

UNIVERSITY TITU MAIORESCU

HABILITATION THESIS

**INNOVATIVE APPROACHES IN
NEONATOLOGY. FROM THE DELIVERY
ROOM TO THE NEONATAL INTENSIVE CARE
UNIT AND THE FOLLOW UP PROGRAM FOR
HIGH RISK NEONATES**

ADRIAN IOAN TOMA

UNIVERSITY TITU MAIORESCU

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SUMMARY OF THE THESIS

The thesis represents a synthesis of my professional, academic and scientific pathways after obtaining the PhD title and also a presentation of the future projects. The material is structured according to the CNATDCU in three distinct sections.

Section A represents a review of my professional, academic and scientific pathways after obtaining the PhD title

From the professional perspective, when obtaining a PhD title, I was already specialist in neonatology and I had an obtained competency in general ultrasonography. After this, I became a primary doctor in neonatology (2005), specialist in paediatric neurology (2012) and competencies in management of healthcare services (2009), electroencephalography (2013) and electromyography (2015). Regarding the professional position, I was a researcher in neonatology (2003-2006), then head of the neonatology unit, both at "Panait Sârbu" Obstetrics and Gynecology Hospital (2006-2010) and head of the neonatology unit at Life Memorial Hospital (then Medlife Medical Park) since October 2010.

Regarding the academic and training qualifications, I have been certified S.T.A.B.L.E.instructor since 2004 to the present day and trainer in the field of neonatal emergencies, certified since 2007 by the Ministry of Health and Ministry of Education. The university career started in 2014, when I became after an exam Associate Professor of Neonatology at the University Titu Maiorescu, Faculty of Medicine. Since 2022 I became also coordinator of the residency program in neonatology at the same university – the only neonatology residency program in a private hospital in Romania

Besides the role in the training of the medical students and residents, it is to be mentioned also the important role in several continuous medical education programs developed at national level. I was the national coordinator (from International Relief Teams – the implementing organisation) of the Healthy Baby Romania program, coordinating between 2004 and 2010 the training of trainers in the field of neonatal emergencies in all the university centres in Romania – 20 courses taught together with trainers from the US. Also, I was trainer and local training site coordinator in the RoNeonat program (2008-2010). I served as research and training expert in two national training projects financed by EU (INTENSIV – 2018-2022 and PracTINNg –since 2025 – a project still ongoing). In this position I coordinated at the national level the process of training of the physicians and nurses from the university centres in the field of neonatal resuscitation and neonatal intensive care. I am also coordinating the STEHOSCOPE program – realized in collaboration between the University Titu Maiorescu and LDS Charities –the aim of the project is to train the physicians and nurses at levels I and II in the field of Neonatology and improvement of the physician-nurse collaboration .It is worth to mention also the program Care With Care organized by Save the Children Romania –where I coordinated between 2022 and 2024 the training of more than 300 physicians in POCUS:

Also as a didactic and academic activity there should be mentioned the publishing in Romanian of two books as main author and 10 chapters in medical textbooks and the publishing in English of one book and three chapters of medical textbooks and the coordinantion of two national guidelines and revision of many others, also publishing in 2025 of the National Standards of POCUS as the first author.

My scientific activity has been always focused on the analysis of the impact of the new technologies in the neonatal medicine and the ability to predict the prognosis in the case of the graduates of the Neonatal Intensive Care units. The following directions of research could be mentioned:

- Delivery room resuscitation and the management of the neonate in the delivery room
- The respiratory pathology of the neonate

- Neonatal neurology and the follow up of the neonate at risk of neurologic and neurodevelopmental sequelae.

In the field of neonatal resuscitation I studied from 2005 to 2010 the effect of the resuscitation with room air, being one of the few researchers doing similar studies at that time. My studies have been very well received worldwide and were cited in reviews and international guidelines. I have been also concerned with the analysis of the cases of perinatal depression that could mimic perinatal asphyxia and with the use of lung ultrasound in the delivery room.

Regarding the neonatal respiratory pathology, two directions of research could be identified: the use of lung ultrasound in the delivery room and in the neonatal intensive care unit and the investigation of the respiratory outcome of the former premature neonates. We were the first centre to use the lung ultrasound in the neonate on a large scale and we investigated the possibility that the lung ultrasound could be used in the delivery room in order to monitor the aeration of the lungs and to anticipate the type of respiratory support needed and, using a quality management project, we demonstrated that, by a correct use of the lung ultrasound a significant reduction in the number of x-rays and the irradiation of the patient could be achieved. We also characterized, by analysing the current medical knowledge in the field, the respiratory outcome of the former premature neonates and the modality of organizing a respiratory follow up program of the former premature infants and also the national coverage of the RSV infection prophylaxis in the newborn.

The main field of research, also explored during the doctoral thesis, has been the neonatal neurology and the follow up of the NICU graduate at risk. I completed studies concerning the standardization in the field of neonatal neurology in Romania, the patterns of the deep cerebral venous system and their association with the germinal matrix/intraventricular haemorrhage, the correlation between the head ultrasound performed at TEA and the GMA patterns at TEA and the neurologic prognosis at 12-24 months corrected age. I also investigated the role of the early intervention in the neurologic prognosis and the prognostic value of the different neurologic examination of the neonate and infant (GMA and Amiel Tison Examinations) performed at TEA and 12 months CA in predicting the neuromotor outcome at 2 years, succeeding to demonstrate by using a logistic regression model that combining the two methods is increasing the predictive value.

Section B is describing the ability to coordinate the research teams and to organize and manage educational activities.

Regarding the research teams, it is to mention that I have been a part of two research consortiums – one national 2008-2010 – Project 42143/1.10.2008 – Non-syndromic deafness in children) and one EU funded project -2010 (Proiect Nr 42143/1.10.2008 Surditatea non-sindromică la copil.) și unul european 2010-2019 (ProiectulNEOCIRC – Dobutamine for NEOnatal CIRCulatory failure by novel biomarkers – collaborative project through FP7 Health 2011 Single stage – project number 282533) and at present I am a part of an European Research Project Consortium (250061 NEODATA+: A Multimodal European Health Data Space for Personalised Neonatal CareLead: Elisabeth Kooi& Artur Jaschke) and a European Study (SafeBoosC IIIv – regarding the use of NIRS in neonatal intensive care. In all these projects I coordinated the research activities at the level of the investigation site (Panait Sărbu Hospital or LMH).

It is to be said that during all my research activity I attempted to form research teams. As it could be noticed from the list of published papers and abstracts, I always encouraged the residents and young doctors to participate in research and I included them as part of all my research projects. As a consequence, a number of colleagues trained by myself became well known specialists in certain fields and the young residents fulfilled research projects of their own under my supervision and these resulted in publications in scientific journals and winning

prizes at the national scientific conferences. As a consequence of those projects, two of my residents were admitted in the doctoral school, under the coordination of other colleagues.

Concerning the coordination of the training teams, as previously mentioned, I coordinated two national training programs (Healthy Baby Romania and Stethoscope) I served as research and training expert in two EU financed programs (INTENSIV and PracTINNg) – coordinating the training of the physicians and nurses and I coordinated the training in Care with Care Project at national level and a training Centre in RoNeonat,

The activity of coordination in the field of training consisted also in coordinating the Romanian editions of the training manuals – the 4th, 5th, 6th and 7th edition of the Neonatal Resuscitation Program of AAP and AHA and the 5-th Edition of the S.T.A.B.L.E. Program Training Manual

Section C is shortly describing the perspectives and future plans in the professional, academic and research fields.

As professional future plans, I would attempt to maintain the actual state – primary physician in neonatology, head of the neonatal unit and member of the board of the Romanian Neonatology Association. In addition I am aiming to obtain the title of primary physician in neonatal neurology and to obtain a place in one of the committees of Newborn Brain Society. Also, I will continue to elaborate and up-date the practice guidelines of the Romanian Neonatology Association.

Concerning the academic field, I am aiming, after obtaining the Habilitation, obtaining the title of Professor and new training competencies: neonatal resuscitation instructor certified by ERC and instructor of GMA, Also, I am planning to elaborate, together with my colleagues a course support for the neonatology.

I would be also involved in writing the second volume of Procedures in Neonatology, where I will be coordinating a number of chapters and the future Textbook of Neonatology edited by the Romanian Neonatology Association. As a personal project, I will write volume II of the Neonatal Ultrasonography.

I am also planning to be fulfilling further my roles in PracTINNg and Stethoscope Projects,

My future scientific projects will concentrate on participating in International/European research projects (at present I am part of two ongoing projects NEODATA and SafeBoosC IIIv) and develop my own research projects and coordinate the projects of my team-members.

As personal projects are to be mentioned: the use of multiparameter monitoring in the delivery room, the short and long term effects of the family centered care, the study of the maturation of the brain of the premature neonates and determining new predictors for the short and longterm outcomes of the NICU graduates.

As a conclusion of all the above, my professional, academic and scientific activity has been always governed by the same principles of continuous improvement, un-stoppable searching and gladly sharing the knowledge and abilities. I preferred to be one step ahead, even if it was not easy and to develop my own projects and share with the others as much as possible of the knowledge I get.