

STATEMENT

by Prof. Dr. Boyan Atanasov Stoykov, PhD

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Appointed as a member of the scientific jury by order of the Rector of the Medical University - Varna No. R-109-408/27.09.2023.

of the dissertation work of Dr. Doichin Georgiev Nikolov,
specialist urologist - MU - Varna

with title

"CHALLENGES FOR HOSPITAL UROLOGY PRACTICE IN THE TIMES OF THE COVID-19 PANDEMIC"

for the awarding of an educational and scientific degree "Doctor" in the scientific specialty "Urology", in the professional direction 7.1 "Medicine" from the field of higher education 7. "Health and sports"

Dr. Doichin Georgiev Nikolov was enrolled as a doctoral student of independent training in the Department of Surgical Diseases of the Medical University of Varna on 21.06.2022, according to the rector's order No. P-109-252. After the development of the work, implementation of the individual study plan, accumulation of the necessary credits from training in the doctoral school, he was dismissed with the right of defense. By decision of the AC and order of the Rector of the Medical University - Varna No. R-109-408/27.09.2023. I have been elected as a member of the Scientific Jury, and on the basis of Protocol No. 1/29.09.2023, I have been appointed to prepare an opinion. The materials provided by Dr. Doichin Nikolov meet the criteria and requirements laid down in the requirements for a dissertation for the acquisition of the educational and scientific degree "doctor" at the University of Varna and the Law on the Development of the Academic Staff in the Republic of Bulgaria. The opinion is prepared on the basis of the dissertation work and the author's reference to it. The volume of work is 126 pages and is distributed as follows - introduction (1 page), literature review (39 pages), aim and tasks (2 pages), materials and methods (10 pages), results and discussion (47 p.), conclusions (1 p.), contributions (1 p.), conclusion (2 p.) references (16 p.) and publications (1 p.). Each of the sections is systematized and balanced in itself and correlated with the other sections. The

dissertation includes 40 figures, 25 tables and one appendix. 190 literary sources presenting well-established and up-to-date information on the subject were used. The abstract is synthesized in a form that allows a clear familiarization with the main information presented in the dissertation work.

Timeliness of the problem

The dissertation presented by Dr. Nikolov examines a topic of great social and medical importance. The COVID-19 pandemic has brought significant changes and challenges to healthcare around the world. In recent years, hospitals and medical personnel have faced extremely difficult situations related to the treatment of patients with this disease. Urological practice, like other areas of medicine, is also affected by the pandemic. In this context, understanding the impact of COVID-19 on urology practice and adapting hospital services are central to maintaining the quality of medical care and patient safety.

Knowing the problem

The doctoral student presents a comprehensive literature review covering both established and contemporary sources and authors. 190 sources of information are included, of which 16 are in Cyrillic and 174 are in Latin. The literature review covers one third of the dissertation and demonstrates the high level of awareness of Dr. Nikolov. It summarizes the historical data on similar pandemics and examines in detail the etiology, epidemiology, pathophysiology and clinical manifestations of this disease. Laboratory methods for early diagnosis of COVID-19 are presented in detail, as well as the consequences of the pandemic on hospital urological practice. Special attention is paid to the triage and screening of patients with this disease and the main methods of treatment are presented. The conclusions drawn at the end of the review provide sufficient grounds for discussing the topic formulated by the doctoral student in the form of the presented goals and tasks.

Goals and tasks

The set objective "To study and analyze the challenges of the impact of the COVID-19 pandemic on hospitalizations and operational activity in hospital urology practice, proposing an algorithm for behavior after prioritizing patients with various urological diseases" is discussed in the form of six clear and specific tasks.

Materials and methods

The study includes 4,764 men and 2,260 women hospitalized in the Urology Clinic at the "Sveta Marina" UMBAL - Varna with COVID-19, for the period from 2018 to 2021. By periods: from 01.01.2018 to 03.13.2020 - 4240 patients and for the period from 14.03.2020 to 31.12.2021 – 2794 patients.

The number of operations performed for the period 01/01/2018 to 03/13/2020 is 4,487, and the number of operations performed for the period 03/14/2020 to 12/31/2021 is 2,782 operations.

Results

The number of hospitalized patients in the Urology Clinic of Saint Marina UMBAL - Varna for the period from 01/01/2018 to 03/13/2020 incl. (P1) is 4230 patients. For the second period (P2) from 14/03/2020 to 31/12/2021, 2,794 patient hospitalizations were reported, indicating that the COVID-19 pandemic led to a significant increase in hospitalizations. The number of operations performed at the Urology Clinic of Saint Marina UMBAL - Varna for the period from 01/01/2018 to 03/13/2020 incl. (P1) is 4487 operations. For the second period (P2) from 14.03.2020 to 31.12.2021, 2782 operations were reported. According to the order of the operative intervention carried out, they are divided into: planned operations: 3194 pcs. (period before COVID-19) and 1,601 pcs. (period during COVID-19), emergency operations up to 6 hours after hospitalization 841 pcs. (period before COVID-19) and 767 pcs. (period during COVID-19), emergency operations between 6 a.m. and 12 p.m. after hospitalization 28 nos. (period before COVID-19) and 34 pcs. (period during COVID-19), emergency interventions between 12 and 24 hours after hospitalization 22 nos. (period before COVID-19) and 30 pcs. (period during COVID-19), emergency operations over 24 hours after hospitalization 145 pcs. (period before COVID-19) and 362 pcs. (period during COVID-19). Length of hospital stay ranged from 1 to 45 days, with an average of 8 days for the pre-COVID-19 period, and ranged from 1 to 33 days, with an average of 7 days for the period during COVID-19.

Discussion, conclusions and contributions

After performing the full regression analysis, it is reported that in the period before the onset of the COVID-19 pandemic (P1), an increase in the number of comorbidities by one led to an increase in hospital stay by 2 days, and an increase in patient age by one year leads to an increase in hospital stay by approximately half a day. While for the period in the course of the pandemic (P2), it is tendentially observed that an increase in the number of comorbidities by one leads to an increase in the hospital stay by 3 days, and an increase in the age of the patient by one year leads to an increase in the hospital stay by approximately one day.

CONCLUSIONS 1. Decrease in operational activity by nearly 24% for the period during the course of the COVID-19 pandemic. 2. Reduction of planned operations by 18% compared to the total number for both periods, and increase of emergency interventions up to 6 hours after hospitalization by 8% and after 24 hours of hospitalization by 10%. 3. A decrease in the choice of local and regional anesthesia by 6% and 1% and an increase in the relative share of general anesthesia by 7%. 4. The average operating time before and during the pandemic did not change significantly, reporting a delay of 8 minutes on average due to the increased use of personal protective equipment and strict disinfection measures. 5. The share of therapeutic procedures in patients with malignant urological diseases increased by 3.7%, while the share of patients with urolithiasis decreased by 4.4%. 6. A 6% increase in deobstructive manipulations in patients with complicated urolithiasis and a 7% decrease in patients with obstruction due to benign causes. The share of oncurological diseases remained stable (difference below 1% for both periods). 7. An increase in co-morbidities by one leads to an extended hospital stay of 3 days, and an increase in patient age by one year leads to an increase of the hospital stay by approximately one day.

CONTRIBUTIONS 1. For the first time in Bulgaria, the impact of the COVID-19 pandemic on urological operative activity is analyzed, and the presented retrospective data can support the

management of urological diseases in an emergency epidemic situation. 2. Trends and changes in the order of operative interventions, the choice of anesthesia and their duration have been identified. 3. The most appropriate therapeutic procedures for individual groups of patients with various urological diseases in the context of the COVID-19 pandemic were compared and analyzed. 4. The impact of age and comorbidities on patients' hospital stay is reported, which can help in developing individual patient management strategies and optimize their treatment and rehabilitation. 5. A diagnostic-therapeutic algorithm has been developed, tailored to the health system of the country and suitable to serve as a model in a future epidemic situation of a similar nature.

Conclusion:

The dissertation work of Dr. Doichin Georgiev Nikolov meets all the requirements for awarding the educational and scientific degree "doctor" in professional direction 7.1. "Medicine" from the field of higher education 7. "Health care and sports", doctoral program "Urology". The presented dissertation is the first in Bulgarian literature demonstrating the impact of COVID-19 on hospital urological practice. The developed diagnostic-therapeutic algorithm for the management of urological diseases according to their priority in the conditions of the COVID-19 pandemic is a valuable guide that will allow us to more successfully fight against this insidious disease.

Given the above opinion, I give a positive assessment and call on the members of the Scientific Jury to award Dr. Doichin Georgiev Nikolov the educational and scientific degree "DOCTOR" in the scientific specialty "Urology".

28.10.2023

City. Pleven

Sincerely:

/prof. Boyan Atanasov, MD/