International School of Neurology

RoNeuro
BRAIN DAYS

8TH EUROPEAN TEACHING COURSE on NEUROREHABILITATION

29 JUNE - 1 JULY, 2018 | EUROPA HOTEL | EFORIE NORD | ROMANIA

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WELCOME ADDRESS

This event is organized by the Foundation of the Society for the Study of Neuroprotection and Neuroplasticity, together with the Romanian Society of Neurology and "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania, and is endorsed, by the World Federation of Neurorehabilitation (WFNR), European Federation of Neurorehabilitation Societies (EFNRS) and European Academy of Neurology (EAN).

After seven successful past events, the meeting in Eforie Nord will again present a platform for exchange of newest scientific information as well as providing space for teaching oriented workshops. Each year, we are reaching an audience with an interest in this steadily expanding and exciting field (physicians, nurses, therapists, basic scientists etc.)

A major topic will be to come to a resume where neurorehabilitation in Europe stands today and where future perspectives in science and education as well as in optimizing services shall go. The formats used in the meeting as well as the selected main thematic areas will certainly have a chance to be of interest to a wide audience.

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GENERAL INFORMATION

COURSE VENUE

ANA Hotels – Eforie Nord
Europa Hotel

Phone: 0040241 / 741.710, fax: 0040241 / 741.720
Republicii Street no 13, Eforie Nord, Constanta – Romania

Registration Desk

All materials and documentation will be available at the registration desk located at SSNN booth. The staff will be pleased to help you with all enquiries regarding registration, materials and program. Please do not hesitate to contact the staff members if there is something they can do to make your stay more enjoyable.

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LANGUAGE

The official language is English. Simultaneous translation will not be provided.

CHANGES IN PROGRAM

The organizers cannot assume liability for any changes in the program due to external or unforeseen circumstances.

NAME BADGES

Participants are kindly requested to wear their name badge at all times. The badge enables admission to the scientific sessions and dinners.

FINAL PROGRAM & ABSTRACT BOOK

The participants documents include the program and abstract book which will be handed out at the registration counter.

COFFEE BREAKS

Coffee, tea and water are served during morning coffee breaks and are free of charge to all registered participants.

MOBILE PHONES

Participants are kindly requested to keep their mobile phones turned off while attending the scientific sessions in the meeting rooms.

CURRENCY

The official currency in Romania is RON.

ELECTRICITY

Electrical power is 220 volts, 50 Hz. Two-prong plugs are standard.

TIME

The time in Romania is Eastern European Time (GMT+2).

SCIENTIFIC PROGRAM

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BRAIN DAYS

8TH EUROPEAN TEACHING COURSE on NEUROREHABILITATION

FRIDAY - JUNE 29TH, 2018

JOINT WFNR/EFNR PRESIDENTIAL SESSION

CHAIRPERSONS : Volker Hömberg (Germany), Dafin F. Mureșanu (Romania), Giorgio Sandrini (Italy)

08:45 – 09:00	WELCOME ADDRESS
09:00 – 09:10	In memoriam Anna Liese Christensen Volker Hömberg (Germany)
09:10 – 09:40	From neurobiology to evidence-based medicine concepts in neurorehabilitation after stroke. Dafin F. Mureșanu (Romania)
09:40 – 10:10	What does „proportional recovery" mean for future neurorehabilitation? Volker Hömberg (Germany)
10:10 – 10:40	Physical therapy update Volker Hömberg (Germany)
10:40 – 11:10	COFFEE BREAK

SESSION 2 - CHAIRPERSONS: David C. Good (USA), Leopold Saltuari (Austria)

11:10 – 11:40	Robotic therapy, scientific data and clinical experience Leopold Saltuari (Austria)
11:40 – 12:10	Spine is more than scaffold Heinrich Binder (Austria)
12:10 – 12:40	Pain in neurorehabilitation Giorgio Sandrini (Italy)
12:40 – 13:10	Stroke rehabilitation: Where are we now, and where are we going? David C. Good (USA)
13:10 – 14:30	LUNCH

SESSION 3 - CHAIRPERSONS: Heinrich Binder (Austria), Gelu Onose (Romania)

14:30 – 15:00	A synthetic approach on endeavors towards systematizing clinical assessment instruments used to evaluate neuromotor/cognitive-functional deficits after traumatic brain injuries, including through the ICF(-DH) conceptual framework Gelu Onose (Romania)
15:00 – 15:30	Clinical research within the framework of evidence-based medicine - methodological challenges and advances Johannes Vester (Germany)
15:30 – 16:00	ICU aquired weakness- an update Dana Boering (Germany)
16:00 – 16:30	Functional neurological disorders in children – Can rehabilitation help? Kristina Muller (Germany)
16:30 – 17:00	Gerontechnology for older stroke patients Gabriel Prada (Romania)
17:00	EFNR PRESIDIUM MEETING

SATURDAY - JUNE 30TH, 2018

SESSION 4 - CHAIRPERSONS: Johannes Vester (Germany), Cătălin Jianu (Romania)

09:00 – 09:30	Non-invasive brain stimulation after stroke – what's the evidence? Tihomir V. Ilic (Serbia)
09:30 – 10:00	Genetic aspects of TMS-induced brain neuroplasticity in ischemic stroke patients Alexandru Gasnas (Rep. Moldova)
10:00 – 10:30	Aphasias in ischemic stroke patients Cătălin Jianu (Romania)
10:30 – 11:00	Imaging of acute stroke: state of the art Jean Claude Sadik (France)
11:00 – 11:30	COFFEE BREAK

SESSION 5 - CHAIRPERSONS: Vitalie Lisnic (Rep. Moldova), Bogdan Popescu (Romania)

11:30 – 12:00	Neurological rehabilitation of the elderly – between risk factors and prognosis Adriana Sarah Nica (Romania)
12:00 – 12:30	Pilates, Tai Chi and Qigong: new attractive methods in management of Parkinson`s disease Josef Opara (Poland)
12:30 – 13:00	The peculiarities in neurorehabilitation of patients with MS Aleš Pražnikar (Slovenia)
13:00 – 13:30	Clinical and electrophysiological approach to neuromuscular junction disorders Vitalie Lisnic (Rep. Moldova)

13:30 – 15:00	LUNCH

SESSION 6 - CHAIRPERSONS: Andreas Bender (Germany), Aleš Pražnikar (Slovenia)

15:00 - 15:30	Unresponsive wakefulness syndrome and minimal conscious state: from diagnosis to prognosis, rehabilitation and long-term outcome Andreas Bender (Germany)
15:30 – 16:00	Vascular epilepsy Bogdan Popescu (Romania)
16:00 – 16:30	A co-ultramicronized palmitoylethanolamide/luteolin composite mitigates clinical disability and molecular markers in a mouse model of experimental autoimmune encephalomyelitis Stephen Skaper (Italy)
16:30 – 17:00	COFFEE BREAK

SESSION 7 - CHAIRPERSONS: Vida Demarin (Croatia), Stanislav Groppa (Rep. Moldova)

17:00 – 17:30	The role of arts in neurorehabilitation Vida Demarin (Croatia)
17:30 – 18:00	Targeted nutrition, complex monitoring, and specific therapies in early neurorehabilitation of critically ill patients Dorel Sandesc (Romania)
18:00 – 18:30	Classification and clinical manifestations of ischemic circulatory disorders of the spinal cord Mihail Gavriliuc (Rep. Moldova)

SUNDAY - JULY 1ST, 2018

SESSION 8 - CHAIRPERSONS: Wolfgang Grisold (Austria), Alla Guekht (Russia)

09:00 – 09:30	Vascular remodeling and changes in the neurovascular unit in tissue recovery to ischemic injury Gregory del Zoppo (USA)
09:30 – 10:00	How to assist brain in successful recovery after stroke; Experience from pre-clinical work Jaroslaw Aronowski (USA)
10:00 – 10:30	Biological agents: a new avenue for pharmacology in neurorehabilitation Alla Guekht (Russia)
10:30 – 11:00	Placebo, Nocebo and no treatment Wolfgang Grisold (Austria)
11:00 – 11:30	COFFEE BREAK

SESSION 9 - CHAIRPERSONS: Gregory del Zoppo (USA), Ovidiu Băjenaru (Romania)

11:30 – 12:00	Post-stroke neurorehabilitation – an essential component of secondary prevention Ovidiu Băjenaru (Romania)
12:00 – 12:30	Rare neurologic disorders in the context of rare causes of stroke Dafin F. Mureșanu (Romania)
12:30 – 13:00	Leadership in medicine and management Axel Kohlmetz (Austria)
13:00 – 14:30	LUNCH

SESSION 10 - CHAIRPERSONS: Valeria Caso (Italy), Natan Bornstein (Israel)

14:30 – 15:00	Women and stroke Valeria Caso (Italy)
15:00 – 15:30	Romanian Stroke Registry - current status and future developments Cristina Tiu (Romania)
15:30 – 16:00	The registry of stroke care quality (RES-Q) in Republic of Moldova: the first nation-wide data on stroke care quality Stanislav Groppa (Rep. Moldova), Elena Manole (Rep. Moldova)
16:00 – 16:30	COFFEE BREAK
16:30 – 17:00	Vascular imaging in stroke etiology and pathophysiology Sorin Tuta (Romania)
17:00 – 17:30	Stroke risk factors among patients hospitalized with stroke: preliminary results from a cross-sectional study in the population of Republic of Moldova Daniela Efremova (Rep. Moldova)
17:30 – 18:00	National stroke registries: what can we learn from them Natan Bornstein (Israel)
18:00	CLOSING REMARKS

ABSTRACTS

HOW TO ASSIST BRAIN IN SUCCESSFUL RECOVERY AFTER STROKE; EXPERIENCE FROM PRE-CLINICAL WORK

JAROSLAW ARONOWSKI
Vice Chair for Research, Department of Neurology
Roy M. and Phyllis Gough Huffington Chair in Neurology, Texas, USA

In lights of a dismal success with the neuroprotective agents to acutely reduce brain damage after stroke, more attention is now being paid to mechanisms of how to enhance brain repair as a mean to improve brain function during post-stroke recovery phase. Mechanisms targeting both ischemic stroke and intracerebral hemorrhage will be described.

This lecture will attempt to provide pre-clinical evidence for prospective usefulness of some of the experimental approaches that could be considered as potential novel targets for improvement/repair of stroke-damaged brain. Specifically, I will discuss a role microglia/macrophages could play in stroke and how the alteration of their properties from "damaging" to a "healing" phenotype, through regulating their role as (1) phagocytes involved in the brain cleanup process, (2) trophic factors releasing machinery, or (3) white matter repairing cells, could improve post-stroke recovery. In addition, I will discuss existing data on potential roles of other immune cells in post-stroke recovery, such as regulatory T-cells and neutrophils, as well as, describe promising data on the use of mononuclear cells (MNC) derived from bone marrow as therapy to augment post-stroke recovery.

POST-STROKE NEUROREHABILITATION – AN ESSENTIAL COMPONENT OF SECONDARY PREVENTION

OVIDIU BĂJENARU
University of Medicine and Pharmacy "Carol Davila" Bucharest, Romania

In patients who had a recent stroke, neurorehabilitation is an essential component of treatment and it has to be innitiated immediately after the acute stroke therapy of revascularization, when the hemodynamic and metabolic status is under medical control, concomitently with the onset of secondary prevention of recurrent stroke and other vascular events and of virtual medical complications. This approach is also reflected in the principles of organization of the stroke units, including the medical personalized evaluation and therapy, the specific medical protocols and the medical and non-medical personnel included in the teams working in these neurovascular medical units, which have to be coordinated by an experienced

neurologist with a particular interest in stroke. The personalized neurorehabilitation programs have to take into account the neurological, cardiovascular and general medical status (including the possible complications) of the stroke patient, which implies a detailed evaluation and medical monitoring. This complex approach allows the adaptation of both the therapeutic options for secondary prevention and treatment of medical complications, and the neurorehabilitation programs in accordance with the neurologic clinical impairments and disabilities, and patients' biological conditions – mainly neurological and cardiorespiratory. The nowadays guidelines for post-stroke and TIA secondary prevention and postacute neurorehabilitation, emphasize the interference and interconditioning of both types of medical intervention in an unitary approach which has to be adapted according to patients' physical deficits, neurocognitive, psychological clinical consequences in different stages of evolution after stroke.

UNRESPONSIVE WAKEFULNESS SYNDROME AND MINIMAL CONSCIOUS STATE: FROM DIAGNOSIS TO PROGNOSIS, REHABILITATION AND LONG-TERM OUTCOME

ANDREAS BENDER
Therapiezentrum Burgau & Department of Neurology, University of Munich, Germany

Coma, unresponsive wakefulness syndrome (UWS), and minimally conscious state (MCS) are frequent consequences of severe brain injury, such as anoxic-ischemic encephalopathy (AIE), traumatic brain injury (TBI), or stroke.
Neurorehabilitation of patients with such severe disorders of consciousness (DOC) is a big challenge, ranging from the correct diagnosis, the choice of neurorehabilitation techniques, management of frequent complication to prognostication, expectation management as well as end-of-life decisions.

The first major obstacle is the frequent misdiagnosis of up to 40% regarding the correct consciousness-state, i.e. are patients in Locked-in-syndrome, UWS, or MCS? It is important to use standardized clinical rating scales to establish the appropriate level of consciousness. This is of paramount importance because prognosis largely depends on the initial DOC-syndrome. To this end, the Coma Recovery Scale (CRS-R) will be discussed as the international gold standard to quantify the level of DOC.

In addition, the lecture will provide an evidence-based overview of interventions, which are tailored to improve consciousness and the outcome in DOC patients, such as pharmacological stimulation (e.g. amantadine), music therapy, or tilt table therapy.

Prognostication of the long-term outcome of DOC-patients is a challenge with only limited prospective data having been published. Among others, partial loss of brainstem reflexes, high levels of neuron specific enolase (NSE), unreactive EEG, and bilateral loss of cortical SEP-responses are believed to be highly specific negative outcome predictors. Yet, current practice parameters for prognostication may carry the risk of too pessimistic assumptions, therapeutic nihilism, and self-fulfilling prophecies. In order to provide the audience with a realistic view on possible outcomes of DOC-patients, results of a multicentre clinical trial with 3-year long-term outcome data will be discussed. Early prognostic markers that could inform about this outcome early during neurorehabilitation will be evaluated. Despite the frequent presence of strong negative prognostic markers, substantial proportions of patients have potential to regain consciousness with functional communication abilities and at least partial ADL independence. This will provide important information for medical decision makers and for counselling of families during neurorehabilitation.

SPINE IS MORE THAN SCAFFOLD

HEINRICH BINDER
Landsteiner Institute for Neurorehabilitation and Space Medicine Vienna, Austria

To configure the typical shape of human spine the plug-in system of consecutively stacked 24 otherwise unattached vertebrae is insufficient. It needs support from a whole range of jointly acting ligaments and muscles. Erroneously ligaments are estimated mostly as passive tension rods. But that is just one aspect. As important is the function as some kind of gear coordinating translation between neighbouring vertebrae insofar as they decelerate and buffer movements before reaching extreme positions. For that preloading of the ligaments is necessary for what intervertebral discs are responsible. But the very fascinating part of human spine is their ability to stiffen as well as to move. It is an outstanding achievement considering upright posture and gait on one side and the human spine as technologically inverted spherical pendulum on the other hand. In that case broadly speaking the spine is to be understood as pendulum rod, the head at floating end and the pivot point above dorsal pelvic ring. But the problem lies on the one hand in the fact that the spine in reality represents a kind of polynomial manipulator whereas apart of craniocervical junction two main centre of rotation in the cervical and lumbar exist. Furthermore it is necessary to take into account chest with rib cages and abdomen with their eccentric ground pins. A multiplicity of short and long distance spanned and interacting epiaxial and hypoaxial muscles constitute the pendulum manipulator which the central nervous system use to keep ones balance in daily life. A variety of reasons can disturb form and function of spine short and long

ranging. Many reasons belong to this instancing simple false posture, degenerative and traumatic disc and bony damages, pain and certainly also varying central and peripheral nervous lesions. The trouble is that a disturbed form and function of spine themselves causes additional accessorial neurological as well as orthopaedic complaints. Unfortunately this connection is overlooked too often with impaired therapeutic effect as a consequence. For that reason it is necessary to include the inspection of spinal column in neurological examination to identify possible problems aiming for timely and targeted treatment.

ICU AQUIRED WEAKNESS - AN UPDATE

DANA BOERING
SRH Gesundheitszentrum Bad Wimpfen, Bad Wimpfen, Germany

A substantial number of patients admitted to the ICU because of acute medical illness, complicated surgery, severe trauma or burn injury develop a de novo form of muscle weakness during the ICU stay that is referred to as"intensive care unit aquired weakness", due to axonal neuropathy, primary myopathy or both. There is a growing body of literature focussing on the main risk factors for ICUAW, it´s pathophysiology and working out the cornerstones of preention and management due tot he fact that ICUAW is independently correlated to 1 year mortality and physical functioning.

The talk will give an overview on the actual state of the art concerning all these issues embedding the concept of ICUAW in a more comprehensive management strategy of ICU patients from the admission to ICU towards the long chain of recovery along a continuum including pre ICU aspects as well as the multifaceted, long lasting, up to now less considered post intensive care syndrome.

WOMEN AND STROKE

VALERIA CASO
Stroke Unit, Department of Vascular and Cardiovascular Medicine
Santa Maria della Misericordia Hospital, University of Perugia , Perugia, Italy

The AHA Guidelines for Prevention of Stroke in Women have been published recently focusing on unique risk factors for women. However, the issue of the lifelong management of pregnancy in women who had stroke was not fully addressed regarding: future pregnancies, type of delivery, labor induction and secondary prevention during future pregnancy and lactation. Furthermore, no indication was

provided on the use of hormonal contraceptives, ovarian stimulation hormone replacement therapies or other alternatives. Based on the current literature review, no significant increase in the incidence of recurrent stroke during subsequent pregnancies was seen in women with previous stroke. For low risk patients, secondary preventions with aspirin resulted being safe during the second and third trimester, while due to lack of data recommendations on other antiplatelet could not be given. While for high-risk patients, Vitamin antagonists resulted being safe during pregnancy with the exception of the 6-12 weeks of pregnancy period due to a higher risk of embriopathy and for this LWMH/UFH should be considered. While vaginal deliveries should be preferred, caesarean sections should be performed only when there are obstetrical reasons that necessitate them. No indications can be provided on labor induction, while hormone contraceptive use, ovarian stimulation and replacement therapies should be avoided. No recommendations on phytoestrogens, e.g. red clover extracts and soya extracts can be given due to the lack data on their benefits. Perimenopausal and menopausal hot flashes may be treated with gabapentin and/or SSRIs. An unhealthy life-style especially smoking habit, physical inactivity and a BMI above normal should be avoided. Conclusions: Women with past stroke carry risks that are not adequately recognized by international guidelines and for this, these women are not being properly followed for these risks leading to unnecessary disability and loss of life for women and neonates.

THE ROLE OF ARTS IN NEUROREHABILITATION

VIDA DEMARIN
Croatian Academy of Sciences and Arts International Institute for Brain Health, Croatia

Stroke is a devastating illness with huge consequences to the quality of life, frequently causing motor, cognitive and mood impairment.

Due to a mechanism of neuroplasticity, the brain is capable of making new connections, activating new pathways and unmasking secondary roads. Music is a strong stimulus for neuroplasticity, thus having a possibility to enhance recovery after stroke. fMRI studies have shown reorganization of a motor and auditory cortex in professional musicians and other studies showed the changes in neurotransmitter and hormone serum levels in correlation to music. Results of numerous studies showed that listening to music can improve cognition, motor skills and moods, enhancing recovery after brain injury.

In the field of visual art, the brain lesion can lead to the visuospatial neglect, loss of details and significant impairment of artistic work while the lesions affecting the

left hemisphere reveal new artistic dimensions, disinhibiting the right hemisphere, work is more spontaneous and emotional with the gain of artistic quality. All kinds of arts (music, painting, dancing...) stimulate the brain. They should be part of treatment processes. The work of many artists is an excellent example for the interweaving the neurology and arts.

STROKE RISK FACTORS AMONG PATIENTS HOSPITALIZED WITH STROKE: PRELIMINARY RESULTS FROM A CROSS-SECTIONAL STUDY IN THE POPULATION OF REPUBLIC OF MOLDOVA

DANIELA EFREMOVA[1,2]
SORIN PLOTNICU[1,2], DIANA MANEA[1], STANISLAV GROPPA[1,2]
1. Institute of Emergency Medicine, Chisinau, Republic of Moldova
2. State University of Medicine and Pharmacy „NicolaeTestemitanu", Chisinau, Republic of Moldova

INTRODUCTION
Stroke is one of the leading causes of morbidity and mortality worldwide. Recurrent stroke represents 33% of all stroke cases. Survivors of transient ischemic attack (TIA) or stroke have an approximate 3 -4% annual risk of recurrence. Recurrent stroke increases the rate of disability and mortality. Herein, we aimed to estimate the stroke risk factors in patients with stroke and present the preliminary results.

METHODS
Patients hospitalized with diagnosis of stroke and TIA in the Department of Cerebrovascular Diseases, Institute of Emergency Medicine, were recruited into the study. To identify the stroke risk factors, patients were assessed according to a predefined protocol, which included a questionnaire, physical and neurological examination, electrocardiography (ECG), Doppler/Duplex ultrasound of the carotid arteries and blood biochemistry.

RESULTS
In this study 137 patients, 53 (39%) women and 84 (61%) men, with a mean of 63.9 ± 11.15 years have been included. Abdominal obesity was identified in 109 (80%) patients,43 (31%) patientshad a body mass index (BMI)>30, 64 (47%) patients were overweighted and 28(20%) were normal weighted. Hypertension was identified in 103 (75%) patients, 29 (21%) had atrial fibrillation and 24 (18%) diabetes mellitus. Twenty-two(16%) patients were current smokers and 36 (26 %) were former smokers. Ischemic stroke or TIA was identified in 48 (36%)patients. Total cholesterol was increased in 90 (66%) patients. Left myocardial hypertrophy

on ECG was present in 108 (79%) patients and acute ischemic changes in 2 (1%) patients. Atherosclerotic plaques were found in 104 (76%) patients.

CONCLUSIONS
Preliminary results of our study show a spectrum of various risk factors associated with stroke, among which abdominal obesity, carotid atherosclerosis, hypertension, dyslipidemia were the most common risk factors. In order to develop new directions and strategies of secondary stroke preventionin the population of the Republic of Moldova,it is of utmost importance to evidence the expression of each risk factor, the interrelations between these factors and their impact on stroke recurrence.

GENETIC ASPECTS OF TMS-INDUCED BRAIN NEUROPLASTICITY IN ISCHEMIC STROKE PATIENTS

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2. Public Institution Medical and Pharmaceutical State University « Nicolae Testemitanu », Chisinau, Republica Moldova
3. Laboratory of Neurobiology and medical genetics, Chisinau, Republica Moldova

In search for individualized predictors of recovery after Stroke, genetic factors are recently attracting great interest, in particular, the ones related to the brain-derived neurotrophic factor (BDNF). In recent years, the expression and modulation of neurotropic genes, both normal and mutated, have been postulated as potential prognostic markers.

The brain-derived neurotrophic factor (BDNF) protein is a member of the nerve growth factor family of neurotrophins and is known to be essential for the development and maintenance of the neurons. It is an abundantly available neurotrophin in the brain that is activity dependent with a widespread distribution in the cerebral cortex, hippocampus, basal forebrain, striatum and septum areas. BDNF is also known to play a key role in the survival, differentiation, synaptic plasticity and outgrowth of peripheral and central neurons throughout adulthood. Missense mutations within this gene are also known to influence both axonal and dendritic morphology where the ocular dominance column development and initial dendritic outgrowth are altered.

The BDNF Val66Met polymorphism has been reported to be associated with cognitive and emotional dysfunctions by modifying cerebral cortex excitability, gray matter structures, or white matter integrities.

To date, whether subjects heterozygote or homozygote for the Val66Met substitution (from now on Met carriers) have a worse outcome after stroke is matter of debate. After stroke, brain BDNF levels increase, affecting neuronal survival, differentiation, and use-dependent plasticity. A spared absolute ability of Met carriers to recover after Stroke is strongly sustained by the extremely high prevalence of the Val66Met substitution in the population, which ranges from 30% in Caucasians up to 70% in Asians.

In patients with stroke, the greatest difference between genotype groups was found in primary sensorimotor cortex contralateral to hand movements, also as described in healthy subjects.

If in ValVal stroke patients intracortical plasticity could be the main determinant of recovery due to the functional cortical changes, a higher interhemispheric cortical excitability imbalance appears in ValVal as compared to Met carriers.

This accumulating evidence suggests that BDNF mediates, at least in part, the therapeutic benefits of rTMS after stroke.

CLASSIFICATION AND CLINICAL MANIFESTATIONS OF ISCHEMIC CIRCULATORY DISORDERS OF THE SPINAL CORD

MIHAIL GAVRILIUC
Department of Neurology, Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova

Classification of ischemic spinal cord disorders is based on knowledge of vascular anatomy and pathological physiology of blood circulation.

Lazorthés G. and co-authors described three syndromes of spinal stroke: total transverse lesion, anterior spinal artery syndrome, and posterior spinal artery / arteries syndrome. These three classic syndromes are universally accepted for both acute and chronic ischemic disorders of the spinal cord blood circulation.

Still, the syndrome of complete transverse damage of the spinal cord is more typical for ischemic spinal stroke than for chronic spinal cord ischemic injures, where the level of malperfusion is determined by the existence of so-called critical zones of blood irrigation (watershed zones).

The pathophysiological classification of ischemic spinal cord's disorders includes three main groups: (1) vascular disorders due to violation of the integrity of extramedullary vessels, (2) disturbances caused by damage of the vessels of the spinal cord itself, (3) a combination of several factors capable to disturb the blood circulation of the spinal cord. Disturbances of venous blood circulation of the spinal cord are manifested mainly by subacute venous necrotic myelopathy.

In accordance with the etiological factor, ischemic disorders of the spinal cord are divided into primary (primary lesion of the vessel) and secondary (secondary damage of the vessel by its compression).

A separate nosological unit among ischemic circulatory disorders of the spinal cord is the intermittent claudication of the spinal cord of the cauda equina. This clinical manifestation can anticipate the establishment of acute or chronic disorders of the spinal cord blood circulation over the months / years, but can also remain the only manifestation of ischemic disease for a very long period of time.

The introduction of the nuclear magnetic resonance method into clinical practice determined a new era in visualization in vivo of the spinal cord's tissues, including in the disorders of vascular origin. The spinal cord image obtained by MRI method contains valuable information, since it allows excluding other spontaneous non-traumatic spinal cord injuries such as spontaneous epidural or subdural hematomas, intramedullary tumors, syringomyelia, myelitis etc.

Angiography of spinal cord's vessels is an invasive technique, that cannot avoid some complications, but it is used for the diagnosis and treatment of vascular malformation of the spinal cord.

Assessment of the functional state of the spinal cord in the case of vascular lesions can be performed by electromyography (EMG), electroneuromyography (ENMG), somato-sensory evoked potentials (SSEP) and motor evoked potentials (MEP).

Thus, the problem of diagnosing and evaluation of the spinal cord ischemic disorders contains in our days three sections: clinical, methods of visualization and electrophysiological. Their knowledge and practical use is the key to the implementation of adequate treatment.

STROKE REHABILITATION: WHERE ARE WE NOW AND WHERE ARE WE GOING?

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Stroke remains a major public health concern, and has serious ramifications to individuals who have suffered a stroke. Worldwide, stroke is the second most common cause of death and third leading cause of disability. The effects are often long lasting, with as many as 35% of patients still needing assistance with ambulation two years after stroke. Similarly, 25% of patients still require assistance with dressing and daily hygiene. While there has been a revolution in acute treatment of strokes (use of thrombolytic agents and endovascular clot retrieval procedures), many patients are left with permanent disability. There's a general consensus that much recovery of function in strokes is spontaneous. A major goal of stroke rehabilitation is to provide functional improvement beyond what would be expected from spontaneous recovery. A number of studies have indicated that the most important clinical predictor of outcome is the magnitude of the initial deficit. Age is also an important variable as are the degree of previous cognitive impairment, medical comorbidities, and depression. The term "brain plasticity" is widely used to describe the intrinsic changes associated with recovery. These can range from molecular and cellular events to changes in network connectivity and behavior. How rehabilitation affects these various intrinsic events is unclear. Basic studies of the mechanisms that mediate recovery require animal models, but the appropriateness of some animal models make translation to the clinic problematic.

Another factor is that there is no general agreement as to what constitutes "recovery". Much improvement following stroke rehabilitation is probably due to compensation. Whether rehabilitation truly promotes long-term restoration of neural function remains somewhat controversial. Rehabilitation can occur in different settings and intensities, but usually includes a multidisciplinary team of professionals, each of whom contributes a specific expertise to the rehabilitation program. Traditionally, it has been felt that rehabilitation should begin as soon as the patient is medically stable. However, the results of the AVERT trial suggest that intense early mobilization of stroke patients does not produce favorable outcomes compared to delaying rehabilitation a bit longer. This is still an area of active investigation. The intensity of rehabilitation and the optimal time period for rehabilitation remain somewhat controversial. There is some evidence that intense rehabilitation, no matter how it is delivered, is beneficial; but this may not be applicable to all individual patients. Recently, the concept of "proportional recovery" has gained in increasing acceptance. This suggests that the majority of

stroke patients reach 70% of the maximum possible improvement, often measured by specific evaluation scale (for example the of the Fugl-Meyer scale for motor recovery). The majority of patients seem to reach this degree of recovery regardless of the type or intensity of rehabilitation services. This suggests that there may be fundamental biological limits for recovery. Recent studies have shown similar "proportional recovery" in animal models of stroke. There is some suggestion that intense therapy may speed early recovery, but that the ultimate outcome is similar whatever intensity of therapy is used. Despite the "proportional recovery" rule, some patients do not make predicted recovery on long-term follow-up. Upon further evaluation, these patients have more damage to the corticospinal tract than those who recover. Various ways of evaluating the integrity of the corticospinal tract have been used including motor evoked potentials (MEP's) obtained by TMS and fractional anisotropy using Diffusion Tensor Imaging (DTI). From a clinical perspective, subjects who do not improve have findings at 72 hours which include no finger extension, facial palsy, severe impairment of lower extremity motor function, and have large infarctions involving the anterior circulation, usually the middle cerebral artery. It has been suggested that patients who have a low potential for recovery should be taught compensation strategies rather than therapy focused on improving impairment.

The most common approaches to improve function, especially motor function, have used training programs, especially physical and occupational therapy. However there has been a relative lack of research showing that these approaches are beneficial beyond promoting compensation. Therefore, a number of unique motor training programs have been tested experimentally in multicenter trials. These include the EXCITE trial of constraint induced movement therapy, the ICARE trial studying accelerated skill acquisition, and organized trials of robotic assisted training. Although the EXCITE trial demonstrated a modest improvement in motor function and ability to perform functional tests in the community, the CIMT program is not felt to be practical for many patients, and the study failed to provide a control group that had an equal amount of standard training. Many of the other multicenter trials including ICARE and VA robot trial did not show any significant improvement in the intensively treated patients compared to control groups. While the results of these trials have been disappointing, trials of training techniques have often included subjects with different severity, and subacute or chronic patients. There currently is a relative lack of enthusiasm for large, expensive multicenter motor training trials.

Other novel treatment approaches include virtual reality programs. These generally have involved training in a realistic simulated environment. While there have been modest successes, these have not been overwhelming. Mirror therapy, sensory stimulation paradigms, and motor imagery have also been tried. One

of the most recent approaches has focused on neurostimulation. The two most common noninvasive modalities to stimulate the cortex directly are transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS). The hope is that enhancing the excitability of corticospinal projections might facilitate functional recovery. The results of clinical trials have been mixed. One of the problems is that the location of simulation and the intensity of simulation have not been fully investigated. A new approach is vagal nerve stimulation which showed improvement in motor function in a small number of chronic stroke patients.

The search for a drug that clearly enhances recovery from stroke has been an elusive goal for a number of years. A variety of agents have been proposed including noradrenergic agents, and dopaminergic agents. Generally, these studies have not shown any benefit. The timing of administration with relation to the stroke onset may be critical, and whether or not the drug should be linked with a therapeutic intervention remains to be seen. One of the most successful studies used fluoxetine to enhance motor recovery following ischemic stroke (the FLAME study). Other SSRI drugs have also been studied and may show modest improvement compared to control groups. Cerebrolysin has been used in a number of countries. This is a mixture of low molecular–weight peptides and free amino acids.

It is expected that the future will include additional trials of various types of brain stimulation. Certainly routine rehabilitation approaches will continue to be important, especially as they relate to promoting adaptation, as well as providing education to patients and their families. Therapists may also recommend assistive devices.

'Cutting-edge" approaches include brain-machine interface. However this is not practical for most of patients and requires a sophisticated technology. Cell-transplantation has been tried. There are many potential sources of cells and many potential administration techniques. A recently published study using adult progenitor cells administered IV after stroke showed that these are well-tolerated but there is no significant improvement in neurological outcomes at 90 days. Certainly cell transplantation is not ready for general use at this stage. Another possible approach includes enhancing neurogenesis. Neural stem cells and precursor cells reside in the hippocampus in the subventricular zone of the hemispheres. In animal models these can be induced to differentiate into neurons under certain circumstances and migrate into ischemic tissue. Whether this will be feasible in humans following stroke remains to be seen.

Stroke rehabilitation is an exciting area with many new approaches constantly being developed and tested. Unfortunately, one concern is that recovery might be "hardwired" and dependent on the integrity of the corticospinal tract, at least in

terms of motor function. Similar limitations may be true for other stroke-related deficits including aphasia and visual-spatial dysfunction. Nonetheless, research interest seeking new approaches remains strong.

PLACEBO, NOCEBO AND NO TREATMENT

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The topic of placebo and nocebo is often controversially discussed. In clinical practice the term placebo is usually associated with a fake therapy, or the patient`s imagination , or some more remote field as healers and magic.

However the term placebo is currently used in conjunction with placebo controlled randomized trials (RTC) , which is the current standard in evaluating drugs, or any other treatment. There is a third group in this context, which is the no treatment group, which also concerns important aspects. In addition to the technical term of placebo, increasingly more situations become apparent, where placebo elements can be traced.

A less well known term is nocebo, literally „I will harm", which in a way is a bad prediction. This can be done willingly or unwillingly but has an equally important meaning for the patient.

In the past years much research towards the placebo effects were carried out. These scientific approaches wer based on sophisticated experiments and also supported by imaging techniques.
A number of factors as natural course, spontaneous healing, fluctuations, regression to the mean and the doctor and patient bias are additional difficulties, as the dependence on the types of diseases, which have often distinct and specific placebo characteristics.

Publications have induced more awareness of the placebo effect, as well as a better understanding. Scrutinizing the effect of drugs , several investigations demonstrated, that in each drug and medication in inherent placebo effect can be detected.

These findings and investigation have led to a better understanding of these effects, and it will be important to raise awareness not only in physicians but in the complex therapeutic team.

Ethical aspects in regard to the present patient physician relation and the use of placebo treatment are important and need further considerations.

THE REGISTRY OF STROKE CARE QUALITY (RES-Q) IN REPUBLIC OF MOLDOVA: THE FIRST NATION-WIDE DATA ON STROKE CARE QUALITY

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BACKGROUND: Effective stroke treatment exists, but the implementation of evidence-based practices is limited. Therefore the primary goal of the Registry of Stroke care quality (RES-Q) project is to improve stroke care quality in a European setting by translating data collected by the Quality Registry into actionable healthcare policies on both national and European levels, within a timeframe of 3 years. As a European Stroke Organization (ESO) driven initiative, RES-Q is a pan-European, collaborative effort on the part stroke treatment centres, clinicians, and researchers to rapidly improve the level of stroke care throughout all participating countries. The major challenge of stroke management is not finding new and better treatments, but the implementation of already existing and proven stroke therapies. Implementation research is thus needed to improve outcomes after stroke.

OBJECTIVE: To present the first results of the RES-Q from four hospital centers from the Republic of Moldova, for 2017.

MATERIAL AND METHODS: Data on all acute stroke admissions were collected in march (one monthe per year) and presented as medians, mean±SD.

RESULTS: 4 centers from our country: Institute of Emergency Medicine, Institute of Neurology and Neurosurgery, Municipal Clinical Hospital Holy Trinity, Balti Municipal Hospital, provided data and enrolled 251 patients between 1-31 March 2017. The

mean age of the enrolled patients was 66,82±10,07 (47,8% female and 52,2% male). 84,06% were ischemic strokes 14,7% - hemorrhagic strokes and 0,011% subarahnoidian hemorages. In 94,02% patients was performed CT or MRI, 100% of all were admitted to the Neurology Department with length of hospitalization 8-13 days, 1,19% had thrombolytic therapy and median door-to-needle time ranged from 60 to 120 minutes, 3-100% were assessed for physiotherapy needs, and 100% had ECG screening for atrial fibrillation.

CONCLUSION: These nation-wide data on stroke care quality provide important national and international benchmarks. Substantial disparity in stroke care quality was detected and effort should be taken to remove it in the future. With the purpose to get true data for the whole our country, about the number of patients with stroke and the stroke care quality in Republic of Moldova, we decided to extent the number of medical centers for the 2018 of the registry data collection, which corresponds to territorial administrative division of our country, and wich also offer emergency care in stroke patients.

BIOLOGICAL AGENTS: A NEW AVENUE FOR PHARMACOLOGY IN NEUROREHABILITATION

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In parallel with advances in acute stroke interventions, increasing attention is being paid to enhancing recovery and restoration of patients. There has been substantial growth in the number and quality of experimental, translational and clinical studies. New therapies are under development that target restorative processes, and anumber of technologies have been evaluated. Animal studies suggest that post-stroke recovery may be enhanced by compounds with an impact on brain plasticity; key therapeutic strategies are enhancing the processes underlying spontaneous recovery, modifying infammation, reducing late neuronal death. The combination of these compounds with rehabilitative training looked promising. Restorative therapies are introduced at different time points after stroke, usually - within days of stroke onset and interact with spontaneous neural repair mechanisms.

There is both basic and clinical evidence that support the use of drugs that act on different neurotransmitter systems: catecholaminergic, cholinergic, serotonergic, and glutamatergic; some positive effects of these drugs on motor, cognitive, and language skills have been found out.

Biologic plausibility has been shown for the noradrenergic agonists, implicating norepinephrine as a neurochemical mediator of recovery; drugs decreasing noradrenergic activity impair recovery. A number of studies demonstrated that amphetamine induced physiological or structural changes in the brain that may be relevant to recovery, for instance, sprouting and synaptogenesis and facilitate long-term potentiation. However, the effectiveness of amphetamine combined with physiotherapy varies across clinical trials. Levodopa, "gold standard" therapy for Parkinson's disease, was evaluated in stroke as another pharmacological intervention that affects the norepinephrine system; some clinical studies suggest that it can be recommended in conjunction with exercise therapy to improve the functional outcome in stroke rehabilitation.

Selective serotonin reuptake inhibitors (SSRIs) have been in use for many years for the treatment of mood disorders. Animal studies have shown that SSRIs may have other direct effects on the brain, such as encouraging the neurogenesis. Cochrane review found promising clinical evidence that SSRIs might improve recovery after stroke, even in patients who were not depressed. Large trials are now needed to confirm or refute these findings.

Memantine, N-methyl-D-aspartate receptor antagonist, has been proved to stabilize progression of in vascular dementia compared with placebo; placebo-controlled study of memantine for enhanced stroke recovery is ongoing.

Biological medical products have been used in medicine empirically from ancient times. Recently, systematic review with meta-analysis of clinical trials demonstrated, that Chinese herbal medicine as an adjunctive therapy can improve cognitive impairment and enhance quality of life in patients with vascular dementia, however, significant methodological limitations of the included studies were noted. On the other hand, in the second half of the last century medical products, based on modern technologies were introduced; in the late 20th and early 21st centuries, biotechnology has dramatically expanded and numerous new products have been developed. Currently several biological targets are under study to develop restorative therapies; growth factors, monoclonal antibodies, cell-based therapies etc are being evaluated to promote neural repair after stroke.

Cerebrolysin is a peptide preparation with neurotrophic activity demonstrated in various models in vitro and in vivo. It increased levels of NGF in the neocortex and hippocampus. The compound supports survival of neurons, stimulates neuronal differentiation, growth and sprouting and supports the formation of synaptic contacts in cell culture as well as in animal models. Cerebrolysin has been shown to enhance neurogenesis in the dentate gyrus of the hippocampus. The Cochrane review stated that Cerebrolysin may have positive effects on cognitive

function and global function in elderly patients with vascular dementia. CARS – a large prospective, randomized, placebo-controlled, double-blind, parallel group, multicenter showed that Cerebrolysin, as compared to placebo, is enhancing recovery and improving a number of motor tests, neurological status and disability parameters and QoL of patients after stroke. The meta-analysis combines the results of two identical stroke studies (CARS-1 and CARS-2) assessing efficacy of Cerebrolysin on motor recovery during early rehabilitation also demonstrated that Cerebrolysin had a beneficial effect on motor function and neurological status in early rehabilitation of patients after acute ischemic stroke.

Actovegin (a deproteinized hemoderivative of calf blood) demonstrated a beneficial effect on cognitive outcomes in patients with poststroke cognitive impairment in a large, 12-month, parallel-group, randomized, multicenter, double-blind, placebo-controlled study.

Further studies of compound enhancing recovery of stroke survivors are needed. Proven efficacy and safety of these medications in the vulnerably stroke patients is important.

Key references:

Bornstein et al., Neurol Sci. 2018 Apr;39(4):629-640
Bonaiuti, Eur J Phys Rehabil Med. 2013 Apr;49(2):227-31.
Caleo Neuroscience. 2015 17;311:180-94.
Carrillo-Mora et al., Clin Neuropharm 2017;40: 131–139
Corbett et al., Cerebrovasc Dis 2014;38:233–239
Cramer, Stroke. 2015 Oct;46(10):2998-3005
Cramer et al., Stroke. 2017;48:692-698.
Cramer et al., Journal of Stroke 2018;20(1):57-70
Guekht et al., Stroke. 2017 48(5): 1262–1270.
Guekht et al., Neurol Sci. 2017 Oct;38(10):1761-1769
Kalaria et al., Biochimica et Biophysica Acta 2016, 1862, 915–925
Muresanu et al., Stroke. 2016 Jan;47(1):151-9
Muresanu et L., J Cell Mol Med. 2012 Dec;16(12):2861-71.
Oczkowski Expert Rev. Neurother. 13(8), 903–909 (2013)
Richards et al., Prog Brain Res. 2015;218:253-80.
Zeng et al., Phytother. Res. 29: 1843–1857 (2015)

PHYSICAL THERAPY UPDATE

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This lecture will summarize the most important physical therapeutic technique used in neurorehabilitation for improvement of motor function and discuss their differential clinical usefulness for special patients`problems.

This list will include the most useful electrical and magnetic stimulation methods of peripheral as well as non invasive brain stimulation. Also aspects of hydrotherapy and application of heat and cold will be presented and their physiological background discussed.

These techniques will also be classified according to their impact on neuromodulation for facilitation of motor rehabilitation.

WHAT DOES „PROPORTIONAL RECOVERY“ MEAN FOR FUTURE NEUROREHABILITATION?

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Within the last 10 years the number of survivors after stroke and traumatic brain injury (TBI) has dramatically increased due to advances in acute medical care.

In parallel the need for intensive neurorehabilitation to combat resulting impairment and handicap has increased. Fortunately also over the last 20 years neurologic rehabilitation is more and more conceived as applied neuroscience.

Over the last two decades there has been a remarkable change in our thinking in the invention, design and efficacy evaluation of motor therapies in neuro-rehabilitation which can be described by three paradigmatic changes.

Paradigmatic changes

First there is a change from confession to profession i.e. more and more evidence based approaches rather than intuitively driven procedures have come into use.

This was accompanied by a change from "hands on" treating to "hands off" coaching approaches, which now dominate most of the evidence procedures. This change in treatment philosophy has had a marked impact also on the self-understanding of the therapists in their relation to the patient mutating from treaters to teachers . Thirdly these developments were accompanied by a transition from intuitevely marshaled individual one to one treatments to quality proven group treatments.

Especially the distinction between treatment strategies targetted
to restore function and thereby decrese impairments contrasted to approaches to compensate function in order to improve activities is becoming more and more important.

Are we really able to influence impairment i.e. can we reduce the amount of paresis e.g.after stroke. „The enigma of proportional recovery „

First published in 2008 (Prabhakaran et al 2008) an intersting phenomenon was described: The spontaneous impairment recovery after stroke at day 90 after the ictus (with or without treatment) for upper extremity was usually 70% oft he maximum possible difference between initial score and the maximum possible. There were outliers from this rule attributable to severe pathology in the primary descending motor tracts especially the corticospinal tract. In the meantime this"proportional recovery rule was also demonstratesd to apply for impairments in non-motor domains as neglect and language abilities (Lazar et al 2010, Marchi et al 2017). If this 70% proportional spontaneous recovery is a universal rule and cannot be influenced , this of course would mean that impairment oriented rehab is not possible. The challenge is to change the slope (i.e.from 70% to 80%or more) or to make outliers inliers .

In animal experimentation so called „enriched environments" have been proven to facilitate brain repair. There has however been no translation from this experimental animal world tot he clinical bedside

So far only three major strategies have been shown to help decrease impairment in the subacute stage e.g. after stroke: The forced use or constraint induced movement therapy approach has been proven to be effectve in the multicenter prospective EXCITE trial (Wolf et al 2008). Also the use of antidepressant agents was shown to be effective in the FLAME trial (Chollet et al 2011) . Very recently the CARS trial (Muresanu et al 2016) documented for the first time after decades of frustrane attempts to achieve some sort of neuroprotective and/or neurorestorative effects that a mutimodal drug can improve impairment after stroke . This was further corroborated in a consecutive trial (Guekht et al 2017).

Possible additional candidates for a true „impairment" oriented treatment approach are neuromodulatory techniques such as peripheral neuromuscular and/ or sensory stimulation (eg. whole hand subliminal „mesh-glove" stimulation)and more and more also non invasive brain stimulation techniques such as repetitive transcranial magnetic stimulation and transcranial DC stimulation. Also the use of non fatiguable robotic devices to enable a high intensity massed movement treatment appear promising.

As treatment intensity is likely to be the key element for impairment reduction we certainly have to find clever and affordable ways: to increase the daily treatment time of our patients. To day even during inpatient rehabilitation treatment times hardly exceed three hours a day i.e. that we use only a small percentage of waking hours leaving long "idling" time not field by any treatment. In this sense we have to "reinvent" neurorehabilitation within this sensitive post injury period to combat impairment with high frequency treatments combined with neuromodulatory techniques (robot use, peripheral and central stimulation , pharmaceuticals) .

Probably the most important impact in facilitating impairment reduction will however have clever ,economically feasible, approches to increase the net number of therapy or activity hours per day by creating true „ enriched environment" for severely impaired patients . They should enable 6-8 hours of daytime treatment to avoid leaving our patients „inactive and alone" in future.

Neurorehabilitation after the „Proportional Recovery Rule"

But lets adress also the worst case scenario: If the proportional recovery rule cannot be influenced ,there is still ample space if not even more need for neurorehabilitation exploiting our knowledge about compensatory interventions including motor learning. This means optimizing residual motor function at a given a (and unchangeable) impairment level.
References:

Wolf SL, Winstein CJ, Miller JP, Thompson PA, Taub E, Uswatte G, Morris D, Blanton S, Nichols-Larsen D, Clark PC
Retention of upper limb function in stroke survivors who have received constraint-induced movement therapy: the EXCITE randomised trial.
Lancet Neurol. 2008 Jan;7(1):33-4

Chollet F, Tardy J, Albucher JF, Thalamas C, Berard E, Lamy C, Bejot Y, Deltour S, Jaillard A, Niclot P, Guillon B, Moulin T, Marque P, Pariente J, Arnaud C, Loubinoux I.
Fluoxetine for motor recovery after acute ischaemic stroke (FLAME): a randomised placebo-controlled trial.

Lancet Neurol. 2011 Feb;10(2):123-30. doi: 10.1016/S1474-4422(10)70314-8. Epub 2011 Jan 7.

Muresanu DF, Heiss WD, Hoemberg V, Bajenaru O, Popescu CD, Vester JC, Rahlfs VW, Doppler E,Meier D, Moessler H, Guekht A
Cerebrolysin and Recovery After Stroke (CARS): A Randomized, Placebo-Controlled, Double-Blind, Multicenter Trial
Stroke.2016 Jan;47(1):151-9. doi: 10.1161/STROKEAHA.115.009416. Epub 2015 Nov 12

Alla Guekht, Johannes Vester, Wolf-Dieter Heiss, Eugene Gusev, Volker Hoemberg, Volker W. Rahlfs, Ovidiu Bajenaru, Bogdan O. Popescu, Edith Doppler, Stefan Winter, Herbert Moessler, Dafin Muresanu
Safety and efficacy of Cerebrolysin in motor function recovery
after stroke: a meta-analysis of the CARS trials
Neurol Sci 2017 DOI 10.1007

Bernhardt J. Dewey H, Thrift A, Donnan G.
Inactive and alone: physical activity within the first 14 days of acute stroke unit care. Stroke. 2004 Apr;35(4):1005-9.

Lazar RM, Minzer B, Antoniello D, et al.
Improvement in aphasia scores after stroke is well predicted by initial severity.
Stroke 2010;41:1485–1488.

Marchi NA1, Ptak R1, Di Pietro M1, Schnider A1, Guggisberg AG
Principles of proportional recovery after stroke generalize to neglect and aphasia.
Eur J Neurol. 2017 Aug;24(8):1084-1087. doi: 10.1111/ene.13296. Epub 2017 Jun 6.

Prabhakaran S, Zarahn E, Riley C, et al.

Inter-individual variability in the capacity for motor recovery after ischemic stroke.

Neurorehabil Neural Repair 2008;22:64–71.

NONINVASIVE BRAIN STIMULATION AFTER STROKE – WHAT'S THE EVIDENCE?

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Contemporary noninvasive brain stimulation (NIBS) techniques provide important and novel contributions to systems-level neuroscience over the span of last three decades. Despite the existence of several non-invasive approaches, the most significant contributions have undoubtedly achieved by the transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS). Both of these techniques provide an assessment of the internal states of the intact human brain

and a better understanding of its neural dynamics.

In addition to this specific role, the NIBS techniques potential to induce neuroplastic effects in stimulated as well as functionally connected cortical regions opened a new avenue of exciting research. Successive trains of magnetic pulses know as repetitive TMS has a capacity to modulate cortical activity beyond the stimulation period in a frequency-dependent manner, the mechanism that resembles long-term potentiation and –depression, at synaptic levels, based on Hebbian plasticity, although most probably not exclusively.

Considering post-stroke motor recovery, around 1100 patients have been exposed to rTMS either tDCS in RCTs settings, most often directed toward the hand function. This lecture critically reviews the current knowledge on the effectiveness of those methods, as well as safety issues, with highlighting variations in methodological approach.

APHASIAS IN ISCHEMIC STROKE PATIENTS

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Aphasia represents an acquired communication disorder caused by brain damage that impairs a person's ability to understand, produce, and use language.

Aphasia is observed with a prevalence of 25-30% in acute ischemic stroke; it is a marker of stroke severity and is associated with a higher risk of mortality, poor functional prognosis and increased risk of post-stroke dementia.

Recent studies have developed characteristics of aphasia at the hyperacute stage of ischemic stroke, re-examined its anatomy using imaging of white matter tracts, indicated prognosis in the era of stroke units, thrombolysis and thrombectomy, and examined the potential interest of new treatment such as transcranial magnetic stimulation (TMS).

The assessment of aphasias in clinical practice is based on classical analysis of oral production and comprehension. The language disturbances observed are usually combined into aphasic syndromes (non-fluent/ fluent aphasias, etc.) that may evolve rapidly at the acute stage of ischemic stroke. The global aphasia, and anomic plus aphasia are more frequent in acute ischemic stroke; Broca, Wernicke, and transcortical motor aphasia present an intermediate frequency, other aphasias are rare.

The main determinant of the type of aphasia is the infarct location (especially left anterior, posterior or complete middle cerebral artery ischemic stroke). Recent studies at the hyperacute stage have shown that aphasias have a parallel course to that of cortical hypoperfusion, and the reversal of cortical hypoperfusion (following recanalization) is associated with resolution of aphasia.

Language therapy is needed as soon as permitted by clinical condition. Unfortunately, pharmacotherapy remains to be evaluated.

LEADERSHIP IN MEDICINE AND MANAGEMENT

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Leadership, as part of training in management, either in university or in MBA courses, is a relatively young discipline of specific focus while leadership in medicine is hardly ever taught in medical school.

However, the focus on leadership in management has increased especially in the time of a globalized economy as not only different leadership philosophies and their respective strengths and weaknesses are of interest but also specific characteristics expressed in different leadership models in various cultures or regions of the world.

In medicine leadership has traditionally been approached as the natural evolution of the most senior physician or most excellent surgeon also becoming the nominal leader of a medical department. But in modern times of close collaboration between hospital administration (especially the financial and human resource departments) well trained leaders with a medical background need to understand management and leadership concepts well in order to be equal partners to the leaders in hospital administration.

The lecture will introduce different leadership models and highlight also which of these concepts can be found predominantly in different global regions. The lecture will aim for the audience to think about leadership as an essential part of medical training in a world not ruled by medical possibilities but by economical necessities.

CLINICAL AND ELECTROPHYSIOLOGICAL APPROACH TO NEUROMUSCULAR JUNCTION DISORDERS

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Neuromuscular junction disorders (NJD) affect specifically transmission from motor nerve to striate muscle. Skeletal muscle weakness is a hallmark for all these disorders. The frequently affected muscle groups are extraocular, bulbar and proximal. NJD sometimes are confused with myopathies.

Disease mechanisms for NJD most often are autoimmune where autoantibodies induce the muscle weakness. These refer to myasthenia gravis (MG) and Lambert-Eaton myasthenic syndrome (LEMS). Toxic, metabolic factors and DNA mutations as well should be considered. In MG the autoimmune attack is postsynaptic in the majority of cases acting upon the acetylcholine receptors (ACHR). Approximately 10-15% of patients with MG will not have ACHR antibodies ("seronegative" MG). Half of this group of patients will demonstrate antibodies to muscle specific tyrosine kinase (MuSK). The characteristics of anti-MuSK MG are female predominance, severe presentation with involvement of bulbar and respiratory muscles. In LEMS, which is quite rare, the release of acetylcholine from presynaptic terminal is reduced. LEMS is a paraneoplastic disorder related to lung cancer. MG could be in association with thymoma.

Neurophysiological examinations are important to diagnose NMJ correctly. Specialized examination techniques such as testing of single nerve fibers and repeated stimulation at defined frequencies are often necessary. An appropriate selection of the muscles is essential for the examination. Single-fiber examination is more sensitive, but repetitive stimulation more specific.

With optimal treatment, the prognosis for most patients with NMJ is good with little increased mortality risk. The treatment components are symptomatic (acetylcholine esterase inhibitors), immunosuppressive, thymectomy, treatment of MG worsening (crisis) and comorbidity. Respiratory function needs special attention in patients

with NMJ, and heart muscle involvement is potentially a severe complication. In MG crisis IVIG and plasma exchange have comparable efficacy.

FUNCTIONAL NEUROLOGICAL DISORDERS IN CHILDREN –CAN REHABILITATION HELP?

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Symptoms of a Functional Neurological Disorder (FNS) are frequently encountered by pediatricians, neuropediatricians, psychologists and child psychiatrists. The concept of FNS has changed during the last years. The diagnosis is made by identifying the typical clinical signs. The therapeutic approach is pragmatic and multidisciplinary. Somatic procedures (special type of physiotherapy) and psychological interventions complement one another and are individually adapted to the patients needs. An early intervention can prevent a longstanding chronic course of FNS.

Ani, Cornelius; Reading, Richard; Lynn, Richard; Forlee, Simone; Garralda, Elena (2013): Incidence and 12-month outcome of non-transient childhood conversion disorder in the U.K. and Ireland. In The British journal of psychiatry: the journal of mental science 202, pp. 413–418. DOI: 192/bjp10.1.bp.112.116707.

Barbey, Anita; Aybek, Selma (2017): Functional movement disorders. In Current opinion in neurology 30 (4), pp. 427–434. DOI: 10.1097/WCO.0000000000000464.

Grattan-Smith, P. J.; Dale, R. C. (2016): Pediatric functional neurologic symptoms. In Handbook of clinical neurology 139, pp. 489–498. DOI: 10.1016/B978-0-12-801772-2.00040-0.

RARE NEUROLOGIC DISORDERS IN THE CONTEXT OF RARE CAUSES OF STROKE

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According to the World Health Organization, 15 million people suffer stroke worldwide each year. Of these, 5 million die and another 5 million are permanently disabled. Europe averages approximately 650,000 stroke deaths each year.

Stroke is the number one cause of permanent disability globally and the second most common cause of dementia. Although stroke among young adults is generally considered a rare event, with a previous study reporting that about 5% of all strokes in the United States occurred in a young adult population aged between 18 and 44 years, there is growing evidence of an increasing trend of stroke in young adults. It has been documented that stroke incidence in young adults aged between 20 and 54 years has significantly increased between 1999 and 2005.

Many risk factors for cerebrovascular diseases have been established including no modifiable factors such as age, gender, and race, as well as acquired risk factors such as hypertension, smoking, diabetes, and obesity. These factors, however, only account for a portion of the stroke risk suggesting that other variables, including genetics, must be involved in the etiology of stroke. The exact contribution of genetics to the incidence of stroke still remains largely unknown; however, it is clear that stroke can result from both monogenic and polygenic diseases. Common monogenic causes of stroke include cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) and its autosomal recessive form, CARASIL, as well as sickle cell disease, and Fabry disease.

Among rarer monogenic and polygenic causes of stroke we have: mitochondrial encephalomyopathy, lactic acidosis, and stroke like episodes (MELAS), hereditary endotheliopathy with retinopathy, nephropathy, and stroke (HERNS), homocystinuria, moyamoya disease, and inherited connective tissue disorders, including type IV collagen α1- chain gene (COL4A1) mutation, Marfan syndrome, and vascular Ehlers–Danlos syndrome (VEDS).

Despite all recent advances in neuro-technologies applied for stroke diagnostic, up to a third of strokes are rendered cryptogenic or of undetermined etiology. This number is specifically higher in younger patients. At times, inadequate diagnostic workups, multiple causes, or an under-recognized etiology contributes to this statistic.

The current presentation will give a brief overview related to most studied rare causes of stroke: aortic arch atheroma, cervical dissection, PFO & ASA, hereditary conditions, thrombophilia, acquired hypercoagulable status and vasculitis.

NEUROLOGICAL REHABILITATION OF THE ELDERLY – BETWEEN RISK FACTORS AND PROGNOSIS

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The field of neuro-rehabilitation for aged people is a huge, large and challenging section of clinical and rehabilitation activity. The aim of the presentation is to put up to date and develop the particularities of rehabilitation between risk factors and prognosis focused on aged people suffering of some neurological diseases as: stroke (CVA), neurological trauma, multiple sclerosis (MS), Parkinson's disease and different types of cognitive impairment.

CVA has double risks for every decade after the age of 55, more common in men then women and the risk increases if immediate family member has hade a CVA. There are some related to genetic conditions, others to education and behaviour (diabetes mellitus, alcoholic drink hypercholesterolemia, smoking, contraception). Depending on the type of stroke (ischemic or hemorrhagic), HTA in 30% presents high risk and fibrillation five times greater risk of stroke. Pharmacotherapy, especially the anticoagulant, reduces the risk of stroke. Physical inactivity increases the risk for stroke and physical activity decreases that risk. As prognosis the first CT or PET, fMRA or MRA spectroscopy can evaluate the cortical activation pattern to perform movement. In the absence of these evaluations we may introduce step-by step the rehab program, taking care of the pathologic association background and cognitive status. Some researches in Netherlands have shown that 5 weeks after the rehab program, the physical therapy and occupational therapy are tools to predict patient's waking ability and hand dexterity 6 month after stroke.

MS, as an autoimmune disease characterized by inflammation and demyelination of CNS, presents symptoms which can vary unpredictable. Progression depends of several factors starting from motor, sensory and psycho-behavioral disturbances (weakness, fatigue, ataxia, pain, paresthesia, bowel and urinary dysfunction, diplopia, depression) and impact of aging. The interventions of the rehabilitation program include: farmacotherapy (pain, anticonvulsivants, antispastic, intrathecal baclofene pump, antidepressants and anxiolitics, s.a.), posture assessment, verticalisation, balance, gait and manual dexterity training, assistive devices and

environmental adaptation. The rehabilitation program of the elderly with chronic, progressive evolution of MS focuses on symptoms, conserve the energy during the kinetic program and educate the patient and caregivers for adapted equipment and compensatory strategies specific for every patient and prognosis is a challenge.

Parkinson's disease as a neurodegenerative pathology results from a loss of pigmented neurons in the substantia nigra, reducing dopamina. Clinical expressions, as tremor, rigidity, bradykinesia and postural instability, develop a lot of locomotor dysfunctions, impairments and disability in the elderly. The patient needs a multidisciplinary team including specialities like neurology, neurosurgery, orthopaedic, rehabilitation and family medicine. In the rehabilitation program is also included a paramedical team formed of specialists in physical therapy, psychotherapy and speech therapy, occupational therapy, to sustain the functional somatic level and quality of life.

A lot of persons from the group of elder patients develop temporary or permanent cognitive impairment (delirium, dementia, Alzheimer disease). The rehab team includes physical therapist, occupational therapist and psychotherapist, specialized nurse, nutritionist and social worker, try to maximize functional level of somatic and visceral independence (range of motion, strength, coordination, balance and falls, other specific medical problems) and also to maintain the habits, the activities, communication and a positive climate of living in security and trust.

A SYNTHETIC APPROACH ON ENDEAVORS TOWARDS SYSTEMATIZING CLINICAL ASSESSMENT INSTRUMENTS USED TO EVALUATE NEUROMOTOR/ COGNITIVE-FUNCTIONAL DEFICITS AFTER TRAUMATIC BRAIN INJURIES, IN ADULTS, INCLUDING THROUGH THE ICF(-DH) CONCEPTUAL FRAMEWORK

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The already well-known concept of "Evidence-based Medicine" became, in the last decades, a constant and consolidated pathway for specific decision-makings, that applies including within the field of clinical assessment instruments used to evaluate neuromotor/ cognitive-functional deficits after traumatic brain injuries (TBI), in adults.

Accordingly, there is, at present, a large number of measurement tools used, also,

in the post TBI pathology (ones availed for evaluation in other disabling sufferance, too) and in this millennium, as the World Health Organization (WHO) new paradigm to approach human functioning: the International Classification of Functioning Disability and Health ICF(-DH)'s implementation progressed, there have appeared interesting and useful steps towards systematizing such above mentioned assay constructs through the ICF(-DH) conceptual framework.

This invited lecture encompasses the following topics:
- a brief general overview on the WHO's ICF(-DH)
- a synthetic presentation of the main currently met, in the literature, related quantification scales, and
- their positioning in respect to the ICF(-DH) structure
- corollary discussion and conclusions regarding actuality and possible advancements in the domain.

Keywords: traumatic brain injury/es (TBI), International Classification of Functioning Disability and Health ICF(-DH), assessment instruments/ measurement scales

PILATES, TAI CHI AND QIGONG: NEW ATTRACTIVE METHODS IN MANAGEMENT OF PARKINSON`S DISEASE

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Exercise has been recommended for patients with Parkinson's disease (PD) regardless of their disease status or ongoing management. In recent years several reports appeared on the use of non-conventional methods in the treatment of patients with PD, particularly dance, music, Tai Chi and Qigong.
In XXIst century Pilates exercise which has been known as useful in musculo-skeletal disorders, started to be used also in Parkinson`s disease. Joseph Pilates said: "To achieve the highest accomplishments within the scope of our capabilities in all walks of like, we must constantly strive to acquire strong, healthy bodies and develop our minds to the limit of our ability."

Tai Chi is a traditional Chinese martial art that was developed in the 13th century, and it has been widely practiced for centuries with various modifications. Tai Chi combines deep breathing and relaxation with slow and gentle movement while maintaining good postures. It also involves slow and graceful stepping movements with full weight-bearing on both lower extremities, which demands a considerable amount of work by the leg muscles. The benefits of Tai Chi exercise have been

documented for stress reduction, improved agility and balance, postural control, and lower-extremity strength in elderly people. Tai Chi has been shown to improve measures of quality of life (QoL) and balance in people with PD.

Many authors, like Klein and Rivers (2006), Li et al. (2007), Lee et al. (2008), Fuzhong Li et al. (2012), Song (2017) confirmed the improvement of leg strength, stretching, maintain balance and preventing of falls as a result of Tai Chi.

The characteristics of Tai Chi and Health Qigong are slow, coherent, and aerobic low-intensity exercises that can relax body and mind. Tai Chi and Qigong are treated as a style of Chinese martial arts incorporating meditation, breathing, and physical movement. Exercising Tai Chi and Qigong serves many functions: relaxing body and mind, inducing pleasure and satiety, recharging metabolism, improving heart functions and slowing heart rates, and reducing blood pressure.

In concluding: Unconventional methods of treatment of PD like Pilates, Tai Chi and Qigong are much more attractive for patients. Traditional exercise seem to be boring. Recent scientific reports on the use of non-conventional methods in the treatment of patients with PD are very promising.

VASCULAR EPILEPSY

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More than 10% of stroke patients experience seizures in the next five years after stroke and 40% of patients with a post-stroke seizure have a second seizure in the next year. If seizures onset is during the first two weeks post-stroke are classified as early, if they appear later are classified as late. One third of patients with early seizures and one half of patients with late seizures develop vascular epilepsy. In ischemic stroke, the main risk factors for developing vascular epilepsy are the severity of initial neurologic deficit, the size of the lesion, location of the lesion to the cerebral cortex or hippocampus and the embolic mechanism. In hemorrhagic stroke MCA aneurism and cortical bleeding are risk factors. Pathogenic mechanisms are different, in early ischemic stroke seizures excitotoxicity and metabolic dysfunction are the key players, in late ischemic stroke seizures aberrant neuroplasticity seems to lead to development of epileptic foci and in seizures following hemorrhagic stroke hemosiderin probably is the cause. Fortunately, monotherapy is effective to control vascular epilepsy in 88% of cases, the most used drugs being carbamazepine, sodium valproate, lamotrigine, phenytoin and levetiracetam. However, a lot of

attention must be payed to drug interaction in these patients, since almost all are treated with antihypertensive, statin, antiplatelet or anticoagulant drugs.

GERONTECHNOLOGY FOR OLDER STROKE PATIENTS

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It is estimated that worldwide prevalence of older people will increase almost threefold over 100 years: from 8% in 1950 to 21% in 2050, a phenomenon called demographic aging. For the first time in the history of mankind, people can expect to live up to 95 years and beyond. But the consequences of living longer carry with them many challenges. They are associated with increased morbidity and more years spent with dependency and disability from underlying diseases that affect physical, cognitive and sensory functions. As the percentage of older people in general population continues to rise, there will be a higher incidence of stroke and a greater need for stroke rehabilitation in this age group. Gerontechnology is dedicated to make the connection between novel technologies and complex needs of older people, including those with disabilities secondary to stroke. Rehabilitation in older stroke patients needs to take into account both the functional decline due to neurologic event and the pre-existent comorbidities. New technologies come to answer to these requirements. Moreover, older people benefit of a multidimensional approach for post-stroke rehabilitation: physical, cognitive and emotional. In addition, they need a constant monitoring after returning to community and a friendly home environment, adapted to their complex needs. Home care of older stroke patients is a very demanding task and gerontechnology comes to lessen the burden for carers by making use of assistive devices including robots, adaptive ambient and smart environments, sensor technology to monitor disruptive behavior or complications, all based on information and communication technologies.

THE PECULIARITIES IN NEUROREHABILITATION OF PATIENTS WITH MULTIPLE SCLEROSIS

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Multiple sclerosis (MS) is a long-lasting disease typically affecting young adults characterized by a disseminated, chronic, inflammatory demyelinating disease of the central nervous system (CNS). MS is considered to be an autoimmune disease, initiated by T cells targeting self-antigens in the CNS in genetically susceptible individuals. Pathological features of MS include breakdown of the blood-brain barrier, multifocal inflammation, demyelination, oligodendrocyte loss, reactive gliosis, and various degrees of axonal damage, ranging from transient dysfunction to irreversible loss, even at early stages of the disease. Although acute inflammation usually causes reversible neurological dysfunction, MS relapses may also lead to residual irreversible disability involving motor, sensory and cognitive functions. Approximately 50% of people with MS become moderately to severely disabled within 15 years of disease diagnosis and this proportion increases to 75% after 45 years.

Several disease-modifying drugs have been introduced for relapsing-remitting MS (RRMS). Drugs, which have also been approved for use In secondary progressive multiple sclerosis (SPMS): interferon beta-1b and mitoxantrone, do not delay disability progression. Although we expect progress (siponimod), presently 50% of patients with SPMS must rely on other forms of care. A range of symptomatic treatments are available, including pharmacotherapy (eg, for spasticity, gait, pain, ataxia,..), stereotactic neurosurgery (thalamotomy or deep-brain stimulation), and neurorehabilitation. However, treatment remains challenging.
Health-related quality - aspects of life is of critical importance in the care of patients with MS. Several features of MS particularly contribute to poor HRQL (Benito-Leon et al., 2003):

1. MS is a disease with a long list of possible deficits, encompassing a broad range of neurologic and neuropsychiatric functions, as well as other areas.
2. Patients with MS often are diagnosed as young adults; thus, MS greatly affects the development and course of their lives as they try to anticipate their future disability.
3. Due to the MS's unpredictable course, this anticipation is often unsuccessful, and patients have difficulty maintaining a sense of control over their disease.
4. There is no possibility of cure and
5. Current treatments are imperfect, carry some risk, and are sometimes

inaccessible because of inequities in health care provision.

Symptoms rated as important by patients with multiple sclerosis in their perceived order of importance include balance (75 % of patients) and mobility impairments (80% of patients), weakness (70 % of patients), reduced cardiovascular fitness, ataxia (80 % of patients), fatigue (80 % of patients), bladder dysfunction (58-75 % of patients), spasticity (60-90 % of patients), pain (55-70 % of patients), cognitive deficits (60-70 % of patients), depression (25-50 % of patients), and pseudobulbar affect (10 % of patients). Those who develop MS before the age of 20 tend to suffer also from visual dysfunction and sensory problems. Comorbidities, like hypertension, hyperlipidemia, chronic lung disease, depression or anxiety, occur in up to 50% of individuals with MS. In patients with MS and comorbidity a more rapid progression of disability, a greater reduction in quality of life, and an increase in mortality can be observed.

Neurologic disability is significantly associated with HRQL, however, HRQL measures often do not correlate with scales that measure disability, such as the Expanded Disability Status Scale (EDSS) and the Multiple Sclerosis Functional Composite (MSFC). Patient-rated emotional adjustment to illness and patient-rated handicap show the strongest correlations with various measures of HRQL.

Researchers have shown that neurorehabilitation interventions can improve physical function, increase activity and participation, reduce disease burden and optimize the quality of life of people with MS.

It has been implied that rehabilitation is able to enhance neuroplasticity, that is, the intrinsic property of the CNS to structurally and functionally adapt itself in response to external stimuli, environmental changes, or injuries.

Although greater benefits are generally believed to be gained from neurorehabilitation interventions in the earlier phases of MS, there is encouraging evidence that the capacity for neuroplasticity and motor or cognitive learning seems to continue even with more severe disability. Whether or not there is a point at which neural reserve becomes too low for neural plasticity to promote functional change remains unknown. Peripheral physiological changes, such as muscle endurance, and the ageing process, in which reintegration of sensory information becomes more difficult and attention demanding, also contribute to functional limitations.
Preliminary research also suggests that exercise itself might delay disease progression by reducing inflammation and encouraging neuronal repair.

As relationship between different levels of health (ICF WHO) is not linear, it is important to assess functions, activities, participation and quality of live independently and set the rehabilitation goals accordingly. Symptomatic relief and enhancing coping strategies to improve HRQL should therefor be major components of MS care.

IMAGING OF ACUTE STROKE : STATE OF THE ART

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Beside the exclusion of intracranial haemorrhage and stroke mimics, MRI and CT permit an early detection of ishemic stroke, the extension of brain infarct , to identify the arterial occlusion through the anatomical exploration of extra- intracranial circulation and to study the intravascular trombi.

MR/CT imaging may be used to identify the extension of potential viable brain tissue (penumbra) and of irreversible brain lesion (core) using CT perfusion and/or diffusion weighed and perfusion weighted MR imaging.

Recent advances in mechanical thrombectomy techniques have resulted in improved, recanalization and functional outcomes in acute stroke.

Pre-procedural imaging performed to assess suitability for endovascular therapy provides information on clot characteristics, such as clot location, length, density, and susceptibility, which may predict the efficacy of intravenous and endovascular treatments.

ROBOTIC THERAPY, SCIENTIFIC DATA AND CLINICAL EXPERIENCE

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The neurophysiological background of Robotics in Neurorehabilitation is the evidence that intensive training (frequency and duration) and task-specific training improves significantly the neurological outcome. There are several Robotic devices on the market, more or less complex, for upper and lower limbs, with different approaches (Exosceleton, Endeffector System). Although several critical reports the robotic training seems at least equal to intensive conventional rehabilitative therapy.

In our Rehabilitation Department we started to use Robotic gait training since 2002 and we developed different devices to improve muscle tone and motor control of upper limbs and the trunk. The clinical experience and the data will be discussed.

PAIN IN NEUROREHABILITATION

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Pain is common in neurorehabilitation, and painful conditions are those with the highest economic and social burden among those requiring rehabilitation. Despite the importance of pain, not only as a target for neurorehabilitation, but also as a factor potentially affecting outcome, guidelines or consensus on how to deal with pain in this setting has long been lacking. To fill the knowledge gap on pain in neurorehabilitation, the Italian Consensus Conference on Pain in Neurorehabilitation (ICCPN) was promoted, and enrolled a panel of experts representing the main Italian scientific societies in the fields of neurology, (neuro)rehabilitation, and/or pain. Being aware that information from studies with strong evidence-based medicine (EBM) methodology is lacking in neurorehabilitation, because of the difficulties in blinding and standardization of physical therapy and rehabilitation procedures, we chose a consensus conference instead of a systematic review. Consensus conference offers a wide perspective because it considers observational, case–control, and other types of studies, and the opinion of experts in addition to randomized controlled trials (RCTs), other guidelines, meta-analyses and recommendations.

The main limitation of a consensus conference is the potential arbitrariness of the conclusions, but a larger panel of experts from different fields of medicine may at least partially overcome this point. The ICCPN task force was composed by 27 working groups and included 128 members from different fields (neurology, physical medicine and rehabilitation, pain medicine, psychology, neurophysiology, pharmacology, physical therapy, orthopedics, gynecology, urology) in accordance with the multidisciplinary approach that is typical of neurorehabilitation. The bibliographic search, and the evaluation and scoring of a large bulk of literature required a couple of years, and the ICCPN recommendations have recently been published in open access format. The ICCPN yielded 252 recommendations, of which 32 (12.7%) were scored as grade A, 58 (23.0%) as grade B, 39 (15.5%) as grade C, 27 (10.7%) as grade D, but the majority of them (96/252, 38.1%) were based on expert opinion in the absence of any consistent evidence, and scored as good practice point (GPP). Of notice, most of grade A and B evidence came from

studies in the fields of neurology, clinical neurophysiology or pain therapy, but were considered to be pertinent to neurorehabilitation.

Most of the recommendations on physical therapies and exercise were of low (i.e., D or GPP) grade. Taken together, these data underscore the overall low quality of current EBM data on the assessment and treatment of pain in neurorehabilitation, and offer some hints on how to design more robust and methodologically-sound RCTs in this setting. Researchers in neurorehabilitation should take into account a pragmatic design for their RCTs. Moreover, the efficacy of a multidisciplinary approach, which is common in neurorehabilitation, and can combine pharmacological treatments, physical and occupational therapy and psychological interventions warrants to be tested in pain conditions, such as complex regional pain syndrome, where each single intervention is poorly effective.

A CO-ULTRAMICRONIZED PALMITOYLETHANOLAMIDE/LUTEOLIN COMPOSITE MITIGATES CLINICAL DISABILITY AND MOLECULAR MARKERS IN A MOUSE MODEL OF EXPERIMENTAL AUTOIMMUNE ENCEPHALOMYELITIS

STEPHEN SKAPER
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Multiple sclerosis (MS) is the prototypical inflammatory disease of the CNS, whose defining feature is the destruction of myelin. MS is the most frequent cause of chronic neurological impairment in young people. The autoimmune nature of the disease has led to the development of therapeutic strategies based on immunosuppressants, immunomodulators, and monoclonal antibodies. In spite of the noteworthy gains in treating MS, these agents do not necessarily ensure repair or target oligodendrocytes, the myelin-producing cells of the CNS. MS lesions are characterized by the presence of a compromised pool of undifferentiated oligodendrocyte precursor cells (OPCs) which fail to mature into myelin-producing oligodendrocytes. A co-ultramicronized composite of PEA and the flavonoid luteolin (co-ultraPEALut, 10:1 by mass), which possesses analgesic, anti-inflammatory, and neuroprotective is efficacious in improving outcome in several CNS injury models. We recently showed co-ultraPEALut to enhance OPC morphological complexity, protein content, and gene expression for myelin basic protein, proteolipid protein, and 2',3'-cyclic nucleotide 3'-phosphodiesterase, as well as genes coding for

enzymes involved in cholesterol and fatty acid synthesis – all important components of myelin. Experimental autoimmune encephalomyelitis (EAE), a widely utilized animal model of MS based on active immunization with myelin oligodendrocyte glycoprotein (MOG35-55) in female C57BL/6 mice was used to investigate the effects of co-ultraPEALut on clinical outcome and expression of selected disease-relevant markers. Co-ultraPEALut, administered intraperitoneally starting on the 11th day post-immunization (initiation of disease onset) dose-dependently and significantly improved clinical score over the range 0.1-5 mg/kg. Importantly, In MS, cerebellar signs and symptoms as well as cognitive dysfunction are frequent and contribute to clinical disability with only poor response to symptomatic treatment. Further, medulla oblongata volume is considered a valid biomarker of spinal cord damage and disability in MS. Gene expression profiling in medulla oblongata and cerebellum revealed time-dependent increases over a 21-day period in markers for inflammation cytokines, chemokines, acute phase proteins, inducible nitric oxide synthase, cyclooxygenase-2, and the NLRP3 inflammasome, along with microglial cell activation. In addition, markers characteristic of immune system activation in MS (CD4, CD8, CD137) were also elevated. Timing varied as a function of the gene studied, with values generally being low at 7 days, and either peaking at 14 days and/or remaining elevated through 21 days post-immunization. Treatment with co-ultraPEALut in a number of cases was able to limit the enhanced expression of the above genes. Strategies intended to promote endogenous remyelination in MS should focus on both enhancing the long-term survival of OPCs and on stimulating these cells to differentiate into remyelinating oligodendrocytes. Within this context, co-ultraPEALut may represent a novel pharmacological approach.

VASCULAR IMAGING IN STROKE ETIOLOGY AND PATHOPHYSIOLOGY

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Cerebral imaging is the first manadatory step to establish the stroke subtype (ischemic or hemorrhage) and give some hints about mechanisms like a large vessel embolic or hemodynamic stroke or small vessel disease. Vascular imaging of the cervical and cerebral arteries is the next step in thoroughgoing study of ischemic stroke etiology and risk of reccurence.

Classical ultrasound or CT/ MRI angiography and DSA examination could reveal the location and degree of stenosis of cervical or cerebral arteries, but to some

degree the structure of atheroma, lenght of thrombus, all with implication in therapeuthical measures in the acute phase of ischemic stroke (like thrombectomy decision) or revascularization strategies like endarterectomy or stenting of carotid stenosis. Other diseases like dissections of extra - or intracranial arteries, Moya-Moya, or inflammatory arteritis could also be detected through vascular imaging. Beyond this classic approach the more modern techniques like high resolution magnetic resonance imaging coupled with black blood sequences and ultrasmall superparamagnetic iron oxide (USPIO) nanoparticles could detect potential symptomatic plaques presenting a higher incidence of cap rupture, juxtaluminal thrombus, complicated American Heart Association type VI plaques, and larger areas of intraplaque hemorrhageor plaque inflammation. Mural hematoma is usually homogeneous in cervical arterial dissection while being heterogeneous in hemorrhagic atherosclerotic plaques. Arterial wall inflammation with strong contrast enhancement after administration of gadoterate meglumine is highly suggestive of vasculitis.

CLINICAL RESEARCH WITHIN THE FRAMEWORK OF EVIDENCE-BASED MEDICINE - METHODOLOGICAL CHALLENGES AND ADVANCES

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Evidence-based practice knocks on the door of clinical research in neurorehabilitation. The clinical trial is the mechanism for comparing and testing therapeutic interventions to determine their effect in human subjects and thus their value in rehabilitation practice (Terrin, 2003, Behrman 2013). But how are the chances to improve therapeutic concepts within the demanding framework of evidenced-based medicine (EBM)?

Up to now, neurorehabilitation plays a rather orphan role within the framework of EBM. There is need to introduce EBM principles to neurorehab and to open neurorehab to EBM. Recent reports from interdisciplinary working groups consisting mostly from neurologists, neurosurgeons, neuropsychologists, and biostatisticians, state that to create improvements in neurorehabilitation clinical research, important methodological lessons from the past must be taken into account. Is neurorehab clinical research stifled by backward oriented designs? An evaluation of neuroprotection intervention studies conducted in the last 30 years has determined that methodological design flaws are among the major reasons

why pharmacological agents fail to demonstrate efficacy.

Many inconclusive studies used, e.g., a single outcome measure approach based on dichotomization of full scales, such as the modified Rankin scale (mRS) or the Glascow outcome scale. As highlighted by leading researchers and methodologists, dichotomization of a full scale is burdened with loss of power and arbitrary choice of cutoffs, allowing only limited statements on treatment effects. The result of the ECASS II stroke trial provides an excellent example for the associated risk of bias: while dichotomization using mRS 0-1 resulted in P = 0.277, dichotomization using mRS 0-2 resulted in P = 0.024, i.e. in two opposite conclusions on evidence.

Appropriate full scale analyses, multidimensional approaches, meta-analytic pooling across baseline severity strata represent promising pathways to improve assay sensitivity within the framework of evidence-based medicine.

In this lecture, the basic concept of evidence-based medicine, most common traps, classic and modern approaches to study design are discussed with examples from different fields of neurorehabiliation.

VASCULAR REMODELING AND CHANGES IN THE NEUROVASCULAR UNIT IN TISSUE RECOVERY TO ISCHEMIC INJURY

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With a limited repertoire of interventions to improve the outcome of ischemic stroke, recent efforts have turned to developing molecular and cellular approaches that might enhance recovery and improve potential neurological outcome. These have generally focused on efforts that might employ or stimulate stem cell compartments in the central nervous system (CNS) during injury in small animal models. Understanding fundamental events in the acute period of ischemic stroke, including cell-cell interactions, is still limited. This presentation will examine several of these events and the processes that are altered by ischemia. The neurovascular unit is both a structural and conceptual framework that recognizes functional interactions among microvessels (endothelium, basal lamina, pericytes, and astrocyte end-feet), intervening astrocytes, and the neurons and the axons they serve, and other supporting cells (e.g. microglia, oligodendroglia). While there is substantial evidence that neuronal stimulation can alter flow through the dependent

cerebral microvascular bed, evidence that the microvessel endothelium–matrix–astrocyte complex communicates with the neuron is so far sparse. Compartment sensitivity to ischemia and innate inflammation are central to this discussion. The processes affected acutely in response to focal ischemia include i) microvessel patency, ii) microvessel permeability, iii) new vessel formation (angiogenesis), and iv) new neuron generation (neurogenesis).

Temporal responses of the target microvasculature to ischemia demonstrate that i) intravascular patency is compromised by activation of peripheral inflammation and local hemostasis, ii) these events can be reversible in experimental situations, and iii) structural alterations occur in target microvessels that coincide with increased permeability, edema, and hemorrhagic transformation, iv) beginning in the time frame when neuron function is altered in the territories of ischemic injury. Current unknowns include how the structural alterations occur, whether they are reversible, and how microvessel and neuron behavior are coordinated.

Events within the microvasculature and adjacent neurons following the onset of focal ischemia occur simultaneously. The development of new vessels by angiogenesis results in capillary bud formation in the ischemic territories by 5-7 days. However, the microvessel-associated signals (VEGF, αv-integrins) are generated within 1-2 hours of focal ischemia onset and distributed heterogeneously. Recent work has confirmed that these activated microvessels appear within the ischemic cores. Their purpose is still unclear. Their ultrastructure does not reflect that of mature microvessels or capillaries. Neuron proliferation derives from the subventricular zone and dentate gyrus of the injured brain. Migration toward their presumed end-stations has been documented. However, coordination with new vessel formation is not yet well-documented.

Potential stimuli for the promotion of angiogenesis and neurogenesis have been proposed. It is instructive to consider the results of these interventions in terms of their ability to reconstitute the fully functional neurovascular unit.

CURRICULUM VITAE

JAROSLAW ARONOWSKI
USA

Dr. Aronowski is Professor and Vice Chair of Neurology, and the Roy M. and Phyllis Gough Huffington Chair in Neurology at the University of Texas Health Sciences Center (UTHealth) in Houston. He received his degrees from the Warsaw Medical School and Polish Academy of Sciences. He has published more than 100 papers, and given more than 100 plenary lectures and invited presentations around the world Aronowski has served on more than 100 NIH and AHA study sections and acted as a member of the Planning Group to Establish NIH Future Goals/Priorities in Stroke Research-National Institute of Neurological Disorders and Stroke (NINDS). Aronowski's research has been sponsored continuously for two decades with grants from the National Institutes of Health (NIH) and the AHA.

Discoveries in Aronowski's laboratory have resulted in clinical trials for ischemic stroke and intracerebral hemorrhage. He is the Associate Editor for Basic Science for the Stroke journal. He is co-chair of the advisory committee for preclinical studies for NIH StrokeNet. He currently serves as a Treasurer and member of the Financial Committee for the International Society for Cerebral Blood Flow and Metabolism.

In the field of experimental research, Aronowski has trained dozens of clinical stroke fellows, research fellows, and scientists who today play instrumental roles in leading clinical stroke research around the world.

His research focuses on understanding the cellular and molecular mechanisms underlying the pathology of acute cerebral ischemia, reperfusion injury, and secondary injury after intracerebral hemorrhage, with emphasis on the role of transcription factors (specifically NF-αB, Nrf2 and PPAR), neuroinflammation (including the role of microglia, neutrophil, and oligodendroglia), stem cell therapy, and the use of ultrasound in tPA-mediated thrombolysis. Last year, he was honored with the 2017 Thomas Willis Award from the American Heart Association for his significant and long-term contributions to the basic science of stroke.

OVIDIU BĂJENARU
ROMANIA

Corresponding Member of the Romanian Academy
Member of the Romanian Academy of Medical Sciences of Romania
Professor of Neurology and Director of the Clinical Neuroscience Department at the University of Medicine and Pharmacy "Carol Davila" Bucharest, Chairman of the Department of Neurology – University Emergency Hospital Bucharest

- Graduate of the Faculty of Medicine – University of Medicine and Pharmacy (UMF) „Carol Davila" Bucharest (1983)
- Specialist in Neurology (1989), Senior Neurologist (1994); competence in MRI diagnostic in neurologic disorders (1991)
- PhD (1993) - UMF „Carol Davila" Bucharest
- 2006: Doctor Honoris Causa –University „Ovidius" – Constanta
- Postdoctoral specialization at the University „René Descartes" (Paris) during 1993-1994, in clinical Neurology (CHU „Saint-Anne" and „Kremlin-Bicetre") and research grants in Clinical and Experimental Neurophysiology (CHU „Cochin-Port Royale" and Faculté de Medecine Paris V)
- 2001-2013: President of the Romanian Society of Neurology
- Since 2013: Honorary President ad vitam of the Romanian Society of Neurology
- Since 2001: Coordinator and Chairman of all annual National Congresses of the Romanian Society of Neurology and many other scientific events and teaching courses organized for neurologists in Romania
- Visiting Professor in Vietnam (2013) and Kazakhstan (2015), on behalf of WFN
- Member of the Executive Committee of ENS (European Society of Neurology) between 2005-2009, of the Scientific Committee of ECTRIMS (2004-2009)
- Member of European Academy of Neurology (since 2014), American Academy of Neurology, International Parkinson's Disease and Movement Disorders Society, European Stroke Organisation, Danube Neurological Association (member of the Scientific Board and Deputy Secretary General), and others
- Since 2008: official representative of Romania for UEMS - European Board of Neurology (secretary of the Executive Committee between 2010-2015) and member of the examination board for the title of European Neurologist
- Author of more than 1000 scientific papers reported and published in scientific journals, among 147 cited in ISI Web of Science (Hirsch index 16) and Pubmed. Author of chapters in 2 international books of neurology and author and co-author in more than 15 medical books published in Romania.

- Coordinator of the National Diagnostic and Treatment Guidelines in Neurological Disorders
- National Principal Investigator and Investigator in more than 50 international, multicentric, controlled clinical trials in: stroke, Parkinson's disease and movement disorders, multiple sclerosis, dementia, epilepsy, and others.
- Director of more national research grants
- 9 awards of excellency in medicine from different socio-professional national and international organizations, the Romanian Ministery of Health and the Romanian Orthodox Patriarchate
- Initiator and coordinator of the National Medical Programs of the Ministery of Health and National Health Insurance System for the treatment of: acute stroke, multiple sclerosis, rare neurological diseases, advanced Parkinson's disease (1999 – 2015)
- President of Consultative Commision of Neurology of the Ministery of Health and National Health Insurance System (2008 – 2015)

ANDREAS BENDER
GERMANY

TITLE AND POSITION	MD, Professor of Neurology, University of Munich Head of Department, Therapiezentrum Burgau
INSTITUTION	University of Munich, Germany, Department of Neurology & Therapiezentrum Burgau, Germany, Department of Neurology

UNIVERSITY EDUCATION

1992 - 1995	Medical School, University of Düsseldorf, Germany
1995 - 1996	King´s College Medical School, London, UK (DAAD scholarship)
1996 - 1999	Medical School, University of Munich, Germany

ACADEMIC CAREER

1999 – present	University of Munich, Department of Neurology

2001	Doctoral thesis (MD), Department of Psychiatry, University of Munich
2004	Research fellow, Newcastle upon Tyne University, UK (ENS scholarship)
2007 – 2008	Else-Kröner-Fresenius-Memorial-Stipend
2007 – 2008	Research fellow, University of California, San Diego (UCSD), USA
2008	Board certification & Faculty Membership in Neurology ("venia legendi")
2015	Appointment as Professor of Neurology, University of Munich

MAJOR AWARDS

2004	European Neurological Society Fellowship
2007	Else-Kröner-Fresenius-Memorial-Stipend
2009	Neuroprotection Award of the German Brain Foundation
2012	Poster Prizes of the German Neurological Society and German Neurorehab. Soc.

MAJOR GRANTS
Else-Kroener-Fresenius Foundation 2006-2008; 2014-2017
German Research Foundation (DFG) 2008-2010
Federal Ministry of Education and Research (BMBF) 2009-2012
Hannelore-Kohl Foundation (2011-2013)
Federal Ministry of Health (BMG) 2012-2014

PUBLICATIONS
102 publications in peer-reviewed medical journals
Author and Editor of 2 neurology textbooks for medical students

HEINRICH BINDER
AUSTRIA

EDUCATION:

1965 - 1972	Faculty of Medicine at the University Vienna MD since (promotion on) 1972, June 6th
1972 - 1978	University Hospital for Neurology,

	graduated in Medical Specialist for Neurology and Psychiatry
9/1982	Docent for neurology, a title corresponding to PhD
since 1988	Professor for Neurology, University Vienna founding member of the Austrian Society for Neurorehabilitation
5/1989	Head of the Neurological Hospital "Maria Theresien-Schlössel"
1994-2007	Head of Ludwig Boltzmann Insitute for Restorative Neurology and Neuromodulation
Since 2008	Deputy Head of Landsteiner Institute for Neurorehabilitation and Space Medicine
since 2002	Head of the Neurological Center, Otto Wagner Hospital, Vienna. Main focus: Patients with severe neurological/ neuropsychological deficits and invasive neurorehabilitation methods

currently
President of

- Austrian Society for Neurorehabilitation (OEGNR)
- European Federation NeuroRehabilitation Societies (EFNRS)

Member of

- Management Committee of the World Federation NeuroRehabilitation (WFNR)
- Managing Board of the International Danube Symposium
- Editorial Board of "Journal of Medicine and Life":

Chairman of

- Special Interest Group/WFNR "Spinal Cord Injury"
- Special Interest Group/WFNR "Early Rehabilitation"
- Scientific panel/EFNS "Brain recovery and Rehabilitation"
- Special Branch / International Danube Symposium: "NeuroRehabilitation"

Main topic of research: Neurorehabilitation, brain injury, spinal cord injury, vegetative state/ apallic syndrome (more than 140 publications)

DANA BOERING
GERMANY

EDUCATION:

1. Secondary School I. Slavici Arad, Romania
2. Medical School: Facultatea de medicina si Farmacie I.M.F. Cluj-Napoca, Romania

ACADEMICAL QUALIFICATIONS:

1. Dr. medic: I.M.F. Cluj Napoca 1981
2. German acknowledgement as Dr. med. 1987
3. Specialty qualification: Neurologist 1994
4. Further specialty qualification: Neurorehabilitationist 2001, Neurophysiologist 2002

EMPLOYMENT:

St. Mauritius Therapieklinik Meerbusch 2002-2016
SRH Gesundheitszentrum Bad Wimpfen since 2016

PROFESSIONAL APPOINTMENTS, SCIENTIFICAL ACTIVITIES:

1994-2002 Collaboration with the University of Essen in the field of plasticity after stroke, with an emphasis on the role of the cerebellum in motoric learning tasks

Since 2002 Collaboration with the University of Düsseldorf in the field of plasticity after stroke

Since 2009 Collaboration with the Coma Science Group Liege Belgium
Member of the DOC special interest group of the IBIA

VALERIA CASO
ITALY

Valeria Caso, is a stroke neurologist at the University of Perugia Stroke Unit, Italy and has been recently certified in the role of full professor in Neurology.

She is visiting professor in the University of Belgrade.
She is president of the European Stroke Organisation (ESO).

She is currently working for an European Stroke Project "ESO-EAST" "Enhancing and Accelerating Stroke Treatment" which aims to establish a 5-year collaboration with selected physicians from Eastern countries, in order to optimise and implement Stroke Care best practices in these countries and share know-how.

She has authored and co-authored more than 200 published papers and book-chapters.
She has been involved in 20 multicentre trials serving in various positions including steering committees. She is currently actively involved in international research projects on cervical artery dissections, heart and brain, intracerebral haemorrhage, and acute stroke treatment. She has made primary interest the treatment and prevention of stroke in women and working on stroke guidelines in women

VIDA DEMARIN
CROATIA

Professor Vida Demarin, MD, Ph.D. graduated from School of Medicine, University of Zagreb, Croatia, where she gained her Master of Science thesis and Doctor of Philosophy degree. She finished her residency in neuropsychiatry in Sestre milosrdnice University Hospital Centre, Zagreb, Croatia.

She was Head of Department of Clinical Neurology and Centre for Neurological Sciences and Brain Research in University Hospital Centre "Sestre Milosrdnice" (1994.-2012.), medical director of Medical Centre Aviva (2012-2015.), director of International Institute for Brain Health (2015.-on going).

Professor Demarin's field of interest is stroke prevention and management, neurodegenerative disorders and dementia, headache and migraine, neuroplasticity, neuropathic pain and neurorehabilitation.

She is a full member of Croatian Academy of Sciences and Arts. She authored about 1000 papers in national and international journals, several chapters in books, organized and participated in numerous symposia, seminars, conferences and congresses. She is a founder and one of directors of Summer Stroke School, Healthy Lifestyle and Prevention of Stroke and Other Brain Impairments in Interuniversity Centre in Dubrovnik and secretary general of traditional Mind&Brain INPC in Pula.

She is a member of numerous national and international professional societies and she serves on various scientific Advisory, Editorial and Review Boards.

ALEXANDRU GASNAȘ
REPUBLIC OF MOLDOVA

WORK EXPERIENCE

2012 – today	Neurologist in IH Medpark
2014 – today	Consultant in the Department of Neurology of Institute of Emergency Medicine
2009 – today	Scientist in Laboratory of Neurobiology and Medical Genetics
2015 – today	Performer in the State Program :Peculiarities of pathogenic mechanisms, noninvasive and neurosurgical management of ischemic stroke in the population of Moldova.
2014 – today	Lecturer at Neurology and Neurosurgery department at State University of Medicine and Pharmacy "Nicolae Testemitanu
2015 – today	Scientific Secretary of Neurology Society from Moldova

EDUCATION AND TRAINING

2016, April 21-24	Neurology internship, Polisano Clinic, Sibiu, Romania
2016, April 7-8	2nd International Conference "Imaging in Congenital Heart Interventions", Lund, Sweden.
2015, October 1 - 3	5th National Congress of Neurologists of the Republic of Moldova 14th Symposium of Neurologists and Neurosurgeons Chisinau – Iasi Talk: "Brain neuroplasticity and connectivity studies"
2015 April – 2016 April	Grant Project: "Improovement of performances in neuroscince through scientific colaboration and acces to European Centres of Excellence" performer
2015 - 2018	Institutional Project: "Drug resistant epilepsy: risk factors, aspects of clinical, neuroimaging, neurophysiological polymorphism and their role in presurgical evaluation" performer
2015, June 1 - 5	5th European Teaching Course on Neurorehabilitation and 14th Congress of European Society for Clinical Neuropharmacology, Cluj Napoca, Romania Talk: "Transcranial Magnetic Stimulation (TMS) and results of connectivity studies in acute ischemic stroke "
2015, 1 – 8 March	Salzburg Medical Seminars on "Weill Cornell Seminar in Neurology"
2014, November 28 – 29	"Teaching Course on Movement Disorders", Chisinau, Moldova
2012 - today	Transcranial Magnetic Stimulation Program, neuroreabilitation after stroke by TMS
2013, September 22 - 24	Speaker at„The XIX-th Session of the Balkan Medical Days and the second Congress of Emergency Medicine of the Republic of Moldova"
2012, September 24-28	„1st International Course on Neuroepidemiology in Eastern Europe endorsed by the European Federation of Neurological Societies", Chisinau, Moldova
2011-present	Member of Neurology Society from Moldova

2011-till present	PhD candidate- Transcranial magnetic stimulation in aute phase of ischemic stroke
2008- 2011	Resident in Neurology at the Deparment of Neurology and Neurosurgery, State University of Medicine and Pharmacy „Nicolae Testemitanu".
2002-2008	University degree at State University of Medicine and Pharmacy „Nicolae Testemitanu", General Medicine faculty.
1991-2002	Academic Romanian-English Lyceum Mircea Eliade

Additional Information - List of Publications

1. GROPPA,Stanislav.;Gasnaș, A.; Transcranial Magnetic Stimulation And Results of connectivity studies of acute ischemic stroke.Archives of the Balkan Medical Union 03/2013; 48(3):215-217
2. GROPPA, St.,Gasnaș, AL.,ZOTA, E., CERNOBROV, D. Strategii actuale de recanalizare in AVC ischemic acut. Conferința Științifică Anuală a Colaboratorilor și Studenților USMF "Nicolae Testemițanu" 0ctombrie 17-19 ,2012
3. GROPPA ST. ZOTA E. PLOTNICU S Gasnaș A. CHIOSA V. CERNOBROV D.; Protocol de evaluare a pacientului cu accident vascular cerebral acut. „ACTUALITĂȚI ÎN NEUROURGENȚE", Institutul de Medicina Urgenta, 2013, 15 noiembrie 2013 F/C
4. GROPPA ST. ZOTA E. PLOTNICU S Gasnaș A. CHIOSA V.; Conferința Științifică Anuală a Colaboratorilor și Studenților USMF "Nicolae Testemițanu". Moldova, Octombrie 2013
5. GROPPA ST. ZOTA E. CHIOSA V. Gasnaș A.; Conferința științifico-practică „Actualități în neuroștiințe" în cadrul Expoziției internaționale specializate MoldMedizin & MoldDent. Stimularea magnetică transcorticală: indicații diagnostice și tratament. Moldova ,Chisinau,2013, Moldexpo.)
6. Gasnaș,ALEXANDRU.;"Stimularea magnetică transcraniană și rezultatele studiilor de conectivitate în AVC ischemic acut. Caz clinic.". Conferinta anuala a colaboratorilor si studentilor USMF consacrata "Zilelor Universitatii". Chisinau, Moldova, Institutul de Neurologie si Neurochirurgie,15-17 octombrie, 2014
7. Gasnaș,ALEXANDRU.;"Stimularea magnetică transcraniană și rezultatele studiilor de conectivitate în AVC ischemic acut. Caz clinic.". Conferinta Anuala a Tinerilor Specialisti. Chisinau, Moldova, Institutul de Medicina Urgenta, 2014
8. Gasnaș A., BARBARII C., AFTENE D. Manifestările clinice și managementul farmacologic al tulburărilor de mișcare după accident vascular cerebral. Caz clinic. Simpozionul al XIV-lea al Neurologilor și Neurochirurgilor Chișinău-Iași, 1-3 octombrie 2015
9. Stanislav Groppa, Vitalie Chiosa, Bălănuță Tatiana, Gasnaș Alexandru, Ciolac Dumitru.; Aprecierea stării funcționale a structurilor neuronale și de transmitere aferente și eferente ale sistemului nervos central și periferic prin metoda examenului complexa XIV-a ediție a

Expoziției internaționale specializate „INFOINVENT" Moldova, 25 - 28 noiembrie
10. Georghe Ciobanu, Vitalie Chiosa, Alexandru Gasnaș , Implementarea stimulării magnetice transcraniene în practica neurologică în republica moldova. XII-a ediție a Expoziției internaționale specializate „INFOINVENT" Moldova,19-20 noiembrie 2013

Fields of special interests
Transcranial magnetic stimulation, Neuroplasticity, Ischemic tolerance of the nervouse system and vascular cerebral diseases

MIHAIL GAVRILIUC
REPUBLIC OF MOLDOVA

1987-1991	:Neurologist at the Republican Clinical Hospital, Chisinau
1991-1996	:Assistant professor of the Department of Neurology and Neurosurgery at the State University of Medicine and Pharmacy "Nicolae Testemitanu" Chisinau
1996-2001	:Docent of the Department of Neurology and Neurosurgery at the State University of Medicine and Pharmacy "Nicolae Testemitanu" Chisinau
2001-2010	:Deputy Director of the Institute of Neurology and Neurosurgery, Chisinau
2010 (since)	:Professor of Neurology, Chairman of the Neurology Department at the State University of Medicine and Pharmacy "Nicolae Testemitanu" Chisinau
2010-2012	:Dean of the Faculty of Medicine 2 - State University of Medicine and Pharmacy "Nicolae Testemitanu" Chisinau
2012 (since)	:Vice-rector for International Relations - State University of Medicine and Pharmacy "Nicolae Testemitanu" Chisinau

Fields of special interests: ischemic tolerance of the nervous system, vascular cerebral and spinal cord diseases, and encephalitis.

DAVID C. GOOD
USA

Dr. David Charles Good is Professor and Founding Chair of Neurology at the Milton S. Hershey Medical Center of the Penn State College of Medicine. Dr. Good received a Bachelor of Science degree in biochemistry and a Doctor of Medicine degree from the University of Wisconsin at Madison. Dr. Good performed an internship in Internal Medicine at the Hennepin County Medical Center and University of Minnesota Hospital and a completed residency in Neurology and a stroke fellowship at the University of Minnesota Hospital, Minneapolis.

Dr. Good has been the director of rehabilitation at Southern Illinois University School of Medicine in Springfield, Illinois and Wake Forest University Baptist Medical Center in Winston-Salem, North Carolina. He accepted a position at Penn State in 2005 as the first chair of Neurology. He has held leadership positions at his institution, nationally, and internationally. He is a fellow of the American Academy of Neurology and the American Neurological Association. He is a charter member of the American Society of Neurorehabilitation, and has served in a number of capacities in the ASNR including President of the organization. He is past chairman of the Neurorehabilitation and Neuro Repair section of the American Academy of Neurology. He previously chaired the Accreditation Council of the United Council for Neurological Subspecialties. He served on the National Advisory Board for Medical Rehabilitation Research at the NIH. He has served on a number of study sections and has been an ad-hoc reviewer for a number of journals. He is the president–elect of the World Federation for Neurological Rehabilitation, serves on the Presidium, and is the regional vice president for North America. His research interests in recent years have focused on motor recovery in stroke, especially the role of the unaffected hemisphere in stroke recovery.

In addition to many presentations nationally and internationally, Dr. Good is widely published, with three books, multiple book chapters, peer-reviewed papers, and abstracts to his credit.

WOLFGANG GRISOLD
AUSTRIA

Prof. Wolfgang Grisold is a specialist for neurology and psychiatry. From1989 until 2016, he has been heading the department of neurology of the KFJ hospital in Vienna, Austria.

His special interests apart from general neurology are neuromuscular disease and neurooncology , palliative care and education in neurology. His has particular expertise in neuromuscular disease in regards to clinical findings, electrophysiology, neuropathology and imaging. He has participated in 2 EU projects on paraneoplastic syndromes, and in 2 ECCO- EU projects on oncologic video education. His focus in the past years was the effect of cancer on the peripheral nervous system.

He currently published 600 publications among them 4 books (Atlas of neuromuscular disease, 2 editions) and has presently 225 Pubmed quoted publications, 330 Abstracts and presented over 1400 lectures.

He has been involved in education from the aspects of CME and CPD (EFNS, UEMS, WFN), residency training (Austrian society of neurology and UEMS), board examinations (Austrian society and UEMS/EBN), patient and caregiver education and European and international department visits (UEMS/WFN). He has chaired the education committee of the EFNS from 2002 until 2007, has been the co-chair of the education committee of the WFN, where he also chaired the teaching course committee until 2015.

From 2000 to 2002, he was the founding president of the Austrian Society of Neurology.
He is presently the secretary general of the WFN from 2013 and is involved in educational projects as the WFN Teaching centers and WFN department visits.

He was president of the UEMS/EBN (past president), and the EANO (European Association of neurooncology). Within ECCO he chairs the ACOE (accreditation body for CME) and is a member of the UEMS EACCME CME governance board.

In Vienna he is a member of the KAV ethics committee and also a member of the higher medical council of the city of Vienna.

He also works in a private neurology office in Vienna, where combines clinical work with neuromuscular disease and electrophysiology.

STANISLAV GROPPA
REPUBLIC OF MOLDOVA

Stanislav Groppa, MD, PhD, University Professor, Academician of Moldavian Academy of Science, Neurologist, Head of Neurology Chair of "N. Testemitanu" State Medicine and Pharmacy University, Director of the Neurology Neurosurgery Department (Institute of Emergency Medicine), Head of the Neurobiology and Medical Genetics Laboratory

He has graduated of the "N. Testemitanu" State Medicine and Pharmacy University in 1979. At age of 29 he got his doctor of medical science degree, and at 35 - doctor habilitat and at 39 years is conferred the title of university professor.

In 2007, he became a member of the Moldavian Academy of Sciences, and shortly after he was elected academician-coordinator of the Medical Department of the Moldavian Academy of Science. In 2012 Prof Groppa is elected as member of the Moldavian Academy of Science. Between 2015 -2016 hee is vice-president of the Moldavian Academy of Science. He is a Honorary Member of the of Medical Sciences Academy from Romania.

He has been trained in Medical centers from Russia, USA, Germany, China, Australia, Italy, and many others. Established a strong collaboration connections with researches and scientific institutions from all around the world.

Under the leadership, 18 doctoral theses were performed, including doctor habilitat thesis. His scientific interests are in the field of stroke prevention and early management, epilepsy, and pain relief.

Also, he is a member of international organizations, American Neurology and Stroke Association, European Academy of Epileptology; Member of the European Academy of Neurology, Member of Romania Academy of medical Schience, Member of Romania Stroke Association.

Professor S. Groppa is President of the Moldavian League against Epilepsy, President Moldavian Stroke Association, Vice-President of the Moldavian Neurology Society. He is a member of the editorial staff of Moldavian and not only Medical Journals.

ALLA GUEKHT
RUSSIA

Professor Guekht's research interests are in epilepsy, cognition, stroke and neuroepidemiology. She obtained the M.D. degree at the 2nd Moscow Medical Institute and completed residency in Neurology in the same Institute; she was then trained in neuropsychology and neurophysiology, participated in the training/fellow programs in the Munster University, University of Homburg/Saar (Germany), Thomas Jefferson Hospital and Philadelphia Comprehensive Epilepsy Center (USA). She received the PhD Diploma for the dissertation on EEG monitoring in carotid surgery and the Doctor of Medical Sciences Diploma for the dissertation on Brain plasticity and restoration after stroke. Currently she is the Professor of the Department of Neurology, Neurosurgery and Genetics, Russian National Research Medical University, Director of Moscow Research and Clinical Center for Neuropsychiatry of the Healthcare Department of Moscow and Head of the Neurology Clinic of the Buyanov City Hospital in Moscow.

Prof. Guekht is the recipient of several prestigious international and national awards in medicine, including the Bruce S. Schoenberg International Award and lecture in Neuroepidemiology (American Academy of Neurology) , European Educational Award on Epileptology and the Ambassador for Epilepsy Award from ILAE and the IBE, "Honored Physician of the Russian Federation" Award of the Government of Russia; "Priznanie" (Recognition) Award of the Russian Federation for multidisciplinary research in restoration after stroke and the award of the Major of Moscow.

She is the author of more than over 200 articles focusing on epilepsy, stroke (plasticity and restoration), dementia/cognitive decline after stroke, Parkinson's disease, including over 60 papers in peer-reviewed international journals and book chapters, 18 books (in Russian), including Manual in Neurology and National Guidelines in Neurology, 6 patents of the Russian Federation in the field of stroke, epilepsy, neurophysiology . She is the mentor to many young neurologists with over 25 completed PhD and 4 doctoral dissertations.

She served in the Editorial Boards of Epilepsia, Epileptic Disorders; currently – in the Editorial Boards of the Journal of Neurological Sciences, Acta Neurologica Scandinavica, European Stroke Journal, Korsakov Journal of Neurology and Psychiatry. She acts as a regular reviewer for many international journals.

Alla Guekht served as the Member of the International Organizing/ Scientific Committee for many International /European Congresses, invited speaker at the Congresses of the

WFN, EAN, EFNS, ESOC, European and International Epilepsy Congresses, CONy, Vascular Dementia Congress, World Congress on neurorehabilitation, other international and national conferences in neurology, epilepsy, stroke, rehabilitation.

She is currently the Vice-President-elect of the International League again epilepsy, member of the WFN Committee of Education, Steering Committee for the Action Plan for Stroke in Europe, Secretary of the Russian Society of Neurologists.

VOLKER HÖMBERG
GERMANY

Prof. Hömberg had his medical education at the Universities of Düssel-dorf, Freiburg and Boston Massachusetts. After spending electives in Neurology at Boston City Hospital and the National Hospital for Nerv-ous Diseases Queens Square London he was a research fellow at the C. and O. Vogt Institute for Brain Research in Düsseldorf. In 1981 he started a residency in neurology with Prof. Hans Freund at Heinrich Heine University Düsseldorf. In 1987 he was appointed Director of the Neurological Therapy Centre (NTC) a newly founded Institute at Hein-rich Heine University in Düsseldorf. He was also founding Director of the NTC in Cologne . He was involved in the setup of many in-and outpa-tient rehabilitation hospitals in Germany. In 2001he started the St. Mauritius Therapy Clinic in Meerbusch near Düsseldorf and since 2011 he is Director of the Dept. of Neurology at the Gesundheitszentrum Bad Wimpfen and works as senior neurology group leader for the SRH-Group ,one of the biggest hospital groups in Germany.

He was founder, president and vice president of the German Society for Neurorehabilitation for many years. He serves as Secretary Gen-eral for the World Federation of Neurorehabilitation (WFNR)for more than 12 years and is Vice President oft the European Federation of Neurorehabilitation Societies. (EFNR)

He is regular reviewer and co-editor for many international peer re-viewing journals.

He is regular (co) -programme chairman for neurorehabilitation for major international meetings as the World- and European Neuroreha-bilitation Congresses (WCNR,ECNR), Controversies in Neurology (CONy) and the European Stroke Congress (ESC).

He has published more than 250 articles in international peer reviewed journals and many book chapters. His primary scientific interest are the fields of motor rehabilitation, cognition epistemiology, neurological music therapy and pharmacology in neurorehabilitation.

TIHOMIR V. ILIĆ
SERBIA

Dr Tihomir V. Ilić (born 1966) is Serbian neurologist and clinical neurophysiologist specializing in non-invasive brain stimulation (transcranial magnetic and direct current stimulation; TMS and tDCS) and movement disorders. He is the professor of neurology and neuroscience and Dean of the Medical Faculty of Military Medical Academy, University of Defence, Belgrade, Serbia. Dr. Ilić is the president of Serbian Society of Clinical Neurophysiology and a member of the several scientific committees (Movement Disorders Society, International Federation of Clinical Neurophysiology). In addition to his initial post/doc period at the beginning of his career in Germany (J.W.Goethe University Frankfurt /Main, Christian Albrecht University Schleswig Holstein, Kiel), he still maintains very rich cooperation with the leading German research centers in the field of his interest (Dortmund, Wurzburg, Tubbingen). He published the results of his research in leading international journals (including Brain, Journal of Neuroscience, Movement Disorders Journal, Journal of Neurology, Clinical Neurophysiology, Experimental Brain Research, etc). More than 1700 citations on Google Scholar.

DRAGOȘ CĂTĂLIN JIANU
ROMANIA

Senior consultant neurologist
Professor of Neurology
University of Medicine and Pharmacy "Victor Babeș", Dept. of Neurology, Timișoara, Romania,
Head of the First Dept.of Neurology Clinical Emergency County Hospital, Timișoara, Romania

1991- MD, Graduate of the Faculty of Medicine, "Victor Babeș", University of Medicine and Pharmacy, Timișoara, Romania ; first of the candidats. Sustenance of the Diploma Thesis entitled" Neurostimulation in lower-back pain."

May 2001- Sustenance of the doctoral thesis (PhD degree) entitled "Contributions to the semiology of expressive disturbances in aphasia" University of Medicine and Pharmacy "Victor Babeș", Timișoara, Romania

May 2005 - Competence in Neurovascular Ultrasound/Neurosonology, University of Medicine and Pharmacy "Carol Davila", Dept. of Neurology, Bucharest, Romania.

RESEARCH EXPERIENCE

05/2004 – 07/2004 - Visiting Research Fellow (Perfecting stage of duplex imaging of extracranial arteries and transcranial Doppler ultrasound) L'Unite d'explorations vasculaires du Service de Chirurgie Thoracique et Cardiovasculaire, Centre Hospitalier Regional et Universitaire de Caen, France.

09/2005 - Visiting Research Fellow (Perfecting stage of duplex imaging of extracranial arteries and Transcranial color-coded sonography), Le service d´Imagerie Medicale: Echographie, Radiologie, Scanner, IRM de la Fondation Ophtalmologique "Adolphe de Rothschild", Paris, France.

RESEARCH TOPICS

1) Ischemic stroke: extracranial and intracranial stenosis, extra and transcranian ultrasonography, cerebral vessels endothelial dysfunction, cerebral venous thrombosis, thrombolysis in acute ischemic stroke.

2) Neuro-ophthalmology: anterior ischemic optic neuropathies, central retinal artery

occlusion, giant cell arteritis with eye involvement, Color Doppler ultrasound of retrobulbar vessels.

3) Disorders of speech and language: clinical varieties of aphasia, examination procedures and rehabilitation (Western Aphasia Batery-Romanian version).

4) Parkinson's disease: treatment with duodenal levodopa infusion in advanced Parkison's disease.

5) Peripheral neuropathic pain.

VITALIE LISNIC
REPUBLIC OF MOLDOVA

Dr. Vitalie Lisnic is a Professor of Neurology at Department of Neurology of the State University of Medicine and Pharmacy „Nicolae Testemitanu", Chisinau, Republic of Moldova. He is a consultant in the Department of Neuromuscular Diseases, responsible for electromyographic examinations at the Institute of Neurology and Neurosurgery in Chisinau. Dr. Lisnic graduated with mention the Faculty of General Medicine of the Chisinau State Medical Institute in 1989. He passed internships in Neurology and Neurophysiology in Moscow, Russian Federation, 1993; Charles University, Pilsen, Czech Republic, 1994; Landesnervenklinik of Salzburg, Austria, 1999; Emory University, Atlanta, USA, 2002 - 2003, Vienna University, Austria, 2008. In 2003 obtained a clinical attachment in neuropathies at the National Institute of Neurology, Queen's Square, London, UK.

Vitalie Lisnic defended the thesis of doctor of science on amyotrophic lateral sclerosis (1995) and the thesis of habilitat doctor of medical science on impairment of the central nervous system in demyelinating neuropathies (2006).
In 2003-2004 he was the Principal Investigator of the Moldovan team of the grant of the Moldovan Research and Development Association and U.S. Civilian Research and Development Foundation on demyelinating neuropathies. In 2015 - principal investigator of a clinical trial on post herpetic nevralgia.

Dr. Lisnic other important responsibilities include the following:
- President of the Society of Neurologists of the Republic of Moldova

- Member of the Education Committee of the European Academy of Neurology (EAN)
- Member of the management group of the scientific panels on neuropathies, ALS and frontotemporal dementia of the EAN
- Clinical lead of the ebrain e-learning program
- Delegate of the Republic of Moldova in World Federation of Neurology and European Academy of Neurology

Memberships
- European Academy of Neurology
- American Academy of Neurology
- Movement Disorders Society
- European Stroke Organization
- Romanian Society of Electrodiagnostic Neurophysiology

Vitalie Lisnic is the author 2 monographs, more than 150 scientific publications in Moldovan and International biomedical journals. He is member of editorial board of 2 Moldovan and 2 Ukrainian medical journals. Under his guidance were defended 4 Ph.D theses.

KRISTINA MÜLLER
GERMANY

11.06.1957:	born in Kiel parents: Dr. rer. nat. Fritz Müller, Professor emeritus (Pharmaceutic Technology, University of Bonn) and Renate Müller
1967 - 1971:	Ernst-Barlach Gymnasium, Kiel
1971 - 1976:	Ernst-Moritz Arndt Gymnasium, Bonn
June 1976:	Abitur (high school degree)
1976-1983	Medical Schools "Université libre" of Brussels, Belgium; "Rheinische Friedrich Wilhelms" University of Bonn, Germany and "Centre Hôspitalier et Universitaire" of Montpellier, France. Electives in the Department of Dermatology of the Royal Infirmary, Bristol, U.K., "Hospital for Sick Children", Great Ormond Street, London, U.K.
1983	Medical Degree

Oct. 82 - Oct. 83:	Internship (Pediatrics, Internal Medicine, Surgery) at the "Centre Hôspitalier et Universitaire", Montpellier, Frankreich
1983/84:	Medical Thesis (Precocious Puberty: Effects of treatment) in the Department of Pediatrics of the "Centre Hôspitalier et Universitaire", Montpellier, France
from July 1984:	Training in General Pediatrics in the Department of Pediatrics at the "Heinrich-Heine"-Universität Düsseldorf, Specialization in Pediatric Neurology (Prof. H.-G. Lenard)
August 1985:	MD Thesis at the "Rheinischen Friedrich-Wilhelms" Universität Bonn
Jan. 89 - Dec. 90:	Research Project about "Motor development in children " sponsored by the Ministry of Research and Technology of Germany.
November 1991:	Board Qualification in Pediatrics
January 1992: Heine"-	Senior Registrar at the Department of Pediatrics of the „Heinrich-Universität, Düsseldorf
Oct. 92- April 93:	Fellowship at the Hospital for Sick Children , Department of Neuropaediatrics (Prof. B. Neville) , Great Ormond Street , London
February 93:	Habilitation (equivalent to the "Assistant Professor") "Development of voluntary and reflex motor activity in children"
May 93-Nov. 93:	Training in Neurology in the Department of Neurology „Heinrich-Heine"-Universität Düsseldorf (Prof. Dr.H-J Freund)
From May 93	Consultant at the Department of Pediatrics at "Heinrich-Heine-Universität" Düsseldorf
Feb - Dec 99	Research Project: Locomotion in Children with mit Cerebral Palsy
Jan. – Feb. 2000:	Work at the Département de Pédiatrie, Unité de Rééducation Neuropédiatrique (Dr.C. Billard), Centre Hospitalier Universitaire de Bicêtre, Le Kremlin-Bicêtre and Hôpital National de Saint-Maurice, Rééducation des pathologies neurologiques acquises de l'enfant (Dr. A. Laurent-Vannier), Saint-Maurice, France
March – June 2000	Work at the Rehabilitation Institute of Chicago (Chicago, USA) on special aspects of neuro-rehabilitation for children
from October 2000:	Head of Neuropediatrics at St Mauritius Therapy Clinic in Meerbusch-Osterath
since 2006	Board examiner in Neuropediatrics for the Nordrhein Medical Association
March 2007	Additional degree in general Rehabilitation

DAFIN F. MUREȘANU
ROMANIA

Dafin F. Muresanu, MD, PhD, MBA, FANA
Professor of Neurology, Senior Neurologist, Chairman of the Neurosciences Department, Faculty of Medicine, "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, President of the European Federation of Neurorehabilitation Societies (EFNRS), Past President of the Romanian Society of Neurology, President of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), member of the Academy of Medical Sciences, Romania, secretary of its Cluj Branch. He is member of 17 scientific international societies (being member of the American Neurological Association (ANA) - Fellow of ANA (FANA) since 2012) and 10 national ones, being part of the executive board of most of these societies. Professor Dafin F. Muresanu is a specialist in Leadership and Management of Research and Health Care Systems (specialization in Management and Leadership, Arthur Anderson Institute, Illinois, USA, 1998 and several international courses and training stages in Neurology, research, management and leadership). Professor Dafin F. Muresanu is coordinator in international educational programs of European Master (i.e. European Master in Stroke Medicine, University of Krems), organizer and co-organizer of many educational projects: European and international schools and courses (International School of Neurology, European Stroke Organisation summer School, Danubian Neurological Society Teaching Courses, Seminars - Department of Neurosciences, European Teaching Courses on Neurorehabilitation) and scientific events: congresses, conferences, symposia (International Congresses of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN), International Association of Neurorestoratology (IANR) & Global College for Neuroprotection and Neuroregeneration (GCNN) Conferences, Vascular Dementia Congresses (VaD), World Congresses on Controversies in Neurology (CONy), Danube Society Neurology Congresses, World Academy for Multidisciplinary Neurotraumatolgy (AMN) Congresses, Congresses of European Society for Clinical Neuropharmacology, European Congresses of Neurorehabilitation). His activity includes involvement in many national and international clinical studies and research projects, over 400 scientific participations as "invited speaker" in national and international scientific events, a significant portfolio of scientific articles (176 papers indexed on Web of Science-ISI, H-index: 18) as well as contributions in monographs and books published by prestigious international publishing houses. Prof. Dr. Dafin F. Muresanu has been honoured with: „Dimitrie Cantemir" Medal of the Academy of The Republic of Moldova in 2018, Ana Aslan Award 2018 - "Performance in the study of active aging and neuroscience", for the contribution to the development of Romanian medicine, National Order "Faithful Service" awarded by the President of Romania in 2017; "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca, Faculty of Medicine, the

"Iuliu Hatieganu Great Award 2016" for the best educational project in the last five years; the Academy of Romanian Scientists, "Carol Davila Award for Medical Sciences / 2011", for the contribution to the Neurosurgery book "Tratat de Neurochirurgie" (vol.2), Editura Medicala, Bucuresti, 2011; the Faculty of Medicine, "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj-Napoca "Octavian Fodor Award" for the best scientific activity of the year 2010 and the 2009 Romanian Academy "Gheorghe Marinescu Award" for advanced contributions in Neuroprotection and Neuroplasticity.

ADRIANA SARAH NICA
ROMANIA

CURRENT POSITION
- Professor in Physical Medicine, Rehabilitation and Balneoclimatology at the University of Medicine "Carol Davila", Bucharest
- Head of Rehabilitation Department - University of Medicine "Carol Davila", Bucharest
- PhD
- Chief of University Rehabilitation Department III – National Institute of Rehabilitation, Physical Medicine and Balneoclimatology
- European Board certified in PRM
- Senior consultant in Physical Medicine and Rehabilitation
- EFIC Councilor (Romania)
- Vice president of Romanian Society of Rehabilitation
- Specialist in Sports Medicine

MEDICAL CAREER
1978 – MD at the Faculty of Medicine – University of Medicine "Carol Davila", Bucharest
1982 – University assistant and resident doctor – Balneoclimatology, Sport Medicine and Physical Medicine – University of Medicine "Carol Davila", Bucharest
1985 – Specialist in Balneoclimatology, Sport Medicine and Physical Medicine – University of Medicine "Carol Davila", Bucharest, confirmed by the Ministery of Health of Romania
1992 – Lecturer – Balneoclimatology, Sport Medicine and Physical Medicine – University of Medicine "Carol Davila", Bucharest
1997 – PhD at the University of Medicine "Carol Davila", Bucharest
1998 – Ass. Professor of Balneoclimatology, Sport Medicine and Physical Medicine –

University of Medicine "Carol Davila", Bucharest
2002 – 2004 – Medical Director of National Institute of Rehabilitation, Physical Medicine, Balneoclimatology, Bucharest, Romania
2003 – Professor of Rehabilitation, Physical Medicine and Balneoclimatology

SCIENTIFIC ACTIVITY
Author of 4 books
Chapters in published books - 9 chapters
Author or coauthor of more than 200 papers published in national and international issues
Research: project manager in 6 national projects, partner in 1 international project
Keynote speaker in international congresses and conferences: Verona (1995), Florence (2008), Bucharest (2007, 2008)
Delegate of ISPRM WRD Commitee for ICF, 2011

Affiliation
- Romanian Association of Physical Medicine and Rehabilitation ISPRM (International Society of Physical & Rehabilitation Medicine (Board member since 2010)
- Romanian Association for the Study of Pain (Past President)
- Romanian Rheumatological Association
- Romanian Association for Osteoporosis
- Romanian Association for Laser
- Romanian Association for Psycho-neuro-endocrinology
- Romanian Association for Geriatry
- I.A.S.P.
- Fellow of Seminar Salzburg Society
- EFIC (Councellar of the Board of European Federation International Corner Committee for Romania – 2006 - 2012)
- Romanian Termography Medical Association (President)
- Member of the PRM Commision in the Ministry of Healt.

GELU ONOSE
ROMANIA

Dr. Gelu Onose - 60 years (born: the 20th of December, 1956); graduated, in 1982, from the Faculty of General Medicine, within the Institute of Medicine and Pharmacy, in Bucharest, Romania

- Professor (since 2008) at the (State) University of Medicine and Pharmacy "Carol Davila" (UMPCD), in Bucharest – member of the Academic Council of the Faculty of Medicine of the UMPCD

- Doctoral/ Post-Graduate Tutor (since 2008) - at the UMPCD, in Bucharest

- MD; - PhD; - MSc

- Senior Physician of: - Physical & Rehabilitation Medicine (PRM) – since 1994 – and
  - Gerontology & Geriatrics (G-G) – since 2000
  Competences in: - General Ultrasonograpy (since 1996)
  - Management of sanitary services (since 2000)

- Chief of the of the UMPCD PRM Discipline and of the P(neural-muscular)RM Clinic Division (since 2005) - the National Reference Center for NeuroRehabilitation - and of its RDI Nucleus, at the Teaching Emergency Hospital"Bagdasar-Arseni" (TEHBA), in Bucharest

- President Co-Founder of the Romanian Society for Neurorehabilitation (RoSNeRa) – affiliated to the World Federation for NeuroRehabilitation (WFNR) - member of the Council - respectively, of the Romanian Society for Spinal Cord Pathology, Therapy and Rehabilitation (RoSCoS) – affiliated to the International Spinal Cord Society (ISCoS) and to European Spinal Cord Injury Federation (ESCIF) – (since 2008/ 2009) and respectively, Honorary Executive President of the Romanian Society of Physical and Rehabilitation Medicine & BalneoClimatology (since 2015)

- Chairman of the Spinal Cord Injuries Research Panel – within the Management Committee of the World Academy for Multidisciplinary Neurotraumatology (AMN –since 2016)

- Selected and invited - as among "Highly-specialized scholars" - by Thomson Reuters to participate in the invitation-only "Academic Reputation Survey", within its related partnership with Times Higher Education's influential World University Rankings: 2010, 2011, 2012

- Invitated Peer-Reviewer (March 2010) by the "Journal of Molecular Histology" and (March, 2012) by the "Spinal Cord" journal (both ISI Thomson Reuters rated)

- Contributing member/ (2011-2012) to the achievement of the imposing educational project: "E-Learning for Spinal Cord Injury Health Professionals", of the International Spinal Cord society (ISCoS) - including/ specifically, în 4 modules/ submodules of it: (Clinical Assessment of Patients with SCI; Assistive Technology Module and Mobility & seating sub-module; Management of neurogenic bladder; Physiotherapy Module and Physical therapy perspectives on rehabilitation sub-module

- Gest Editor within its Special Issues: Second Edition, Vol. 4, 2011 and Vol. V, Third Edition, 2012

- Founder Member of the Honorary Editorial Board of the Journal of Neurorestoratology (in 2013)

- Senior Expert (since 2012) and also Rapporteur (since 2013) on Chronic Conditions Management and respectively, for Healthy and Active Ageing (since 2016) – of the Comité Permanent/ Standing Committee of the European Doctors (CPME)

- Invited lecturer to all – since the first – European Teaching Courses on Neuro-Rehabilitation, with training conference presentations (in 2011, 2013, 2015) and respectively, with contributions to the organization of its edition, in 2012

- Invited Professor to deliver two extended lectures to the Symposium: "BEYOND TBI (Optimizing Management in TBIs)", held in August, 2013, in Mumbai, India, within an International Educational Program of McCann-Erickson Healthcare Complete Medical

- 8 published medical books - one of them : "The Spondyloarthropathies" received, in 2002, the "Iuliu Hatieganu" Award of The Romanian Academy)

- 6 (of which 2 equivalent micro-monographs - in journal, work) chapters within medical boo ks

- Around 250 scientific works, papers – communicated within national and international scientific meetings and/or published in peer-reviewed or non peer-reviewed medical journals – and professional interviews/ articles, in mass-media

- 3 Patents/ Invention Certificates and 2 Utility Models, appointed by the State Office for Inventions and Marks (SOIM/ OSIM)

- Main awards: the "Iuliu Hatieganu" Award of The Romanian Academy (2002); the Award of the (Romanian) National Authority for Scientific Research for the RDI project acronymed

"ACTUAT" (2006); the Gold Medal at the International Saloon of Inventions, Geneve/ Switzerland for the RDI project acronymed "MOD" (2008); the "Excellency in the Health Domain Award " – granted by the Romanian Ministry of Health (2015)

- A member of the Scientific Council/ Editorial (and Advisory) Board of medical journals:
  - "Journal of Medicine and Life" (rated in Index Medicus, Medline)
  - "Infomedica"
  - (Romanian) "Rehabilitation, Physical Medicine and Balneology"
  - "Romanian Neurosurgery"
  - "Industria Textila" (ISI Thomson rated journal)
  - "Proceedings of the Romanian Academy – Series B: Chemistry, Life Sciences and Geoscience"
  - "Romanian Medical Journal"
  - Founder Member of the Honorary Editorial Board of the "Journal of Neurorestoratology"

- A member of the (scientific societies):
  - Romanian Medical Association (RMA)
  - Romanian Society of Physical and Rehabilitation Medicine (PRM) - including of its Board
  - Romanian Society of Neurosurgery (RSN)
  - Romanian Society of Biomaterials (RSB)

  - Balkan Medical Union (BMU),
  - International Society of Hydrothermal Technique (SITH - the National Council of the Romanian Section SITH - RS)
  - British Society of Gerontology (BSG)
  - International Spinal Cord Society (ISCoS)
  - European Spinal Cord Injury Federation (ESCIF)
  - World Academy for Multidisciplinary Neurotraumatology (AMN)
  - World Federation For Neurorehabiliation (WFNR) - a member of the Council/ Management Committee
  - International Society of Physical and Rehabilitation Medicine (ISPRM)

JÓZEF OPARA
POLAND

1960-1967 medical study at Silesian University of Medicine in Katowice.
Graduated in 1967.
Specialties: neurology 1977
medical rehabilitation 1982

DOCTORSHIP: 1983 (MD)
AGGREGATION (polish habilitation, more than PhD): 1997
Professor in Academy of Physical Education in Katowice: since 1998
Chair of Physiotherapy in Neurology
FULL PROFESSOR IN PHYSICAL CULTURE: 2008
Scholarship: Austria – invited by AUVA - Allgemeine Unfallversicherungsanstalt - 1986
Member of European Panels in EFNS: Neurorehabilitation, Neurotraumatology, Post-Polio,
Chairman of the Organizing Committee of the III Congress of Polish Society of Rehabilitation in Cieszyn – Ustron 1998
Leader of European Panel of Neurorehabilitation in EFNS: 1998-2000
Certificate: tutor in Evidence Based Medicine 2001
Member of Editorial Board in Polish Journal of Physiotherapy since 2001
Co-originator and member of council of WFNR: since 2002
Originator and president of Polish Society for Neurological Rehabilitation since 2003
Regional vice-President of World Federation for NeuroRehabilitation for Central and Eastern Europe since 2009

Member of board of European Federation of NeuroRehabilitation Societies since 2015

SCIENTIFIC GRANTS: FP7 Homecare 222954, WP2 Polish: Facilities of early rehabilitation after stroke in Poland: 2010-2012.

SPECIAL SCIENTIFIC INTERREST:
- stroke rehabilitation
- spasticity
- rehabilitation in paraplegia (SCI), Spondylotic Cervical Myelopathy (SCM), Post-Polio
- clinimetrics
- Quality of Life measures
- rehabilitation after TBI
- rehabilitation in PD

rehabilitation in MS

PROMOTER OF 11 DOCTORSHIPS

Reviewer of many scientific journals, i.e. European Journal of Neurology (IF = 2,66) Quality of Life Research (IF = 2.985), Int. J. Rehabil. Res. (IF= 1.083), Journal of Physical Medicine and Rehabilitation Science, Neurologia i Neurochirurgia Polska (IF= 0.641)

Main recent reports:

1. Opara J.A., Socha T., Bidzan M., Mehlich K., Poświata A. Stress urine incontinence especially in elite women athletes extremely practicing sports. Arch Budo 2011; 7(4): OF227-231. Impact Factor=0,488
2. Opara J.A. Activities of Daily Living and Quality of Life in Alzheimer Disease. J. Med & Life 2012; 5(2): 162-167.
3. Opara J.A., Langhorne P., Larsen T., Mehlich K., Szczygiel J. Facilities of early rehabilitation after stroke in Poland 2010. Int J Rehabil Res. 2012; 35(4): 367-371. Impact Factor=1.083
4. Opara J, Brola W, Leonardi M, Błaszczyk B. Quality of life in Parkinson`s Disease. J Med Life. 2012 Dec 15;5(4):375-81.
5. Opara J., Kucio C., Socha T., Szczygieł J. Role of physical activity in preventing disability in Multiple Sclerosis. Medical Rehabilitation 2012; 16(3): 22-26.
6. Opara J, Jaracz K, Brola W. Burden and quality of life in caregivers of persons with multiple sclerosis. Neurol Neurochir Pol. 2012; 46(5): 472-9. IF=0,488
7. Radajewska A., Opara J., Kucio C., Mehlich K., Błaszczyszyn M., Szczygieł J. The effects of mirror therapy on arm and hand function in acute stroke inpatients. Int. J. Rehabil. Res. 2013; 36(3): 268-274. Impact Factor=1.083
8. Opara J.A. Małecka E., Szczygieł J. Clinimetric measurement in traumatic brain Injuries. J. Med & Life 2014; 7(2): 124-127.
9. Poświata A, Socha T, Opara J. Prevalence of stress urinary incontinence in elite female endurance athletes. J Hum Kinet. 2014 Dec 30;44:91-6. Impact Factor: 1.029
10. Brola W, Mitosek-Szewczyk K, Opara J. Symptomatology and pathogenesis of different types of pain in multiple sclerosis. Neurol Neurochir Pol. 2014;48(4):272-9. IF=0,488 11.
11. Opara J., Kucio C., Kurek J., Małecka E. Is the Barthel scale still useful 50 years after its first publication? Medical Rehabilitation 2015; 19(1): 34-38. ISSN 1427–9622.
12. Opara, J.A. Brola W., Szczygieł J. Palliative care in Polish patients with Multiple Sclerosis. J. Paliative Care Med. 2016; 6:1–4.
13. W. Brola, P Sobolewski, W Szczuchniak, A Góral, M Fudala, W Przybylski, J. Opara. Association of seasonal serum 25-hydroxyvitamin D levels with disability and relapses in relapsing-remitting multiple sclerosis. J Europ J Clinical Nutrition 2016, 1–5. IF=2.709
14. Opara JA, Brola W, Wylęgała AA, Wylęgała E. Uhthoff's phenomenon 125 years later – what do we know today? J. Med & Life 2016; January-March ; Vol IX, Iss 1.
15. Opara J., Grzybowska-Ganszczyk D. Questionnaires measuring leisure-time physical activity in Parkinson`s disease. Current research in motor control V. Bridging motor control and biomechanics. Katowice 2016, p. 198-205.

16. Józef Opara, Justyna Mazurek, Jarosław Szczygieł, Grzegorz Gałuszka, Wiesław Rycerski. Zastosowanie technologii wirtualnej rzeczywistości w usprawnianiu kończyny górnej po udarze mózgu. Rozdział w monografii recenzowanej pod red. Teresy Pop: Rehabilitacja 2016. Wyd. Bonus Liber Sp. z o.o. Rzeszów 2016; s. 164-173.

17. Monika Błaszczyszyn, Tomasz Fiałkowski, Elżbieta Małecka, Józef Opara. Czynniki wpływające na wyniki rehabilitacji po udarze mózgu. Rozdział w monografii recenzowanej pod red. Teresy Pop: Rehabilitacja 2016. Wyd. Bonus Liber Sp. z o.o. Rzeszów 2016; s. 26-35.

BOGDAN O. POPESCU
ROMANIA

Born March 8th, 1971 in Bucharest, Romania.
Address: Department of Neurology, School of Medicine, 'Carol Davila' University of Medicine and Pharmacy, Colentina Clinical Hospital, 19-21 Sos. Stefan cel Mare, sector 2, 020125, Bucharest, Romania.

Scientometrics: 50 ISI full text articles, 0ver 1000 ISI citations, Hirsch index 18.

ACADEMIC EDUCATION AND APPOINTMENTS

1996	MD, 'Carol Davila' University School of Medicine, Bucharest, Romania
2000 - 2009	Assistant Professor, 'Carol Davila' University School of Medicine
2001	PhD, 'Carol Davila' University School of Medicine - suma cum laudae
2002 - 2008	Neurologist, University Hospital Bucharest
2004	PhD, Karolinska Institute, Stockholm, Sweden
2005 -	Head of Laboratory of Molecular Medicine, 'Victor Babeș' National Institute of Pathology, Bucharest, Romania
2008 -	Senior Neurologist
2009 - 2012	Lecturer, 'Carol Davila' University School of Medicine
2009 -	Senior Researcher, 'Victor Babeș' National Institute of Pathology, Bucharest, Romania
2012 - 2015	Associate Professor, 'Carol Davila' University School of Medicine and Head of Neurology Unit II, Colentina Clinical Hospital
2015	Professor of Neurology, 'Carol Davila' University School of Medicine, Colentina Clinical Hospital

AWARDS

1999 Beaufour-Ipsen prize for the best research study in neurology
2000 Young histochemist award - International Society of Histochemistry and Cytochemistry
2004 Diploma of scientific merit – 'Victor Babeș' National Institute of Pathology
2007 'Victor Babeș' Award of Romanian Academy for medical research
2010 Science and Art National Foundation Award of Excellence for research in the field of Neuroscience and Neuropathology
2014 'Brain Networking' Foundation Award of Romanian Academy of Medical Sciences, for developing Neurology nationally and internationally.

OTHER CURRENT ACTIVITIES

Editor in Chief of Romanian Journal of Neurology (2016 –) and former Executive Editor (2001-2016)
President of the Romanian Society of Neurology (2017 –) and former Secretary General (2001-2013)
Research director of the Society for the Study of Neuroprotection and Neuroplasticity (2005 –)
Vicepresident of 'Carol Davila' University of Medicine and Pharmacy Bucharest (2016 –)
Vicepresident of Bucharest College of Physicians (2015 –)

SELECTED PUBLICATIONS

1. Wallin A, Kapaki E, Boban M, Engelborghs S, Hermann DM, Huisa B, Jonsson M, Kramberger MG, Lossi L, Malojcic B, Mehrabian S, Merighi A, Mukaetova-Ladinska EB, Paraskevas GP, Popescu BO, Ravid R, Traykov L, Tsivgoulis G, Weinstein G, Korczyn A, Bjerke M, Rosenberg G. Biochemical markers in vascular cognitive impairment associated with subcortical small vessel disease - A consensus report. BMC Neurol. 2017; 17:102.
2. Ceafalan LC, Popescu BO. Juxtacerebral Tissue Regeneration Potential: Telocytes Contribution. Adv Exp Med Biol. 2016;913:397-402.
3. Gheorghiu M, David S, Polonschii C, Olaru A, Gaspar S, Bajenaru O, Popescu BO, Gheorghiu E. Label free sensing platform for amyloid fibrils effect on living cells. Biosens Bioelectron. 2014, 52:89-97.
4. Enciu AM, Gherghiceanu M, Popescu BO. Triggers and effectors of oxidative stress at blood-brain barrier level: relevance for brain ageing and neurodegeneration. Oxid Med Cell Longev. 2013;2013:297512.
5. Popescu BO, Gherghiceanu M, Kostin S, Ceafalan L, Popescu LM. Telocytes in meninges and choroid plexus. Neurosci Lett. 2012, 516:265-9.
6. Hort J, O'Brien JT, Gainotti G, Pirttila T, Popescu BO, Rektorova I, Sorbi S, Scheltens P; EFNS Scientist Panel on Dementia. EFNS guidelines for the diagnosis and management of Alzheimer's disease. Eur J Neurol. 2010, 17:1236-48.
7. Popescu BO, Toescu EC, Popescu LM, Bajenaru O, Muresanu DF, Schultzberg M, Bogdanovic N. Blood-brain barrier alterations in ageing and dementia. J Neurol Sci, 283:99-106, 2009.
8. Cowburn RF, Popescu BO, Ankarcrona M, Dehvari N, Cedazo-Minguez A. Presenilin-mediated signal transduction. Physiol Behav. 2007;92:93-7.

9. Popescu BO, Cedazo-Minguez A, Benedikz E, Nishimura T, Winblad B, Ankarcrona M, Cowburn RF. Gamma-secretase activity of presenilin 1 regulates acetylcholine muscarinic receptor-mediated signal transduction. J Biol Chem. 2004;279:6455-64.
10. Cedazo-Mínguez A, Popescu BO, Blanco-Millán JM, Akterin S, Pei JJ, Winblad B, Cowburn RF. Apolipoprotein E and beta-amyloid (1-42) regulation of glycogen synthase kinase-3beta. J Neurochem. 2003;87:1152-64.

GABRIEL PRADA
ROMANIA

Gabriel-Ioan Prada, MD, PhD, graduated medical school at "Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania in 1984 and after two years of internship at "Fundeni" Clinical Hospital in Bucharest, started his activity as a junior scientist at "Ana Aslan" National Institute of Gerontology and Geriatrics in Bucharest since 1986. Currently he is senior specialist in Geriatric Medicine and Gerontology and also in Internal Medicine. Dr.Prada has a Diploma in Gerontology at International Institute on Ageing - United Nations and a Master of Science Degree in the Faculty of Medicine, Department of Geriatric Medicine, "Victoria" University of Manchester, United Kingdom under the supervision of Prof.Raymond Tallis, editor of Brocklehurst's Textbook of Geriatric Medicine and Gerontology. Dr.Prada also has a PhD degree in medical sciences at "Carol Davila" University of Medicine and Pharmacy, Bucharest. Currently, Dr.Prada is head of Clinical Department 4 at "Ana Aslan" National Institute of Gerontology and Geriatrics and also Professor of Geriatrics and Gerontology, head of the Chair of Geriatrics and Gerontology, Department 5, Faculty of Medicine, "Carol Davila" University of Medicine and Pharmacy, Bucharest. He is author of 13 books and book-chapters, national and international editions, and over 350 papers published or presented at national and international scientific meetings. Dr.Prada has been involved in several international and national research projects, including HYVET (Hypertension in the Very Elderly Trial), PREDICT (Increasing the PaRticipation of the ElDerly in Clinical Trials), ERA-AGE 2 (European Research Area in Ageing) and FUTURAGE - A Roadmap for Ageing. He is also full member of the Boards of UEMS-Geriatric Medicine Section (European Union of Medical Specialists), EUGMS (European Union of Geriatric Medicine Societies), IAGG (International Association of Gerontology and Geriatrics) and IAGG-ER Clinical Section.

LEOPOLD SALTUARI
AUSTRIA

After completing his study of Medicine in Innsbruck, Austria, he was a resident in the speciality of Neurology at the University of Pavia, Italy, from 1978 to 1983. Further study in the specialization of Physical Medicine and Rehabilitation was completed in 1986.
From 1983 to 1995 Dr. Saltuari was Head of Department on the Neurology Ward IIS/IV at the University Clinic in Innsbruck, specializing in post-acute rehabilitation for stroke and brain-injury patients. During this period, eight physicians completed their residency in Neurorehabilitation under his tutelage
Dr. Saltuari introduced new rehabilitation techniques such as cortical facilitation in Austria and developed new therapeutic techniques, e.g. intrathecal application of Baclofen in patients with supraspinal spasticity.
The government of South Tyrol (Italy) appointed Dr. Saltuari in 1985 to the Commission for Development of National Laws for Rehabilitation.
From 1988-1995 he served as Director of Therapy (Physical, Occupational, and Speech Therapy) in the Department for Neurology in the University Clinic in Innsbruck.
In 1988 Dr. Saltuari was appointed as Medical Director of the School for Occupational Therapy, where he introduced new functional aspects to the educational course. He was active in the "Project Group for Neurological Rehabilitation", reporting to the government of Tyrol in 1992.
Between 1988 and 1995 he was Director of the Laboratory for Evoked Potentials at the University of Innsbruck.
In 1987 and in 1988 he was in residence for several months at Baylor College of Medicine in Houston, Texas. The main area of this research assignment was the treatment of spasticity and pain in hemiplegic and spinal cord injured patients, as well as the treatment of pain by techniques of restorative neurology.
In 1992 Dr. Saltuari was awarded the Venia legendi in Neurology with the theme "Baclofen in Spasticity", in which the efficacy of intrathecal application of Baclofen in cases of supraspinal spasticity was described for the first time.

Dr. Saltuari has been Medical Director of the Department of Neurology in the Hochzirl Hospital since 1995. He is also Vicepresident of the Austrian Neuromodulation Society – AUNS.)
From 1988 – 2015 he has been active in the further education for Physical Therapists in Neurorehabilitation at the Scientific Academy of Lower Austria. He was elected President of

the Austrian Society for Neurorehabilitation in 2002.
Dr. Saltuari has submitted over 200 publications dealing with neurorehabilitative subjects as well as with acute neurological topics.
Since 1986 Dr. Saltuari has been Lecturer for Neurorehabilitation and Evoked Potentials at the University for Medicine in Innsbruck and since 1995 on the staff of the Institute for Sport Science. Since October 2009 he is the Director of the Research Department for Neurorehabilitation South Tyrol, Bolzano, Italy.
Since 2012 Prof. Saltuari is member of the Editorial Board of Functional Neurology and since December 2015 he is the President of the European Society for Neurorehabilitation.

GIORGIO SANDRINI
ITALY

Giorgio Sandrini is Full Professor of Neurology and Chairman of the Department of Neurology and Neurorehabilitation at the Institute of Neurology, "C. Mondino" Foundation, University of Pavia, Pavia, Italy.

He is Director of Postgraduate School in Neurophysiopathology and Chairman of the Section of Clinical and Rehabilitative Neurology, University Department of Brain and Behavioral Sciences.

He is President of the Scientific Committee of the Research Consortium on Adaptive Disorders and Headache. He is President of the European Federation of the Neuro-Rehabilitation Societies and Past-President of the Italian Society of Neuroehabilitation.

He is Chairman of the International Headache Society Italian Linguistic Special Interest Group and Chairman of the European Federation of Neurological Societies Task Force on Neurophysiological Tests and Neuroimaging Procedures in Non-acute Headache.

His main FIELDS OF INTEREST are: Neurorehabilitation, pathogenetic mechanisms, classification and treatment of Headache and Neuropathic Pain; neurophysiology of pain and autonomic system; movement disorders,. SCIENTIFIC ACTIVITY: he has published more than 200 indexed papers. He has edited or co-edited several scientific books and Congress Proceedings.

He organised numerous National and International Congresses. He participated as

investigator / principal investigator or coordinator, to numerous clinical trials carried out according to the GCP on treatment of headache, neuropathic pain or stroke.

STEPHEN SKAPER
ITALY

STUDIES: B.S. (chemistry) Illinois Institute of Technology (1969); Ph.D. (biochemistry) University of South Dakota (1973); Laurea in chemistry, University of Padua (1990)

CAREER: NIH Postdoctoral Fellow, Department of Medicine, University of California, San Diego (1973-1976); Fellow in Human Genetics, Department of Pediatrics, Case Western Reserve University, Cleveland, Ohio (1977); Postgraduate Research Biologist, Department of Biology, University of California, San Diego (1978); Assistant Research Biologist, Department of Biology, University of California, San Diego (1979-1982); Associate Research Biologist, Department of Biology, University of California, San Diego (1983-1987); Head, Laboratory of Neuropharmacology, Neuroscience Research Laboratories, Fidia S.p.A. - Abano Terme, Italy (1987-1993); Principal Scientist and Head, Laboratory of Cell Biology, Researchlife S.c.p.A. (a Lifegroup Company), Biomedical Research Center, St. Thomas Hospital, Castelfranco Veneto (TV), Italy (1993-1996); Visiting Professor, Department of Pharmacology, University of Padua, Padua, Italy (1997); Assistant Director, Molecular Neurobiology Research, SmithKline Beecham Pharmaceuticals, New Frontiers Science Park, Harlow, United Kingdom (1998-2001); Senior Group Leader, Migraine and Stroke Research, Neurology & GI Centre of Excellence for Drug Discovery, GlaxoSmithKline R & D Limited, Harlow, United Kingdom (2002-2003); Senior Group Leader, Neurodegeneration Research, Neurology & GI Centre of Excellence for Drug Discovery, GlaxoSmithKline R & D Limited, Harlow, United Kingdom (2004-2007); Senior Group Leader, Target Validation (Cognition and Pain), Centre of Excellence for Drug Discovery, GlaxoSmithKline R&D Limited, Harlow, United Kingdom (2008); Adjunct Professor, Department of Pharmacology and Anesthesiology, University of Padua, Faculty of Medicine, Padua, Italy (2009-present).

PROFESSIONAL MEMBERSHIPS: Sigma CI (The Scientific Research Society); Phi Lambda Upsilon (honorary chemistry society); Alpha Chi Sigma (professional society in chemistry/ chemical engineering); Society for Neuroscience; International Society for Cerebral Blood Flow and Metabolism

JOURNALS EDITED: Editor-in-Chief, CNS & Neurological Disorders – Drug Targets; Associate Editor, American Journal of Neuroprotection and Neuroregeneration; Editorial Board Member, Scientific Reports (Neuroscience); Councilor, International Association of Neurorestoratology
REVIEW PANELS: The Wellcome Trust (UK), Biotechnology and Biological Sciences Research Council (BBSRC) (UK), Austrian Science Fund (ad hoc review panel to evaluate interdisciplinary doctoral programmes in neuroscience)

RESEARCH INTERESTS: Molecular biology and cellular mechanisms of cell death in CNS ageing, neurodegenerative disorders and neuroinflammation, astrocyte-microglia interactions, pharmacological modulation of oligodendrocyte precursor maturation and demyelinating diseases. Track record of drug discovery project leadership in kinases, ion channels, G-protein-coupled receptors, DNA repair enzymes, growth factors, identification and optimization of tools for target validation studies, utilising RNAi, conditional and viral knockdown\outs\ins, transcriptomics, proteomics and in vitro cell-based disease or mechanism relevant assays in rodent systems.

PUBLICATIONS: OVER 300 publications in the neurosciences, including book chapters and symposia proceedings.
PATENTS: Pharmaceutical compositions containing monosialoganglioside GM1 or derivative thereof suitable for the treatment of Parkinson's disease (Patent No.: US 6,620,792 B1), use of CRF receptor agonists for the treatment or prophylaxis of diseases, for example neurodegenerative diseases (US 2003/0186867 A1), treatment of conditions with a need of GSK-3 inhibition (PCT WO 02/062387 A1), use of CRF receptor agonists for the treatment or prophylaxis of diseases, for example neurodegenerative diseases (PCT WO 01/72326 A1), use of monosialoganglioside GM1 or N-dichloro-acetyl-lyso-GM1 for preventing or reversing neuronal degeneration induced by long term treatment with L-DOPA in the therapy of Parkinson's disease (EP 0 770 389 A1)

REVIEWER FOR JOURNALS: Journal of Neuroscience, PNAS, Nature Reviews, The FASEB Journal, Journal of Neurochemistry, Journal of Neuroinflammation, Neurobiology of Disease, Neurobiology of Aging, Glia, Neuroscience, Apoptosis, PLoS One Biology, Journal of Pharmacology and Experimental Therapeutics, British Journal of Pharmacology, European Journal of Pharmacology, Journal of Neurological Sciences.

SORIN TUȚĂ
ROMANIA

CoAssociated Professor, University of Medicine and Pharmacy Carol Davila Bucharest
Head of the Stroke Unit in National Institute of Neurology and Neurovascular Diseases Bucharest,

ESO European Master in Stroke Medicine Krems, Austria, 2007-2009, "Passed with distinction" award.

Medical Director of the National Institute of Neurology and Neurovascular Diseases Bucharest, 2006-2007

Member of the Neurology Committee of the Romanina MInistry of Health 2013
Organisor and co-organisor of the Romanian National Stroke Conference 1997-2017
Secretary of the Steering Committee "brainLINC Journal", Elsevier, Urban&Fischer, Munchen 2003-2004

Vice-president of the Romanian National Stroke Association
Three national and one international awards for scientific activity.

CRISTINA TIU
ROMANIA

I always considered myself an optimistic person but still there are certain things which I find depressing, and a CV is one of those things. Suddenly it is not about you anymore, but about a person who had a number of achievements which are rarely the things you find interesting about yourself, and all your life is compressed in half a page.

I have graduated the University of Medicine and Pharmacy "Carol Davila" in Bucharest in 1987 and I started my career in neurology in 1991, as a resident in the Department of Neurology of the University Hospital Bucharest, the same place where now I am Associated Professor and Head of the Stroke Unit. I have two favorite domains: vascular pathology and multiple sclerosis. My main interest is in cerebrovascular diseases, I am coordinating a teaching course for cervical and cerebral ultrasonography and I followed the European Master in Stroke Medicine Programme in Austria.

My involvement in MS field started in year 2000, when the first patients in Romania were treated with DMTs due to a constant effort (read fight) of three people: Prof. Ioan Pascu, Prof. Alexandru Serbanescu and Prof. Ovidiu Băjenaru. Since then, I have followed-up hundreds of patients with MS, and I am now the coordinator of the University Hospital Bucharest Center for the National Programme for treating the Patients with Multiple Sclerosis. I have participated, together with my colleagues in the majority of the main International Clinical Trials in MS in the last decade and we had also several original scientific work related to clinical aspects of MS patients. I am one of the two representatives of the Romanian Society of Neurology in the Board of ECTRIMS.
In the end of my half page, I am looking forward to future goals: development of basic research in MS in Romania, a National MS Registry, better drugs, a better education for patients and doctors, a better me...

JOHANNES VESTER
GERMANY

Born, 1952, he specialized in Veterinary Medicine between 1971 and 1974 at the University in Munich, then changed to the University in Cologne in 1974 and specialized in Human Medicine from 1974 to 1980. In 1976 to 1979, he additionally studied biometric methods for pharmacology and clinical research at the Institute for Data Analysis and Study Planning in Munich.

While studying human medicine, he completed research work on pattern recognition in the visual brain and developed a pharmacodynamic Neuron Simulation Model at the Institute for Medical Documentation and Statistics of the University at Cologne.

From 1985 to 1995, he was member of the Ultrahigh Dexamethasone Head Injury Study Group and the leading biometrician of the German GUDHIS project in Traumatic Brain Injury, involving 10 Departments of Neurosurgery in Germany.

Since 1982 he holds > 100 advanced training courses on biometry for professionals in clinical research as well as teaching courses for universitary institutions and international societies.

Since 1995 he is Senior Consultant for Biometry & Clinical Research. He planned and evaluated about 150 randomized clinical studies worldwide.

Since 2013 Elected Member of the International Scientific Committee of the Society for the Study of Neuroprotection and Neuroplasticity (SSNN).

Since 2013 Elected Member of the World Academy for Multidisciplinary Neurotraumatology (AMN), since 2016 Elected Member of the Presidium of the AMN.

Since 2015 Member of the PhD Neuroscience International Faculty, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

Since 2017 Invited Associate Professor, Department of Neuroscience, "Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

He is head of the Multidimensional Department at the Institute for Data Analysis and Study Planning, and statistical peer reviewer for leading medical journals such as Stroke (American Heart Association).

He is member of various international Advisory Boards and Steering Committees including participation as biometric expert in regulatory authority panels, in FDA, EMA, and BfArM hearings, and in workshops of the International Biometric Society (IBS)

GREGORY DEL ZOPPO
USA

Dr. del Zoppo has contributed to the science of acute treatment strategies for ischemic stroke and of the impact of ischemia on the cerebral microvasculature. He was a pioneer of the acute clinical use of plasminogen activators for the treatment of thrombotic/thromboembolic stroke in the early 1980s. In consequence

his group has focused on microvessel/neuron responses in the acute evolution of post-ischemic cerebral injury in experimental systems including non-human primate models to murine in vitro systems, and in clinical trial design. Contributions of the experimental work on cerebral microvessel responses in focal ischemia (ischemic stroke) include the focal "no-reflow" phenomenon, the role of peripheral inflammatory responses to microvessel events, acute alterations in microvessel structure, acute endothelial- and astrocyte-matrix adhesion receptor and matrix alterations in edema and hemorrhagic transformation, and related glial events associated with neuron injury. Current attention is on the relationships and interactions among endothelial cell and astrocyte adhesion to the matrix, the tight junction and adherens complexes, and their management of the permeability barrier under nromoxia and injury. Those studies support the concept of the "neurovascular unit."Dr. del Zoppo has also designed and conducted clinical trials in acute interventions in ischemic stroke, and problems of hemostasis and thrombosis. Currently, he serves on both DSMBs and Advisory Boards for clinical trials in ischemic stroke. Following research work at the California Institute of Technology, Dr. del Zoppo trained in internal medicine and hematology, and at the Institute of Neurology, Queen Square (London). Experimental and clinical programs were undertaken at The Scripps Research Institute, the Klinikum RWTH Aachen (Gastprofessur der DFG), and the University of Washington. For this work Dr. del Zoppo received the Javits Neuroscience Investigator Award, election to the AAP, the ANA, and the Japanese Society of Neurology, and the 2012 Willis Lecture Award of the AHA/ASA. He is currently Professor of Medicine (in the Division of Hematology) and Adjunct Professor of Neurology at the University of Washington

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