

## REVIEW

by Assoc. Prof. Dr. Yavor Yordanov Ivanov , PhD, Head of Pneumology and Phthisiology Clinic - University Hospital "Dr. Georgi Stranski" EAD - Pleven

Regarding the competition promulgated in State Gazette No. 28/28.03.2023 for the academic position of Professor in the field of higher education 7. "Health and Sport", professional field 7.1 "Medicine" and specialty "Pneumology and Phthisiatry" at the Faculty of Medicine, Department of Internal Medicine; Board of Pulmonary Diseases and Allergology, Clinic "Pulmonary Diseases" at University Hospital "St. Marina" EAD-Varna

The opinion was prepared in accordance with the requirements of the Law on the Acquisition of Scientific Degrees and Academic Positions at the Medical University - Varna.

By the decision of the scientific jury, Assoc. Prof. Diana Petkova Gospodinova-Vulkova, Ph.Prof. Petkova has submitted all required documents.

### 1. Biographical data

Assoc. Prof. Diana Petkova is a graduate of higher education in Medicine - Master's degree, Faculty of Medicine, Medical University - Varna in 1990. She started working as a resident in the Department of Internal Medicine of the General Hospital of Varna. She started working at the OPD in Shumen and in the town of Shumen. He started his studies in the Department of Medicine in Shumen and Provadia. Since 1994 he moved to the Department of Pulmonary Diseases of Medical University Varna. He acquired specialties in internal and pulmonary diseases in 2001 and 2003, respectively. There she started his academic development - successively assistant, senior assistant and chief assistant. He holds the administrative position of the Head of the First Department, focusing on Sleep Medicine and Non-Invasive Ventilation. He is the head of the Board of Pulmonary Diseases and Allergology MU Varna since 2019.

She defended her dissertation for the award of the educational and scientific degree "Doctor" on the topic "Respiratory disorders during sleep: risk assessment and clinical effectiveness of the use of non-invasive ventilation nCPAP, BIPAP, VPAP in home conditions" in 2009. She also has a degree in social medicine and health management.

In the period 2009 - 2023 she specialized in prestigious university centers in Sweden, Austria, Switzerland, Germany, Belgium, Scotland in the following areas: interstitial lung diseases, sleep medicine, non-invasive ventilation, epidemiology and biostatistics, tuberculosis, etc. She has been a moderator and guest speaker at a sleep medicine symposium in Bern, Switzerland.

Assoc. Prof. Petkova is an organizer and lecturer at congresses of the Bulgarian Society of Pulmonary Diseases. She is currently serving her third term as Chair of the Board of the BRS.

She is the leader of 5 successfully implemented scientific projects at MU Varna, one at BRS. She is also involved in 5 international projects - 2 on sleep medicine, one on detection and follow-up of patients with A1AT deficiency at European level, one on pulmonary hypertension together with the University of Zurich, one on sleep medicine and non-expiratory ventilation together with KS St.

Gallen Switzerland. Founder and chairman of "Lung League Varna" - a joint project with the Lung League St.Gallen, Switzerland.

Editor-in-chief of the magazine. Editor of "Heart Lung" until 2022. He is a member of the editorial board of the ASKLEPIOS international annual of history and philosophy of medicine; of the editorial board of GP Medic and of the editorial board of the journal Medic Plus.

She was the chair of the Quality Management and Risk Management Committee at St. Marina Hospital Varna from 2000-2016. She is the Chair of the Prescribing Committee for 34 patients with Pulmonary Arterial Hypertension, IPF and severe asthma at St. Marina Hospital Varna.

She is fluent in written and spoken English, German and Russian.

She is a member of the Bulgarian Doctors' Union; the Bulgarian Society of Pulmonary Diseases and the Governing Council of the BDPB; the European Respiratory Society. Member of the National Expert Board on Pulmonary Diseases at the Ministry of Health, Member of the Expert Council on Lung Diseases and Tuberculosis of the Ministry of Health.

She is recipient of the following awards: honorary member of the Lung League St. Gallen, Schweiz; diploma for contribution to society of ABBA; Honorary badge and diploma for the development of pneumology and phthisiology in Bulgaria.

## **2. Scientific research activities**

Assoc. Prof. Diana Petkova has submitted the following publications for participation in the competition:

- 1.The dissertation for obtaining the educational and scientific degree "Doctor".
- 2.Habilitation thesis - monograph.
- 3.Publications and reports published in scientific journals, refereed and indexed in world-known databases of scientific information - 26.
- 4.Publications and reports published in non-refereed peer-reviewed journals or published in edited collective volumes - 20.
- 5.Full-text publications in scientific journals and collections , beyond the minimum science-metric requirements for the academic position of "professor" - 43.

### **The main scientific directions of her developments are:**

- 1.Sleep-disordered breathing (SDB) - clinical manifestations and therapeutic management, phenotypic characteristics of the Bulgarian population of patients with SDB
- 2.Non-invasive ventilation - indications and application, follow-up and education of patients and their relatives
- 3.Respiratory failure and home oxygen therapy

4. Pulmonary arterial hypertension

5. Pulmonary thromboembolism - epidemiological data, modern methods of diagnosis and treatment, pulmonary hypertension caused by chronic-recurrent BTE (CPRH)

6. Pulmonary tuberculosis, risk factors, clinical features, non-tuberculous mycobacterioses

7. Idiopathic pulmonary fibrosis - clinical presentation, diagnosis and differential diagnosis, treatment and follow-up

8. COPD and bronchial asthma - epidemiology, clinical features and treatment

9. Infectious diseases of the lung: pneumonias, epidemiological data and clinical characteristics

10. COVID-19 - clinical features, risk factors, course, treatment of pulmonary manifestations

11. History of medicine

12. Rare diseases

**Sleep-disordered breathing (SDB) - clinical manifestations and therapeutic management, phenotypic characteristics of the Bulgarian population of patients with SDB**

In her dissertation "Respiratory disorders during sleep: risk assessment and clinical effectiveness of non-invasive ventilation- nCPAP, BiPAP, VPAP in home settings" the author has presented for the first time in Bulgaria a large study on the prevalence of snoring, excess daytime sleepiness, changes in hormonal activity and arterial hypertension in adults. She introduced the use of the validated Epworth Sleepiness Scale. The author also assessed compliance to non-invasive home ventilation treatment. Vascular resistance, echocardiographic characteristics, and clinical manifestations in different patient groups are analyzed. Quality of life in patients with DNVS was studied. The author also presents her own data on sexuality disorders in patients with DNVD, comparing data from Bulgaria and Switzerland.

Patients with sleep-disordered breathing were prospectively studied to determine cardiovascular risk to create an algorithm characterizing higher CVD risk. An upper airway resistance syndrome was defined as tonsillar hypertrophy, retrognathia and variations in craniofacial structure, and visceral adipose tissue. A methodology to assess visceral adipose tissue was introduced to phenotype patients with DNVO. A multidisciplinary team with her participation has adopted and published: "National Consensus for the Diagnosis and Treatment of Sleep and Wake Disorders". Coronary artery calcium (CAC) as a marker of coronary atherosclerosis and biological vessel age for the quantitative assessment of coronary artery calcium scoring (CACS) in patients with OSA without known cardiovascular disease is presented. Disruptions in circadian rhythms of cortisol secretion and sleep architectonics in patients with schizophrenia, an important element in the pathogenesis of mental illness, have been studied. Two publications present the effectiveness of pitolisant administration on excessive daytime sleepiness in OSA patients refusing long-term CPAP treatment and in OSA patients adherent to CPAP treatment and residual excessive daytime sleepiness. Administration of pitolisant significantly reduced daytime sleepiness and fatigue. The author is involved in the establishment of an interdisciplinary Sleep Medicine Center based at the University

Clinic of Pulmonary Diseases based on a joint project with the Clinic of Pulmonary Diseases and the Sleep Medicine Center of the Cantonal Hospital St. Gallen, Switzerland.

### **Non-invasive ventilation**

Assoc. Prof. Petkova conducted a prospective observation of patients using different modes of non-invasive ventilation CPAP, BiPAP, VPAP, APAP. Short-term and long-term compliance to treatment was monitored. An algorithm for training and monitoring of noninvasive ventilation treatment in patients with DNVS was introduced.

### **Home oxygen therapy**

In her monograph "Home oxygen therapy: conditio sine qua non", the author summarizes the knowledge and experience accumulated so far in Bulgaria and shares her and the literature's experience in initiating and monitoring the effects of long-term home oxygen therapy, with a detailed analysis of the devices used, indications and contraindications. The monograph contains 20 chapters where these issues are discussed. It shares the experience and results of the Lung League Varna, as well as her 13 years of experience working with patients on home oxygen therapy and their loved ones. The focus of the monograph is the need of Bulgarian patients with respiratory failure for reimbursement by the NHIF and the Ministry of Health for home oxygen therapy.

### **Pulmonary hypertension**

Assoc. Prof. Petkova has published the studies of the team led by her on the survival, quality of life and clinical effectiveness of the treatment administered to patients with PH. Quality of life studies in patients with idiopathic and post-thromboembolic pulmonary hypertension are presented.

### **Pulmonary thromboembolism (PTE) and post-thromboembolic pulmonary hypertension (PTH)**

The author is the team leader of a retrospective study on BTE and post-thromboembolic pulmonary hypertension - ie. Varna cohort. The main conclusion of this study is that CTEPH is a serious complication in patients after acute or recurrent BE. Follow-up of symptomatic patients is necessary for early diagnosis and timely treatment.

### **Pulmonary tuberculosis**

Cases of tuberculosis in patients with systemic diseases on targeted therapy are presented. Biologic therapy is a relatively new medical approach in the treatment of severe disease. The danger of tuberculosis activation and opportunistic infections is shown.

### **Idiopathic pulmonary fibrosis**

Data on the clinical course, methods of diagnosis, and results of antifibrotic treatment are summarized.

### **Bronchobstructive diseases - COPD and bronchial asthma**

Assoc. Petkova is part of a national expert team that has studied and published data on: screening among high-risk groups; the importance of COPD patients being followed up by specialist pulmonologists; the assessment of COPD severity; and the characterisation of outpatients with

bronchial asthma; evaluation of the effect of the combination drug beclomethasone/formoterol Extrafine in patients with COPD; characteristics of patients with severe asthma considered suitable for biological treatment (the Bulgarian RECOGNIZE study); use of mucolytics as adjunctive therapy in patients with COPD.

### **Infectious diseases of the lungs**

Published data from St Marina's Hospital for patients with pneumonia. They are the result of participation in international projects to follow the epidemiology, course and characteristics of bacterial infections of community-acquired pneumonias and nosocomial pneumonia. They are part of the candidate's participation in the GLIMP research group.

### **COVID-19 - clinical characteristics and course features**

The published materials present data on the epidemiology and severity of viral pneumonias, survival and treatment, treatment with antiviral drugs and antibacterial agents, and coagulation disorders.

The scientific production of Assoc. Prof. Diana Petkova exceeds the minimum scientific-metric requirements - 396,6 points (with a mandatory minimum - 200 points).

According to the submitted data, she has 52 citations or reviews in scientific publications, refereed and indexed in world-known databases of scientific information or in monographs and collective volumes, which bring her an additional 780 points. Her total impact factor is 89.244.

She was a supervisor of a successfully defended PhD student (Dr. Valentina Dimova Dimitrova). She has supervised the training of graduate students and has participated in the writing of three textbooks.

### **3. Diagnostic - medical activity**

Associate Professor Diana Petkova has over 30 years of experience as a physician. She is competent and applies modern diagnostic and therapeutic methods in her daily work. She has extensive experience in the field of pulmonary diseases and in internal medicine in general. Participates in consultative activities as a Republican Consultant in the North-Eastern region of Bulgaria. She also works in outpatient care as a specialist pulmonologist with outpatient practice.

### **4. Teaching and teaching activities**

Assoc. Diana Petkova has over 30 years of teaching experience in pulmonary diseases. She conducts lectures and practical exercises with the students in the training of "Pulmonology" BEO. Her average annual workload for the last 4 years is 208.25 hours (at the norm of the decision of the AC of MU Varna - 99 hours).

She is a member of the Examination Committee for the State and Semester Examination in Internal Medicine, a member of the National Committee for the Acquisition of Specialty in Pneumology and Phthisiology.

## 5. Conclusion

The presented data on the scientific, teaching and medical activities of Assoc. Prof. Diana Petkova, are a definite testimonial that she has reached a high level of creative knowledge and medical-diagnostic competence, which will allow her to continue her career as a physician, scientist, educator and administrator in a position of greater responsibility.

Her achievements to date convincingly exceed the required scientific metrics reflected in the Law on the Medical University of Varna, its Rules and Regulations for the Acquisition of Scientific Degrees and Academic Positions.

I propose the Honourable Scientific Jury to award Assoc. Prof. Diana Petkova Gospodinova-Vulkova, PhD, the academic position of "PROFESSOR" for the needs of the Faculty of Medicine, Department/UC First Department of Internal Diseases; Board of Pulmonary Diseases and Allergology, Clinic of Pulmonary Diseases at the University Hospital "St. Marina" EAD-Varna.

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/Doc. Dr. Yavor Ivanov, D.M./