



Atrial Fibrillation in Nursing Practice: Assessment, Monitoring, and Patient Education: An Updated Review

¹ Hlimah Obaid Alrashady,²-Abdullah Salem Abdullah Alammar,³-Ayat Adnan Essa Albahrani,⁴-Amani Mithqab Khormi,⁵- Basmah Dakhel Salem Aljameeli,⁶-Hamad Mohaimeed Hamad Alotaibi,⁷-Mohammed Sulaiman Awwad Alatawi,⁸- Omamh Kalid Falatah,⁹-Manal Ghazi Hamil Alharthi,¹⁰-Mohammed Abdullah Mohammed Alharthi,¹¹-Ali Ismail Hassan Gaisi,¹²-Amal Ali Ahmad Sofyani General Nursing,¹³- Abdullah Aied Salam Albalwi,¹⁴-Ali Mohammed Taher Geesi,¹⁵-Amal Salem Mohammed Daak,

1. Ksa, Ministry Of Health, Buraidah Central Hospital
2. Ksa, Ministry Of Health, Abu Arish General Hospital
3. Ksa, Ministry Of Health, Omran General Hospital
4. Ksa, Ministry Of Health, Erada Hospital For Mental Health-Jazan
5. Ksa, Ministry Of Health, Al Rawda Health Center
6. Ksa, Ministry Of Health, Al Bajadia General Hospital
7. Ksa, Ministry Of Health, Tabuk Health Cluster - Sulaymaniyah Primary Health Care Center
8. Ksa, Ministry Of Health, Ohud Hospital
9. Ksa, Ministry Of Health, Badr 3 Health Center
10. Ksa, Ministry Of Health, Al Bajadia General Hospital
11. Ksa, Ministry Of Health, Dehma Primary Health Care Center
12. Ksa, Ministry Of Health, Jazan Middle Sector Phcc-Alaradha-Mohataq Alasm
13. Ksa, Ministry Of Health, ALWAGH GENERAL HOSPITAL
14. Ksa, Ministry Of Health, Dehama Primary Health Care Center
15. Ksa, Ministry Of Health, Al-Idabi General Hospital

Abstract:

Background: Atrial fibrillation (AF) is the most common cardiac arrhythmia, characterized by abnormal atrial electrical activity leading to rapid and disorganized heartbeats. It significantly increases the risk of stroke, especially in patients with underlying cardiovascular conditions. Understanding the pathophysiology, risk factors, and complications associated with AF is crucial for effective nursing management, including assessment, monitoring, and patient education.

Aim: This review aims to provide an updated understanding of atrial fibrillation in nursing practice, focusing on assessment, monitoring, management strategies, and the critical role of patient education in preventing complications such as stroke.

Methods: A comprehensive review of current literature on atrial fibrillation management, including diagnostic techniques, therapeutic options, nursing interventions, and patient education strategies, was conducted. Information was gathered from medical databases, clinical guidelines, and research studies.

Results: AF is increasingly prevalent, particularly among older adults, and presents with varying symptoms ranging from asymptomatic to severe complications like stroke. Risk factors include hypertension, coronary artery disease, and obesity. Nursing management involves regular assessment using tools like ECG, monitoring vital signs, and providing patient education on medication adherence, lifestyle modifications, and the importance of follow-up care. Pharmacological treatments, including anticoagulants, rate control

agents, and rhythm control medications, are essential. Non-pharmacological interventions such as ablation therapy may be considered in refractory cases.

Conclusion: Atrial fibrillation remains a significant health concern due to its high prevalence and the potential for severe complications like stroke. Nurses play an integral role in assessing, monitoring, and educating patients with AF to prevent adverse outcomes. Early diagnosis, appropriate management, and ongoing patient education can significantly improve quality of life and reduce the risks associated with AF.

Keywords: Atrial fibrillation, stroke prevention, nursing management, ECG, anticoagulation therapy, patient education, rhythm control, rate control.

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Introduction:

Atrial fibrillation (AF) represents the most prevalent form of cardiac arrhythmia, resulting from abnormal electrical activity within the atria, leading to their disorganized and rapid contraction. As a type of tachyarrhythmia, AF is characterized by an increased heart rate. The condition can present as either paroxysmal, lasting less than 7 days, or persistent, lasting longer than 7 days. The irregularity of the atrial rhythm disrupts normal blood flow, creating turbulence that enhances the likelihood of thrombus formation. These clots can subsequently dislodge, leading to cerebrovascular events such as stroke, making AF the leading cardiac contributor to stroke incidence. Risk factors for AF include advanced age, hypertension, pre-existing heart and lung conditions, congenital heart defects, and excessive alcohol consumption. Symptomatology can range from asymptomatic cases to those experiencing chest pain, palpitations, tachycardia, dyspnea, nausea, dizziness, diaphoresis, and generalized fatigue. Although AF can become a permanent condition, various therapeutic interventions and risk-reduction strategies have been developed to mitigate stroke risk in individuals with sustained AF. These treatments encompass anticoagulation therapy, rate and rhythm control medications, cardioversion, ablation procedures, and other interventional cardiac techniques [1][2][3].

Nursing Diagnosis:

Patients with atrial fibrillation often report a variety of symptoms including palpitations, dizziness, nausea, lightheadedness, weakness, malaise, excessive sweating, and a sensation of panic.

Causes:

Atrial fibrillation may be triggered by a range of factors. Common etiologies include advanced age, congenital heart disease, valvular disorders, coronary artery disease, structural heart conditions, excessive alcohol intake, hypertension, and obstructive sleep apnea. Any condition that induces inflammation, stress, damage, or ischemia to the heart's structural or electrical components can predispose individuals to AF. In certain instances, AF may also be iatrogenic in nature [4].

Risk Factors:

The global prevalence of atrial fibrillation has been on the rise, with its incidence increasing notably with age. Projections suggest that by 2050, the number of individuals diagnosed with AF may double or even triple. While the worldwide prevalence of AF stands at approximately 1%, this rate escalates to around 9% in individuals aged 75 and older. At age 80, the lifetime risk of developing AF reaches 22%. Furthermore, studies have shown that AF is more commonly observed in males and is more prevalent among Caucasians than African Americans [5][6].

Assessment:

A thorough history and physical examination are essential for diagnosing atrial fibrillation and assessing associated risks. The patient history should focus on the presence of symptoms such as palpitations, chest pain, dyspnea, increased lower extremity edema, exertional dyspnea, and dizziness. It is

also crucial to identify risk factors, including hypertension, a history of valvular or ischemic heart disease, obstructive sleep apnea, obesity hypoventilation syndrome, smoking, alcohol consumption, illicit drug use, previous rheumatic fever or heart disease, pericarditis, and hyperlipidemia. During the physical exam, the clinician should assess the patient's overall appearance (such as signs of obesity), inspect the neck for jugular venous distension (JVD), carotid bruits, and measure circumferential changes. Cardiovascular examination should involve auscultation of all four cardiac areas and palpation for the apical impulse. A pulmonary examination, including auscultation, percussion, and specialized tests, may be necessary to assess lung function. The extremities should be evaluated for signs of edema, peripheral pulses, and possible peripheral vascular disease (PVD), such as hair loss and skin breakdown. An abdominal exam should involve palpating the aorta and auscultating for abdominal bruits. The clinical presentation of atrial fibrillation can vary significantly, ranging from no symptoms to signs indicative of acute heart failure.

Evaluation:

In addition to a comprehensive history and physical examination, the electrocardiogram (ECG) is pivotal in diagnosing atrial fibrillation, where it typically presents with a narrow complex "irregularly irregular" rhythm and the absence of distinct P-waves. Laboratory tests are essential to investigate potential underlying causes, such as a complete blood count (CBC) to detect infection, a basic metabolic panel (BMP) to assess for electrolyte imbalances, thyroid function tests to rule out hyperthyroidism, and a chest x-ray to evaluate thoracic abnormalities. It is also crucial to evaluate for the possibility of pulmonary embolism (PE), which can induce right heart strain and contribute to atrial dysfunction, thereby exacerbating or precipitating AF. In cases of suspected PE, diagnostic tests such as D-dimer assays and CT scans are useful, and patients should be stratified for PE risk using tools like the PERC and Wells criteria. A transesophageal echocardiogram (TEE) is recommended for these patients to assess for the presence of atrial thrombus and to evaluate the heart's structural integrity. Notably, TEE should be performed prior to cardioversion to minimize the risk of stroke [7][8].

Medical Management of Atrial Fibrillation

The management of atrial fibrillation (AF) in acute settings is contingent upon the patient's hemodynamic stability and a thorough risk assessment. In cases where the patient exhibits hemodynamic instability, immediate cardioversion accompanied by anticoagulation therapy is imperative. It is recommended that a transesophageal echocardiogram (TEE) be performed prior to cardioversion; however, in patients with hemodynamic stability but experiencing a rapid ventricular response, cardioversion can be conducted without prior TEE. When rapid ventricular response is identified, rate control should be initiated using either beta-blockers or calcium-channel blockers, which may be administered as intravenous (IV) boluses or continuous infusions. Typically, an initial bolus is given, followed by a drip if symptoms remain unresolved. Although digoxin can also be used as a rate control agent, it is generally not recommended as a first-line treatment due to its side effects and the potential for tolerance. Amiodarone may be considered for rhythm control; however, it is also not the first-line choice in acute scenarios and should be used only after consultation with cardiology.

In the chronic management of AF, risk stratification is performed using the CHADs-2-Vasc score, which estimates the annual risk of cerebrovascular accident (CVA). A score of 0 indicates a "low-risk" category, wherein anticoagulation therapy is typically not necessary. A score of 1 places the patient in the "low-moderate risk" category, prompting the physician to consider either anticoagulant or antiplatelet therapy. Patients with a score greater than 2 fall into the "moderate-high risk" category, where anticoagulation therapy is strongly recommended [2]. In addition to anticoagulation, rate or rhythm control should be implemented. Medications such as beta-blockers, calcium channel blockers, amiodarone, dronedarone, and digoxin are commonly used. The HAS-BLED score is another essential tool used to assess the risk of bleeding in patients who are candidates for anticoagulation therapy. This score serves as a critical indicator for determining the patient's suitability for initiating anticoagulation treatment. Non-pharmacological interventions for AF include ablation therapy, which is considered for patients who are

refractory to pharmacological treatment. In more severe cases, where AF results in heart failure, pacemaker implantation may be necessary [9][10][11].

Nursing Management of Atrial Fibrillation

The nursing management of atrial fibrillation (AF) begins with the acquisition of a 12-lead electrocardiogram (ECG), which typically reveals a chaotic rhythm without discernible P waves. Vital signs should be closely monitored, as instability may necessitate immediate cardioversion. The patient should be continuously connected to a cardiac monitor to ensure ongoing assessment of their condition. Medications should be administered as prescribed, including anticoagulants, to mitigate the risk of thromboembolic events. Additionally, neurovital signs should be regularly checked to assess potential neurological complications.

When to Seek Medical Intervention

Immediate medical attention should be sought in cases where the patient exhibits hemodynamic instability, loss of consciousness, altered mental status, cold extremities, or unresponsiveness. These symptoms suggest a worsening of the patient's condition and the need for urgent medical intervention.

Outcome Identification

The primary goals in managing atrial fibrillation include achieving a normal heart rate and rhythm, with the resolution of symptoms. Successful treatment should result in the absence of clinical manifestations of AF, such as palpitations, shortness of breath, or dizziness.

Monitoring and Assessment

Monitoring during the management of atrial fibrillation involves checking coagulation parameters to ensure therapeutic anticoagulation levels, as well as continuously assessing neurovital signs and peripheral pulses. Embolic events can result in occlusion of blood vessels, so it is essential to monitor for signs of vascular compromise. Vital signs, including oxygenation levels, should be regularly assessed, and a repeat ECG should be obtained to track the rhythm and ensure that therapeutic targets are met.

Coordination of Care

Atrial fibrillation is a chronic condition that can significantly impair the quality of life and imposes a substantial financial burden on healthcare systems globally. While cardiologists are responsible for the clinical management of AF, pharmacists play an integral role in optimizing treatment outcomes. Many patients with AF are prescribed multiple medications, including antiarrhythmic agents and anticoagulants. Emerging evidence suggests that the use of Angiotensin receptor blockers and statins may reduce the frequency of AF episodes and improve the success rate of cardioversion. Therefore, pharmacists must ensure that prescribed medications are dosed appropriately, monitor for potential drug interactions, and verify that patients are receiving therapeutic anticoagulation to prevent stroke. Nurses also play a crucial role in educating patients about medication adherence for managing underlying conditions such as hypertension and coronary artery disease and ensuring consistent follow-up care. Additionally, patients should be informed about the signs of a stroke and when to seek urgent medical attention in the emergency department [12][13][14].

Outcomes of Atrial Fibrillation

The prevalence of atrial fibrillation (AF) has been steadily increasing, and it is associated with a significantly higher risk of stroke. Specifically, individuals with AF are five times more likely to experience a stroke compared to the general population. Projections indicate that by 2030, approximately 19.6% of individuals over the age of 65 will be diagnosed with atrial fibrillation. The most concerning complication of AF is the risk of acute stroke, which can result in severe morbidity and mortality. However, evidence suggests that 60% of strokes attributed to atrial fibrillation can be effectively prevented through the use of anticoagulants. The use of the CHADS₂-VASc score to evaluate patients with AF is a valuable tool in guiding treatment strategies, with the ultimate goal being the prevention of stroke. By appropriately stratifying risk

factors and utilizing medical or surgical therapies, the incidence of stroke and heart failure can be substantially reduced [3].

Health Teaching and Health Promotion

Patient education is a critical aspect of managing atrial fibrillation. It is essential for patients to adhere to their prescribed medication regimens to effectively manage their condition. Additionally, patients should be counseled on the importance of smoking cessation, as smoking exacerbates the risks associated with AF. Consistent follow-up visits with healthcare providers should also be emphasized to ensure ongoing assessment and adjustment of treatment plans as necessary.

Risk Management

In managing atrial fibrillation, it is imperative that patients and healthcare providers remain vigilant for signs of hemodynamic instability or changes in mental status. If a patient experiences such instability, prompt communication with the clinician is crucial for timely intervention and management [15].

Discharge Planning

Upon discharge, it is vital that patients continue taking their medications as prescribed to maintain therapeutic control of their condition. Smoking cessation should be reinforced, and patients should be reminded of the importance of adhering to follow-up appointments with their healthcare provider to monitor their progress and adjust treatment strategies as needed [15].

Nursing Interventions to Control Vital Signs in Atrial Fibrillation

Atrial fibrillation (AF) is a common arrhythmia that poses significant risks to patient health, including stroke, heart failure, and other complications. Vital signs, such as heart rate, blood pressure, oxygen saturation, and temperature, are critical indicators of a patient's clinical status and are often altered in individuals with AF. Nursing interventions are crucial in stabilizing vital signs, preventing complications, and promoting optimal patient outcomes. These interventions must be systematic, based on the patient's clinical presentation, and responsive to changes in the patient's condition.

1. Heart Rate Control and Rhythm Management

One of the key nursing interventions in the management of atrial fibrillation is controlling the heart rate and rhythm. AF is characterized by a rapid and irregular heart rate, which can lead to hemodynamic instability and increase the risk of clot formation. Nurses play a central role in monitoring the patient's heart rate and rhythm. This is typically achieved through the use of medications such as beta-blockers (e.g., metoprolol) or calcium channel blockers (e.g., diltiazem), which work by reducing the heart rate and improving the heart's ability to fill between beats. Nurses must carefully monitor the patient for signs of bradycardia or hypotension, especially when administering these drugs, to avoid adverse effects. In some cases, rhythm control may be necessary. Nurses may be involved in preparing the patient for electrical cardioversion, a procedure aimed at restoring normal sinus rhythm. Prior to cardioversion, patients typically undergo a transesophageal echocardiogram (TEE) to rule out the presence of thrombi in the atria. If the patient's vital signs are stable, nurses assist in preparing the patient for this procedure and ensure that they are informed and comfortable throughout the process.

2. Blood Pressure Management

Patients with AF often present with elevated blood pressure, which can exacerbate the condition and increase the risk of stroke and heart failure. Nursing interventions to manage blood pressure typically involve administering antihypertensive medications as prescribed. Angiotensin-converting enzyme inhibitors (ACE inhibitors), angiotensin receptor blockers (ARBs), and diuretics are commonly used to control blood pressure in these patients. Nurses must regularly monitor blood pressure to ensure that it is within a therapeutic range and adjust medication administration as needed. Additionally, nurses should assess the patient for signs of orthostatic hypotension, which can occur when blood pressure drops

suddenly upon standing. In such cases, the nurse should encourage slow movements when changing positions, provide adequate hydration, and ensure that the patient remains safe to prevent falls. The nurse must also be vigilant about the risk of hypotension, particularly when administering medications that lower blood pressure, and promptly report any concerns to the healthcare provider.

3. Oxygenation and Respiratory Support

Patients with AF may experience compromised oxygenation due to the rapid and irregular heartbeat, which can reduce cardiac output and impair tissue perfusion. Maintaining adequate oxygen saturation is essential in managing these patients. Nurses are responsible for monitoring oxygen saturation levels using pulse oximetry, and if oxygen levels fall below acceptable thresholds (typically 90%), supplemental oxygen should be administered as ordered. In severe cases where respiratory distress is noted, nurses may need to provide more intensive respiratory support, such as non-invasive positive pressure ventilation or mechanical ventilation, if indicated. In addition to monitoring oxygenation, nurses should assess for signs of pulmonary edema or heart failure, which can be common in patients with AF. Symptoms such as shortness of breath, crackles in the lungs, or increased work of breathing require immediate intervention.

4. Temperature Regulation

While AF is not directly associated with significant changes in body temperature, it is essential for nurses to monitor the patient's temperature regularly. An elevated temperature could indicate the presence of infection, such as pneumonia or sepsis, which may complicate the clinical course of AF. Nurses should administer antipyretics as prescribed and ensure proper hydration and rest to support the body's ability to regulate temperature.

Challenges in Nursing Care for Atrial Fibrillation

Despite the wide array of nursing interventions available to manage vital signs in patients with atrial fibrillation, there are several challenges that nurses must address in the care planning and delivery process.

1. Complexity of Medication Management

Patients with AF are often prescribed multiple medications, including antiarrhythmic drugs, anticoagulants, beta-blockers, and blood pressure medications. The complexity of managing these medications, including ensuring the correct dosages and preventing drug interactions, can be a significant challenge. For instance, anticoagulant therapy, such as warfarin or novel oral anticoagulants (NOACs), requires regular monitoring of coagulation parameters, which can be labor-intensive and require frequent adjustments. Nurses must be well-versed in the pharmacology of these drugs and capable of identifying potential side effects, such as bleeding risks associated with anticoagulation therapy. Furthermore, patient non-adherence to prescribed medications remains a significant challenge in AF management. Nurses must play an active role in educating patients about the importance of medication compliance and its role in preventing complications like stroke. This involves discussing potential side effects, the need for regular blood tests (in the case of warfarin), and the importance of consistent follow-up care.

2. Hemodynamic Instability

Managing hemodynamic instability in AF patients presents a significant challenge, especially in cases of acute decompensation. Rapid heart rates and the subsequent reduction in cardiac output can lead to shock, acute heart failure, and multi-organ dysfunction. In such instances, timely intervention is crucial, but the rapid deterioration of the patient's condition can make it difficult for nurses to stabilize vital signs. Quick assessment and communication with the healthcare team are essential to initiate appropriate interventions, such as medication titration or urgent cardioversion.

3. Patient Education and Compliance

Educating patients about atrial fibrillation and its management is a critical aspect of nursing care but also presents challenges. Many patients with AF are elderly and may have difficulty understanding complex medical information. Nurses must provide clear, concise explanations about the condition, its potential complications, and the importance of medication adherence and lifestyle changes. However, language barriers, cognitive impairment, and health literacy issues can complicate these educational efforts. Nurses must tailor their teaching to the patient's individual needs and provide reinforcement through written materials or repeated explanations.

4. Multidisciplinary Coordination

AF management often requires a collaborative approach, involving cardiologists, pharmacists, and other healthcare professionals. Nurses must coordinate with these professionals to ensure that care plans are comprehensive and that the patient receives the appropriate interventions at the right time. This can be challenging when there are communication barriers between healthcare team members or when treatment plans are not well-aligned. In conclusion, while nursing interventions play a critical role in stabilizing vital signs in atrial fibrillation, several challenges persist. Effective management requires a combination of medication administration, continuous monitoring, patient education, and interprofessional collaboration. By addressing these challenges, nurses can help improve patient outcomes and reduce the risk of serious complications such as stroke and heart failure.

Conclusion:

Atrial fibrillation (AF) is a complex and growing healthcare issue, with its prevalence expected to increase significantly in the coming decades, particularly among aging populations. This condition is a major contributor to stroke, making its prevention a key priority in both clinical and nursing settings. AF can lead to serious complications, such as stroke and heart failure, and requires a multifaceted approach to care. Nursing professionals are central to the management of AF, responsible for early identification, continuous monitoring, and patient education. Effective nursing interventions aim to stabilize vital signs, control heart rate, and manage symptoms, which can reduce the risk of complications and improve patient outcomes. The management of AF begins with a thorough assessment that includes obtaining an ECG, assessing vital signs, and identifying risk factors such as hypertension, obesity, and pre-existing heart conditions. In addition to pharmacological management, which may involve anticoagulation, beta-blockers, and rhythm control medications, non-pharmacological interventions like ablation therapy are sometimes necessary for patients who do not respond to medical treatments. Nurses play a crucial role in ensuring that patients adhere to their prescribed treatment regimens, monitor for signs of complications, and educate patients on lifestyle changes, including smoking cessation and weight management, which can mitigate the risk of AF progression. Patient education is particularly important in preventing strokes, as anticoagulant therapy can significantly reduce this risk when managed correctly. Nurses must provide clear instructions regarding the use of anticoagulants, the importance of regular follow-up visits, and the need for monitoring vital signs to detect potential complications early. Moreover, nurses should educate patients on recognizing signs of a stroke and when to seek immediate medical help. In conclusion, the role of nurses in the care of AF patients is critical. They are not only responsible for clinical management but also for guiding patients in making informed decisions about their health. By ensuring comprehensive care that includes risk management, patient education, and the use of evidence-based interventions, nurses can significantly reduce the morbidity and mortality associated with atrial fibrillation.

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الملخص :

الخلفية: يعد الرجفان الأذيني (AF) أكثر اضطرابات ضربات القلب شيوعًا، ويتميز بنشاط كهربائي غير طبيعي في الأذنين مما يؤدي إلى ضربات قلب سريعة وفوضوية. ويزيد بشكل كبير من خطر السكتة الدماغية، خاصة لدى المرضى الذين يعانون من حالات قلبية وعائية أساسية. يعتبر فهم الفيزيولوجيا المرضية، وعوامل الخطر، والمضاعفات المرتبطة بالرجفان الأذيني أمرًا بالغ الأهمية من أجل إدارة التمريض الفعالة، بما في ذلك التقييم، والمراقبة، وتعليم المرضى.

الهدف: تهدف هذه المراجعة إلى تقديم فهم محدث للرجفان الأذيني في ممارسة التمريض، مع التركيز على التقييم، والمراقبة، واستراتيجيات الإدارة، والدور الحيوي لتعليم المرضى في الوقاية من المضاعفات مثل السكتة الدماغية. الطرق: تم إجراء مراجعة شاملة للأدبيات الحالية حول إدارة الرجفان الأذيني، بما في ذلك تقنيات التشخيص، والخيارات العلاجية، والتدخلات التمريضية، واستراتيجيات تعليم المرضى. تم جمع المعلومات من قواعد البيانات الطبية، والإرشادات السريرية، والدراسات البحثية.

النتائج: أصبح الرجفان الأذيني أكثر شيوعًا، خاصة بين كبار السن، ويظهر بأعراض متفاوتة تتراوح من عدم وجود أعراض إلى مضاعفات شديدة مثل السكتة الدماغية. تشمل عوامل الخطر ارتفاع ضغط الدم، وأمراض الشرايين التاجية، والسمنة. تشمل إدارة التمريض التقييم المنتظم باستخدام أدوات مثل تخطيط القلب الكهربائي (ECG)، ومراقبة العلامات الحيوية، وتقديم تعليم المرضى حول الالتزام بالأدوية، وتعديلات نمط الحياة، وأهمية الرعاية اللاحقة. تشمل العلاجات الدوائية، مثل مضادات التخثر، وأدوية التحكم في معدل ضربات القلب، وأدوية التحكم في الإيقاع، العناصر الأساسية. يمكن النظر في التدخلات غير الدوائية مثل العلاج بالتبريد في الحالات المقاومة.

الخلاصة: لا يزال الرجفان الأذيني يشكل مصدر قلق صحي كبير بسبب انتشاره العالي وإمكاناته للمضاعفات الشديدة مثل السكتة الدماغية. يلعب الممرضون دورًا أساسيًا في التقييم، والمراقبة، وتعليم المرضى المصابين بالرجفان الأذيني للوقاية من النتائج السلبية. يمكن أن يؤدي التشخيص المبكر، والإدارة المناسبة، والتعليم المستمر للمرضى إلى تحسين نوعية الحياة بشكل كبير وتقليل المخاطر المرتبطة بالرجفان الأذيني.

الكلمات المفتاحية: الرجفان الأذيني، الوقاية من السكتة الدماغية، إدارة التمريض، تخطيط القلب الكهربائي (ECG)، العلاج بمضادات التخثر، تعليم المرضى، التحكم في الإيقاع، التحكم في معدل ضربات القلب.