A MODEL FOR RISK MANAGEMENT OF COMPLICATIONS IN PATIENTS WITH EXPERIENCED ACUTE MYOCARDIAL INFARCTION

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Abstract: Ischemic heart disease and Acute Myocardial Infarction remain the leading cause of death worldwide. For the development of the disease, the prognosis and the outcome of it, are the age and comorbidity of the patient, the possibilities of applying modern endovascular treatment and treatment in intensive cardiology units, the patient's access to centers for interventional treatment, the stratification of risk and the application of modern medications for primary and secondary prevention, are of great importance. Rehospitalizations after AMI are unfortunately a common phenomenon, which significantly damages the healthcare system and leads to a number of psychological, physical and financial losses for the patient. **The aim** of the current study was to develop a Risk Management Model for Complications in Patients with experienced Acute Myocardial Infarction designed for healthcare professionals. **Materials and methods:** A documentary method was used and the specialized medical literature was studied. Based on keywords - cardiorehabilitation, secondary prevention of cardiovascular diseases, risk prevention after experienced myocardial infarction, a model for prevention and risk management in acute myocardial infarction, Guidelines for the management of acute myocardial infarction, we performed a systematic search in electronic databases data and systematized the found materials. On the basis of the existing scientific literature, a "Model for the management of the risk of complications in patients with acute myocardial infarction" was developed, intended for health care professionals. The method of observation in real clinical practice and graphical representation of the results were also used. **Conclusions**: To overcome the negative statistics and the increased morbidity and mortality from cardiovascular diseases, effective primary prevention, motivation to change the behavior and lifestyle of the population and cardiac rehabilitation after a coronary accident in order to avoid future complications are needed. The prepared Risk Management Model combines the separate elements of conducting cardiac rehabilitation in accordance with the modern recommendations of the European Society of Cardiology for conducting cardioprophylaxis.
Keywords: management, complications, Myocardial Infarction, model, cardioprophylaxis

1. INTRODUCTION

Ischemic heart disease (IHD) and Acute Myocardial Infarction (AMI) remain the leading cause of death worldwide For the development of the disease, the prognosis and the outcome of it, are the age and comorbidity of the patient, the possibilities of applying modern endovascular treatment and treatment in intensive cardiology units, the patient's access to centers for interventional treatment, the stratification of risk and the application of modern medications for primary and secondary prevention, are of great importance (Ibanez, James, Agewall, Antunes, Bucciarelli-Ducci, Bueno, Caforio, Crea, Goudevenos, Halvorsen, Hindricks, Kastrati, Lenzen, Prescott, Roffi, Valgimigli, Varenhorst, Vranckx, Widimský, ESC Scientific Document Group, 2018, 119–177; Петров, Мартинов, 2008, 1-2; Zhan, Shi, Wu, He, Liu, Shen, 2019; Иванова, 2014). Rehospitalizations after AMI are unfortunately a common phenomenon, which significantly damages the healthcare system and leads to a number of psychological, physical and financial losses for the patient (Dreyer, Raparelli, Tsang, D'Onofrio, Lorenze, Xie, Geda, Pilote, Murphy, 2021, e021047).

2. AIM

The aim of the present study was to develop a Risk Management Model for Complications in Patients with experienced Acute Myocardial Infarction intended for healthcare professionals.

3. MATERIALS AND METHODS

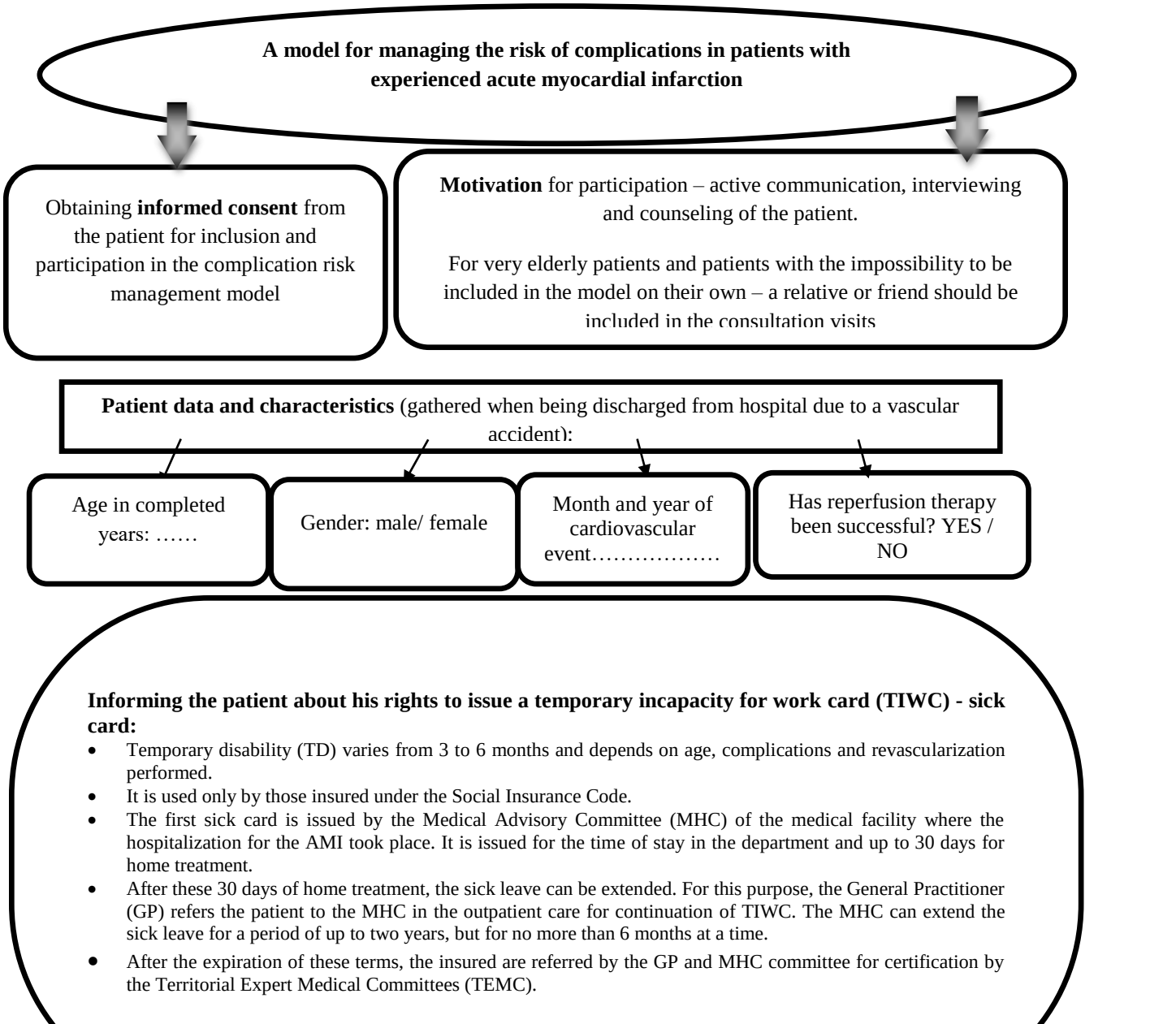
A documentary method was used and the specialized medical literature was studied. Based on keywords - cardiorehabilitation, secondary prevention of cardiovascular diseases, risk prevention after experienced myocardial infarction, a model for prevention and risk management in acute myocardial infarction, Guidelines for the management of acute myocardial infarction, we performed a systematic search in electronic databases data and

systematized the found materials. On the basis of the existing scientific literature, a "Model for the management of the risk of complications in patients with acute myocardial infarction" was developed, intended for health care professionals. The method of observation in real clinical practice and graphical representation of the results were also used.

4. RESULTS AND DISCUSSION

There is compelling evidence in the scientific literature for the role of the nurse in cardiac rehabilitation. The multidisciplinary prevention program EUROACTION, involving 9062 patients and their families, is coordinated by nurses. The applied prevention model was conducted in England, Denmark, France, Italy, Spain, the Netherlands, Poland, Switzerland. One year after its launch, effective management of risk factors (tobacco smoking, diet, blood pressure control and lipid profile values) were reported and a positive change in the patient's lifestyle was established (Тодорова, 2018, 1171-1176).

Treatment, adherence to the prescribed therapy and control are essential for a favorable outcome of the disease and a reduction in the rate of complications. They depend on various socio-economic factors, on the patient himself and his will to adhere to the prescribed therapy, on the organization of the health system and on the approach of medical professionals to the sick. This is a two-way process that requires clear, accurate and understandable information about the prescribed therapy (Ibanez, James, Agewall, Antunes, Bucciarelli-Ducci, Bueno, Caforio, Crea, Goudevenos, Halvorsen, Hindricks, Kastrati, Lenzen, Prescott, Roffi, Valgimigli, Varenhorst, Vranckx, Widimský, ESC Scientific Document Group, 2018, 119–177; Нинова, Симеонова, Илариoнова, 2020, 39-45; Нинова, 2008, 35-37; Todorova, Petrova, 2016, 147; Ninova,, 2020, 743-748.). The information must reach the patient and he must realize the risk he is taking if he does not comply with the prescribed treatment.



Conducting health education on:

- ❖ The nature and symptoms of the disease;
- ❖ Need for early recognition of cardiovascular diseases and their complications;
- ❖ Behavior of the patient in case of recurrence of symptoms;
- ❖ Raising awareness of the possibilities of starting cardiorehabilitation through hospitalization on the clinical track "Physical therapy and rehabilitation after experienced/old myocardial infarction and after operative interventions";
- ❖ Annual influenza vaccination is recommended

Collection of data on the presence of accompanying diseases:
Does the patient have co-morbidities? YES / NO;
What kind?.....

Measurement of height, weight, waist circumference /WC/ and calculation of BMI: Height…… cm. Weight……...kg. BMI…….kg/m2 WC:…….……cm.

With a BMI of 20 – 25 kg/m2, the patient is advised to maintain this healthy weight
For a BMI over 25 kg/m2, instructions are given for a necessary reduction in body weight until reaching a healthy weight
For WC ≥94 cm in men and ≥80 cm in women, advice is given not to increase body weight further and, if possible, to decrease
For WC ≥102 cm in men and ≥88 cm in women, weight reduction is recommended

If given instructions for weight reduction and WC - **telephone notification and calling the patient for a visit** after 1 month
During the visit - **measurement of height, weight and WC** and assessment of the control of this risk factor

In patients with diabetes mellitus:

- Health education about the need to control blood sugar levels, avoid hypoglycaemia and behave in the event of hypoglycaemia;
- Training for working with a glucometer;
- Emphasis on likely atypical presentation of symptoms in case of cardiovascular complications;
- Control of measurements performed by the patient - during regular patient visits and by phone call or notification.

Arterial hypertension: YES/NO

- During the first visit, the patient and/or his relative are trained to measure and track blood pressure (BP) daily and record the measured values;
- Control over the measured values by a medical specialist - in person during the visit, by phone call and, if necessary, consultation with a doctor;
- **Goal:** achieve and maintain a systolic blood pressure below 140 mmHg, and in high-risk patients who tolerate antihypertensive therapy a systolic BP below 120 mmHg

Heart failure /HF/: YES/NO

- Health education for early recognition of the symptoms of HF and cardiac asthma;
- Routine daily control of heart rate, blood pressure, body weight and saturation;
- Giving recommendations for the purchase of a SMART bracelet with the ability to track the specified indicators.

Smoking: YES/NO
Duration: ……years;
Motivation to quit smoking - providing research evidence on the risks of continued exposure to this risk factor;
Monitoring of prescribed drug therapy/e-cigarettes - during in-person visits and via phone calls

Alcohol use: YES/NO
Concentrate: ……ml/day;
Wine:……...ml/day;
Beer: ……ml/day;
In case of use and abuse - motivation to refuse and reduce intake to 20 ml. daily for men and 10 ml. for women.
For abstainers – continuation of abstinence and life without alcohol consumption.

Study of physical activity /PA/

- ✓ Was the patient physically active before the AMI?: YES/NO
- ✓ Restrictions on its performance: YES……/NO
- ✓ Health education about the need for PA and the risks of not having it;
- ✓ Study of the motivation and possibilities for performing PA;
- ✓ Patient preferences for a certain type of sport or other PA.....
- ✓ Giving recommendations for recovery of PA from 8 to 12 weeks after the cardiac incident;
- ✓ In patients with complete revascularization, physical exercises can be restored earlier as prescribed by a cardiologist.

It is suitable to start with recreational sports with low to moderate physical activity. It can be started with housework, outdoor walks, gymnastics, cycling. For patients with difficulty in walking - aqua aerobics gymnastics. Subsequently, activity progression and inclusion in a progressive exercise program is recommended. Giving advice on buying an electronic device /eg. wristband/ for monitoring ECG, heart rate and blood pressure during physical activity. Provide health education to the patient about the possible symptoms that may occur during exercise and their behavior in case of symptoms.

Planning of laboratory and instrumental tests:

1. Control ECG – from 6 to 12 weeks after discharge in patients with left ventricular ejection fraction ≤40%;
2. Control over blood cholesterol values - from the 4th to the 6th week after AMI.
   - ✓ LDL-cholesterol target values – initial target 1.8 mmol/L, then reaching 1.4 mmol/L;
   - ✓ Triglycerides – below <1.7 mmol/L;
   - ✓ In patients who experienced a repeated cardiovascular event - below 1.0 mmol/L;
   - ✓ If necessary, consultation with a cardiologist;
   - ✓ After achieving optimal values of lipids in the blood - adherence to treatment and control of indicators at least once a year.
3. Control of liver enzymes before starting statin treatment and 8-12 weeks after their use. In case of data on increased values - again control after 4-6 weeks.
4. Examination of blood sugar, HbA1c, complete blood count and creatinine.

Educating the patient about possible non-pharmacological methods of lowering cholesterol:

- **FORBIDDEN FOODS: foods containing trans-fats** (hydrogens, hardened saturated fats), which are found in the form of margarine, palm and coconut oil, sausages, cakes, waffles, chips, snacks, biscuits, ice cream, some types of bread, etc. . widespread in industry.
- **Foods with a high content of saturated fat in the diet** - e.g. sausages, bacon, ribs, offal, butter, lard, bacon, cheeses, creams, non-fat yogurt;
- Avoidance, and if possible, complete exclusion of carbonated drinks;
- **PREFERRED FOODS:** foods rich in fiber and whole grains (oats, barley), raw and cooked vegetables, fresh and frozen fruits, pulses (lentils, beans, chickpeas, beans, peas), lean fish, skinless chicken, lean fresh and yogurt. Cooking food should be boiling, steaming and grilling.
- Intake of functional foods enriched with phytosterols – normally found in vegetable fats and in small amounts in vegetables, fresh fruits, nuts, cereals and pulses.
- Taking nutritional supplements containing rice with red yeast;
- **FOODS PERMITTED LESS RARELY AND IN MODERATE CONSUMPTION** – low-fat milk and cheese, lean beef, pork and lamb, seafood, refined bread, pasta and rice, potatoes, corn chips, dried fruit and canned fruit, mayonnaise, ketchup, olive oil, all unsalted nuts, sugar, honey, chocolate, fruit juices.

Health education about the need for:

- ***Adherence to the prescriptions of the prescribed medical treatment*** - type of medication, action, dosage regime, time regime of reception, risk in case of refusal and failure to take the medical treatment prescribed by the doctor;
- ***Control over the intake of the prescribed dual antiplatelet therapy at each visit:*** **Sample questions:** "Are you taking your prescribed Aspirin?" What time of day? After a meal or on an empty stomach do you take the medication?" "Do you take Clopidogrel and at what time of day?" (Aspirin is taken at least 30 minutes after a meal with plenty of water, and Clopidogrel can be taken before or after a meal);
- Aspirin is generally prescribed for an indefinite period of time in a dose of 75-100 mg, and Clopidogrel up to 12 months after the heart attack, unless an increased hemorrhagic risk is assessed.
- Use of non-steroidal anti-inflammatory drugs only after consultation with a doctor;
- **Medical control, observation and self-monitoring for possible manifestations of bleeding** (hematomas and/or bruises, epistaxis, hematuria, hemoptoea, melena, hematemesis). Conditions requiring immediate medical attention.
- Informing the attending physician about taking antiplatelet agents before an upcoming surgical or dental intervention;
- **When taking a Beta blocker -** control over the heart rate and teach the patient to measure and self-monitor;
- **Mandatory statin administration in all post-AMI patients regardless of blood cholesterol concentrations.**

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5. FINDINGS AND CONCLUSION

Development and implementation of a risk management model for patients with myocardial infarction survivors can contribute to improved quality of health care. As part of multidisciplinary teams, nurses can be active participants in both primary, secondary and tertiary prevention of cardiovascular disease. Their role as "ambassadors" of cardioprevention and mediators between the patient and medical professionals may be important in reducing cardiovascular risk. It takes time and a lot of effort to manage it, because prevention is complex, and habits and lifestyle built over years are not easily changed. The effort is worth it and every reduced risk counts because human capital is our most valuable asset.

Acknowledgements: This research was supported by the Bulgarian Ministry of Education and Science under the National Program "Young scientists and Postdoctoral Students – 2"

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