

OPINION

by Prof. Valentina Boyanova Petkova-Dimitrova, Doctor of Science, Faculty of Pharmacy, Medical University - Sofia

on the dissertation for the award of the educational and scientific degree 'doctor'

professional field: Pharmacy from the field of higher education Health and Sports

doctoral program: Pharmacology - (incl. Pharmacokinetics and chemotherapy)

Author: Plamen Stefkov Bekyarov

Form of doctoral studies: full-time doctoral studies

Department: Pharmacology, Toxicology and Pharmacotherapy

Topic: Study of the hospital use of antimicrobial drugs intended for the prevention and treatment of obstetric and gynecological infections

Scientific supervisors: Assoc. Prof. Silviya Georgieva Mihaylova, Ph.D.

Prof. Dr. Marieta Petrova Georgieva, MD

1. General presentation of the procedure and the doctoral student

The presented set of materials on paper and electronic media is in accordance with the Procedure for acquiring the ONS "doctor" at MU-Varna and the Regulations of MU-Varna dated 27.05.2025.

The doctoral student has attached evidence for 4 publications and participation in two scientific forums.

Master of Pharmacy Plamen Bekyarov graduated from the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna in 2017. He began his career as a master of pharmacy at Matrikaria Ltd.. He is currently an assistant professor at the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, as well as the head of the hospital pharmacy SHAT "PROF. DR. D. STAMATOV". He has a specialization in Clinical Pharmacy at the same university. Fluent in written and spoken English, which contributes to the rich literature review carried out in the dissertation.

2. Relevance of the topic

The dissertation proposed for review for the acquisition of the educational and scientific degree "doctor" is relevant and reflects contemporary trends in the development of pharmaceutical practice. The treatment of bacterial infections caused by resistant pathogens is one of the greatest challenges facing modern medicine, as in Europe they are the cause of about 35,000 deaths every year. The World Health Organization predicts that in 2050 antimicrobial drug resistance will cost the lives of over 10 million people worldwide.

The development of resistant strains may be a consequence of various factors, the most common of which are the presence of innate or acquired resistance, horizontal gene transfer, biofilm formation, cross-resistance and heteroresistance.

That is why the goal set, namely the study and analysis of the hospital use of antimicrobial drugs intended for the prevention and treatment of obstetric and gynecological infections in Hospital "Prof. Dr. D. Stamatov" - Varna for a period of 12 years, is well formulated and relevant. The proposed work meets the goal set, as the tasks, 6 in number, for its achievement are correctly formulated, which achieves a good balance from the point of view of the future application of scientific contributions. It is an undeniable fact that patient care and patient safety are at the center of EU policies in the field of medicines. The rational use of medicinal products, and in particular antimicrobial drugs, is an extremely important component of this policy.

The list of publications and scientific activity of the doctoral student is in accordance with the requirements and reflects the application of the methodologies, as well as the results of his own research.

3. Knowledge of the problem

The analyzed studies included in the literature review argue the choice of topic and defend the relevance of the problem. The conducted documentary analysis of the resistance of various strains of pathogenic microorganisms provides an opportunity for a wide field of research and opportunities for the author. This speaks of the emphasized interest of Assist. Prof. Bekyarov in this direction, reflects his theoretical knowledge and practical experience.

4. Research methodology

The doctoral student has mastered various methodologies, and is well versed in different terminologies and logically connects his studies. Retrospective and prospective analysis of data on antibiotic use were conducted. The retrospective analysis by department covers a 12-year period before the start of the study (2012-2023). The data used were taken from the pharmacy software "Gamma Store", the prospective analysis is based on the obtained statistically significant mathematical models. The chosen research methodology allows achieving the set goal and leads to obtaining an adequate answer to the tasks formulated in the dissertation work.

5. Characteristics and evaluation of the dissertation work and contributions

The dissertation work is structured in accordance with the requirements for preparing a scientific paper. A goal and 6 main tasks have been formulated, which have been successfully carried out in the course of the own research.

The tools used include general and specific methods.

Through the diversity of the methods used, which are skillfully combined to achieve the set goal, the main purpose of a dissertation is achieved, that is to show that the candidate possesses and applies certain methodological knowledge in practice.

The results of the dissertation have been published in four scientific articles.

The contributions that can be differentiated can be summarized as follows:

- For the first time, a systematic retrospective study of antibiotic use (DDD/100 bed-days) was carried out, for a period of 12 years, in SBAGAL "Prof. Dr. D. Stamatov" - Varna.

- The application of regression analysis of varying complexity (up to the third order) demonstrates effectiveness in modeling real clinical data and offers a statistical framework for future similar studies.
- The results of the analysis provide a scientific basis for optimizing antibiotic therapy, taking into account trends in resistance and the needs/specificities of the various departments.
- A statistical approach has been developed for modeling and predicting hospital antibiotic use, adapted to the structure of SBAGAL. This allows for long-term planning of drug needs and effective monitoring of antibacterial therapy.
- For the first time, a quantitative prospective analysis of antibiotic use has been carried out in SBAGAL "Prof. Dr. D. Stamatov" - Varna, which contributes to the existing data at the national level and can help identify risk trends.
- The applied quantitative approach and the models used can be adapted and optimized for application in other hospital structures, which gives the study a strategic value for creating national algorithms for control and monitoring of antibiotic consumption.

6. Assessment of the publications and personal contribution of the doctoral student

In connection with the dissertation work, 4 articles have been published in scientific journals, in 2 of which Asst. Prof. Bekyarov is the first author. The doctoral student has participated in two scientific forums, during which the results of the dissertation work were reported. These scientometric indicators show the author's desire to popularize the results of the studies and his good publication activity.

7. Abstract

The content and quality of the proposals for review of the abstract corresponds to the content of the dissertation, complies with the requirements and reflects the main results achieved in the dissertation.

CONCLUSION

In conclusion, the dissertation on the topic: "Study of the hospital use of antimicrobial drugs intended for the prevention and treatment of obstetric and gynecological infections" by Assistant Professor Plamen Bekyarov, developed with a correctly set goal and objectives, using adequate methodological tools and reliable interpretation in the discussion of the results, meets the requirements for obtaining the educational and scientific degree "doctor". The dissertation contains scientific, scientifically applied and applied results that represent an original contribution to science and meet the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation and the Regulations of MU - Varna. The presented materials and dissertation results fully comply with the specific requirements adopted in connection with the Regulations of the Medical University - Varna for the development of the academic staff.

I accept that the work is an independent work of the dissertation candidate and due to the above, I confidently give my positive assessment of the conducted research, presented by the above-reviewed dissertation work, abstract, achieved results and contributions, and I propose to the esteemed scientific jury to award the educational and scientific degree of 'doctor' to Assistant Professor Plamen Bekyarov in the doctoral program in Pharmacology /incl. pharmacokinetics and chemotherapy.

02.09.2025

Prepared the opinion:

Prof. Valentina Petkova-Dimitrova, Ph.D.

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