



## РЕЦЕНЗИЯ

от доц. д-р Галя Крумова Цолова, дм

### REVIEW

by Assoc. Prof. Galya Krumova Tsoleva, MD, PhD

Member of the scientific jury for the procedure of dissertation work defense, according to Order No. RD-24/13.01.2023 of the Director of the National Center of Public Health and Analyzes on the title "Application and implementation of the TDABC methodology - Time Driven Activity Based Costing and its duration in eye clinics in Bulgaria in the treatment of patients with macular degeneration".

The announced competition is for the acquisition of an educational and scientific degree "Doctor" in the higher education field 7. "Healthcare and sport" in the professional direction 7.1. "Medicine" in the scientific specialty "Social Medicine and Health Management", with candidate **Adriana Miroslavova Dacheva**.

The review was prepared in accordance with the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions at the National Center of Public Health and Analyzes (NCPHA).

#### **General presentation of the procedure and the PhD student**

In accordance with the procedure, a set of documents in paper and in electronic form were provided, containing the required documents and including the following: dissertation; dissertation abstract; copies of scientific publications; list of scientific publications and participations in scientific forums; other documents.

Adriana Dacheva is assigned as a PhD student of individual training under the Order of the Director of the National Center of Public Health and Analyzes No. RD-530, effective from 11.11.2021, on the postgraduate program: "Social Medicine and Health Management". The PhD student possesses the required number of points, according to Appendix 1. Minimum national requirements for scientific and teaching activities.

At the Scientific Committee of the "Health Promotion and Disease Prevention" Directorate, and based on a decision of the Scientific Committee, the PhD student was permitted with the right of dissertation defense, according to Order No. RD-22/12.01.2023 of the Director of the National Center of Public Health and Analyzes.

The set of documents is in accordance with the requirements, which proves the

legitimacy and completeness of the conducted training and the procedure for its administration.

### **Autobiographic data of the candidate**

Adriana Miroslavova Dacheva was born on 14.08.1991 in Sofia. In 2010 she graduated from 22 Secondary language school “Georgi Stoykov Rakovski”, with a profile on informatics and information technologies. In 2014 she acquired a bachelor’s degree in Bulgarian Philology from the Slavic Philology Faculty of Sofia University “St. Kliment Ohridski”, and in 2016 – a master’s degree from the same university, specialty “Translator-Editor with English Language”.

In 2017 she graduated from the European Higher Education School of Economics and Management (EHMS), specialty “Health Management”. Since November 2021 she is a PhD student on an individual training at the National Center of Public Health and Analyses.

Her work experience started in 06.04.2016 as a Technical Assistant in the consulting company HTA Ltd., Sofia. Afterwards, she successively worked as an Office Manager and Budget Impact Analyst, Head Manager of a department and since 01.01.2021 – as an Operational Director in the same company.

In addition to her work experience, she has done specializations in Glasgow, Barcelona and Copenhagen. She has studied and implemented agreements for risk-sharing and innovative financial models for payment of expensive therapies and gene therapies in the country. Since 2019, she has been actively applying the Harvard Business School (HBS) methodology for measuring healthcare benefits in Bulgarian clinics in the fields of ophthalmology, cardiology, and oncology.

Adriana Dacheva is a lecturer in the field of health technology assessment for leading healthcare companies with offices in Bulgaria and a lecturer at a scientific circle of medical students at Medical University, Pleven: “Measuring benefits in healthcare”.

She is the author and co-author of scientific publications, monographs, books, and posters at scientific conferences.

### **Topicality of the dissertation work**

The dissertation is dedicated to an extremely up-to-date issue. Nowadays, all healthcare systems operate under limited financial resources, which often leads to inadequate distribution of both financial resources and care. Innovative health organizations worldwide are transforming healthcare through Value Managed Healthcare (VMHC), aiming to improve

patient outcomes and optimize costs. VMHC includes health services oriented towards the measurement of added value by using specific methodologies - TDABC (time-driven activity-based costing) and measurement of final outcomes (health outcomes and results related to the patient's quality of life). Value measurement in the healthcare system enables a shift from a fee-for-service model to a benefit-based system of care.

The current work is dedicated to the implementation of the TDABC methodology in patients with age-related macular degeneration. The application of this methodology is a long-term strategy that intends to structure the measurement of clinical outcomes and results related to the patient's quality of life, aiming to improve the activity through regular data processing and analysis, as well as to monitor the effect of a specific therapy on patients' quality of life.

### **Characteristics of the dissertation work**

The dissertation work is developed according to the requirements of the ADASRB. The text is clear, well-structured and there is an adequate balance between the specific sections.

The work is presented in 158 pages and includes all required elements: introduction, literature review, research methodology, discussion of results, conclusions, recommendations. The bibliography includes 113 literature sources, of which 9 are in Cyrillic and 104 are in Latin. The work is illustrated with 25 tables and 12 figures. Internationally certified questionnaires and methodologies for assessing the patients' quality of life are applied.

### *Literature review*

The literature review exemplifies leading world practices regarding the implementation of the TDABC methodology in the healthcare sector, centered on benefits, including - costing based on activity and its duration, as well as the role of OST in the measurement of benefits in the healthcare sector.

There is a strong emphasis on the idea that the concept of value requires the inclusion of every aspect concerning the patient, which requires a transformation of the traditional payment model, and consequently, a new structure for this approach is needed. In this aspect, the application of the Value-Based Healthcare (VBHC) framework allows cost reduction without compromising quality.

The analysis in the literature review demonstrates a very good awareness about the researched problem by the PhD student, as well as skills for working with scientific literature



and for discussing different opinions and generalizations. The qualitative and well-structured literature review is the basis for developing the objective and the tasks of the dissertation work.

### *Research methodology*

The objective and the tasks of the dissertation, as well as the working hypothesis and the subject of the research are presented in a precise manner. The purpose of the study is to conduct an external evaluation, cost analysis, analyses of processes, management team structure and technical solutions in two eye clinics (Eye Clinic 1 and Eye Clinic 2) as a concept of performing an ophthalmic procedure of intravitreal administration of VEGF-inh. in patients with macular degeneration using the TDABC methodology. There are 7 tasks that arise from the defined objective of the study.

The TDABC implementation methods include: performing an external evaluation, cost analysis, analyses of the process, management team structure and technical solutions in two eye clinics, as a concept in performing an ophthalmic procedure of intravitreal VEGF-inh administration in patients with macular degeneration.

Questionnaires, individual interviews with the senior management of the clinics, group interviews with the medical staff, field observations in clinics, and electronic database registers are used. With the aim to evaluate the activity in each step during the process of providing medical care, a model developed in Microsoft Excel is utilized.

During the process of evaluating the required time for intravitreal implementation of VEGF-inh. in an operating room, timing method is used, and an average value is calculated for performing the procedure for all patients.

### *Results, conclusions and recommendations, contributions*

An analysis is conducted based on the results of the completed initiation questionnaires (Macular Degeneration Initiation Questionnaire and Macular Degeneration Initiation Questionnaire - Process Plan), the performed interviews and the observation of intravitreal VEGF-inh administration in Eye Clinic 1 and 2.

As a result, the following items are produced: diagrams reflecting the sequence and duration of the procedure processes before and after optimization, a comparative analysis of the time of conducting the processes for intravitreal application, a financial model calculating the remuneration of the involved staff and current analysis and recommendations affecting the management and technical solutions.

The obtained results are compared with those of other relevant studies. Introduced is a six-component strategy for transitioning to a high-value healthcare delivery system, including:

*Organizing integrated practice centers; Evaluating outcomes and costs for each patient; Moving to bundled payments for specific healthcare cycles; Integrated Healthcare Systems; Expansion of geographic coverage; Building an adequate information technology platform.*

The dissertation determines *8 conclusions*, which are a logical consequence of the predefined objective, tasks and analysis of the results.

The TDABC methodology implementation is a long-term strategy that aims to define a precise measurement of work productivity in primary care and to identify its determinants, including a combination of workforce allocation, technology and patient characteristics. It is an appropriate approach for the complex costs management in hospital settings. In *Eye Clinic 1*, the introduction of the methodology is related to human capacity release, which leads to improved productivity through process optimization and frees up practical capacity to be redistributed to activities with higher added value.

In *Eye Clinic 2*, the implementation of the methodology is focused on the introduction of measurement of achieved outcomes (health outcomes and results associated with the quality of life of patients), which is related to ensuring a competitive benefit and providing better patient care.

Overall, *four recommendations* are provided to the eye clinics, which serve as the basis for future TDABC methodology implementation with a focus on patient, health outcomes, and human and financial resources with the active participation of senior management staff during the entire process.

*The contribution* of the dissertation has both a scientific-theoretical and a scientific-applied basis and reflects the obtained results.

For the first time in Bulgaria, an external evaluation, cost analysis, process analysis, and analysis of the management structure and technical solutions in ophthalmology for patients with macular degeneration was conducted by introducing the concept of benefit-based healthcare, and in particular - implementation of the TDABC methodology.

The concept of value-based healthcare (VBHC) and the implementation of the methodology TBABC (Time Driven Activity Based Costing) are built on adequate care to achieve individual patient's goals (personal value) as well as to accomplish the best possible outcomes with the available resources (technical value).

Using a multidisciplinary strategy covering qualitative and quantitative research methods, TDABC fills the current gaps by providing evidence-based recommendations to improve outcomes and the determinants of work productivity.

### *Personal involvement of the author*

The author was personally involved in all stages of the study - planning, design development, management, coordination and control during the data collection, as well as during analysis and processing. The dissertation work demonstrates that Adriana Dacheva has in-depth knowledge, professional and personal qualities to carry out research work independently. The work is written in a stylistically good language; it gives a complete representation of the processed work.

### *Scientific publications related to the dissertation*

The PhD student has 8 published articles, of which 2 in Bulgarian and 6 in international journals as well as 7 participations in international scientific forums related to the dissertation work.

### *Abstract*

The abstract fully reflects the work of the PhD student, synthesizes the content of the dissertation and is fully compliant with the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Application and the Regulations for the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions in NCPHA.

### **CONCLUSION**

My assessment of the dissertation work is positive. The presented development is an in-depth study of an up-to-date global issue, the solution of which is provided as the implementation of an innovative and novel for Bulgaria methodology - TDABC (*valuation based on the activity and its duration*), developed by Harvard Business School. It comprises all the required elements. The study has a scientific and practical direction, and the topic is indisputably up-to-date and dissertable.

The dissertation fully meets the requirements of the Act on the Development of the Academic Staff in Bulgaria, the Regulations for the Application of the Act on the Development of the Academic Staff in Bulgaria and the Regulations on the Terms and Conditions for Acquiring Scientific Degrees and Holding Academic Positions in NCPHA for the assignment of the scientific degree "Doctor" of the scientific specialty "Social Medicine and Health Management".

The abovementioned considerations lead me to the intention to assertively propose the members of the honored scientific jury to vote positively for awarding the educational and scientific degree "Doctor" to Adriana Miroslavova Dacheva.

08.02.2023 г.

Produced by:

Assoc. Prof. Galya Tsoleva, MD, PhD

