

Multidisciplinary Approaches to Cardiac Risk Management Synergy between Nurses, ECG Technicians, and Pharmacists.

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ABSTRACT

The CVDs are the most common cause of death globally and cause strain on the healthcare system. Respiratory CVDs complicate the healthcare system due to rising risk factors in the population such as hypertension and diabetes. Effective management of cardiac and related diseases is needed. This explains the importance of multidisciplinary care involving nursing, ECG techs and pharmacists. Nursing, as education and monitoring of patients, leads in lifestyle changes, control of the symptoms, and adherence to effective medications. ECG Techs also play an important role in diagnosing and detecting cardiac conditions that are potentially very invasive. Ischemia and other arrhythmias are detected by ECG testing, allowing intervention. While pharmacists also play an important role in medication management by monitoring, optimizing adherence, and detecting potential interactions. Providing multidisciplinary care has been shown to improve outcomes. Communication challenges, role overlaps, and resource gaps have been shown to impact effective multidisciplinary care. Addressing these barriers has been shown to improve communication, training gaps, and healthcare team integration. This is a review of the role multidisciplinary care contributes and the importance of the integration for the provision of nursing care and ECG tech/pharmacist care. Systemic challenges can be overcome through collaboration in healthcare systems to improve CVD management and reduce the burden they cause globally.

Keywords: Cardiovascular diseases, cardiac risk management, multidisciplinary approach, nurses, ECG technicians, pharmacists, patient care, medication adherence, early diagnosis, collaboration.

1. INTRODUCTION

Cardiovascular diseases (CVDs) are also among the highest contributors to the global burden of disease and mortality¹. Therefore, Integrated CVD (ICVD) managed Risk of CVDs in nurses, ECG techs, pharmacists and others, is being implemented in more and more health care systems². These professionals are and should continue to be, of utmost importance in the CVDs related to their CVD specialties, and the collaboration of such professionals with other members of the health care team will improve patient outcomes and the overall efficiency, cost-effectiveness of the health care system³.

Modern health care systems are surveyed and studied and the attempt to reduce the features that contribute to the potential health risk of the system being analyzed and the system that is being incorporated⁴. Some of the health care system risk are.

hypertension, hyperlipidemia, diabetes, current smoking, physical inactivity and family history of the above mentioned. The aim of the recruiting health care systems is to identify people that are in risk of suffering serious negative health expenses including but not within heart attack, stroke, and heart failure⁵. The recruiting of health care systems within modern health care systems involves address of the patients' personalized clinical needs using a pre-defined, geographically bounded, and multidisciplinary collaboratives system in health care to provide evidence based⁶

Nurses have a distinct viewpoint when it comes to administering care for patients with cardiac issues since they are the only professionals in a health care team who know how to do and understand the roles of all other professions in the team⁷. Being the primary caregivers in the ward, nurses are tasked with the patient education, provide emotional support, and monitor/intervene emotional issues of the patients in relation to their cardiac health. In the course of dealing with patients with cardiac issues, nurses are expected to have comprehensive understanding of the patient's psychosocial status, risk factors and medical history⁸.

Nurses prevention and management of cardiovascular illnesses and risk factors involve multiple nursing functions. Nurses include in their roles the cardiovascular risk health educational nurses 's officers who inform patients about the cardiovascular health education and the importance of managing risk levels in the control and prevention of cardiovascular events⁹. Nurses modulate and implement lifestyle changes in patients and practice stress management, along with educational materials, by balanced eating, exercising, and tobacco smoking cessation¹⁰. Nurses supportive patients vintage educational and intellectual multiple daily and routine health preventive programs, as well as instructions and education about medication, symptom control and recognition, and risk health of cardiovascular events¹¹.

Nurses additionally implement and in real time report the integration of scheduled multidisciplinary health and social service delivery framework of patients estimated traffic control. Predictability of patients with cardio pathological risk factors profile health status continuum. Nurses, in collaboration with other health professionals, share information about the patient in order to complete the necessary medical diagnostics and to provide timely educational and medical interventions related to cardiovascular prevention¹².

The contribution of the ECG technicians, referred to as electrocardiographers, in the diagnostic stage of cardiac care, is unquestionable. The ECG is one of the tools extensively used in the diagnosis and monitoring of different health conditions. ECG helps the health service providers to know the electrical activity of the heart and the various activities of the heart¹³. By recording the electrical signals of the heart, ECG gives information about the heart in different ways including the heart's pattern, shape and functions. For instance, it helps diagnose arrhythmias, ischemia, and myocardial infarction and dysfunctions of the heart¹⁴.

The technicians perform the ECG tests in the most professional and accurate way. They make sure that the tests undertaken are conducted appropriately and that the interpreted results are done without delays. The data that is retrieved from any ECG is used by service providers to diagnose¹⁵. The information is used in the management in the primary and secondary of a variety of heart related conditions, for example, coronary artery disease, arrhythmias, heart failure, and valvular disorders. The ECG technicians also make sure that the instruments used have a high functionality and that they conform to the safety procedures and the recordings done are of high quality for the precise diagnosis¹⁶.

Collaboration among ECG technicians and other health care professionals helps achieve optimal outcomes in the management of cardiac risks. The ECG technician has the responsibility of informing the physician or cardiologist of the results of the ECG so that he/she can formulate a suitable plan for management and the initiation of interventions when there are abnormalities in the ECG. ECG technicians also work along closely with the nursing staff and the pharmacists to ensure that the delivery of care to patients with heart diseases is holistic by integrating every dimension of the patient's wellbeing¹⁷.

The role of the pharmacists in the management of the risk of cardiovascular events is immensely valued. Pharmacists ensure that there is safe and optimal management of the medications that are utilized in the management of cardiac conditions when they collaborate with other members of the health care team¹⁸. In collaboration with the nurses and ECG technicians, pharmacists focus on managing adherence to the prescribed medication, evaluation of possible drug interactions, and patient education¹⁹.

Within cardiac risk management, the impact the role of the pharmacist plays in the initiation of the treatment of blood pressure, blood cholesterol, and blood glucose controlling medications is vital in the prevention of other comorbidities related to the cardiovascular system. Antihypertensive classes of medications, statins, antiplatelet and anticoagulant medications, etc. are prescribed. The role of the pharmacist is to review the patient's medications and determine whether or not the prescribed medications are appropriate for the patient's condition and to counsel the patient on appropriate use of their medications²⁰.

The role of the pharmacist in educating patients is to help patients understand the importance of taking their medications as prescribed, the side effects of their medications, and the importance of medication adherence. The patient and pharmacist relationship is a partnership, and in addition to providing the patient with medication management, the pharmacist can recommend a patient to use dietary supplements, which are available without a prescription, to improve heart health and can provide the patient with techniques to help avoid or minimize side effects related to other medications²¹.

The cooperation of cardiology nurses, ECG technicians and pharmacists is of utmost importance in order to manage and control heart diseases. Nurses, ECG technicians, and pharmacists need to work together, integrating their specialties to provide comprehensive and seamless care for the patients. The cooperation of these health care providers leads to more efficient and effective care, higher satisfaction of the patients, and better health outcomes in terms of advancing to the best and most effective care²².

Integrated care in the context of cardiac risk management is based on constant interaction and joint planning of tasks among members of the health care team. Nurses, ECG technicians, and pharmacists should partake in constant communication and collaboration in order to create a fully inclusive care plan for the patient and consider all potential problems that need to be addressed. For instance, nurses can identify certain lifestyle factors influencing health, pharmacists can analyze the prescribed medications for any adverse interactions and side effects, and ECG technicians can identify and record any anomalies in the electrical activity of the heart that require modification²³.

Regular case discussions, multidisciplinary meetings, and patient care rounds create opportunities for all members of the healthcare team to have a role and contribute their skills, particularly for seamless integration of patient care. This integration helps to mitigate the risk of overlooking any area of a patient's care and incorporates the most efficient measures to alleviate the risk of comorbidities, particularly of a cardiac nature²⁴.

There are strong interprofessional relationships between the nursing team, ECG technicians, and pharmacist that can contribute to optimizing patient outcomes. Patients are able to better manage their comorbidities and their quality of life can be markedly improved with the collaborative efforts of these healthcare providers. The formulation of a comprehensive care plan that facilitates all nursing interventions and is tailored to the patient's profile can be accomplished by the nursing team, ECG technician, and pharmacist²⁵.

Consider the following example, a patient who is at risk for cardiovascular disease may receive lifestyle counseling from a nurse, be monitored with ECG, and provided with medications by a pharmacist to control blood pressure and cholesterol. The amalgamation of these processes contribute to accurate diagnoses, improved treatment plans, and the effective management of the patient's cardiovascular health²⁶.

In today's health care climate, the integration of a variety of healthcare disciplines into one model for cardiac risk management has become the gold standard. Patient care will be greatly improved when cardiovascular nurses, ECG technicians, and pharmacists, each with their own specialized knowledge and skills, work together²⁷. The cardiovascular healthcare model will also be invaluable for the prevention and management of cardiac risk factors and care as the incidence of cardiovascular disease continues to increase. With cardiovascular care becoming fully integrated, patients will receive care that encompasses comprehensive management, prevention, and continued care for their cardiovascular health. This integrated approach will also improve the patients' ability to self-manage their cardiovascular health²⁸. The result will be a lower incidence of cardiovascular disease and related complications, thus decreasing the overall burden of cardiovascular disease on the healthcare system.

Review

Roles of Nurses in Relation to the Patients and the Associated Risks

Patients are aided by nurses. On the other hand, nurses are healthcare facilitators alongside other professionals. Therefore, nurses are the hub of the healthcare delivery system. However, this role as health facilitators and preventers of diseases (e.g. cardiovascular disease) is underappreciated in a healthcare system. Nurses are educators, monitors, and dispensers of therapies, but that is not all²⁹.

Nurses are not just monitors and supervisors of health. They are system advocates. They are the ones who construct a system and create a network that allows the incorporation of timely health promotion and disease prevention to be more seamless. Out of all the healthcare professionals, nurses are the ones who synthesize and articulate the significance of timely action in the provision of health promotion. This timely action is directed towards the prevention of adverse health impacts. Nurses put in place harmonised and integrated action to circumvent the eventualities of diseases, such as cardiac arrest, strokes, and other clinical disasters, among patients³⁰.

In addition to tracking vital indicators, during consultations with patients, nurses discussed risk factors management. In particular, patients are educated about the control of diabetes through dietary modifications, the importance of regular physical activity, smoking cessation, stress management, and the control of chronic diseases. Nurses are also responsible for the importance of adherence to the prescribed medications and for ensuring that patients understand and receive the proper information about the medications prescribed to them. Nurses also provide patients with chronic cardiovascular diseases emotional support to help them cope with the psychological side of their illness³¹.

Of all the activities that nurses do, the education about the control of risk factors and the promotion of healthy lifestyle habits is, without a doubt, the most valuable. According to the evidence, heart diseases are prevalent in patients with unhealthy diets and sedentary lifestyles. In order to stop the progression of heart diseases, nurses counsel patients on the importance of

a heart-healthy diet, regular physical activities, and healthy weight maintenance, Relatively to other healthcare professionals, nurses are more likely to encourage their patients to make and sustain positive lifestyle changes because they develop closer relationships with them³².

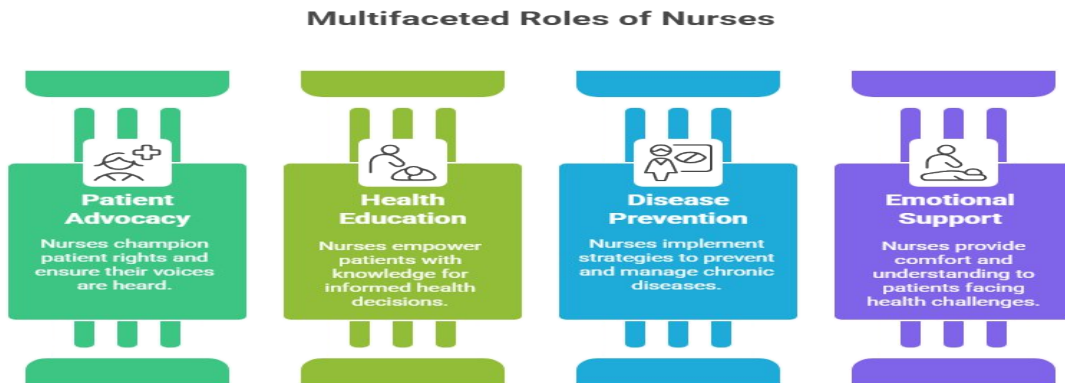


Figure 1: Roles of Nurses in Relation to the Patients and the Associated Risks

Role of ECG Technicians in Cardiac Risk Management

Technicians who perform electrocardiograph (ECG) test are specialized healthcare professionals who perform ECG and assist with the diagnostic process of identifying cardiac illnesses. An ECG records the heart’s electrical activity and indicates whether the heart has an abnormal rhythm, ischemia, or has had an earlier heart attack. Accurate ECG readings are necessary to identify heart conditions and possible interventions³³.

ECG technicians perform ECG tests, and are responsible for the appropriate placement of electrodes to ensure quality, accurate recordings of the heart’s electrical activity, and correct the heart’s electrical activity. Data is essential for the identification of numerous possible cardiac conditions, including and not limited to the presence of an abnormal heart rhythm (arrhythmia), atrial fibrillation, or heart failure. Abnormalities can be detected, and if timely and accurate ECG is completed, the chances of significant cardiac events (i.e. heart attack, stroke) within the cardiovascular continuum can be minimized³⁴.

ECG technicians also coordinate with cardiologists and other members of the medical staff to assure correct interpretation of the data and its utilization for treatment decisions . When an ECG test uncovers abnormalities the technician notifies the physician enabling prompt further diagnosis and intervention if required. ECG technicians also help guarantee that all diagnostic devices are properly working which is critical for the capture of reliable data and the protection of patients’ safety³⁵.

Given the critical role of ECGs in the diagnosis and monitoring of a range of cardiovascular ailments the teamwork of ECG technicians and nurses and especially of pharmacists is necessary. When abnormal findings are apparent these professionals join efforts to solve the problems at hand whether through novel and refocused prescription management or other lifestyle alterations and/or diagnostic testing³⁶.

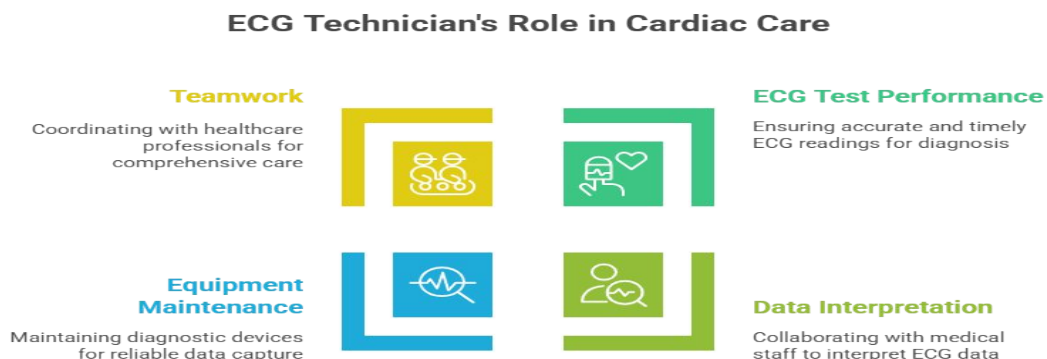


Figure 2: ECG Technicians’s Role

The Work of a Pharmacist in Cardiac Risk Management

Cardiovascular disease is a result of numerous long-standing medical conditions which must be managed individually and

in parallel at a pharmacy. Risk factor modifications to management include hypertension, diabetes, and hyperlipidemia, and is of a primary cardiovascular failure. It is of the utmost importance to gather an extensive management plan to ensure the medications prescribed to the patients are consistently safe and efficient while being free of side effects intolerable to the patient³⁶.

Pharmacists are charged with the liability of accurate dispensing of medications to patients that can be utilized in an active role to manage the cardiovascular risk profile of patients. Prescribed therapy will include antihypertensives, antiplatelet therapy, and statins as a primary role in the management of blood pressure, clot prevention, and hyperlipidemia, respectively. Pharmacists are also responsible for the actively targeted nonadherers to a specific therapy; patients will be involved in a collaborative relationship to form a team in medication management³⁸.

Cardiovascular disease management plans also include maintenance medications of lifelong therapy. Management plans must include patient education and the allied role of therapists in medication management. Medication side effect management is provided by pharmacy educated healthcare practitioners. Assistance strategies are provided to assist the patient in management of common side effects of antihypertensives, dizziness, and statins, which can include gastrointestinal upset, by the pharmacist³⁹.

Moreover, the nurses and ECG technicians collaborate with the pharmacists to prevent any adverse reactions with other therapies or comorbidities for the medications being prescribed. As specialists in the science of drugs, pharmacists strengthen the multidisciplinary cadre by ensuring that patients receive optimal therapies for managing their cardiovascular health⁴⁰.

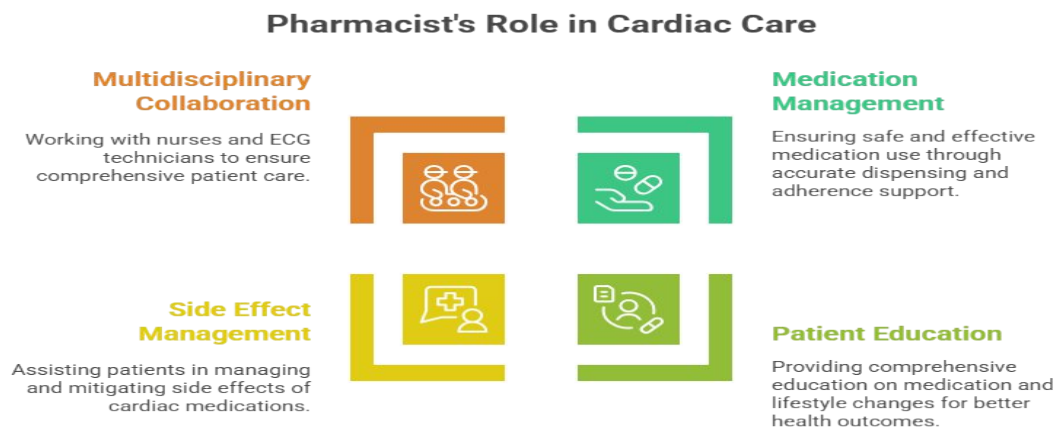


Figure 3: Pharmacists Role in Cardiac Risk Management

Synergy Between Nurses, ECG Technicians, and Pharmacists

The partnerships formed between nurses, ECG technicians, and pharmacists are equally important for the management of cardiac risk factors. Each of these professionals possesses a distinct skill set and, through their collaboration, enhance patient care and health outcomes. Each of these professionals is able to ensure that all of the patient's cardiovascular health concerns are managed in a comprehensive and coordinated manner⁴¹.

Key Areas of Synergy and Collaboration

Patient education is a synergistic focal point. Heart health education is the responsibility of nurses, pharmacists, and ECG technicians. Nurses instruct patients on lifestyle change techniques and medication adherence, ECG technicians provide fundamental ECG test education, and pharmacists discuss the role of medication in cardiovascular risk management. This teamwork provides patients a consistent and all-inclusive forum for instruction⁴².

Monitoring and diagnosing cardiovascular diseases is yet another synergistic focal point. Nurses note and document patients' vital sign and symptom changes, ECG technicians administer and provide test results for ECGs, and pharmacists evaluate the effectiveness of the medication. This group of healthcare providers can guarantee that appropriate action is taken and any alterations in a patient's condition are managed⁴³.

In addition, when a patient's ECGs are abnormal, the staff works together to formulate an appropriate intervention plan. Nurses may modify a patient's lifestyle plan, pharmacists can change prescriptions, and ECG technicians may perform relevance follow-up tests to ensure the heart's electrical activities and changes are blocked. This kind of multifunctional teamwork results in an improved provision of patient-centered care, as it streams focus and effort toward simultaneously managing all possible risk elements⁴⁴.

2. DISCUSSION

Over the years, CVDs (Cardiovascular diseases) have continued to contribute the most deaths worldwide, and this has led to a CVD massive burden in the health sector. In the health sector, the ongoing burden of CVDs has resulted in the need for more informed and adaptable strategies to address and manage the incidences of chronic diseases and illness, to which lifestyle related risk factors are more evident (tobacco use, a sedentary lifestyle, poor dietary habits, etc). The development of CVDs healthcare staff from various disciplines joining together of CVDs and chronic disease risk is predominantly CVDs and its treatment. Nurses, ECG examiners, and pharmaceutical specialists have critical functions in the CVDs identifications; preventive education, early diagnosis; disease progression delays; and treatment. They remain fundamental to interprofessional CVDs healthcare⁴⁵.

Considering and acting on multiple risk factors and other variables such as high blood pressure, high cholesterol, diabetes, and smoking is referred to as management of coronary risk factors. The intricate nature of the cardiovascular system, combined with variables such as lifestyle and personal medical history, calls for collaboration with the entire medical team. The cardiovascular risk management system is fully collaborative with the specialized skills of the nurses, ECG technicians, and pharmacists. Each of those professions is responsible for one critical component of the system and, as a result, partners with one another to ensure the cardiovascular system is operating properly and for all the functions of the system to be realized⁴⁶.

Interdisciplinary and team-based approaches are highly regarded individually, holistically, and in an all-encompassing way. Each team member is able to work more efficiently, and collaboratively. Health care professionals are able to work more efficiently when collaborating. Assessing the health condition and teaching the patient is the role of the nurse. Conducting diagnostic tests and identifying abnormal heart rhythms and other cardiac issues is the role of ECG technicians. Evaluating patient medication therapy to assess the appropriateness of prescribed medication and monitoring for serious adverse drug interactions and side effects is the role of a pharmacist. Cardiovascular disease primary prevention and management is outstanding because of the collaboration of all these roles⁴⁷.

Assessing risk factors for cardiovascular disease, nurses are among the first to detect patients at risk for cardiovascular disease. Cardiovascular diseases begin with the condition of the heart; the heart's condition can be assessed by some symptoms and further testing. Some symptoms are elevated blood pressure, irregular heartbeats, etc. Nurses also assess the cholesterol and behavioral/ lifestyle factors associated with heart disease⁴⁸.

One of the first warning signs of heart disease, cardiovascular events, and various other health conditions is high blood pressure. For the management of cardiac risk factors, patients' health education is the primary and essential contribution of nurses. If patients understand risk factors, blood pressure, etc, a heart-healthy diet, and exercise, patients can take control of their health. Nurses also promote the importance of taking prescribed medications and the necessity of long-term maintenance medications, especially the importance of medication compliance. Nurses often are the life between the patients and their other healthcare providers, making sure their patients understand all the instructions and information given to them⁴⁹.

Although the nursing profession offers many unique opportunities and experiences, the integration of care with other disciplines can create issues. Nursing staff often experience blockage in care due to gaps in communication and ambiguity in the responsibilities of other team members, which can deter optimal patient care. These issues become even more pronounced in high-pressure situations in which time and workload constraints compromise the ability. The first step to understanding and monitoring heart disease is performed by ECG technicians. ECGs are one of the best methods to analyze the heart's electrical activity. These professionals evaluate and proscribe heart irregularities such as arrhythmias, ischemia, and past myocardial infarctions. Cardiovascular disease manifest also consists of the electrical peculiarities of the heart, hence the work of ECG technicians is crucial for CVD to be diagnosed at early stages⁵⁰.

Trying to test and analyze the ECGs with perfect accuracy is the first priority ECG technicians. The healthcare team relies on clear recordings and thorough reporting of results, and the technicians bear the responsibility of accurate electrode placement. If electrodes are improperly positioned or equipment is malfunctioning, the recording results are rendered useless. Additionally, the results obtained from the ECGs are only one part of interpreting the whole picture. These results must be combined with the patient's medical history, the patient's complaint, and the results of other diagnostic tests. Because of this reason, ECG technicians must be in close cooperation with cardiology, nursing, and pharmacy to make certain that their inputs are part⁵¹. The positive partnership of ECG technicians and other health specialists leads to improved continuance of care in the patients. An instance of this is when the technician detects ECG variations, and can alert the physician, thus enabling the doctor to make prompt revisions to the patient's treatment. The technician can partner with the nurses to ensure that the patient's treatment is efficient and that the patient can tolerate the treatment without negative side effects to collaborate with staff members such as ECG technicians and pharmacists⁵². Cardiac risk management is a complex area that requires the training of various health professionals, and more so, if the disease is to be managed via pharmacotherapy. Hypertension, hyperlipidemia and diabetes are some of the risk factors that need to be treated via long-term medication, which can also be expensive. It is the responsibility of the health care team, and more so the pharmacists to ensure that patients are placed on the right medication and are adequately informed on medication use, including the side effects, and any changes that should be made on their other medications during the course of treatment⁵³.

In the event that patients experience some of the adverse reactions associated with their medications, pharmacists' training

is essential to reduce the incidence of these events. They check the patient's complete medication chart to see if there are any dangerous combinations of drugs that are prescribed. For example, patients with cardiovascular illnesses are at risk of being prescribed medicines for other illnesses and may suffer negative reactions with dangerous side effects. As a result, it may also be challenging to manage the adverse reactions of some of these patients. The pharmacists' experience and training on the effects of medications on patients ensure that there is minimal risk with polypharmacy⁵⁴.

In addition, there is a challenge of patients not taking their medicines as prescribed, which is a concern with cardiovascular illnesses because of the need for long-term medication use. Along with the nurses, pharmacists undertake activities that help patients understand the need for taking their medication and the role it plays in their condition. The pharmacists also teach patients how to take their medicines, in a manner that guarantees that the patients are likely to take them consistently, and are not delayed or hindered by side effects⁵⁵.

Although vital to the process, pharmacists have to face difficulties pertaining to the integration of the communication and coordination of the other members of the healthcare team. In certain cases, pharmacists have no connections to the patient care round, fully bypassing any dialogue, and there with the nursing and ECG staff. These setbacks can lead to lost opportunities to advance patient care. This can be resolved through healthcare systems establishing improved communication surrounding pharmacists and other team members to promote joined decisions and to, manage every component of a patient's medication, thoroughly supervised⁵⁶.

The roles of nurses, ECG techs, and pharmacists work synergistically to offer a rounded out approach to cardiac care. Each profession works with other to offer the highest level of patient care. Each day nurses are the first to identify and mitigate potential risk factors, while educating patients, and ECG techs perform diagnostic testing to detect possible heart conditions. Afterwards pharmacists (most likely) see to it that the prescribed medications are appropriate for the patients' cardiovascular risk factors and are designed to help achieve preliminary goals of the treatment⁵⁷. The team works together to incorporate all aspects of patient care in a timely manner. A case in point is a patient diagnosed with hypertension. While the nurse manages and records lifestyle modifications, and the ECG tech monitors heart activity and rhythms, the pharmacist manages the antihypertensive therapy. A coordinated team approach allows the shaping of cardiac care around the patient's individual needs, allowing for rapid identification, treatment, and management of the diseases⁵⁸. Although there are many challenges to effective collaboration, the full potential of this synergy can be achieved by overcoming those challenges. Some of these challenges include communication barriers, role ambiguity, and resource limitations. Communication is crucial to make sure all team members are informed of the patient's condition and treatment plan. Integrated communication and collaboration can be achieved through regular multidisciplinary meetings, joint training, and shared electronic health records (EHR).

3. CONCLUSION

Teamwork in cardiac risk management is just as vital as any other aspect involved in integrated care delivery. Nurses, pharmacists, and ECG technicians add to and optimize the skill sets targeted at one aspect of the patient's cardiovascular health. These professionals' teamwork is the foundation of reducing the cardiovascular disease burden to the healthcare system and the increasing breadth of care. The communication and role boundaries are closed the most, when the stakeholders are aligned at the integrated care delivery expectations. These are the fundamentals around which other collaborations and resource optimization in the management of cardiovascular disease are centered, and are key to system enhancement.

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