# OPINION

**by Prof. Dr. Svetla Vasileva Staykova, MD, PhD**
Head of the Nephrology and Dialysis Clinic – St. Marina University Hospital – Varna

**About:** awarding the educational and scientific degree "Doctor" to **Dr. Kiril Zhivkov Zhelyazkov,** according to a decision under Protocol No. 51/15.12.2025) of the Faculty Council and Order of the Rector of the Medical University - Varna: No. R-109- 516/16.12.2025 on the basis of Art. 24, para. 6 and Art. 30, para. 3 of the PPZRASRB, Art. 68, para. 1 of the Regulations for the Development of the Academic Staff at the MEDICAL UNIVERSITY - VARNA
on the topic: **"COVID-19 in patients with end-stage renal failure - complications, risk factors and mortality"**

**Biographical data and career development: Dr. Kiril Zhelyazkov graduated from the Medical University - Varna, Faculty of Medicine in 2016. and in the same year he was appointed as a resident physician at the Clinic of Nephrology, Dialysis and Toxicology of the University Hospital "St. Marina" - Varna, where he continues to work to this day. In 2019, after winning a competition at the Clinic, he held the position of assistant physician, and in 2022. acquired the specialty "Nephrology".**
Additional participations and scientific research are: ERASMUS program - Wroclaw Medical University, **Participation in practical training "Masterclass dor Transplant specialist 2023" in the renal transplantation center of the Clinical Institute "Fundeni" - Bucharest, Romania.** He is a member of the Bulgarian Nephrological Society and the Union of Scientists - Varna. Dr. Zhelyazkov understands both German and English - written and spoken.

**Relevance of the topic being developed:** The infection caused by the novel coronavirus SARS-CoV-2 has triggered a global health crisis with profound medical, social and organizational consequences. Among the most vulnerable groups of patients are patients with end-stage renal disease (ESRD) undergoing chronic hemodialysis. This multiplies the likelihood of infection and makes dialysis units epidemiologically vulnerable structures. At the same time, COVID-19 leads to a number of complications specific to hemodialysis patients, including hemodynamic instability, increased blood clotting during and outside the hemodialysis procedure, and missed or shortened procedures, which further compromises their treatment. International data from numerous cohort studies show that in dialysis patients, COVID-19 is more severe and is associated with higher morbidity and mortality, reaching 20–30% in the early phases of the pandemic. For Bulgaria, there is a lack of sufficient studies that systematically analyze the characteristics of the clinical course, the factors affecting survival, and the impact on the quality of dialysis treatment. The present dissertation aims to fill this significant gap in the national scientific literature by presenting a comprehensive analysis of the clinical, epidemiological, and dialysis characteristics of hemodialysis patients in the context of the COVID-19 pandemic.

**Literary awareness: The dissertation has provided a precise and detailed overview,** presenting a thorough understanding of the risks to which dialysis patients are exposed, as well as outlining possible directions for improving clinical practice and organizational strategies in future pandemic or epidemic situations.
Systematically studies the survival and causes of death in chronic hemodialysis patients with COVID-19. Analyzes in detail the demographic characteristics (age, gender) and comorbidities (diabetes, hypertension, cardiovascular diseases) in dialysis patients, and examines the relationship between SARS-CoV-2 infection and vaccination status as predictors of hemodialysis effectiveness and clinical outcome. The establishment of a relationship between the quality of hemodialysis (measured by URR and Kt/V) and clinical outcomes, including the duration of hospitalization, severity of the course, and survival, is impressive. The main goal of Dr. Kiril Zhelyazkov's dissertation is precise and specific: an in-depth retrospective study to characterize the impact of COVID-19 on chronic hemodialysis patients in our country. It carries out a comparative analysis between patients with and without proven infection, as well as identifies the key predictors of an adverse outcome.

**Evaluation of the material and methods:** A retrospective observational cohort study was conducted at the Nephrology and Dialysis Clinic of St. Marina University Hospital. The studied cohort includes patients on chronic hemodialysis, divided into two groups: with proven COVID-19 infection and without data on past infection during the pandemic period 2020–2022. . 190 patients were included, of which group A - 101 with a positive PCR or rapid antigen test for COVID-19 and group B - 89 without confirmed infection during the follow-up period.
The methodology used is scientifically sound, reasoned and consistent with the objectives of the study. Data from the electronic hospital information system and medical records were used. Statistical analysis was performed using: Jamovi version 2.2.2., paired samples T-test and Wilcoxon W test were applied for the monitored indicators, and for the remaining variables - Independent samples T-test and Mann-Whitney U test. Multinomial logistic regression was used to identify determinants of various causes of mortality. Kaplan–Meier analysis and Cox regression helped identify independent predictors of mortality.

**Evaluation of results and discussion:** The larger section of the dissertation is a retrospective own study, with a significant place in the author's work being devoted to the study of: the relationship between cardiovascular comorbidity and mortality, emphasizing the need for proactive management of cardiovascular risk in dialysis populations, as well as strict control of blood pressure and lipid levels; optimization of anemia therapy and prevention of thromboembolic events; the importance of dialysis adequacy as a determining factor for patient sustainability. Patients with lower Kt/V values have more complications and a higher risk of mortality, maintaining vascular access stability should be considered a priority in pandemic preparedness planning for dialysis units. The results also confirm the significant benefit of vaccination in terms of survival, and this effect was maintained throughout the two-year follow-up. The study conducted by Dr. Zhelyazkov highlights the need for targeted strategies — prioritizing vaccination, optimizing dialysis, treating cardiovascular risks, and personalized monitoring — to protect one of the most vulnerable segments of the patient population in the post-pandemic era.

**The discussion** is presented in an accessible manner, in accordance with the results obtained and compared with studies and research on the topic in the current foreign literature.
Survival modeling confirms the leading role of both infectious status and vaccination, which is consistent with international data on improved outcomes in dialysis populations. .Dialysis adequacy emerges as an important but nuanced factor. The analyses of the three cohorts followed not only correspond to

international reports, but also highlight specific characteristics of our population that help explain the results obtained.

Based on the results obtained, 8 main conclusions have been made, which are logically and correctly formulated, follow the data from the results and meet the set goals and objectives.

**Scientific contributions**: The dissertation candidate has indicated 4 contributions of a theoretical nature and 5 of a practical-applied nature, which shows the relevance of the topic. I accept all the indicated contributions. They are significant, well-founded and realistically formulated.

**Scientometric criteria:** Dr. Kiril Zhelyazkov has presented 4 publications on the topic, of which he is the first author of 2 of them. The dissertation demonstrates that the author possesses in-depth theoretical knowledge and professional skills in the scientific specialty of nephrology, demonstrating qualities and skills for independent conduct of scientific research.
The dissertation is distinguished by its thoroughness and consistency in examining the problem. The abstract is stylishly designed, well illustrated and flawlessly reflects the essence of the dissertation. The key strength of this study lies in its comprehensive design, including three complementary cohorts, which together provide a multidimensional perspective on the effects of COVID-19 in dialysis patients.

**In conclusion, COVID-19 has increased the significant risks faced by dialysis patients, but it has also revealed clear opportunities for treatment and prevention. A multi-pronged approach – combining aggressive vaccination programs, proactive cardiovascular disease management, optimizing dialysis adequacy, and stability of access – offers the most effective path to improving survival.**

I define the dissertation of Dr. Kiril Zhelyazkov as a current and significant scientific work, with great practical significance. The dissertation work of Dr. Kiril Zhelyazkov submitted for opinion contains original contributions of an applied nature, which are the personal work of the author..

**Based on the presentation made, I strongly suggest that the members of the Scientific Jury vote positively to award the educational and scientific degree "Doctor" to Dr. Kiril Zhelyazkov.**

27.01.2026г.

Prof. Dr. Svetla Staykova, MD, PhD