

## STATEMENT

By Prof. Dr. Ivan Tomov Gruev, PhD

Deputy Director of Medical Activity, NMTB "Tsar Boris III" - Sofia

For dissertation thesis of

Dr Simona Nikolaeva Yankova

On a topic

### ACUTE CORONARY SYNDROME IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

For awarding the scientific and educational degree "PhD" in scientific specialty  
"Cardiology", cipher 03.01.47

MEDICAL UNIVERSITY PROF. DR. PARASKEV STOYANOV, VARNA FACULTY OF  
MEDICINE

FIRST DEPARTMENT OF INTERNAL DISEASES

DEPARTMENT OF CARDIOLOGY

**Scientific supervisor:** Assoc. Prof. Dr. Atanas Angelov, PhD

**Scientific consultant:** Prof. Dr. Diana Petkova, PhD

**I declare that I have no conflict of interest in relation to this work and I do not establish any evidence of plagiarism.**

**I am appointed as a member of the scientific jury by order of the Rector of MU- Varna - R-109-99/ 28.01.2025**

***Brief biographical reference:* Dr. Yankova was born on 26. 04. 1991.**

Since 01.02.2019 she has been a part-time doctoral student at the First Department of Internal Diseases with the scientific supervisor Assoc. Prof. Atanas Angelov.

#### ***Education***

From September 2005 to June 2010 - high school at Neofit Rilski's Language Parallel with intensive study of English and second language German in Harmanli.

From September 2010 to September 2016 Higher Education – Master's Degree in Medicine with an average success rate of 5.72 in Medical University 'Prof. Dr. Paraskev Stoyanov', Varna.

Acquired Specialty in Cardiology on Sept. 6, 2022.

Acquired Professional Qualification - Echocardiography - Basic Level 10. 03. 2023.

### **Professional experience**

Until 2017, Dr. Yankova worked in pre-hospital and emergency care.

From February 2017 to June 2021 she was employed at the MU "Prof. Dr. Paraskev Stoyanov", Varna as an honorary assistant in the Department of Internal Diseases of English-speaking students.

Since November 2017, she has been working as a cardiologist in the Department of Cardiology at MBAL Dobrich AD, in the city of Dobrich.

Intern-doctor under Erasmus 2016 program in Poland – Department of Internal Diseases Propedeutics and Department of Cardiology at Banacha University Hospital, Warsaw.

Intern – doctor of cardiology in the specialized clinic of Arrhythmia at the Medical University "I. I. Mechnikov", St. Petersburg, Russia, 2017.

Trainee cardiology doctor at Sechenov Medical University, Moscow, Russia, 2018.

### **Significance of the problem:**

Acute coronary syndrome (ACS) and chronic obstructive pulmonary disease (COPD) are the leading causes of mortality and disability in the world. According to the National Statistical Institute, the number of deaths from COPD in Bulgaria in 2022 was 18.6 per 100,000 people, and the mortality rate from ACS amounted to 84.8 per 100,000 people. COPD is a disease of increasing social significance and, according to the World Health Organization prognosis, is expected to become the third leading cause of death worldwide by 2030. Population-based studies have shown that cardiovascular diseases (CVD) are responsible for 20-30% of deaths in patients with COPD. The main mechanisms that determine the increased cardiovascular risk in patients with COPD are chronic inflammation, oxidative stress, obesity, decreased physical activity, smoking, and dyslipidemia.

Patients with ACS and concomitant COPD are a high-risk group in which a comprehensive approach is needed both in treatment and during follow-up. These patients consume more resources in primary and secondary medical care - consultations, emergency room visits, hospitalizations, and hospital stays. Strategies are needed to improve adherence to drug therapy, correct risk factors and reduce the incidence of complications and rehospitalizations.



**The dissertation is well structured and concise.** It consists of 204 pages and contains 43 figures, 20 tables and 4 annexes. The bibliography covers a total of 501 literary sources, of which 18 are in Cyrillic, 470 in Latin and there are 13 references to web pages.

**The aim of the dissertation is clearly stated:**

To assess the clinical and demographic characteristics, adherence to the prescribed therapy, the causes of repeated hospitalizations, and mortality in patients with ACS and COPD.

**Six tasks are set:**

1. To investigate the risk characteristics, clinical presentation, and therapeutic behavior in persons with acute coronary syndrome and accompanying COPD.
2. To make a comparison with a control group of patients with acute coronary syndrome with similar demographic and clinical characteristics, but without data on COPD.
3. To evaluate adherence to the prescribed therapy after hospitalization and in particular to treatment with beta-blockers.
4. To assess the quality of life in patients with ACS and COPD compared to the control group.
5. To determine the causes of hospitalizations.
6. To analyze the clinical and demographic characteristics of deceased patients with ACS.

**Materials and methods**

The study was conducted over 48 months. All examinations were performed from June 2019 to June 2023 in the Department of Cardiology in cooperation with the Second Internal Department of the Dobrich Hospital AD, Dobrich.

**Study participants**

A total of 140 consecutive patients diagnosed with ACS and hospitalized in the intensive care unit of the cardiology department at the Dobrich Hospital AD, Dobrich, were studied prospectively. The subjects studied were divided into two groups, depending on the presence of previously outpatients diagnosed with COPD:

**Group A** includes 70 patients with ACS and known COPD. In persons without proven obstructive disease but with evidence of dyspnea, chronic cough or sputum production, and/or a history of long-term smoking (more than 20 packages years), spirometry was performed

because of the risk profile. According to the study, COPD was discovered in five patients (3.6%) of those with ACS, bringing the total number in group A to 75.

- **Group B** includes 65 people with ACS without COPD.

The examined patients are categorized into both groups depending on the formulated inclusion and exclusion criteria necessary for the set goals.

Questionnaire, clinical, laboratory, instrumental and statistical methods were used, as well as several modern questionnaires to assess the quality of life.

## **Results:**

### **Detailed and classified.**

**The differences in risk profile, presentation of ACS, and evolution after the incident were clearly defined between the two study groups. Data from the 6-minute walking test, quality of life questionnaires, and adherence to therapy for ACS were examined in detail.**

**Conclusions based on the results obtained – 8 in all.**

**Well described and substantiated in the dissertation work.**

1. Patients with ACS and COPD have a more pronounced risk profile for IHD compared to patients with ACS without COPD.
2. The incidence of anemia, CKD, and stroke is higher in the COPD group.
3. Patients with ACS and COPD have poorer lipid profile control and are slower to achieve the target blood sugar values in the presence of DM. They are less motivated to quit smoking in the long term and are less physically active.
4. Patients with COPD are more likely to present with a clinical sign of ACS without ST elevation. Because of their high-risk profile, they are less frequently referred for invasive diagnosis and subsequent treatment. According to their coronary pathology, people with ACS and COPD have a dominating single-vessel CAD, with RCA being the most typically impacted.

5. The population with ACS and COPD studied by us shows weaker adherence to the prescribed main classes of medications – BB, ACE/ARBs/ARNI, lipid-lowering agents, and antiplatelet therapy.

6. ACS, in combination with COPD, has a multifactorial effect on all aspects of patients' lives, with health status remaining permanently reduced within one year after ACS compared to the control group.

7. Patients with concomitant COPD are at greater risk of hospitalization for CVD up to twelve months after the acute coronary event. The most common cause is HF, followed by IHD.

8. Higher BMI, smoking, lower physical activity, and higher baseline CRP values are associated with higher mortality in COPD patients one year after ACS.

**Contributions** (according to the wording in the dissertation work):

**Contributions of an original nature**

1. For the first time in Bulgaria, a study has been conducted on the risk and clinical characteristics of patients with ACS and COPD. The merit of the study is the monitoring of the spirometric parameters of pulmonary obstruction.

2. For the first time in Bulgaria, the quality of life of patients with ACS and COPD is being studied.

3. For the first time in Bulgaria, adherence to the prescribed drug therapy for the region of Northeastern Bulgaria is objectively monitored.

4. For the first time in Bulgaria, the causes of hospitalizations in patients with ACS and COPD for one year after the acute coronary event are being tracked.

5. For the first time in Bulgaria, mortality in patients with ACS and COPD is monitored.

**Confirmatory contributions**

1. The risk characteristic for CAD in patients with COPD is confirmed.

2. The need for patients with COPD to be treated as a high-risk population for the manifestation of ACS is confirmed.

3. The need for functional testing after ACS in patients with established COPD is confirmed.

4. The poorer quality of life in patients with ACS and COPD is confirmed;



5. The more frequent occurrence of ACS without ST elevation in patients with COPD is confirmed.

6. The less frequent referral for SCA in patients with ACS and COPD is confirmed.

7. The thesis, defended by an increasing number of authors, about the lack of contraindications to the use of cardioselective BB and the need for control for adherence to therapy is confirmed.

8. The role of CVD as a cause of more frequent hospitalizations in patients with COPD has been confirmed.

**Publications associated with the dissertation:** presented with 2 publications and 3 participation in congresses.

**Conclusion:** Dr. **Simona Nikolaeva Yankova's** dissertation is the first comprehensive investigation of ACS in Bulgarian COPD patients. The PhD student demonstrates a deep understanding of the scientific literature throughout the presentation, together with exceptional opportunities to gather, evaluate, and summarize the results. I particularly appreciate the phenotyping of patients according to the severity of COPD as well as the rich set of tools for assessing the quality of life, the inclusion of the 6-minute test and the assessment of adherence to therapy. The dissertation fully meets the criteria of the Law on the Development of the Academic Staff of the Republic of Bulgaria and the regulations of the University of Varna for the award of the educational and scientific degree " PhD ". Therefore, I recommend to the honorable members of the Scientific Jury to vote positively for the awarding of the educational and research degree "PhD" to **Simona Nikolaeva Yankova**.

**08. 02. 2025**

**Sofia**

**Prof. Ivan Tomov Gruev, PhD**

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