

**"VICTOR BABEȘ" UNIVERSITY OF  
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**MULTIDIMENSIONAL ASSESSMENT IN PULMONARY  
PATHOLOGY, FROM ACUTE IMPACT TO CHRONIC  
IMPLICATIONS**

**ABSTRACT**

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## ABSTRACT

Graduating from a healthcare high school in 1991, I discovered since then that my vocation is to heal people. Although at the beginning of the faculty, I imagined my future in a city in the north of the country, my professional path was different; ending up practicing pulmonology at the "Victor Babeș" Clinical Hospital for Infectious Diseases and Pneumophthisiology in Timișoara. This would not have been possible if my mentor, Univ. Professor Dr. Voicu Tudorache would not have seen a certain potential in me.

The habilitation thesis entitled MULTIDIMENSIONAL EVALUATION IN PULMONARY PATHOLOGY, FROM ACUTE IMPACT TO CHRONIC IMPLICATIONS thus comes as a crowning of my work so far, being the result of a laborious activity, carried out over several years, in which, the work from the patient's bed merged with research.

The thesis is developed according to the recommendations of the Ministry of Education and Research (Order of the Minister of Education and Research no. 3121/27.01.2015) as well as the Guide for the Preparation and Editing of the Qualification Thesis within the "Victor Babeș" University of Medicine and Pharmacy Timișoara, developed on based on the recommendations of the National Council for Attestation of University Titles, Diplomas and Certificates (CNATDCU).

The habilitation thesis presents the results of scientific, academic, and medical activity since 2002, when I became a member of the Pulmonology team.

The work is organized into four parts:

- (i) the first part is dedicated to scientific activity, (ii) the second part is dedicated to academic activity and academic achievements, (iii) the third part is dedicated to professional activity, and (iv) the last part includes the academic career development plan.

The first step in the scientific activity was the doctoral thesis, with the title I „Interaction between obstructive sleep apnea and methabolic syndrome", defended in 2010 thesis, which was the result of my first research in the field of somnology. This field was then in its infancy in Romania.

Afterward, postdoctoral concerns included numerous kinds of research in the somnology field and other pulmonary pathologies, acute and chronic. Of course, the emergence of the Covid 19 pandemic led me to study this new pathology, which is highly challenging and has numerous implications.

In addition to the scientific activity, I was also involved in the research activity, participating as an investigator in more than 25 clinical trials.

So far, I have published in ISI-indexed journals, full text and abstracts 82 papers, 33 ISI full-text articles (13 main authors, 20 co-authors), 48 papers published as abstracts in ISI-indexed journals (16 first author). The research results were published in journals with a high impact on the scientific community, accumulating a Hirsch index of 8 (219 citations) and the cumulative impact factor of the works published as the main author FCIAP= 43.2 (33 articles).

I have always considered modern medicine team medicine, so my research activity was carried out within multidisciplinary teams, in which I collaborated with radiologists, pediatricians, and psychiatrists from the country and abroad.

The most recent research topics addressed sleep-related pathology and those related to SARS Cov2 virus infection frequent pathologies with significant medical and social consequences. Also, although they did not materialize in internationally published studies, I have an important activity in the field of Tobaccology, where I have several publications and have been involved in organizing training for younger pulmonologist colleagues.

The first direction of research addressed in the present thesis included studies related to the pathology induced by SARS CoV2 virus infection and included the following studies:

- *Is Lung Ultrasound Helpful in COVID-19 Neonates?-A Systematic Review.* Stoicescu, E. R., Ciuca, I. M., Iacob, R., Iacob, E. R., **Marc, M. S.**, Birsasteanu, F., Manolescu, D. L., & Iacob, D. (2021). *Diagnostics*, 11(12), 2296.
- *The effect of comorbidities and complications on COVID-19 mortality: a detailed retrospective study in western Romania.* **Marc M.S.**, Roșca D., Fira-Mladinescu O., Oancea C., Pescaru C.C., Velescu D., Wellmann N., Motofelea, A.C., Ciuca, I.M., Saracin, K., Manolescu D. *Journal of Personalized Medicine*. Volume 13, Issue 11.
- *Massive Spontaneous Pneumomediastinum-A Form of Presentation for Severe COVID-19 Pneumonia.* Pescaru CC., **Marc MS.**, Costin EO., Pescaru A., Trusculescu AA., Maritescu A., Suppini, N., Oancea Cl., *Medicina - Lithuania*, Volume 58, Issue 11.

The first scientific article aimed to evaluate the effectiveness of lung ultrasound in neonatal populations affected by SARS-CoV-2 virus infection. Even though there has been a limited number of publications focusing on lung ultrasonography in neonates with COVID-19 pneumonia, these studies demonstrate the utility of lung ultrasound in detecting lung lesions in neonates, thus opening the way to new research directions with practical applicability importance.

The following study looked at the impact of comorbidities and complications during hospitalization on patients with COVID-19 disease. The study was relevant, highlighting that the presence of comorbidities has a major impact on the evolution of the disease. In the same context, the following article presented the case of a patient with an infrequent complication outside of the SARS-CoV2 pandemic but which was more common during this infection, namely pneumomediastinum.

Another particularly important aspect related to the pandemic with the SARS-CoV2 virus was the appearance of sequelae related to the disease. These aspects were also highlighted in our following research.

- *Longitudinal Analysis of Pulmonary Function Impairment One Year Post-COVID-19: A Single-Center Study.* Suppini N., Fira-Mladinescu O., Traila D., Motofelea, A.C., Marc, M.S., Manolescu D.; Vastag E.; Maganti R.K.; Oancea C. *J. Pers. Med.* 2023, 13, 1190.
- *The Effects of COVID-19 on Skeletal Muscles, Muscle Fatigue and Rehabilitation Programs Outcomes.* Pescaru CC., Maritescu A., Costin EO., Traila D., **Marc MS.**, Trusculescu A.A., Pescaru A., Oancea Cl. *Medicina-Lithuania*, Volume 58, Issue 9
- *A systematic review of telemedicine driven pulmonary rehabilitation after the acute phase of COVID 19.* Pescaru C.C., Crisan A.F., **Marc M.**, Trusculescu A., Maritescu A., Pescaru A., Sumenkova A., Bratosin F., Oancea C., Vastag E. *Journal of Clinical Medicine*, volume 12, Issue 14.

Thus, in the first article, lung function was evaluated in patients with COVID-19 disease one year after recovery. The study is relevant in the context in which some patients developed fibrotic lesions and implicitly a restrictive respiratory syndrome, which, in a certain percentage, persisted even after a more extended period.

Also, with colleagues from the Department of Respiratory Rehabilitation, we analyzed and reviewed the effects of rehabilitation programs for these patients and their long-term impact.

The COVID-19 pandemic had an overwhelming impact on the planet, from all points of view, and forced us to adapt to social distancing rules so that a branch in a pioneering stage, namely telemedicine, got unprecedented momentum. Thus, the following article evaluated the effectiveness of telemedicine-led rehabilitation programs in patients who presented with SARS-Cov2 virus infection after the acute phase.

The advent of vaccines against this changed the dynamics of the evolution of the pandemic, so in the study below, we performed a review and meta-analysis that included several articles to highlight the role of vaccination.

- *Impact of Pre-Infection COVID-19 Vaccination on the Incidence and Severity of Post-COVID Syndrome: A Systematic Review with Meta-Analysis.* Milena Adina Man, Daniela Rosca, Felix Bratosin, Ovidiu Fira-Mladinescu, Adrian Cosmin Ilie, Sonia-Roxana Burtic, Ariadna Petronela Fildan, Camelia Melania Fizedean, Adelina Maria Jianu, Rodica Anamaria Negrean, **Monica Steluta Marc.** *Vaccines* 2024, Vol. 12, Issue 2, 189, **ISSN: 2076-393X.**

A constant concern related to acute bacterial pathology, together with colleagues from the Department of Pediatric Pulmonology, was represented by the study of pneumonia in children, where we used lung ultrasound as a diagnostic tool superior to irradiating radiography, reflected in the first study, and as a method of noninvasive monitoring of children with pneumonia, which is the most common cause of death in children internationally, developing the first ultrasound score helpful in childhood pneumonia: highlighted in the following works, which is used by researchers as an objective parameter to evaluate and monitor the evolution of pneumonia pediatrics.

- Ciuca IM, Dediu M **Marc MS**, Lukic M, Horhat DI, Pop LL. Lung Ultrasound Is More Sensitive for Hospitalized Consolidated Pneumonia Diagnosis Compared to CXR in Children. *Children.* 2021; 8(8):659.
- Ciuca I.M., **Marc M.**, Nicolae-Mircov F., Dediu M., Pop L. L. Ultrasound pneumonia dimensions in children and inflammation, *European Respiratory Journal* Sep 2020, 56 (suppl 64) 1154
- Ciuca I.M., **Marc M.**, Dediu M., Popin D., Pop L. Lung ultrasound score for pediatric pneumonia surveillance-ERS 2022 Congress Barcelona .

The following research direction referred to chronic pathology, a widespread pathology in clinical practice. In this field, I have published several articles as lead author and co-author:

- *Endothelial dysfunction: The possible link between cardiovascular comorbidities and phenomenon of inflammaging from COPD.* Tudorache E., Fira-Mladinescu O., Traila D., **Marc M.**, Rajnoveanu RM., Tofolean DE., Fildan, AP.-, *Medicine*, Volume **101**, Issue **33**.
- *Self-reported sleep disturbance and mild cognitive impairment in COPD patients with severe airflow limitation.* Barata PI., **Marc MS.**, Tudorache E., Frandes M., Crisan AF., Olar DC., Oancea C., *Clinical Respiratory Journal* 2021, Volume 15, Issue 7

In the first study presented in this subchapter, it is highlighted that endothelial dysfunction is a factor that can link cardiovascular comorbidities and the phenomenon of "inflammaging" in COPD. It is suggested that certain specific biomarkers, such as endothelin-1 (ET-1), would be helpful for a more faithful assessment of COPD-related cardiovascular risk in elderly patients without obvious signs of systemic inflammation.

COPD patients often suffer from sleep-disordered breathing, and the prevalence of this breathing disorder and cognitive impairment tends to increase with age. Cognitive function is influenced by education, physical activity, age, smoking status, and sleep quality. The following study observed that COPD patients with severe airflow limitation typically experience poor sleep quality and cognitive function. A notable association was identified between cognitive function and sleep quality.

COPD progression is worsened by exacerbations, the acute worsening of symptoms that require changes in treatment. Exacerbations have a significant impact on health, contribute to disease progression, and are associated with high mortality. Recognition of

exacerbation risk factors, especially in severe cases, is crucial for efficient management. In the following studies, we highlighted the role of risk factors in developing exacerbations.

- *Risk factors of chronic obstructive pulmonary disease exacerbations.* Hoge SP., Tudorache E., Fildan AP., Fira-Mladinescu O., **Marc M.**, Oancea C. *Clinical Respiratory Journal*, Volume 14, Issue 3
- *The Impact of Air Pollution on Frequent Exacerbations among COPD Patients: An Observational Study on the Population of Western Romania.* Bala GP., Timar B., Gorun F., Motisan R., Pescaru C., Tudorache E., **Marc M.**, Manolescu, D., Citu C., Oancea C.- *Journal of Clinical Medicine*, Volume 11, Issue 15.
- *Airborne Particulate Matter Size and Chronic Obstructive Pulmonary Disease Exacerbations: A Prospective, Risk-Factor Analysis Comparing Global Initiative for Obstructive Lung Disease 3 and 4 Categories.* Bala G.P., Rosca, O., Bratosin F., Shetty U.S.A., Vutukuru S.D., Sanda I.I., **Marc M.**, Fira-Mladinescu O., Oancea, C. - *Journal of Personalized Medicine*, Volume 13 Issue 10.

The first article aims to outline common risk factors and triggers for COPD exacerbations and discuss their significance concerning exacerbation severity. The important role of infections, both viral and bacterial, but also the role of other risk factors, such as pollution, is highlighted.

In the following studies, we highlighted the importance of pollution in COPD exacerbations in patients from our clinic's relevant research because few studies have been conducted in our geographic area.

Also, the role of respiratory rehabilitation in COPD patients is clearly proven. The objective of the following study was to introduce a respiratory muscle training regimen using a mobile phone application adapted for people with COPD over six months, with participants participating in sessions online supervised by a physiotherapist specializing in pulmonary rehabilitation. The research evaluated the effects of training on lung capacities, maximal inspiratory and expiratory pressures (MIP/MEP), and diaphragm excursion, serving as indicators for tracking improvement in respiratory function.

- *Respiratory muscle training program supplemented by a cell-phone application in COPD patients with severe airflow limitation.* Barata PI., **Marc MS.**, Tudorache E., Manolescu D., Olar CD., Frandes M., Oancea C., , *Respiratory Medicine* 2021, Volume 190.

In relation to interstitial lung pathology, the research themes and the relevance of the studies carried out are as follows:

- *Bronchoalveolar lavage: role in the evaluation of pulmonary interstitial disease* Hoge SP., Tudorache E., Pescaru C., **Marc M.**, Oancea C. *Expert Review Of Respiratory Medicine*, Volume 14, Issue 11.
- *Correlation between Transthoracic Lung Ultrasound Score and HRCT Features in Patients with Interstitial Lung Diseases.* Man MA., Dantes E., Hancu BD., Bondor Cl., Ruscovan A., Parau A., Motoc NS., **Marc M.**, *Journal of Clinical Medicine* 2019, Volume 8, Issue 8.
- *ANCA-associated vasculitis in idiopathic pulmonary fibrosis A case report and brief review of the literature.* Traila D., **Marc MS.**, Pescaru C., Manolescu D., Fira-Mladinescu O., *Medicine* 2022, Volume 101, Issue 9.
- *Large Lung Consolidation: A Rare Presentation of Pulmonary Sarcoidosis.* **Marc MS.**, Pescaru CC., Costin EO., Crișan AF., Maritescu A., Pescaru A., Suppini N., Olteanu GE., Traila D., Oancea C., Manolescu D, *Life* 2024, Volume 14, Issue 1.
- *Physical Activity and Respiratory Muscle Strength in Patients with Sarcoidosis: An Observational Study.* Pescaru, C., Frandes M., **Marc M.**, Traila D., Pescaru A., Oancea C.-, *International Journal of General Medicine*, Volume 15, volume 15.

The first study is a review that highlights the usefulness of bronchoalveolar lavage (BAL) in the diagnostic approach of interstitial lung disease (ILD). BAL is a noninvasive and well-tolerated procedure that is a crucial diagnostic tool for various lung pathologies. The combination of clinical, radiological, and BAL data helps to establish more accurate diagnoses of DIP, potentially avoiding more invasive procedures such as surgical lung biopsy.

Due to its complexity, diffuse interstitial pathology is sometimes challenging to diagnose. High-resolution computed tomography (HRCT) is the gold standard. Still, chest ultrasound has gained more and more credit in recent years. Our study aimed to evaluate the correlation between LUS and HRCT scores and the association with symptoms and degree of pulmonary function impairment in patients with ILD. LUS is a useful screening tool for ILD in connective tissue diseases.

As a center of expertise in interstitial pathology, we are faced with a varied case history. Thus, starting from a case from our own experience and data from the literature, we suggested that the association of idiopathic pulmonary fibrosis with ANCA-positive vasculitis could represent a distinct phenotype with therapeutic and prognostic implications. The detection of ANCA antibodies should be considered in idiopathic pulmonary fibrosis as a method of immunological screening, both in this type of patient's diagnostic and monitoring phases.

Also, from my own case history, I highlighted in the following study the fact that sarcoidosis can raise numerous differential diagnosis problems in clinical practice, one of them being bronchopulmonary cancer. The identification of pulmonary sarcoidosis poses difficulties due to its varied manifestations, our aim being to highlight an atypical presentation, such as a pulmonary mass, thus emphasizing the importance of exploring different diagnostic options.

In the last study presented in this subchapter, we highlighted the role of respiratory rehabilitation programs in patients with sarcoidosis at different stages of the disease and a comprehensive analysis of physical capacity and respiratory muscle strength compared to a control group.

In the last sub-chapter of the first part, we covered several areas of interest, namely somnology, bronchopulmonary cancer, and cystic fibrosis.

My interest in the field of somnology began at the beginning of my residency when this sub-branch of pulmonology was less known in our country.

In this field, we have published the following studies, trying to show the impact of sleep apnea syndrome on the quality of life of patients with this condition and on comorbidities.

- *A Narrative Review of Self-Reported Scales to Evaluate Depression and Anxiety Symptoms in Adult Obstructive Sleep Apnea Patients* Velescu D.R., **Marc M.S.**, Trăilă D., Pescaru C.C., Hogeia P., Suppini N., Crișan A.F., Wellmann N., Oancea C. *Medicina* 2024, 60(2), 261.
- *CPAP Therapy on Depressive and Anxiety Symptoms in Patients with Moderate to Severe Obstructive Sleep Apnea Syndrome* Velescu DR., **Marc M.**, Manolescu D., Traila D., Oancea C. *Medicina-Lithuania*, Volume 58, Issue 10.
- *Impact of CPAP Therapy Adherence on Global Cognition in Patients with Moderate to Severe Obstructive Sleep Apnea: A One-Year Follow-Up* Velescu DR., **Marc MS.**, Pescaru CC., Traila D., Vastag E., Papava I., Motofelea AC., Ciuca IM., Manolescu D., Oancea C., *Medicina-Lithuania*, Volume 59, Issue 5.
- *Impact of moderate to severe obstructive sleep apnea on the cognition in idiopathic pulmonary fibrosis* Tudorache V., Traila D., **Marc M.**, Oancea C., Manolescu D., Tudorache E., Timar B., Albai A., Fira-Mladinescu O. -, *Plos One*, Volume 14, Issue 2.

- *Sleep Quality Aspects in Post-COVID-19 Patients.* Muntean I., **Marc M.**, Gheorghevi C., Diaconu GA., Feraru N., Sion D., Nemes R.M., Mahler B. *Journal of Personalized Medicine*, Volume 13, Issue 7.

The first study in this subchapter is a narrative review that aims to provide clinicians and researchers with a comprehensive picture of available scales designed to screen for depression and anxiety and assess their severity in people with obstructive sleep apnea (OSA). Due to the increased frequency of depression and anxiety in patients with sleep apnea syndrome, screening for these conditions is essential. However, it is important to interpret the results, clinical evaluations, and other objective measures for a more accurate diagnosis.

In the following studies, the focus was on the impact of CPAP therapy on depression and anxiety associated with OSA, but also on cognitive decline in patients with this condition. The patients were followed dynamically in all cases, and the results were compared with those of the control group. The conclusions that emerged were that an efficient treatment of SASO also positively impacts comorbidities.

The study recommending somnographic screening in patients with pulmonary fibrosis documents the presence of a mild cognitive deficit only in forms of idiopathic pulmonary fibrosis that are associated with various types of sleep disturbances.

The COVID-19 pandemic and infection control measures have been associated with increased anxiety, stress, depression, and decreased sleep quality. The study carried out in collaboration with my colleagues showed that infection with the SARS-CoV-2 virus negatively affected sleep quality and, consequently, the general quality of life. Poor sleep quality persisted in these patients at the baseline visit and the 6-month reassessment, suggesting that sleep disturbances persist over time, forming part of the post-COVID-19 syndrome. The study underscores the importance of investigating and individualizing sleep disorders in post-COVID-19 patients as part of routine care.

Lung cancer is the leading cause of cancer death worldwide. Due to late-stage diagnosis, the prognosis remains poor despite advances in therapy. Consequently, there is a need for noninvasive or minimally invasive diagnostic tools to enable early detection and intervention. Together with my colleagues, I conducted several studies, given the relatively high frequency of this pathology in our clinical practice.

1. *The Association of IFN- $\gamma$ , TNF- $\alpha$ , and Interleukins in Bronchoalveolar Lavage Fluid with Lung Cancer: A Prospective Analysis* Hoge P., Tudorache E., Fira-Mladinescu O., **Marc M.**, Manolescu M., Bratosin F., Rosca O., Mavrea A., Oancea C. *Journal of Personalized Medicine* 2023, Volume 13, Issue 6, <https://doi.org/10.3390/jpm13060968>
2. *Serum and Bronchoalveolar Lavage Fluid Levels of Cytokines in Patients with Lung Cancer and Chronic Lung Disease: A Prospective Comparative Study* - Hoge P., Tudorache E., Fira-Mladinescu O., **Marc M.**, Velescu D., Manolescu D., Bratosin F., Rosca O., Mavrea A., Oancea C. *Journal of Personalized Medicine*, Volume 13, Issue 6, DOI 10.3390/jpm13060998, FI= 3.508.
3. *Differential Outcomes of VATS and Open Surgery in Lung Cancer Patients with Antecedent Oncological Diagnoses.* Tanase B.C.; Burlacu A.I.; Nistor C.E.; Horvat T., Oancea C.; **Marc, M.**; Tudorache, E.; Manolescu, D.J. *Pers. Med.* 2023, 13, 1498. FI 3.4
4. *A Retrospective Analysis Comparing VATS Cost Discrepancies and Outcomes in Primary Lung Cancer vs. Second Primary Lung Cancer Patients* Tanase BC., Burlacu AI., Nistor CE., Horvat T., Oancea C., **Marc M.**, Tudorache E., Mateescu, T., Manolescu D. *Healthcare*, Volume 11, Issue 12, DOI 10.3390/healthcare11121745, FI= 2.8.

Chronic inflammation plays a crucial role in the development and progression of lung cancer, with inflammatory cytokines released by both immune and tumor cells being implicated in various stages of the disease. Cytokines such as IFN- $\gamma$ , IL-1, IL-2, IL-4, IL-6, IL-10, IL-12p70, and TNF- $\alpha$  are particularly relevant, influencing the immune response and tumor growth. Recognizing the potential of these cytokines as biomarkers for diagnosis, prognosis, and assessment of treatment response, ongoing research aims to assess their levels in both blood and lavage fluid. It could provide new insights into patients' clinical and therapeutic management. The first two studies sought to provide some new data on the association between the levels of various pro-inflammatory cytokines and lung cancer, bronchoalveolar cancer, comparing patients with lung cancer to those with benign lung diseases.

The following two studies addressed minimally invasive surgical methods useful in diagnosing lung cancer. Thus, according to the studies, it is shown that patients with a history of cancer do not show any significant difference in long-term results between VATS (video-assisted thoracoscopy) and the type of intervention. Still, VATS is associated with shorter duration of surgical maneuvers, shorter hospital stays, and lower complication rates while maintaining good oncologic outcomes. Also, as shown in the last study, the utility of VATS is comparable in patients with primary or secondary lung cancer, but hospital length of stay and costs are higher in the latter case.

The last part of the scientific activity is dedicated to cystic fibrosis. This is a polymorphic condition, the evolution of which is associated with multiple complications, but the lung damage dictates the prognosis. Together with colleagues from the Department of Pediatric Pneumology, I collaborated on several studies:

- *Lung ultrasound in Children with Cystic Fibrosis in Comparison with Chest Computed Tomography: A Feasibility Study.* Ciuca IM, Pop LL, Dediu M, Stoicescu ER, **Marc MS**, Manea AM, Manolescu DL. *Lung Diagnostics.* 2022; 12(2):376.
- *How useful is the lung ultrasound in cystic fibrosis?* Ciuca I, Pop L, **Marc M**, Oancea C. *European Respiratory Journal* Sep 2016, 48 (60) PA1261
- *Factors Influencing Lung Function in Patients with Cystic Fibrosis in Western Romania.* Dediu M, Ciuca IM, **Marc MS**, Boeriu E, Pop LL. *Journal of Multidisciplinary Healthcare* 2021;14:1423-1429
- *Vitamin D(25-OH-cholecalciferol) in Cystic Fibrosis and the Relations with Cholesterol and Proteins.* Ciuca IM, Pop LL, Dediu M, Tanasescu SA, Ardelean F, Iovanescu G, Boeriu E, Vlad CD, **Marc MS**, Guta BA. *Rev. Chim.* 2019;70(9):3185–7.
- *Microbiology Characteristics Among Cystic Fibrosis Patients in Western Romania.* Ciuca, I., Pop, L., Rogobete, A., **Marc, M.**, Tamas, L., & Horhat, F. (2018)., *Central European Journal of Clinical Research*, 2018(1), 76-82.

The first study addressed, for the first time at an international level, the role of lung ultrasound as a method of diagnosis and monitoring of specific cystic fibrosis lesions, the ultrasound results being compared with those obtained by computer tomography. Also, in the following studies, the risk factors regarding pneumopathy associated with cystic fibrosis were studied, including the role of vitamin D in patients with cystic fibrosis and the implications of the characteristic microbiome in these patients.

In the second chapter, I included my academic achievements, in which I mentioned and detailed the didactic activity, from the involvement in practical works and courses to the organization of scientific medical events, such as the "Pneumoclinics" Symposium, addressed both to pulmonologists and residents and students. Coordination of undergraduate theses in General Medicine, General Medical Assistance, and Master, coordination of Smart Diaspora" projects.

Together with my colleagues from the Pulmonology Discipline, I developed Pulmonology courses for both students and residents. I participated as a co-author in developing the National Somnology Guide, the first edition, under the auspices of the National Society of Pneumology and the Ministry of Health. I am also a co-author of specialized medical books on a subject related to Tobaccology, a field in continuous progress in our country. I am a reviewer for 4 journals indexed in Clarivate's Web of Science.

In addition to the teaching activity, I am an attending physician in the Pulmonology specialty within the II Pulmonology Department of the "Victor Babeș" Clinical Hospital for Infectious Diseases and Pneumophthisiology Timișoara, having a certificate in Somnology, Noninvasive Ventilation, and Health Services Management.

In the final chapter, my academic and scientific development projects are presented to continue the research activity in the field of Pulmonology, with both national and international connections that will raise Timisoara pulmonology. Thus, I set out to develop the Preventative Medicine and Healthy Lifestyle segment in the pulmonology sphere, starting from the notion of Tobaccology and Sleep Medicine, segments in which the multidisciplinary involvement, especially of young researchers, is particularly important. I believe that many practical things can be done in terms of preventative medicine, both primary, secondary, and tertiary prevention so that both the healthy population and patients with various pathologies can benefit from practical advice and medical education. Together with my younger colleagues, I have built a dynamic and eager-to-progress team, a team that already has participation in national and international congresses. I want some of them to become my Ph.D. students so that they can continue these activities.

In the long term, I want to continue academic and scientific activity in pulmonary disease, developing a multidisciplinary center of applied prevention with international connections.

The bibliography and the list of ten representative scientific papers conclude this habilitation thesis.

In conclusion, my habilitation thesis presents my professional path and academic, professional, and scientific achievements, bringing some arguments for my certification as a doctoral thesis supervisor.

We developed study materials for students and resident doctors, focusing on the pediatric pulmonary specialty, the only specialty in the country with a manual dedicated to pediatric pulmonary residents in Timișoara.