

**To the Chairman of the Scientific Jury Appointed by Order No. R-109-356/25.10.2024
of the Rector of the Medical University – Varna**

Opinion

by Assoc. Prof. Dr. Lyubomir Stefanov Bakalivanov, MD
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By Order No. R-109-356/25.10.2024, I have been appointed as a member of the scientific jury for the procedure to conduct a competition for acquiring the educational and scientific degree of "Doctor" in the field of higher education 7. Healthcare and Sports, professional direction 7.1. Medicine, scientific specialty "Anesthesiology and Intensive Care" (03.01.38).

I have duly received the necessary documents and materials in accordance with the regulations for the development of the academic staff of MU-Varna.

Candidate in the competition: Dr. Mirela Galinova Neykova

Dissertation topic: "The Influence of Bispectral Index Monitoring on Sedation Protocols in the Intensive Care Unit"

Scientific supervisor: Prof. Viliyan Platikanov, MD

Biographical data of the candidate:

Dr. Mirela Neykova was born on August 16, 1991. Her professional career began as a physician at the Emergency Medical Center – Varna. Since December 19, 2016, she has been part of the KAIL team at University Hospital "St. Marina" in Varna, working as a resident physician in anesthesiology and intensive care. Since October 2020, she has been an assistant at KASIM at MU Varna. She obtained her specialty in "Anesthesiology and Intensive Care" on June 1, 2021, and continues to work as an assistant physician and specialist at KAIL at University Hospital "St. Marina" Varna.

Relevance of the dissertation topic:

Patients requiring intensive care and treatment often suffer from severe primary and accompanying diseases. They frequently need prolonged mechanical ventilation (MV) and daily invasive procedures. This is one of the main reasons sedation, pain relief, and sometimes relaxation are necessary for these patients to tolerate MV, procedures, and reduce stress and pain levels.

The present dissertation thoroughly examines all methods and techniques for pain relief and sedation in patients, work protocols, and provides a comparative analysis of them, highlighting the advantages and disadvantages of different approaches.

Structure of the dissertation:

Dr. Mirela Neykova's dissertation consists of 156 pages, illustrated with 58 figures and 39 tables. The bibliography includes a total of 182 references, of which 7 are in Cyrillic and the remaining 175 in Latin script.

The introduction is comprehensive and in-depth, fully corresponding to the essence of the dissertation. It is evident that Dr. Neykova has studied the problem concerning all aspects of sedation and analgesia in intensive care units. A detailed literature review of 38 pages is presented, arranged chronologically and analyzed through the lens of the "Bispectral Analysis of Brain Activity" method. The state of the problem in Bulgaria is also analyzed.

The aim of the dissertation is clearly defined, namely: to create a revised, modern protocol for sedation of patients on MV, based on an objective and continuous method for monitoring sedation through bispectral index analysis.

Six tasks have been formulated to achieve this aim. All tasks are clearly defined, specific, and practically and theoretically oriented to support the scientific thesis.

The study is a prospective, monocentric clinical trial conducted by the KAIL team at University Hospital "St. Marina" Varna. The study received a positive evaluation at the meeting of KENI at MU-Varna.

A total of 80 patients were included in the study, divided into two groups: a control group with 40 patients, where sedation levels were monitored according to the RAAS scale, and an experimental group with 40 patients, where sedation levels were controlled based on BIS index values. Inclusion and exclusion criteria for the study are described in detail.

In the "Materials and Methods" section, the non-invasive method for bispectral brain activity analysis is described, along with current clinical protocols and all methods used in the study. Statistical analysis was performed using the modern software program SPSS 26.

In the next section, "Results and Discussion," a detailed analysis of the patients in both study arms is provided. Demographic data, risk factors, hemodynamics, and accompanying diseases are analyzed. Separate analysis is conducted for patients requiring tracheostomy for airway management during prolonged MV.

A thorough analysis of the APACHE II score is particularly notable, offering a full assessment of the severity of the condition within the first 24 hours of intensive care, considering numerous indicators with prognostic value in intensive treatment. Failed weaning attempts and extubation rates are also analyzed. Results are richly illustrated with figures and tables, and a discussion of the obtained data is presented.

The dissertation concludes with six findings that advocate for the application of bispectral brain activity monitoring in patients requiring sedation and MV in intensive care units.

Three scientific and practical contributions of the dissertation are systematized.

A "Sedation Protocol for Patients on MV in KAIL at University Hospital 'St. Marina' – Varna" has been created and presented. In my opinion, this is the most significant contribution of the dissertation, which, under certain circumstances, could be applied in other intensive care units in the country.

Based on the presented dissertation, I believe that Dr. Neykova has thoroughly, comprehensively, and analytically defended her scientific thesis. The dissertation addresses a significant and daily problem faced by physicians working with patients requiring prolonged MV.

The proposed method for monitoring and assessing sedation depth via bispectral brain activity analysis is non-invasive, relatively accessible, and easy to interpret.

Dr. Neykova presents to the scientific community a sedation protocol resulting from her scientific and practical efforts, which significantly contributes to daily practice.

Three publications are presented, two of which are directly related to the dissertation topic.

This provides me with a solid basis to confidently recommend to the esteemed members of the Scientific Jury to give a positive evaluation of the dissertation work of Dr. Mirela Galinova Neykova for the acquisition of the educational and scientific degree "Doctor."

December 31, 2024

Sofia

Respectfully:

Заличено на основание чл. 5, §1, б. „В“ от Регламент (ЕС) 2016/679
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/Assoc. Prof. Dr. Lyubomir Stefanov Bakalivanov, MD/