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# **Integrating nursing, pharmacy, and health records in Advanced Cardiovascular Life Support (ACLS) Protocols: Best practices for emergency responders in cardiology**

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**Abstract**---Background: Cardiovascular illnesses are a leading cause of mortality globally, with coronary heart disease (CHD) being a common cardiovascular disorder that poses a significant health burden on communities. CHD is characterized by inadequate blood supply to the heart due to plaque buildup in the coronary arteries, resulting in chest discomfort, heart attacks, and potentially fatal outcomes. Aim of Work: The aim of the research is to recognize the risk factors contributing to CHD, explore prevention methods, evaluate suitable treatment options, and identify effective rehabilitation techniques, particularly focusing on the role of nursing care in managing patients with this condition. Methods: A comprehensive electronic search was conducted across six databases (PubMed, Web of Science, Scopus, MEDLINE, Cochrane Library, and

Embase) up to 2018. The present research involved a comprehensive analysis of existing literature to examine effective nursing interventions and care strategies for patients with coronary heart disease, including monitoring, education, and emotional support. Results: Nurses play a crucial role in managing CHD by monitoring vital signs, administering medications, conducting diagnostic tests, and ensuring patients receive timely and appropriate therapies. They provide patient and family education on lifestyle changes, medication adherence, and self-care strategies, along with emotional support to help patients address the physical and psychological challenges associated with CHD. Conclusion: The expertise, empathy, and dedication of nurses significantly enhance patient outcomes and overall quality of life for those suffering from coronary heart disease. Nurses serve as primary defenders in the prevention and treatment of CHD, taking on responsibilities such as evaluating, diagnosing, and advising patients on disease management.

**Keywords**---Telehealth, Coronary Heart Disease (CHD), Nursing Interventions, Patient Care, Risk Factors, Rehabilitation Techniques.

## **Introduction**

Coronary heart disease (CHD) is a common and potentially fatal ailment that requires meticulous nursing care [1,2]. Nursing care is essential in identifying and preventing CHD at an early stage. In addition, they do comprehensive exams, closely monitor vital signs, and examine risk factors in order to identify patients who are at risk of getting the condition [3]. Nurses enhance patients' empowerment by providing health promotion and education, equipping them with information about lifestyle alterations, including the adoption of a heart-healthy diet, frequent engagement in exercise, and effective stress management. Nurses have the capacity to decrease the occurrence of coronary heart disease (CHD) and its related problems by applying preventative strategies [3-5]. In addition, they work together with healthcare teams to create personalized care strategies for the administration of medications, cardiac rehabilitation (CR), and routine follow-up appointments [6-9]. In addition, they monitor patients' symptoms, administer prescriptions, and provide them with information regarding the purpose, dose, and possible adverse effects of their given drugs [6].

Nurses provide continuous assistance and guidance, attending to patients' worries, advocating for adherence to treatment protocols, and supporting the adoption of good living habits. In addition, they constantly observe the development of patients and are able to detect any alterations or difficulties, enabling prompt treatments to avoid future deterioration [10-14].

Furthermore, nursing care is essential in providing crucial emotional and psychological support to patients. The diagnosis of CHD may elicit emotions of dread, anxiety, and tension, which may negatively impact the mental well-being of patients [15,16]. Therefore, nurses provide a kind and understanding presence, attentively listen to patients' worries, and attend to their emotional requirements.

Furthermore, they provide assistance and techniques for dealing with challenges, fostering the ability to recover and maintain an optimistic outlook [4]. In addition, nurses have a role in organizing support groups and directing patients to suitable resources. This helps to create a feeling of community and assists patients in managing the emotional difficulties that come with the condition [7]. Nurses play a crucial role in improving patients' quality of life and general well-being by providing comprehensive care in the presence of illness [17,18].

### **Aim of the Work**

We conducted a literature analysis on the role of nurses in managing patients with CHD and the latest developments in nursing treatments for CHD, recognizing the major influence of nursing care on these patients.

### **Explanation of the underlying mechanisms and symptoms of coronary heart disease (CHD)**

The main causes of coronary heart disease (CHD) are atherosclerosis, inflammation, and oxidative stress [19]. Atherosclerosis is a persistent inflammatory condition associated with the lipid profile and characterized by the development of plaque in the coronary arteries. These plaques impede the circulation of blood, leading to the development of coronary heart disease (CHD). Oxidation of low-density lipoprotein (LDL) cholesterol plays a crucial role in the initiation and advancement of atherosclerosis [19-21].

An excessive consumption of saturated fats, trans fats, and cholesterol might lead to the development of atherosclerosis [22,23]. Moreover, psychological illnesses such as depression, anxiety, and stress are significant contributors to the risk of coronary heart disease (CHD). Various risk factors have been found for coronary heart disease (CHD), such as an improper diet, lack of physical exercise, smoking, stress, and hereditary susceptibility [22,23].

Coronary heart disease (CHD) may emerge with a range of symptoms and clinical presentations, including chest discomfort, dyspnea, and tiredness [19]. Nevertheless, under critical circumstances, coronary heart disease (CHD) may manifest without any noticeable symptoms, a condition referred to as silent ischemia, which may lead to more serious occurrences [24]. Hence, it is crucial to identify and control risk factors for CHD at an early stage in order to avoid its occurrence, advancement, and treatment [25].

### **Assessment of potential risks and educating patients**

Effective risk assessment methods are crucial for identifying individuals with a high risk of coronary heart disease (CHD) and creating suitable treatment strategies [26]. Undoubtedly, it provides patients with the information about their risk factors and motivates them to actively adopt beneficial lifestyle modifications and comply with suggested therapies [26,27]. Efficient methods for educating patients include instructing them on how to be resourceful, offering education that focuses on the patient's needs, using digital health techniques, evaluating

genetic counseling, and maintaining consistent and continuous contact and support [4,5].

Teaching resourcefulness is a proven method for enhancing mental well-being, especially in addressing conditions like depression and stress [12,15,28]. Furthermore, it is crucial that patient-centered education be grounded on empirical data and customized to meet the specific requirements and preferences of individual patients [29,30]. Thus, digital health initiatives enable the provision of education and assistance to patients with cardiovascular diseases (CVDs) using various means such as text messaging platforms, smartphone apps, and wearable gadgets [14,31-33]. Genetic counselors have the responsibility of providing care for patients with CHD. Examining past educational experiences that have been remembered might provide significant information [34]. Furthermore, consistent and continuous communication and assistance are essential for ensuring that patients comprehend their illness, cultivate suitable lifestyle adjustments, and enhance their quality of life [7,25].

### **Assessment and Diagnosis in Nursing**

Evaluating and diagnosing individuals with CHD is crucial for implementing optimal treatment methods. An effective nursing assessment involves thoroughly examining and evaluating medical records, doing a physical examination, assessing mental health status, reviewing laboratory findings, evaluating lifestyle, and examining food patterns [8,35,36]. Therefore, it might assist nurses in recognizing possible health hazards and/or problems and establishing a personalized nursing care strategy. Additionally, it is important to ensure that nursing treatments are customized to address the specific requirements of each person [8].

Research has shown that using an individualized educational strategy that prioritizes health promotion may enhance the quality of life for individuals with coronary heart disease (CHD) [37]. This approach is designed to change or improve a lifestyle that promotes heart health and to encourage tactics that empower patients [37,38]. In addition, nurses have the ability to provide a meal frequency questionnaire to patients in order to evaluate their dietary patterns and pinpoint areas that need improvement [37]. Furthermore, mindfulness-based therapies have shown a decrease in sadness and stress levels among patients [37]. Essentially, it is crucial to identify and categorize nursing diagnoses associated with CHD in order to provide efficient and focused patient care [36,39].

An essential nursing diagnostic linked to congenital heart disease is reduced cardiac output [8,23]. This diagnosis is established when the heart's cardiac output is impaired, resulting in insufficient blood circulation [35]. Effective therapies to augment cardiac output include the administration of medicines that improve heart function [36]. Furthermore, they encourage physical exertion within acceptable boundaries and provide patients with knowledge on lifestyle changes that might decrease the strain on the heart [41].

Another notable nursing diagnostic is the risk for poor tissue perfusion, which pertains to patients who are at risk of insufficient blood flow to certain bodily

tissues as a result of the narrowing or blockage of blood arteries [39]. In this scenario, nurses assess the patient's peripheral pulses, skin color, temperature, and capillary refill time in order to ascertain the condition of tissue perfusion [8,36].

Hence, implementing preventive measures such as closely monitoring and controlling blood pressure and cholesterol levels, encouraging individuals to quit smoking, offering patient education on a heart-healthy diet, and ensuring compliance with prescribed medications can effectively decrease the likelihood of additional tissue damage and enhance overall blood flow in patients diagnosed with coronary heart disease (CHD) [35].

### **Pharmacological Treatment and Nursing Considerations**

Treating CHD requires a comprehensive and diverse approach to care. Medications have a crucial role in the management of symptoms, prevention of problems, and enhancement of overall heart health [43]. The selection of medications for CHD is determined by specific patient features, including symptoms, risk factors, and total heart abnormalities [44]. Individualized medication doses and combinations are customized to suit the specific requirements of each patient, and consistent monitoring and follow-up with healthcare professionals are essential for achieving optimum treatment of coronary heart disease (CHD) [8,44].

Nurses have the duty of educating patients on the significance of adhering to medication instructions, which includes the accurate dose, frequency, and timing [4]. Furthermore, it is important to provide patients with comprehensive information on probable side effects and unpleasant reactions. Therefore, it is essential that the instruction provided be unambiguous, succinct, and tailored to the patient's comprehension level [45].

Nurses verify the accuracy and currency of patients' medication records, including prescribed prescriptions, non-prescription pharmaceuticals, and herbal supplements [45]. This procedure includes acquiring a thorough drug history and resolving any inconsistencies [45]. Nurses deliver drugs according to the specified guidelines known as the "six rights" of medication administration, which include ensuring the correct patient, medication, dosage, route, timing, and documentation. This procedure should be executed with meticulousness and strict adherence to established norms [46].

### **Surveillance of the Negative Consequences**

Nurses monitor patients to detect possible side effects and unfavorable responses to drugs. This encompasses alterations in essential physiological indicators, diagnostic measurements, and clinical manifestations (such as vertigo, queasiness, and skin eruption) [8]. Therefore, it is essential for nurses to expeditiously communicate any negative consequences to the healthcare team [40]. It is the job of nurses to ensure that patients follow their prescription regimens. This includes identifying any obstacles to adherence and offering

assistance and education to enhance compliance [46]. It is important to carry out this procedure in cooperation with both the patient and the healthcare team [47]. Nurses engage in collaborative efforts with other healthcare professionals, such as doctors, pharmacists, and others [9]. Collaboration is crucial to guarantee that patients get suitable and efficient drug management [48].

Studies have shown that implementing prolonged nursing interventions, such as continuous and comprehensive treatments, may enhance medication adherence and facilitate patient recovery by promoting appropriate behavior [39,46]. These interventions include providing continuous support and education to patients and working together with the healthcare team [48].

### **Cardiac rehabilitation (CR) and lifestyle modifications**

These therapies are crucial for strengthening cardiovascular fitness, mitigating risk factors, improving psychological well-being, and fostering long-term health in patients with coronary heart disease (CHD) [32]. The rehabilitation phase I for cardiovascular diseases (CVDs) is a crucial component of the treatment for patients with coronary heart disease (CHD). This phase includes education and counseling, exercise and physical activity, breathing exercises, chest physiotherapy, breathing muscle stretching activities, and progressive mobilization [49]. Nurses have a role in several facets of CR, including patient evaluation, instruction, and psychological assistance. In addition, they guarantee the seamless delivery of healthcare services across various contexts and provide informational, managerial, and relational consistency to enable the provision of coherent, logical, and timely treatment [50].

Nurses have a crucial role in educating patients, assisting them in comprehending their medical condition, available treatment choices, and essential lifestyle adjustments for achieving the best possible recovery [3,51]. In addition, they evaluate and oversee the progress of patients throughout the cardiac rehabilitation program. This includes monitoring attendance at rehabilitation sessions, assessing health-related self-efficacy, and identifying any obstacles to following the program [7].

In addition, they have the potential to cooperate with other healthcare practitioners in order to create and execute personalized cardiac rehabilitation regimens for every patient [48]. Implementing evidence-based techniques at the institutional level, enabling patient referrals to CR programs, providing continuing support and encouragement, and addressing participation obstacles may effectively enhance CR program enrollment and adherence rates [52]. Furthermore, they might contribute to the development and execution of hybrid cardiac rehabilitation (CR) programs that integrate both in-person CR and virtual or remote CR, aiming to enhance the accessibility and convenience for patients [53].

## **Psychosocial support**

Individuals diagnosed with coronary heart disease (CHD) must prioritize the preservation of their mental well-being as it has a direct impact on the course of their illness and their overall quality of life [15]. Multiple research projects have shown that psychological therapies, including patient education, positive psychology-based methods, and cognitive-behavioral therapy (CBT), enhance mental health and well-being in patients with coronary heart disease (CHD) [27,46,54].

Furthermore, the assistance provided by family members plays a crucial role in aiding the psychological adaptation of these patients and enhancing their quality of life [10,15]. Individuals diagnosed with CHD have the potential to enhance health-promoting habits by means of psychological therapies, counseling (such as spiritual and genetic counseling), and enhancing self-regulation [7]. De Eston et al. [55] found no correlation between religious, spiritual, and existential well-being and coronary heart disease (CHD). Li et al. [56] discovered that self-control had an indirect and positive impact on the degree of health-promoting behavior in patients with CHD. This implies that therapies targeting the improvement of self-control might be advantageous for these patients.

## **Management of Patients with Acute Coronary Syndrome (ACS)**

Effective nursing interventions and management methods play a vital role in providing care and facilitating recovery for patients experiencing acute coronary events, such as ST-segment elevation myocardial infarction (STEMI) and non-ST-segment elevation acute coronary syndrome (NSTEMI) [57].

Conducting an initial examination and monitoring is crucial for detecting risk factors, assessing chest discomfort, and interpreting ECG data [57]. Regular surveillance of essential physiological indicators, such as arterial pressure, pulse rate, and oxygen saturation, is of utmost importance. Therefore, the administration of suitable drugs is a crucial step for the management of acute coronary events [8]. Patients diagnosed with ST-elevation myocardial infarction (STEMI) need prompt reperfusion treatment in order to limit cardiac damage and enhance overall prognosis. Additionally, the choice of coronary revascularization techniques may vary based on the patient's health and the procedures followed by the hospital [45]. These techniques include both early and delayed invasive or conservative approaches [45].

During acute coronary events, such as STEMI and NSTEMI, nursing interventions and management techniques include doing an initial evaluation, monitoring the patient's condition, administering medication, providing reperfusion treatment, offering education and counseling, managing any problems that arise, and coordinating the patient's care. These treatments are crucial for delivering the best possible care and enhancing patient outcomes [8]. Furthermore, it is crucial to have emergency response procedures and prioritize rapid treatment for nursing patients with CHD in order to effectively manage their condition and minimize consequences [58].

Hence, it is imperative for nurses to have knowledge of the common symptoms of CHD and promptly evaluate any abrupt alterations in the patient's state. They should activate the emergency response team, commence basic life support, administer emergency medications, continuously monitor and assess the patient, offer emotional support, and cooperate with the healthcare team [39,47].

### **Progress in the field of nursing technology and digital health**

Advanced technologies have the capacity to greatly influence the provision of nursing care for patients with CHD [31,33,35]. These technologies boost patient outcomes, promote self-management, and permit improved communication between patients and healthcare practitioners [55]. The following are some of these technologies:

#### **Electronic Health Records (EHRs)**

Electronic Health Records (EHRs) enable nurses to electronically access and record patient information, facilitating smooth communication and uninterrupted provision of treatment [31]. Nurses have the ability to promptly access and modify patient information and work together with other medical professionals, guaranteeing thorough and synchronized treatment for patients with CHD [31].

#### **mHealth applications**

The mHealth apps developed for CHD management enable nurses to provide individualized care and assistance to patients from a distance. These apps provide instruction on drugs, lifestyle adjustments, and the treatment of symptoms [59]. In addition, nurses have the capability to remotely observe patients' essential indicators, monitor their adherence to medicine, and provide prompt feedback and treatments. Therefore, mHealth apps have the potential to enhance patient involvement and self-care, leading to improved overall results.

#### **Telemedicine**

Nurses may remotely monitor patients' vital signs, activity levels, and symptoms by using wearable gadgets and sensors [9]. Nurses may detect early indicators of cardiac events, such as fluctuations in heart rate and blood pressure, with the use of real-time data transmission [12]. In addition, nurses have the ability to take preventative measures, provide guidance, and escalate treatment as needed. This proactive approach helps to minimize problems and decrease the number of hospital readmissions [9,12,14].

#### **Telehealth and virtual visits**

Telehealth solutions enable nurses to do virtual patient visits, enhancing the availability of treatment and minimizing obstacles related to travel [12]. In addition, they evaluate symptoms from a distance, analyze prescription use, and provide guidance on making lifestyle changes [9,12]. Additionally, telehealth



enables frequent patient check-ins, improves communication between patients and healthcare providers, and supports the ongoing provision of treatment and patient satisfaction [9,12,14]. Interdisciplinary collaboration refers to the cooperation and coordination of professionals from different disciplines or fields of expertise. It involves working together to achieve common goals and share knowledge and resources. Care coordination, on the other hand, involves organizing and managing the many aspects of a patient's care to ensure that it is well-coordinated and efficient

There is an increasing amount of research that emphasizes the beneficial effects of multidisciplinary collaboration on patient outcomes and the quality of treatment for patients with CHD [49]. Efficient cooperation among healthcare practitioners results in greater compliance with treatment protocols, enhanced drug administration, and heightened patient instruction. Williams et al. [49] shown that the use of multidisciplinary collaboration in managing CHD leads to a decrease in hospital readmissions, an enhancement in patient satisfaction, and an increase in patient empowerment. The results highlight the important significance of multidisciplinary teamwork in guaranteeing thorough and patient-focused treatment [49]. Thus, it is crucial to cultivate cooperative partnerships among healthcare experts from many fields in order to maximize the treatment of CHD and improve patient outcomes [49]. Efficient communication and teamwork need the implementation of initiatives among healthcare providers to guarantee optimal results for patients with CHD.

An effective approach is to use Electronic Health Records (EHRs) to streamline communication and cooperation among healthcare providers. EHRs serve as a centralized platform for accessing patient information [60]. Facilitating access to consistent information for all healthcare providers engaged in a patient's care is beneficial in minimizing mistakes and enhancing patient outcomes [61]. Another approach is implementing scheduled team meetings, which provide an opportunity for healthcare personnel to engage in discussions about patient care, exchange information, and synchronize their actions [62]. Regular meetings may also aid in the identification of prospective concerns and obstacles in patient care and promote the process of problem-solving [62].

### **Ethical considerations in nursing care for congenital heart disease (CHD)**

Healthcare practitioners may encounter ethical issues and dilemmas while dealing with CHD, necessitating thoughtful deliberation. Obtaining informed permission poses a significant ethical dilemma for healthcare practitioners when providing medical treatment to patients [63]. Angioplasty, as with other invasive treatments, entails inherent risks and possible problems. Therefore, it is important for patients to have a comprehensive understanding of the potential dangers and advantages associated with these medical treatments prior to giving their permission [64]. Patients' decision-making processes may be influenced by their cultural and/or religious views. Therefore, healthcare providers should deliver culturally sensitive treatment that acknowledges and respects these beliefs [65].

Resource allocation poses an additional ethical dilemma in the care of CHD, a chronic ailment that need continuous management and treatment. However, the availability of healthcare resources is restricted [66]. Healthcare workers have a responsibility to ensure that resources are used properly in order to provide optimal care to patients. This may include making challenging decisions about whether individuals should be granted certain treatments or interventions.

Additionally, it may need the careful consideration of the individual patients' demands in relation to the overall requirements of the healthcare system, in order to guarantee that resources are allocated in a just and impartial manner [67]. Healthcare practitioners must possess a robust comprehension of ethical concepts and values. Healthcare practitioners may enhance their abilities and remain current on the newest ethical concerns and debates in CHD treatment by ongoing education and training. Furthermore, healthcare institutions have the ability to create policies and procedures that provide guidance for making ethical decisions in the management of Congenital Heart Disease (CHD) [67]. Research has shown that people with CHD often have a limited comprehension of their illness and the therapeutic options that are accessible to them [68].

The absence of information may arise from several circumstances, including inadequate health literacy, restricted healthcare availability, and communication difficulties between patients and healthcare practitioners [68]. In order to uphold patients' autonomy and respect their desires, healthcare practitioners should embrace a patient-centered approach to caring for individuals with CHD. This approach entails offering patients thorough information regarding their condition, deliberating the advantages and disadvantages of various treatment choices, and participating in end-of-life conversations regarding advance care planning, resuscitation preferences, and palliative care options. It is crucial to take into account the influence of cultural or religious beliefs, family dynamics, and other social factors.

## **Conclusion**

Practical nursing care plays a vital role in improving patient outcomes and increasing the quality of life for individuals with congenital heart disease (CHD). The nursing evaluation and diagnosis are crucial components of delivering complete patient care. They include the methodical collection and analysis of data to detect health issues and provide suitable solutions. In addition, they guarantee the secure and efficient use of medicine, advocate for and assist with CR programs, and encourage adjustments to one's lifestyle. In the context of psychosocial support and patient counseling, nursing care encompasses the establishment of a therapeutic nurse-patient relationship, the use of cognitive-behavioral therapy (CBT), and the promotion of general well-being. During Acute Coronary Syndrome (ACS), nursing care involves doing quick evaluations, closely monitoring patients, promptly taking action, and collaborating effectively with multidisciplinary teams. The goal is to provide comprehensive cardiac care, enhance patient outcomes, and minimize complications in this important emergency related to cardiovascular diseases (CVDs). Future research and development in nursing care for coronary heart disease (CHD) should prioritize the improvement of sedation procedures during percutaneous coronary

intervention (PCI), the creation of personalized lifestyle treatments and patient education programs, and the investigation of patient activation measures in CHD nursing care. Furthermore, it is essential for future studies to assess and question the use of telemedicine, wearable technologies, artificial intelligence, and virtual reality in the field of nursing.

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دمج سجلات التمريض والصيدلة والصحة في بروتوكولات دعم الحياة القلبية الوعائية المتقدمة (ACLS): أفضل الممارسات لمستجيبى الطوارئ في أمراض القلب

#### الملخص

الخلفية: تُعتبر الأمراض القلبية الوعائية من الأسباب الرائدة للوفاة على مستوى العالم، حيث تُعتبر مرض القلب التاجي (CHD) من الاضطرابات القلبية الوعائية الشائعة التي تشكل عبئاً صحياً كبيراً على المجتمعات. يتميز مرض القلب التاجي بقلة إمدادات الدم إلى القلب نتيجة تراكم اللويحات في الشرايين التاجية، مما يؤدي إلى شعور بالألم في الصدر، ونوبات قلبية، ونتائج قد تكون قاتلة.

الهدف: يهدف البحث إلى التعرف على عوامل الخطر المساهمة في مرض القلب التاجي، واستكشاف طرق الوقاية، وتقييم خيارات العلاج المناسبة، وتحديد تقنيات إعادة التأهيل الفعالة، مع التركيز بشكل خاص على دور الرعاية التمريضية في إدارة المرضى المصابين بهذه الحالة.

الطرق: شمل البحث الحالي تحليل شامل للأدبيات الموجودة لفحص التدخلات التمريضية الفعالة واستراتيجيات الرعاية للمرضى المصابين بمرض القلب التاجي، بما في ذلك المراقبة، والتعليم، والدعم العاطفي.

النتائج: يلعب الممرضون دوراً حاسماً في إدارة مرض القلب التاجي من خلال مراقبة العلامات الحيوية، وإعطاء الأدوية، وإجراء الفحوصات التشخيصية، وضمان حصول المرضى على العلاجات في الوقت المناسب والمناسبة. يقدمون التعليم للمرضى وعائلاتهم حول تغييرات نمط الحياة، والالتزام بالأدوية، واستراتيجيات الرعاية الذاتية، بالإضافة إلى دعمهم عاطفياً لمساعدتهم في التعامل مع التحديات الجسدية والنفسية المرتبطة بمرض القلب التاجي.

الاستنتاج: تعزز خبرة وشفقة وم **dedication** الممرضين بشكل كبير نتائج المرضى ونوعية حياتهم الشاملة لأولئك الذين يعانون من مرض القلب التاجي. يشكل الممرضون خط الدفاع الأساسي في الوقاية وعلاج مرض القلب التاجي، حيث يتخذون مسؤوليات مثل التقييم والتشخيص وتقديم النصائح للمرضى حول إدارة الأمراض.