

REVIEW ARTICLE

Multidisciplinary approaches involving clinical pharmacists in the cardiac rehabilitation of patients with chronic coronary syndrome in Ukraine

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ABSTRACT

Aim: This study is to investigate the impact of pharmacists' interventions in the clinical practice of rehabilitation of patients after acute coronary syndrome with subsequent scientific and applied substantiation of the functional fulfillment of pharmacists' roles as part of multidisciplinary teams.

Materials and Methods: Foreign and Ukrainian publications of scientometric databases Scopus, Web of Science, Cochrane, PubMed, ESC, AHA, ADA sites. European, American and Ukrainian regulatory and legal support for the rehabilitation of patients after acute coronary syndrome with the participation of pharmacists as part of multidisciplinary teams. The methods used were narrative search using keywords, dialectical, synthesis, content analysis, visualization.

Conclusions: The functional content of pharmacists' roles as part of multidisciplinary teams in the process of cardiac rehabilitation of patients after acute coronary syndrome has been scientifically substantiated. The need to develop and implement clinical pharmacology guidelines in cardiology for specific nosologies, tailored for community and clinical pharmacists, has been identified. It is recommended to update the curricula in postgraduate training of pharmacists and clinical pharmacists in accordance with ESC/AHA standards.

KEYWORDS: Treatment adherence, chronic coronary syndrome, pharmaceutical care, multidisciplinary team, cardiac rehabilitation, drug-drug interaction

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INTRODUCTION

About 80% of all premature deaths in the world are caused by non-communicable diseases, among which cardiovascular and cerebrovascular diseases (such as heart attacks and strokes), cancer, chronic respiratory diseases (such as chronic obstructive pulmonary disease and bronchial asthma) and milestone diabetes play a major role [1]. One of the areas of activity of the World Health Organization for 2023-2030 is the development of preventive and therapeutic measures to reduce premature mortality from non-communicable diseases (Target 3.4) [1], among which measures aimed at the rehabilitation of patients after complications and recurrences of cardiovascular diseases play an important role [2].

The incidence of cardiovascular diseases remains high in the European Union, where the number of patients who underwent inpatient treatment for diseases of the circulatory system in 2021 was 8.6 million [3].

Coronary heart disease (CHD) is the leading cause of death among men and women in Ukraine (as of 2021) [4]. Analyzing statistics on the mortality rate from ischemic heart disease among countries in the world, Ukraine ranks fourth [4].

The results of the observational study EUROASPIRE V (n = 2759), in which participated 27 European countries, including Ukraine, showed an unsatisfactory level of adherence to lifestyle changes and pharmacotherapy among patients with very high cardiovascular risk [5].

Increasing measures aimed at preventing cardiovascular and cerebrovascular diseases, improving screening of risk factors, covered by the European Union initiative "Healthier Together", can contribute to reducing disability and premature mortality, as well as improving the quality of life of such patients and lead to a decrease in the burden and costs of healthcare [6].

To address these issues, the clinical guidelines of the European Society of Cardiology (ESC) [7] and the American Heart Association (AHA) [8] emphasize interprofessional collaboration within multidisciplinary teams of healthcare professionals, including physicians of various specialties, nurses, pharmacists, medical psychologists, social workers, etc.

The effectiveness of clinical pharmacists' interventions in rehabilitation programs for patients with acute coronary syndrome has been demonstrated in improving adherence to pharmacotherapy, reducing adverse reactions on medicines and promoting lifestyle changes, all of which contribute to fewer repeat hospitalizations and a reduction in premature mortality [9-11].

Therefore, it is relevant to study the impact of pharmaceutical care on improving adherence to treatment in the clinical practice of rehabilitation of patients after acute coronary syndrome with the subsequent determination

of the functional content of the roles of Good Pharmacy Practice (GPP) of pharmacists and their participation in multidisciplinary teams.

AIM

The purpose of this study is to investigate the impact of pharmacists' interventions in the clinical practice of rehabilitation of patients after acute coronary syndrome with subsequent scientific and applied substantiation of the functional fulfillment of pharmacists' roles as part of multidisciplinary teams.

MATERIALS AND METHODS

The materials for the scientific substantiation of the impact of pharmacists' interventions on the clinical practice of rehabilitation of patients after acute coronary syndrome were foreign scientific studies, European, American and Ukrainian regulatory and legal support for the rehabilitation of patients after acute coronary syndrome with the participation of pharmacists as part of multidisciplinary teams.

The search and analysis of the Ukrainian regulatory and legal documents were carried out using the narrative search method using the keywords: "medical guarantees program" (60 documents), "cardiac rehabilitation" (1 document), "pharmaceutical assistance" (4 documents), "cardiovascular diseases" (4 documents) as of April 04, 2025 on the website of the Verkhovna Rada of Ukraine in the "Legislation" section, subsection "Regulatory and legal framework of Ukraine". The inclusion criteria comprised regulatory and legal documents that were in effect at the time of writing the article, pertaining to research conducted over the past decade. A total of 69 documents were selected. In addition, on the website of the State Expert Center of the Ministry of Health of Ukraine, in the section "Standardization in the field of health care", in the subsection "Standardization of medical care" in the register of "Medical and technological documents", a search was carried out for regulatory and legal documents using the keywords "ischemic heart disease" (3 documents), "arterial hypertension" (3 documents), "type 2 diabetes" (3 documents), "heart failure" (3 documents), "atrial fibrillation" (3 documents), "pharmacist's protocol for dispensing reimbursed medicines to patients with cardiovascular diseases" (1 document), "acute coronary syndrome" (2 documents). The inclusion criteria consisted of regulatory and legal documents that were valid at the time the article was written, relating to research carried out over the past five years. A total of 18 documents were selected. The exclusion criteria were identical documents with different dates of amendments. A total of 87 regulatory and legal documents were analyzed.

Considering that the basis for the development of Ukrainian standards for providing medical care to patients with cardiovascular diseases are the clinical recommendations of the ESC, AHA, and the American Diabetes Association (ADA), we examined the websites of these organizations and selected relevant clinical recommendations for providing medical care to patients with chronic coronary syndrome, arterial hypertension, atrial fibrillation, heart failure and type 2 diabetes. Using content analysis, the pharmaceutical component in international and Ukrainian standards for providing medical care was identified.

In addition, an information search was conducted by using a narrative review and keywords: "cardiovascular pharmaceutical care" (1569 documents), "pharmacological care model" (205 documents), "pharmacist intervention in cardiac rehabilitation" (2 documents), "pharmacist intervention in ischemic heart disease" (4 documents), "pharmacist intervention in case of chronic coronary syndrome" (2 documents) in the scientometric databases Scopus, Web of Science, PubMed, Cochrane library in English and using the visualization program VOSviewer [12]. The inclusion criteria included open-access, full-text scientific publications published exclusively in English, strictly addressing the research topic within the past five years. A total of 1,782 documents were extracted. The exclusion criteria included annotations, duplicate publications, reviews, books, paid-access scientific publications, and publications that were only indirectly related to the selected research topic. After applying the exclusion criteria, 22 clinical trials, meta-analyses, randomized controlled trials, and systematic reviews involving pharmacists in the rehabilitation of patients after acute coronary syndrome were analyzed.

After analyzing regulatory documents and scientific research and using the synthesis method, we generalized the methods used worldwide for the further formation of a holistic approach to the participation of pharmacists in multidisciplinary teams in the rehabilitation of patients after acute coronary syndrome.

By using the dialectical method, contradictions in the existing model of providing pharmaceutical care to patients after acute coronary syndrome were identified, which became the basis for modeling part of the model of pharmaceutical care for patients with ischemic heart disease with comorbid conditions as a single cycle of the continuous process of providing medical care.

Following the identification of the functional components of pharmacists' roles in accordance with the principles of Good Pharmacy Practice, applied research methods were utilized to evaluate the feasibility of integrating these defined functions into real-world clinical practice. In addition, a clinical case involving the participation of a clinical pharmacist was analyzed to further elucidate the advantages and potential barriers associated with the implementation of a multidisciplinary approach to cardiac rehabilitation in patients with coronary artery disease and comorbidities.

The practical implementation of the proposed approaches in cardiac rehabilitation of a multidisciplinary approach with the involvement of a clinical pharmacist was considered on the example of a patient who previously provided informed consent to the processing and use of data for scientific purposes. A patient was randomly selected from the clinical population after providing informed consent for the processing and use of personal data for scientific purposes.

Levels of depression and anxiety were evaluated using the Hospital Anxiety and Depression Scale (HADS)

(Zigmond & Snaith, 1993). Scores were interpreted as follows: <7 points indicated a normal range, while ≥8 points suggested the presence of subclinical or clinical anxiety (HADS-A) or depression (HADS-D). Treatment adherence was assessed using the Medication Adherence Rating Scale (MARS-5) (Thompson et al., 2000), which also allowed for the estimation of medication-taking duration. Pharmacotherapy monitoring was conducted in accordance with the methodology established by the National Health Service (NHS) England [27].

The study was conducted in accordance with the Declaration of Helsinki of the World Health Organization "Ethical Principles of Medical Research with the Participation of Human Subjects" (International Ethical Guidelines for Biomedical Research Involving Human Subjects, 2016).

REVIEW

Using the VOSviewer visualization program with the keywords "cardiac rehabilitation" and "pharmaceutical care" made it possible to identify a new trend in scientific research on the impact of pharmacist interventions on the rehabilitation of patients after acute coronary syndrome (seven publications), aimed at lifestyle correction, improving adherence to pharmacotherapy and risk factors: total cholesterol, blood pressure, blood plasma glucose (Fig. 1) [12].

The results of the analysis of international documents indicate a reorientation of pharmaceutical services from pharmaceutical provision of medicines to pharmaceutical care [14]. Thus, the European Resolution CM/Res (2020)3 on the implementation of pharmaceutical care for the benefit of patients and Health services stipulates that pharmacists are obliged to supervise the following:

1. rational pharmacotherapy, taking into account polypharmacy in medicines prescriptions for cardiovascular diseases with concomitant conditions;
2. contribute to reducing the occurrence of undesirable adverse reactions and medicines interactions, taking into account medicines metabolism;
3. appropriate use of medicines by patients, which will subsequently positively affect adherence to treatment;
4. modification of risk factors for cardiovascular diseases [13].

Of particular interest are the American clinical guidelines on pharmaceutical care for patients after acute coronary syndrome [15] and on the prevention of acute coronary syndrome under the supervision of pharmacists [15]; Australian clinical protocols and recommendations for rehabilitation and recovery programs for patients with cardiovascular risk (Queensland) [16]; British guidelines on the possibilities of optimizing pharmacotherapy [29]. It should be noted that the listed clinical guidelines for pharmacists are a clarification of the functional content of the roles of GPP and the separation of the functions of pharmacists as part of multidisciplinary teams in the care of patients with chronic coronary syndrome in accordance with the ESC [7] and AHA [8] clinical guidelines and algorithms for the provision of appropriate pharmaceutical care.

According to the results of the analysis of Ukrainian regulatory documents in healthcare institutions, the position of clinical pharmacist [17] with defined functional responsibilities is envisaged [18; 19]. However, the quality standards of pharmacy services are of a recommended nature [19], and the Law of Ukraine "On Medicinal Products" with defined functions of pharmacists comes into force after the end of martial law in Ukraine [18]. In addition, according to the order of the Ministry of Health [17], the position of clinical pharmacist in healthcare institutions does not provide for the participation of a clinical pharmacist in multidisciplinary teams, which contradicts the concept

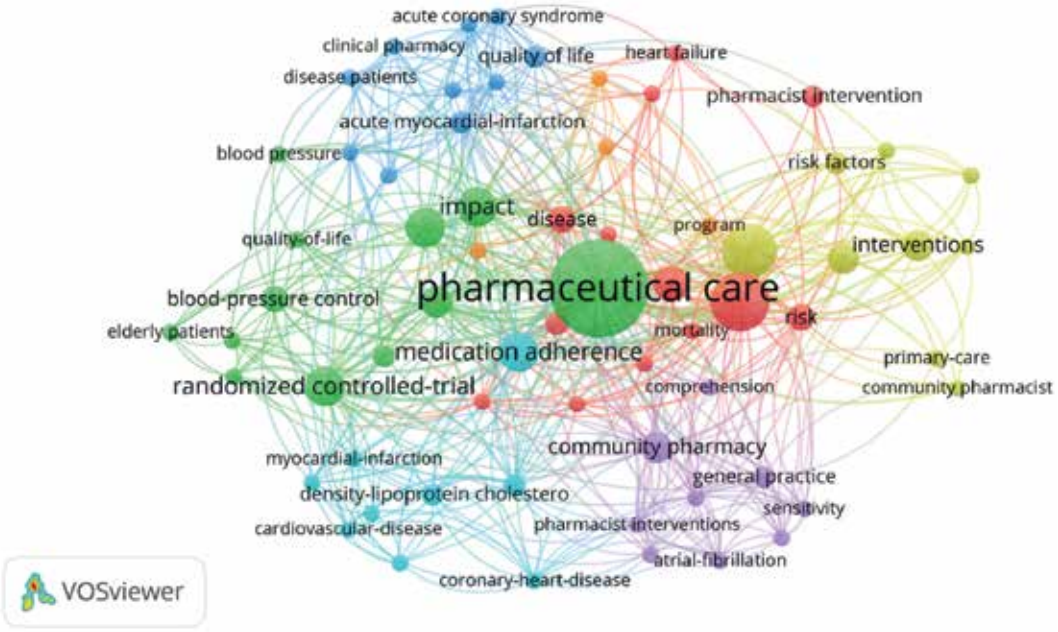

Fig. 1. Scientific works distributed within the cluster networks by keywords "cardiac rehabilitation", "pharmaceutical care" [12]

of "pharmaceutical care" in the new version of the Law of Ukraine "On Medicinal Products" [18].

The results of the analysis of foreign scientific publications indicate the effectiveness of the influence of pharmacist interventions on adherence to treatment, control of safe use of medicines and risk factors for patients with chronic coronary syndromes [20] as part of multidisciplinary teams and in the periods before and after exacerbation of coronary syndrome. Interventions of clinical pharmacists in monitoring pharmacotherapy of patients with chronic coronary syndromes showed a decrease in the occurrence of repeated cardiovascular events by 30% and mortality by 2% [21].

In addition, clinical pharmacists, as members of cardiac rehabilitation medical teams, participate in educating patients on the proper and safe use of medications, aiming to minimize the risk of side effects [9].

Considering the fact that patients with acute coronary syndrome have long-term risks of recurrent cardiovascular events, a special role is assigned to the intervention of pharmacists together with the medical team in ensuring continuity of care and cardiac rehabilitation [22]. In an open, prospective, controlled, non-randomized clinical trial, the intervention of clinical pharmacists in interprofessional interaction with the medical team showed an improvement in treatment adherence within the patients with acute coronary syndromes by 49.3% compared with the control group (18.8%), and in solving drug-related problems (60%) [23]. A systematic review and meta-analysis of randomized clinical trials (n = 8933 patients with cardiovascular disease) showed improvements in blood pressure, glycated hemoglobin, low-density lipoprotein cholesterol, and adherence to pharmacotherapy among patients with cardiovascular disease in the context of primary prevention and pharmacist-led control of modifiable risk factors [22].

Therefore, summarizing the results of the analysis of foreign and Ukrainian regulatory documents and scientific publications, the functional fulfillment of the roles of pharmacists in good pharmacy practice (Table 1) in the rehabilitation of patients after acute coronary syndrome is highlighted [13].

Considering the above-described activities in which pharmacists can participate as members of a multidisciplinary team, and for the practical implementation of the proposed model, we conducted an analysis of clinical cases during the patient rehabilitation process with the involvement of a clinical pharmacist. The clinical case analysis with the involvement of a Clinical pharmacist provided insights into the feasibility of implementing pharmacists' functions in clinical settings, highlighting both the benefits and the challenges encountered in practice.

CLINICAL CASE

A 52-year-old white woman applied for correction of pharmacotherapy due to complaints that appeared during the last 2 weeks of periodic increase of blood pressure during the day, headache, swelling of the lower legs, periodic weakness, increased shortness of breath (on the MRC scale from 2 to 3 degrees of severity). The patient leads a sedentary lifestyle, has mainly canned foods and semi-finished products in her diet, does not smoke and has no allergies to medications.

The diagnoses include hypertension, ischemic heart disease, and stenting (1 BMS in the anterior interventricular branch of the left coronary artery). She also has heart failure with reduced left ventricular ejection fraction (LVEF) and chronic obstructive pulmonary disease (COPD).

Table 1. Functional content of the Roles of pharmacists of good pharmacy practice in the rehabilitation of patients after acute coronary syndrome [13]

Clinical hospital pharmacists	Pharmacist assistants, pharmacists, pharmacovigilance professionals
Modification of CVD risk factors	Modification of CVD risk factors
Monitoring of prescribed and over-the-counter medicines (OTC)	Patient screening
Checking for medicines compatibility	Monitoring of prescribed and over-the-counter (OTC) medicines
	Checking for medicines compatibility
Pharmacovigilance	Pharmacovigilance
Supervision of polypharmacy	Supervision of polypharmacy
Coordination of pharmacotherapy	Coordination of pharmacotherapy
Educating patients about the drug regimen	Educating patients about the drug regimen
Monitoring of the effectiveness of pharmacotherapy together with the doctor	Monitoring of the effectiveness of drug therapy in cooperation with a primary care physician
Monitoring adherence to treatment together with the doctor	Monitoring adherence to treatment
Providing healthcare institutions with medicines	Providing patients/consumers with medicines
	Dispensing medicins under the reimbursement program

At the time of admission, she was taking nebivolol 2.5 mg per day, losartan 25 mg per day, atorvastatin 40 mg per day, acetylsalicylic acid 100 mg per day, and salbutamol 200-400 mcg per day in spray form.

Objectively: BMI = 24, waist circumference 78 cm. Increased BP figures were detected – 150/99 mm Hg. Art., signs of decompensation of heart failure with EFLV (decrease in EFLV from 46% to 30%) and negative dynamics of lipid profile indicators with an increase in the level of total cholesterol (from 4.0 mmol/l to 5.7 mmol/l,) and low-density lipoprotein (LDL) (from 1.77 mmol/l to 3.65 mmol/l). According to the results of the HADS questionnaire, there are signs of depression (12 points).

After interviewing the patient by a clinical pharmacist, it was found out: the patient leads a sedentary lifestyle, eats a large amount of canned vegetables, does not smoke, and has no allergies to medications.

Monitoring of adherence to pharmacotherapy showed that the patient periodically refuses therapy with losartan 25 mg/day due to disappearing episodes of BP drop. Sometimes forgets to take atorvastatin 40 mg per day. Episodically took salbutamol 100 mcg (1 inhalation 1 time per day) in the form of a spray, but began to use it more often after increasing shortness of breath (2-4 inhalations per day), as she perceived these symptoms as signs of exacerbation of chronic lung disease.

In monitoring the effectiveness of pharmacotherapy, carried out by the doctor in collaboration with the clinical pharmacist, negative dynamics according to echocardiography (Echo-CG) data were taken into account by comparing the latest results from the medical record with those obtained at the start of treatment, as well as the negative dynamics of lipid profile indicators.

DISCUSSION OF PHARMACOTHERAPY CORRECTION IN A CLINICAL CASE

According to the ESC clinical guidelines [7], the patient is classified as having high cardiovascular risk and has not achieved the target blood pressure (BP) values of <130/80 mm Hg. The current combination therapy of nebivolol 2.5 mg/day and losartan 25 mg/day is not considered optimal. For improved BP control and to achieve target values, it is recommended to reassess the dosages of the prescribed medications or consider fixed-dose combinations that include a diuretic agent (e.g., indapamide or hydrochlorothiazide) [25].

For the improvement of the patient with heart failure with reduced left ventricular ejection fraction and disease progression, the use of angiotensin II receptor and neprilysin inhibitors should be considered regardless of the presence of concomitant type 2 diabetes. In addition, the use of mineralocorticoid receptor antagonists and sodium-glucose co-transporter 2 inhibitors is also recommended in accordance with ESC clinical guidelines [25]. In addition, the use of carvedilol should be considered, as it has additional benefits in the treatment of heart failure with reduced ejection fraction [25].

For the correction of dyslipidemia, intensification of lipid-lowering therapy with the maximum dose of a statin should be considered, in this case atorvastatin 80 mg with ezetimibe 10 mg to accordance with ESC guidelines [7]. In the future, it is possible to use a PSK9 inhibitor (in Ukraine, this drug is registered on the pharmaceutical market, but it has been defective for a long time).

Considering the fact of the patient's acute Q-wave myocardial infarction with urgent stenting, in accordance with ESC recommendations, the use of antiplatelet therapy with acetylsalicylic acid at a dosage of 75 mg or 100 mg, or clopidogrel 75 mg, is prescribed [7].

After consultation with a psychiatrist, sertraline should be considered, as it is safe for patients with heart failure and reduced left ventricular ejection fraction [26]. However, recent observational data suggest that antidepressant use increases the risk of sudden cardiac death (SCD) by 56% when used for 1 to 5 years [26]. Psychotherapy or short-term use of sertraline may be considered until the patient's condition improves.

Medications interaction screening of the prescribed pharmacotherapy, taking into account CYP isoenzyme metabolism, showed the following results (Table 2) [27-29].

Thus, optimization of pharmacotherapy is aimed at correcting decompensation of heart failure and will look as follows:

1. Sacubitril/valsartan dose titration over 3-4 weeks from 24/26 mg 2 times a day to optimally tolerated (under control of BP and K+ levels) or to the target level of 97/103 mg 2 times a day;
2. Carvedilol 6.25 mg 2 times a day, torasemide 20 mg until the disappearance of signs of leg edema with subsequent transition to a maintenance dose of 5 mg per day;
3. Atorvastatin 80 mg per day in combination with ezetimibe 10 mg per day with a control of lipid profile after 3 months;
4. Acetylsalicylic acid 100 mg per day;
5. Eplerenone 25 mg per day with titration to the target dose of 50 mg once a day;
6. Dapagliflozin 10 mg once a day;
7. Consultations with a psychiatrist and a pulmonologist are suggested for further correction of pharmacotherapy.
8. Training provided by a clinical pharmacist on lifestyle modification, dietary nutrition features (use of the DASH diet [7] and reducing salt intake, consumption of fresh vegetables instead of canned).
9. Recommendations were given for monitoring of blood pressure and heart rate, weight and recording daily results in the patient's diary.
10. Patient training was provided on the method of using and storing medications, and the features of using pillboxes.

The clinical pharmacist dedicated a total of 50 minutes to the patient's clinical assessment, including 20 minutes for the patient interview and 30 minutes for evaluating drug compatibility and justifying the optimized pharmacotherapy plan. The subsequent integration of pharmacists' defined functions into routine daily clinical practice, along with the implementation of multidisciplinary approaches involving pharmacists and clinical teams in a larger patient

Table 2. Drug interaction screening based on CYP isoenzyme metabolism [27-29]

Medicines Combination	CYP Isoenzymes	Interaction
Losartan + Sertraline Indapamide + Sertraline Eplerenone + Sertraline Bisoprolol + Sertraline Carvedilol + Sertraline	3A4	Inhibition of action
Losartan + Sertraline Carvedilol + Sertraline Valsartan + Sertraline Torasemide + Sertraline	2C9	Inhibition of action
Metoprolol succinate + Sertraline Metoprolol tartrate + Sertraline Nebivolol + Sertraline Bisoprolol + Sertraline Carvedilol + Sertraline	2D6	Inhibition of action
Atorvastatin + Sacubitril/Valsartan		Increase in peak concentration of sacubitril by 74% and valsartan by 34%

cohort, may contribute to advancing pharmacists' practical competencies toward a level of unconscious competence, thereby significantly reducing the time required for similar interventions.

The proposed model of clinical pharmacist interventions, integrated within multidisciplinary teams throughout various stages of medical care in the cardiac rehabilitation of patients following cardiovascular events (Fig. 2), demonstrates the potential to enhance adherence to prescribed pharmacotherapy, ensure the safe and rational use of medications, and reduce the risk of recurrent cardiovascular complications. Collectively, these outcomes probably may contribute to a measurable improvement in patients' quality of life.

DISCUSSION

According to the results of the study, potential pharmacist interventions in the clinical practice of patient rehabilitation after acute coronary syndrome were identified and substantiated, enabling their practical implementation as part of a multidisciplinary team. The effectiveness of a multidisciplinary approach involving pharmacists in the rehabilitation of such patients was demonstrated in a systematic review [11], the results of which showed the following: improvement in both clinical and non-clinical treatment outcomes; reduction of low-density lipoprotein cholesterol levels to optimal target values; enhancement of adherence to pharmacotherapy and health-related quality of life [11].

In a prospective, randomized, controlled trial of patients with acute coronary syndrome, the results of a pharmacist intervention after three months of follow-up showed a decrease in the number of adverse reactions and drug interactions, improved adherence to pharmacotherapy and better achievement of blood pressure and heart rate targets among the patients participating in cardiac rehabilitation programs [9].

A prospective quasi-experimental study demonstrated the effectiveness of pharmacist interventions, including monitoring and adjustment of pharmacotherapy; structured education on lifestyle modification and appropriate medication use; development of a medication monitoring plan after discharge from the inpatient department; creation of a personalized medication schedule with the simultaneous use of a pillbox; provision of the informational materials on diet and an active lifestyle for patients with chronic coronary syndrome after hospitalization [30].

According to the results of a randomized clinical trial, pharmacists have shown effectiveness in optimizing pharmacotherapy and improving the results of adherence to guidelines in secondary prevention of chronic coronary syndrome [23].

Taking into account the above-mentioned data, the functional fulfillment of the roles of pharmacists of good pharmacy practice in the rehabilitation of patients after acute coronary syndrome as part of multidisciplinary teams has been identified and scientifically substantiated. These measures can further improve the quality of life of patients, save healthcare costs for the treatment of adverse reactions, drug interactions and reduce the burden on healthcare systems by reducing the number of premature hospitalizations. However, as we noted earlier, the separate functions of pharmacists, in accordance with the current Ukrainian legislation, are of a recommended nature [19], and the position of clinical pharmacist in healthcare institutions [17] is limited in terms of the participation of clinical pharmacists in multidisciplinary teams, which also contradicts the norms of the Law of Ukraine "On Medicinal Products" [18]. The outlined contradictions require further harmonization of the current Ukrainian legislation in accordance with the European one. In addition, to ensure the continuous process of providing pharmaceutical care in the health care structure, attention

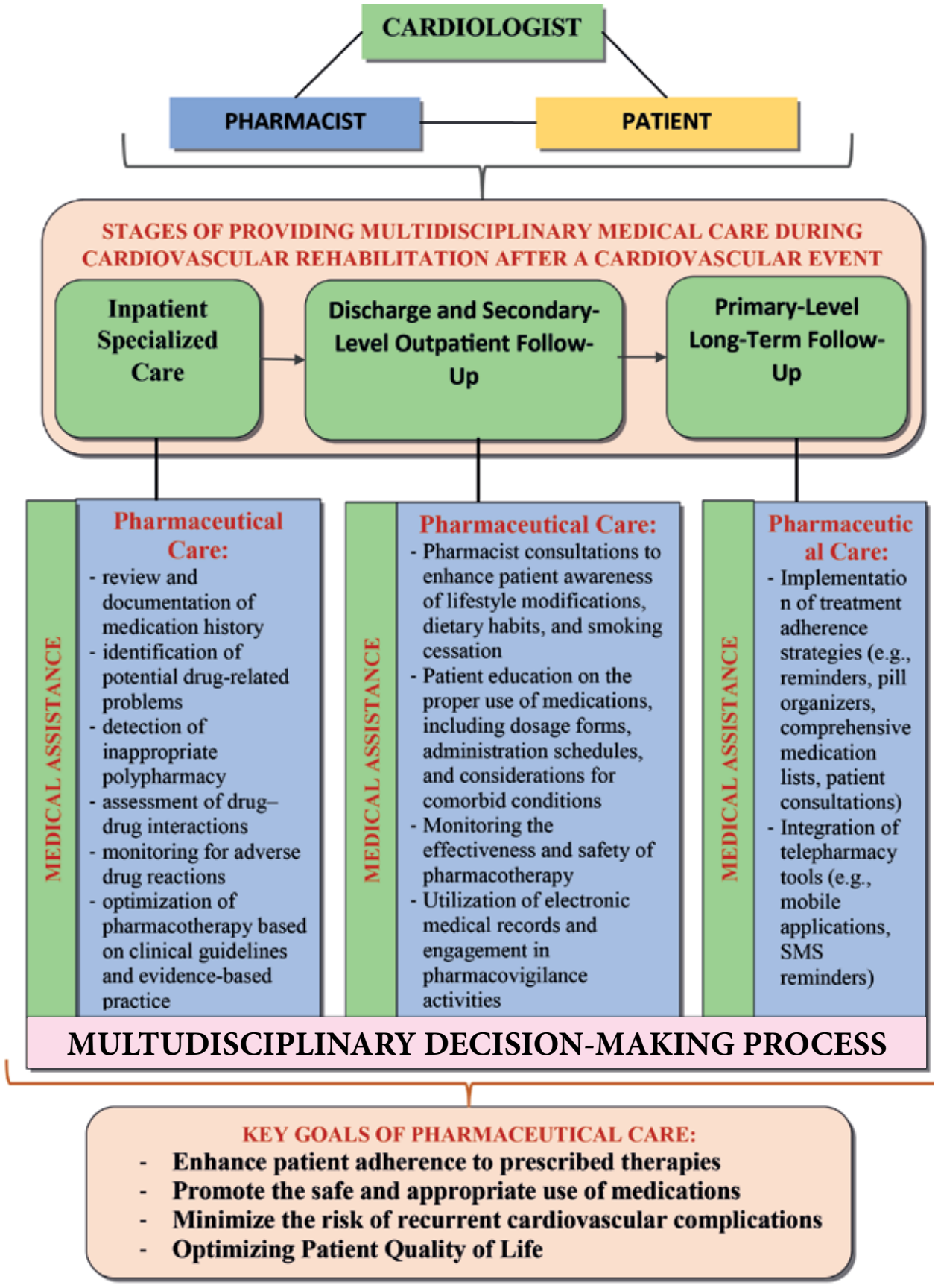

Fig. 3. Model of clinical pharmacist/pharmacist interventions as part of multidisciplinary teams at various stages of medical care in the cardiac rehabilitation of patients after cardiovascular events

Source: compiled by the authors of this study

should be paid to postgraduate training of pharmacists as part of multidisciplinary teams in specialized areas (cardiology) in the process of continuous professional development in accordance with the update of ESC/AHA clinical recommendations, as well as the development of recommendations on clinical pharmacology in cardiology for individual nosologies (arterial hypertension, chronic coronary syndrome, chronic heart failure, type 2 diabetes mellitus, atrial fibrillation, etc.).

CONCLUSIONS

1. Based on the results of the analysis of international and Ukrainian regulatory framework, the need to harmonize the current Ukrainian legislation in accordance with the European one for the further inclusion of pharmacists in multidisciplinary teams has been identified.
2. The functional fulfillment of the roles of pharmacists in multidisciplinary teams in the process of cardiac rehabilitation of patients after acute coronary syndrome has been identified, ~~and~~ scientifically substantiated, and applied in clinical practice.
3. The need to develop and implement recommendations on clinical pharmacology in cardiology for individual nosologies for community pharmacists and clinical pharmacists has been identified.
4. It is recommended to update the curricula in postgraduate training of community pharmacists and clinical pharmacists in accordance with ESC/AHA/ACC standards.

We see the development and implementation of recommendations on clinical pharmacology for individual nosologies for community pharmacists and clinical pharmacists as a prospect for further research.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest

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