medications and activity restrictions (Dababneh & Siddique, 2025).

Section 5 Personal Reflection

How does the patient's history aid in the diagnosis of pericarditis? Why do you think the updated clinical guidelines emphasize chest pain as the primary criterion for pericarditis? Why do you think a sign of inflammation is also necessary for a diagnosis? How can NSAIDs treat pericarditis? Why do the new guidelines emphasize the use of colchicine in addition to NSAIDs?

Case Study

What testing and imaging should Jackie anticipate for Mr. Thomas? Select all that apply.

- ECG
- VCUG
- Cardiac Cath
- Troponin
- CBC
- BMP
- Urinalysis
- CRP
- X-ray
- CMR
- PET scan

Jackie is providing education to Mr. Thomas after a diagnosis of pericarditis. What rationale should she use to explain to Mr. Thomas why rest from strenuous activity is necessary?

a. There are blockages in Mr. Thomas's cardiac arteries, which could make exercise dangerous

b. Exercise significantly increases heart rate, thereby increasing friction between the layers of the pericardium. This can contribute to more inflammation and a recurrence of pericarditis

c. Exercise releases endorphins, which can negatively affect the heart

d. Refraining from physical activity reduces blood pressure, thereby allowing the heart to rest.

Section 6: Nursing Implications

Nurses are instrumental in achieving optimal outcomes for patients with pericarditis. Nurses must monitor symptom progression and perform thorough physical assessments to identify complications of pericarditis (Dababneh & Siddique, 2025). Patient education is critical to achieving optimal outcomes. It should emphasize adherence to prescribed treatments, including taking colchicine as directed and avoiding heavy exertion, to reduce the risk of recurrent pericarditis (Wang et al., 2025). An interdisciplinary team, including cardiologists, radiologists, cardiac surgeons, infectious disease specialists, primary care providers, nurse practitioners, nurses, and other healthcare professionals, is critical for appropriate diagnosis and treatment. The healthcare team must be able to identify subtle clinical findings and utilize appropriate imaging to guide accurate diagnosis and treatment. When pericardiocentesis is necessary, nurses are also essential in preparing and educating the patient and their family prior to the procedure (Dababneh & Siddique, 2025).

In the event of cardiac tamponade, an emergent and life-threatening complication that can occur with pericarditis, nurses can implement specific interventions to improve healthcare outcomes in this situation. These interventions include providing oxygen; bed rest with legs elevated; establishing intravenous access, preferably with two large-bore IVs; administering medications as ordered; maintaining fluids for resuscitation; ECG monitoring; ensuring chest x-ray and echocardiogram are completed if ordered; and having a pericardiocentesis tray ready. Nurses should notify the provider of symptoms such as hypotension,

diminished heart sounds, low oxygenation, altered mental status, and thready pulse. Nurses should monitor oxygenation and ventilation, urine output, vital signs, ECG, anxiety, and heart and lung sounds (Stashko & Meer, 2023).

Section 6 Personal Reflection

How can nurses promote optimal outcomes for patients with pericarditis? How can a nurse prepare for interventions if cardiac tamponade is suspected? How can the communication of subtle exam findings contribute to a timely diagnosis and treatment?

Case Study

Mr. Thomas asks Jackie how he can prevent getting pericarditis again. What should she tell him? Select all that apply.

- Pericarditis is not 100% preventable, but there are ways to reduce the risk of recurrence
- Exercise regularly during the first month after diagnosis
- Take medications exactly as prescribed and do not discontinue them until instructed by the provider
- Refrain from activities that increase the heart rate to over 100 beats per minute for at least one month
- Bed rest for two months is the most effective way to reduce the risk of recurrent pericarditis

Section 7: Conclusion

Early recognition and timely implementation of a treatment plan are important for promoting favorable outcomes in pericarditis (Malik et al., 2024). While most individuals fully recover from pericarditis, complications can occur. Since the publication of the 2025 ACC guidelines, nurses and other healthcare workers have access to the most recent evidence-based recommendations to provide high-quality care to their patients and reduce the risk of complications. Nurses must be knowledgeable about pericarditis, including its various types. This enables nurses to identify characteristic symptoms, thereby facilitating accurate diagnosis and timely treatment. Nurses who can identify risk factors can also aid in the early detection of this condition. Nurses who are familiar with current evidence-based guidelines for the diagnosis and treatment of pericarditis are best prepared to facilitate optimal outcomes.

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