

European Paediatric Neurology Training Advisory Board

Report nr 13:

EVALUATION OF THE PAEDIATRIC NEUROLOGY TRAINING IN THE REPUBLIC OF UKRAINE

2021

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Sameer Zuberi

Robb Forsyth

President EPNS

Secretary EPNS

Summary of recommendations:

Advice 1: Medical schools should collaborate closely with university or other major hospitals. This would reduce the cost of basic medical training, reduce the expensive overproduction of doctors and could produce licensed young doctors with a better clinical and professional background.

Advice 2: Teach medical students a high level of the scientific world language English. This will enable them to read the world literature, participate in discussions with colleagues abroad, follow on line training activities and be properly updates in international congresses.

Advice 3: Shape the training of paediatric neurologist according to the European syllabus and extend the training period to 5 years, incorporating basic training of at least 2 years in paediatrics or adult neurology and incorporating all the relevant fields in the other 3 years.

Advice 4: Start the training after obtaining the basic practical medical knowledge and the basic medical certification

Advice 5: During the training as paediatric neurologist, trainees should be able to function as residents which are fully licensed medical doctors under supervision of senior paediatric neurologists

Advice 6: Higher relevant structures of the Ministry of Health should enable the availability of medications necessary for treatment of common neurological diseases of childhood.

Advice 7: Ukrainian paediatric neurologist are familiar with the day to day problems of children with neurological disease and should be an important source or an important and equal partner of information for all discussions on the level of Ministry/ professional associations and other decision making concerning the specialism and the children with neurological diseases

Advice 8: In order to make the PhD degree comparable and as much worth as those in Western countries, the work should result at least in 3-4 publications in peer reviewed journals. (for example in the journals under auspices of EPNS, ICNA, EACD)

Advice 9: Strengthening collaboration programs with research centers throughout Europe to which PhD students can be send to widen their experience and knowledge is strongly encouraged. EPNS may support this endeavor for example through the Fellowship and visiting teacher programmes.

Advice 10: Clinical and research fellowship programmes for young paediatric neurologists or trainees such as offered by EPNS also offers opportunities to gain knowledge of paediatric neurology by spending time acknowledged high level centers of paediatric neurology centers in western Europe.

Advice 11: The Ukraine Paediatric Neurology Association could facilitate an attractive post-license program in cooperation with the universities. A proper reward should be developed in order to motivate licensed (senior) colleagues to increase the active knowledge of the English scientific language to encourage their participation in international courses and congresses. On the other hand may translation into the Ukrainian language of on line Paediatric Neurology training courses in cooperation with and by means of the electronic platform of the Ukrainian academy of childhood disabilities a realistic future possibility.

Advice 12: The quality of neurophysiological investigations and their assessment could be ameliorated by concentrating this type of investigations in one department or center under the care of a dedicated paediatric neurologists/neurophysiologists.

Advice 13: Ukrainian regulatory bodies are encouraged to decide that some EPNS training programs should also be obligatory for all teachers of PN and heads of paediatric neurology departments of regional hospitals

Advice 14: It is of utmost importance to spread the theoretical and practical message of this multidisciplinary approach among Paediatric Neurologists in Ukraine.

Advice 15: Together with the upgrading of the paediatric neurology training to European standard, programmes should be developed for training of paramedical professionals such as physical therapists, speech and language pathologists/ therapists, sensory therapists.

Advice 16: Non evidence based therapeutic programmes in the sphere of complementary and alternative medicine do not belong in regular medical therapeutic programmes and are not to be included to national protocols.

Introduction

Child Neurology was accepted on the European level as a subspecialty of Paediatrics as well as of Neurology in 2002. A European syllabus and training program of Child Neurology was compiled and accepted by the European Paediatric Neurology Society (EPNS) and by the Committee of National Advisors in Child Neurology (CNA) as well as by the relevant chapters of the Union of European Medical Specialists (UEMS). Latest revision was in 2019.

The European Training Advisory Board for Paediatric Neurology is active as a joint effort of the EPNS and the CNA as a means to implement the program in the training of Child Neurology specialists in the European countries. The ultimate aim is that the trainees of each European country will have a quality of training that is in accordance with the EPNS European training program. The Training Advisory Board offers to national child neurology societies the opportunity to work together with them to evaluate the national training system. The Training Advisory Board includes four delegates from the CNA, four from the EPNS' Education and Training Committee and the president and secretary of the EPNS. The chairperson of the CNA chairs the Board.

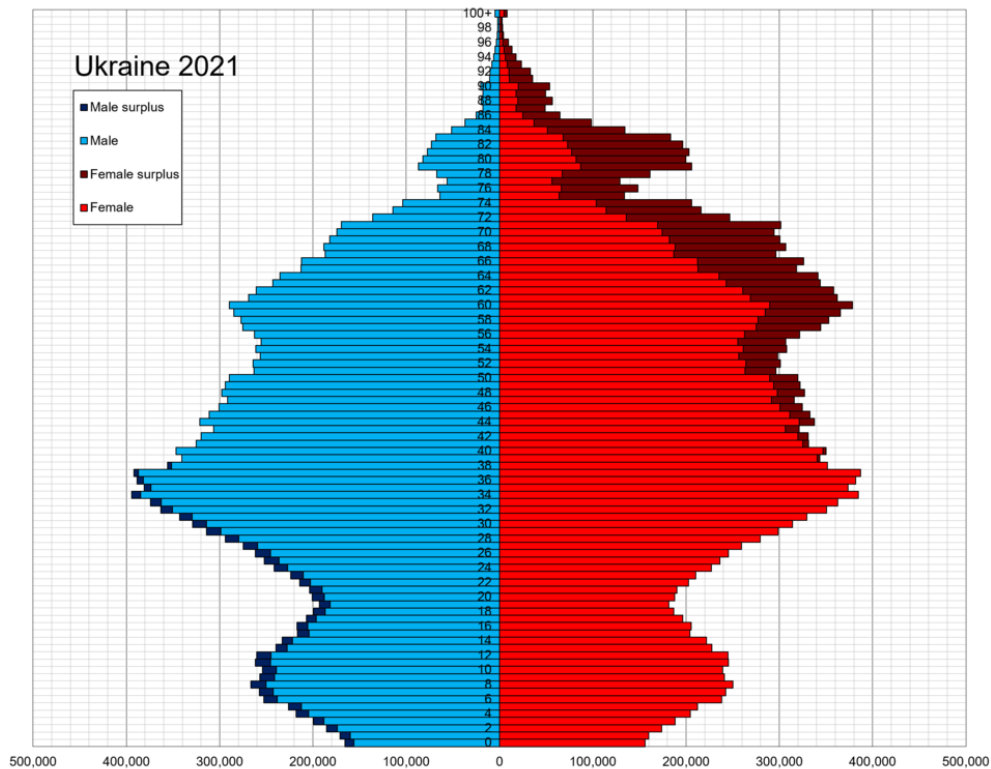
The Ukrainian paediatric neurologists through their representation in the Committee of National Advisors to EPNS initiated to have the Ukrainian training evaluated in accordance with this aim. The visit took place October 25-26th, 2021 in Kiev. The visit needs to be followed in about a year by a report from the Ukrainian group.

Demographics and medical care

The republic of Ukraine is a country in Eastern Europe and is the second-largest country in Europe after Russia, which it borders to the east and north-east. Ukraine also shares borders with Belarus to the north; Poland, Slovakia, and Hungary to the west; Romania and Moldova to the south; and has a coastline along the Sea of Azov and the Black Sea.



It has a population of 43,734 million and is the eighth-most populous country in Europe. The nation's capital and largest city is Kiev. The estimated number of children under 18 years of age is 7.834.000 In Ukraine, state hospitals provide free care to children with neurological problems.



Ukraine population pyramid based on StateStatistics Committee of Ukraine

Account of meetings, site visits in which information was acquired

During our visit, we were the guests of Ass. Prof.dr Volodymyr Martynyuk, (head of dept of Child neurology and *medical-social rehabilitation, Shupik National Healthcare University of Ukraine, Kiev*), dr Oxana Nazar and dr Alla Nechay, paediatric neurologists at the Neurology department of Kiev City Paediatric Hospital No1, and paediatric neurologists at the Neurology department of National specialized children’s hospital Okhmatdyt, Kiev. Dr Alla Nechay who is Ukraine CNA representative provided the pre-visit data sheets and also acted as interpreter.

Meetings:

Monday 25th October, 2021

Ministry of Health:

- Orabina Tetiana Mykolaivna Acting Director General of the Directorate of Medical Staff, Education and Science

Shupik National healthcare University of Ukraine

- Professor Oleksandr K. TOLSTANOV MD, Dr. Sc Vice-Rector for education
- Professor Olesya Hulchiy MD, Dr. Sc Vice-Rector for International Relations and International Students Research & Training

Neurology department of Kiev City Children Clinical Hospital No1

- Dr Alla Nechay, PhD paediatric neurologist
- Dr Iryna Nikolaenko, paediatric neurologist
- Dr Natalia Smulska, PhD, paediatric neurologist
- Teaching staff of the department of Child neurology and *medical-social rehabilitation, Shupik National Healthcare University of Ukraine*, : Ass Prof Viktoria Svystilnyk, Ass Prof Liudmyla Panasiuk, Ass Prof Anatoliy Nevirkovets

Tuesday 26th October, 2021.

Ukrainian centre of medical rehabilitation for children with organic injuries of neurological system

Volodymyr Martynyuk, Center Director and Chief Freelance Paediatric Neurologist of the Ministry of Health of Ukraine up to 2017, *Expert of Ministry of health* from 2020

And further staff including paediatric neurologists that combine their work as paediatric neurologist with cused Voyta therapy, physiotherapy, speech therapy, ophthalmology, epilepsy, neurophysiological techniques, orthotics, reflexology, acupuncture. In addition we visited medical specialists in psychology and remedial education and (neuro)radiology.

National specialized children's hospital Okhmatdyt, Kiev

- Dr Olena Savchenko, Head Paediatric Neurology department
- Dr Natalia Pichkur, MD, Head of Center of orphan diseases
- Natalia Olkhovych, MD, Head of Laboratory of medical genetics
- Rebenkov Staislav, PhD, Head of Radiology department

Neurology department of Institute of Paediatrics, obstetrics and gynecology:

- planned visit had to be canceled due to COVID outbreak

History of Paediatric Neurology in Ukraine

The origins of pediatric neurology in Ukraine are closely linked to two main sources - the Moscow and Kharkiv schools of neuropathology and psychoneurology. In 1911 the first in Europe Institute of Child Neurology and Psychology (director - Prof. GI Rossolimo) was opened in Moscow, and in 1921 - the All-Ukrainian Psychoneurological Institute (Kharkov) was organized. In 1932, the Department of Child Psychoneurology was opened at the Ukrainian Academy of Psychoneurology, and later at the Institute of Neurology, Psychiatry and Narcology of the Academy of Medical Sciences of Ukraine. In 1945, the Department of Pediatric Nervous Diseases was organized on the basis of the current Institute of Pediatrics, Obstetrics and Gynecology of the Academy of Medical Sciences of Ukraine (Kyiv). The history of scientific and pedagogical activity in the specialty "pediatric neurology" in Ukraine began in the cities of Kharkiv, Kyiv and Donetsk.

In the first years of Ukraine's independence, invaluable assistance in creating a children's neurorehabilitation service was provided by specialists from the *Kindercenter* in Munich (director - Prof. X. von Foss). In cooperation between the Ministry of Health of Ukraine and the Ministry of Labor and Social Law, Family, Women and Health of the Federal State of Bavaria (Dr. Christoph Helzel) in Ukraine laid the foundations of social pediatrics".

Since 1993, the Ministry of Justice of Ukraine has registered a public organization - the Association of Pediatric Neurologists of Ukraine, which in different years was headed by SK Yevtushenko, V.Yu. Martyniuk, VI Kozyavkin, OP Perfilov, TI Pomerantseva, LG Kirilova.

In the years of Ukraine's independence, professional relations with specialized foreign organizations of pediatric neurologists have significantly improved. Thus, on September 9-12, 2009, the International Congress of Paediatric Neurologists was held in Kiev under the auspices of the World Association of Pediatric Neurologists (ICNA). The congress was attended by experts from 44 countries.

International Ukrainian-Bavarian symposia "Medical and social rehabilitation of children with disabilities" are held regularly. A total of 13 symposia were held in Kiev, Munich, Lviv, Odesa, Dnipro, Kharkiv, Yevpatoria, and Kropyvnytskyi. The first symposium was held in 1995 in Kherson.

Congresses on perinatal neurology are held under the auspices of the European Society of Pediatric Neurologists (EPNS). National Representative from Ukraine in EPNS is dr Alla Nechay.

Active cooperation with the European Academy of Child Disability (EACD) continues. dr O.O. Kochmar is a member of the EACD board. National Representative from Ukraine -is dr O.B. Nazar. In 2021, the first joint conference of the Ukrainian Academy of Child Disability and the European Academy of Child Disability had been held in Kiev, 41 experts from Europe, USA and Canada participated.

Present situation of Paediatric Neurology in Ukraine

In Ukraine, the specialty "paediatric neurology" according to the orders of the Ministry of Health (№ 214 of 11.10.1993 and № 385 of 28.10.2002) is a separate medical specialty. The neurological care to children is provided by approximately 700 paediatric neurologists (1 for 8400 children), led by the experts of the regional /city state administrations. Specialized care for children is provided in children's neurological departments of regional (city) children's hospitals (approximately 30 in Ukraine), children's outpatient paediatric clinics (approximately 1050 institutions found in all regions of Ukraine). In Ukraine rehabilitation in children with organic injury of neuro system is considered part of paediatric neurology and not a separate specialism. Medical and social rehabilitation centers for children (about 100 centers and departments), children's specialized sanatoriums in Odessa "Khadzhibei sanatorium", Evpatoria, Crimea (sanatorium "Iskra", sanatorium "Batkivshchyna", clinical sanatorium of the Ministry of Defense of Ukraine). The paediatric neurologists in these centers may combine their main work with functioning as rehabilitation specialists/ physiatrists or work in professions which would in some countries would be considered as para-medical, such as speech and language therapy (*those here are pedagogic, doctors don't do that*)physiotherapy, orthotics, sensory therapy. Application of acupuncture which in western countries is considered part of complementary and alternative medicine is also made available at least in the Kiev based Ukrainian centre of medical-social rehabilitation for children with organic injuries of neurological system. In the main rehabilitation centers often also a full diagnostic programme including neurophysiological investigations such as EEG and EMG, ultrasound diagnostics.

Higher consultative and diagnostic institutions are

- the National Children's Specialized Hospital "OKHMATDIT" This hospital harbors not only a neurological department but also the Center of orphan diseases to which all children with metabolic disease are referred for diagnosis and treatment. This hospital also had a laboratory of medical genetics where basal metabolic studies can be carried out as well as primary genetic essays. In its radiology department MRI facilities are present and with the help of the PICU specialists also MRI under sedation/ anesthesia is possible for a limited group of patients.
- the Institute of Pediatrics, Obstetrics and Gynecology of the National Academy of Medical Sciences of Ukraine
- Institute of Neurology, Psychiatry and Narcology of the National Academy of Medical Sciences of Ukraine
- Ukrainian Medical Center for Rehabilitation of Children with Organic Nervous System Injuries of the Ministry of Health of Ukraine

- Leading rehabilitation institutions for children with chronic pathology of the nervous system are the International Rehabilitation Clinic in Truskavets , Odessa Center for Rehabilitation of Disabled Children of the Charitable Foundation "Future" , Chernihiv Center for Medical and Social Rehabilitation of Disabled Children "Renaissance"

Neurological care for children in Ukraine is provided in accordance with the Concept of Improving Neurological Care for Children (1998), the Concept of Comprehensive Rehabilitation of Children with Disabilities (2008), Standards for Medical and Social Rehabilitation of Children with Organic Nervous System Disorders (2005), Concept of Social Pediatrics (2011). The purpose of the Concept of Social Pediatrics is to further improve the current system of rehabilitation of children with disabilities with the definition of priority areas, namely: prevention of disabling pathology in children; formation of a single rehabilitation space around a child with a disability and his family; creation in accordance with international standards of a system of comprehensive medical and social rehabilitation of children with disabilities, which will ensure the provision of qualified medical care, adequate inclusion in the educational environment, early career guidance and design of living space in society, taking into account their health.

School system in Ukraine*

The school system is divided into an elementary school(6 years; age level 6–12), basic (3 years; age level 12–15), and secondary (3 years; age level 15–18), Students with a secondary school certificate have access to higher education. Only the students who have passed the Unified National Examinations may enroll in a state-accredited higher education institution, based on ranking of scores he/she received at the exams. Most of these institutions offer three level studies: a Bachelor's Program (3–4 years); a Master's Program (2 years), and a Doctoral Program (3 years). Ukrainian medical graduates are obliged to complete Internship 1-3 years.

Basic medical training is provided in a 6 years curriculum. A degree of one of Ukraine Medical Universities is required to apply for training as pediatrician or neurologist. Training is provided/ coordinated by *Shupik National Healthcare University of Ukraine* in Kiev (this institution coordinates training for all 108 Postgraduate medical specializations) and Kharkiv Medical Academy of Postgraduate Education.

Paediatric Neurology Training

Basic medical training consists of 6 years in 14 public and 5 private medical Universities. Also 3 institutions of postgraduate education are subordinated to Ministry of Health. 2 institutions of postgraduate training provide training in PN in Ukraine: Shupik National healthcare University of Ukraine, Kharkiv Medical Academy of Postgraduate Education, also 1 was in Donetsk (temporarily does not work)

A specialization in Paediatric Neurology can be entered by fully trained Paediatricians or Neurologists. It is not required to spend time in the other specialism during the specialization to become a paediatric neurologist. In order to become a paediatric neurologist a further 5 months of training is required. Usually paediatric or neurology departments in need of a paediatric neurologist select the candidates that will become a paediatric neurologist, send them to postgraduate training and provide a salary during the training period.

* Regarding School system in Ukraine : <https://ukrlawcouncil.org/en/education-system/>

* Regarding Medical education : <https://mcu.org.ua/medicinskoe-obrazovanie-v-ukraine/?lang=en>

The 2 year training as pediatrician and the 5 months training as paediatric neurologists has a similar structure. In the morning trainees attend lectures given by experienced paediatric neurologist (all with PhD) who also have a training position at the University and not only teach paediatric neurologists but also paediatric neurology to trainees in other disciplines such as paediatrics, neonatology, child psychiatry and anesthesiology, doctors in physical rehabilitation, Family medicine doctors *and others*. In the afternoons trainees visit the hospital or outpatient clinic as consultants and discuss cases. In this situation one patient is evaluated by a group of 4-5 trainees under supervision of one paediatric neurology teacher. For example at the Neurology department of Kiev City Paediatric Hospital No1 at present there are 19 trainees in paediatric neurology who are guided by four paediatric neurologist instructors. Paediatric neurology trainees never individually bear responsibility for in- or outpatients in terms of evaluation, treatment or follow up. At present, in COVID times, most teaching is virtual and the trainees are not allowed to come to the hospital. The regular clinical work in the teaching hospital wards is been done by senior paediatric neurologists.

The paediatric neurology topics that are not covered in the 5 months training are available as thematic courses in the teaching departments of the Institutions mentioned above. An approved Ukrainian training program in paediatric neurology exists but it does not meet the requirements of the EPNS syllabus. However, core topics of pediatric neurology training are neuroanatomy, infectious diseases, neuroimaging, neurologic examination, epilepsy in newborns, headache, stroke, neurogenetic disorders, stroke, etc. Sometimes expert speakers on a subject are invited.

At the end of the training period trainees take an exam that consist of 3 parts:

- a. 150 (out of a database of 2000) MC questions – computer examination
- b. Analysis of 1 case (written exam)
- c. Oral examination

Most trainees pass the exam and are then fully certified paediatric neurologists and return to the department that send them and function there as pediatric neurology specialists. They then may practice independently in hospitals, outpatient clinics. Of course there is always the possibility to discuss difficult clinical cases with more senior colleagues. An increasing number of paediatric neurologists however finally choose (also) to work in a private practice.

At present the Ministry of Health, the Shupik National healthcare University of Ukraine and representatives from the (Association of child neurologists of Ukraine) are discussing a fundamental change in the training of the different medical specialists. This would mean that trainees would work a certain period as residents in their chosen specialism. For paediatric neurology this would likely be 2 years. The exact content of the curriculum and the time path is not yet known

Postgraduate training and research

3 years after obtaining the certificate of specialist pediatric neurologist and working as a such, pediatric neurologists usually return to the institution of Postgraduate training for a new short course (1 month) and examination to become a 2nd category specialist after the process called attestation. After 5 year they also return for further evaluation to become a first grade specialist and so on. After 10 years a pediatric neurologist can have obtained the highest grade. For this training there is a choice of topics for advanced training which is not only available for pediatric neurologists but also for other type of specialists who may care for children with neurological problems such as adult neurologists.

Paediatric neurologists working in outpatient facilities throughout the country do have to be enrolled in the postgraduate training as they have to approve their level by credit points each year and pass through educational courses as one of the sources of the credit points.

Many of them still also have not a very modern concept of paediatric neurology, being trained in the Soviet days and not having passed through international training courses, i.e. EPNS courses. In order to make modern ideas on Paediatric Neurology more available to non-English speaking (older) colleagues and to become less dependent of Russian books and literature, the 2nd edition of Aicardie's textbook on Diseases of the nervous system in childhood (1998) was translated in Russian.

In clinical medicine, obtaining a PhD grade is possible and is needed for an academic career. The PhD program is under the direction of the Ukrainian Medical Universities and the Ministry of Education. Largest part of the PhD training consists of a 3 years theoretical training course, which is evaluated by an examination. Research projects are proposed by senior researchers. The PhD student carries out the research under strict supervision. Some PhD students manage to enroll in a project in which Ukrainian scientists cooperate with centers in the USA (for example with the University of Illinois) or Europe (important agreements exists with the Karolinska Institute in Sweden) and benefit from grants generated through these channels. A main breakthrough is that the students now know English, and can find the appropriate literature. However, it is still very difficult to publish in the international (English) literature. The feeling is that publications from Ukraine should be facilitated by for example the European Journal of Child Neurology.

Problems and threats to paediatric neurology training and practice.

Possibilities to diagnose paediatric neurological illnesses are limited (in some regions). All regions are supplied with good quality MRI and CT machines. To obtain a good quality MRI is possible but transportation movements with often severely ill patients are sometimes necessary. The possibility to obtain a contrast enhanced MR and CT scan under sedation which is a prerequisite for good MRI quality in smaller, anxious, very sick or mentally impaired children that cannot be instructed to lie motionless often is a logistic challenge.

In recent years there is competition from private paediatric neurology centers for which services parents have to pay and for which no quality assessment can be done. The often refer to the state PN clinics without a proper diagnosis or conclusion but with a brain MRI or other additional assessments for which the parents had to pay

All paediatric neurology departments are able to make EEG's. However, only the main centers are able to provide an EEG following the international accepted 10/20 system.

Laboratories offering karyotyping or array investigations and basic metabolic screening are available in Ukraine and their costs are comprised in the state health programme. In contrast, laboratories in which more complex metabolic and genetic screening methods (whole Exome Sequencing, different Genepanels) are carried out are not yet present in Ukraine. Material on which more complex assessments have to be done, need to be sent abroad at high costs for parents.

Another problem is that some evidence based successful medications for treatment of common paediatric neurological diseases are not available in Ukraine. Examples are vigabatrine for the treatment West syndrome, midazolam (for intravenous or nasal application) to treat prolonged epileptic seizures/ status epilepticus and intravenous fenobarbital for first line treatment of neonatal seizures..

Research facilities are mainly concentrated in paediatric neurology departments associated with Medical departments of paediatric neurology and neurosurgery, Also there are Science-research Institutions (at least 4 in Ukraine; 2 in Kiev) which carry out research. Publications from these research programmes mostly appear in Ukrainian or Russian language journals and are rarely sent to peer reviewed international English language journals.

Problems in pediatric neurology and training in Ukraine at this moment:

- Insufficient involvement of trainees in daily practice. Training in the neurological examination of children of different age groups with neurological diseases could be ameliorated.
- Limited duration of the paediatric neurology training
- Not all essential modules of paediatric neurology training are available such as: training in neuro-ophthalmology (fundus examination), adult neurology training for pediatric neurologists coming from pediatrics, neurooncology (and the other way around, training in neurobehavioural problems such as autism ADHD etc. is possible). Diagnosis and follow up of children with possible behavioural problems such as Autistic Spectrum Disorders up to 4-5 years of age is done by paediatric neurologists. Only thereafter they can be referred to a child psychiatrists
- EEG and EMG training is not part of basic paediatric neurology training.
- Adult neurologists or general pediatricians with no or limited training may sometimes take care of children with neurological problems.
- Organization of transition of children with neurologic disease to adult care is often difficult by lack of knowledge of most adult neurologists of the specific problems of young adults with neurologic diseases with childhood onset.
- Active and passive knowledge of English – the present scientific world language - is limited to the younger generation which makes it difficult for many senior paediatric neurologists to participate in international pediatric neurology congresses, webinars, discussions or read scientific papers in journals in English language. Publication of scientific papers is mainly in journals in the Ukrainian or Russian language. During our visit, the need for translation into Ukrainian of paediatric neurology training courses or content of main advanced plenary sessions of international/ European paediatric neurology congresses was expressed more than once.

Evaluation visit - impressions

Ukraine is a country in transition from a poor economic situation to European Union level. The Ukrainian Paediatric Neurological Service is making a strong effort to make a transition from the former Soviet type of organization and education to a more modern European standard. On this road of transition, many obstacles still have to be removed. At present, the paediatric neurology practice still suffers from an old fashioned and limited education system, which does not meet European standards. The majority of paediatric neurologists have limited-access to,-knowledge of modern paediatric neurology mainly due to the lack of English language. In larger centers, paediatric neurologists work in a more contemporary fashion. However, they also suffer severely from the absence of laboratories that offer up to date genetic, metabolic and biochemical screening. Radiologic facilities are well developed and the larger centers have access to MRI. However, expert paediatric neuroradiologists are still badly needed. Sending material abroad for analysis is costly and time consuming. The social security system is still severely underdeveloped and only for this reason many parents cannot afford basic paediatric neurological evaluation and treatment for their children. Dedication and clinical skills of paediatric neurologists working in the larger centers are highly developed but their diagnostic and therapeutic possibilities are limited because of the unavailability or costs (and not covered by state reimbursement of newly developed drugs used for treatment of common paediatric neurological diseases in Ukraine, for example *Duchenne muscular dystrophy, SMA, TSC and others*)

The presence of paediatric Neurodisability centers in Ukraine, which treat children in a multidisciplinary way on an international level, is a good start and a noble initiative. The paediatric neurologists working in the rehabilitation centers often combine their work with that what in western countries is often the domain of paediatric Rehabilitation Specialists.

The training of paediatric neurologists is severely hampered by the severely limited duration and *mainly* theoretical education in Medical Universities and Postgraduate Training. At present the training to become a Paediatric Neurology Specialist is shaped as a three year internship rather than a training of a medical specialist with its own responsibilities. In contrast, after becoming a Paediatric Neurologist they work at first 3 years before gaining 2nd category paediatric neurologist under supervision by heads of departments and senior colleagues.

In respect to the content and duration of the education, the Ukrainian Paediatric Neurology Training does not meet the criteria of the European syllabus. The duration of paediatric and adult neurology training is not in accordance with the European syllabus. In respect to neurophysiological facilities, the use and interpretation of EEG is well integrated in the daily clinical work but EMG and evoked potentials are investigations which are not easily obtained. Independent Neurophysiological units with dedicated Clinical Neurophysiologists are rare in Ukraine.

The recommendations of the Training Advisory Board of EPNS for the Ukraine situation are important as a basis to strengthen PN in Ukraine

- This would mean amelioration of acute treatment of neurological disease in children by making available common and effective drugs for treatment (e.i. midazolam, IV fenobarbital etc)
- Effective treatment would not only prevent secondary damage to the brain and subsequent loss of normal and healthy development leading to better quality's, e/i. less mentally impaired children and families leaning on government funds or if not being unable to contribute to the national production

Conclusions and recommendations

1. Until now, trainees who obtain their final medical exam at a Institution of Postgraduate Medical Training do not have sufficient clinical experience. The education is -predominantly theoretical.

Advice 1: Institutions of Postgraduate Medical Training should collaborate closely with university or other major hospitals. This would reduce the cost of basic medical training, reduce the expensive overproduction of doctors and could produce licensed young doctors with a better clinical and professional background.

Advice 2: Teach medical students a high level of the scientific world language English. This will enable them to read the world literature, participate in discussions with colleagues abroad, follow on line training activities and be properly updated in international congresses.

2. At this moment the education of paediatric neurologist is far too short (2 years of paediatrics, 5 months of PN!) in comparison to the European syllabus. In addition, residents are not de facto functioning actively as medical doctors and mainly observe instead as act as a medical doctor. Although many anti-seizure medications are available, some essential first line medications such as midazolam, IV fenobarbital etc are missing. Amelioration of the quality of paediatric neurology training and availability of medication necessary for treatment of common neurological diseases will lead to their earlier recognition and hands on proper treatment and thus not only prevent the emotional but also the economic burden for parents and society of acquired brain injury due to late diagnosis.

Advice 3: Shape the training of paediatric neurologist according to the European syllabus and extend the training period to 5 years, of at least 2 years in paediatrics or adult neurology and incorporating all the relevant fields in the other 3 years.

Advice 4: Start the training after obtaining the basic practical medical knowledge and the basic medical certification

Advice 5: During the training as paediatric neurologist, trainees should be able to function as residents which are fully licensed medical doctors under supervision of senior paediatric neurologists

Advice 6: Higher relevant structures of the Ministry of Health should enable the availability of medications necessary for treatment of common neurological diseases of childhood.

Advice 7: Ukrainian paediatric neurologist are familiar with the day to day problems of children with neurological disease and should be an important source or an important and equal partner of information for all discussions on the level of Ministry/ professional associations and other decision making concerning the specialism and the children with neurological diseases.

3. The PhD education should contain an opportunity to do sound research under supervision.

Advice 8: In order to make the PhD degree comparable and as much worth as those in Western countries, the work should result at least in 3-4 publications in peer reviewed journals. (for example in the journals under auspices of EPNS, ICNA, EACD)

Advice 9: Strengthening collaboration programs with research centers throughout Europe to which PhD students can be sent to widen their experience and knowledge is strongly encouraged. EPNS may support this endeavor for example through the Fellowship and visiting teacher programmes.

Advice 10: Clinical and research fellowship programmes for young paediatric neurologists or trainees such as offered by EPNS also offers opportunities to gain knowledge of paediatric neurology by spending time acknowledged high level centers of paediatric neurology centers in western Europe.

4. At this moment the system for continuous education after obtaining the grade of highest level of paediatric neurology specialist needs an improvement, including the active and passive knowledge of the English scientific language. Many paediatric neurologist work under solitary circumstances with very little feedback and opportunities to keep up with new developments. Paediatric neurologists with first or the highest category (grade) should confirm their level of knowledge every 5 years (all should collect credit points by attending courses, participating in(international) conferences or publishing the paper etc).

Advice 11: The Ukraine Paediatric Neurology Association could facilitate an attractive post-license program in cooperation with the universities. A proper reward should be developed in order to motivate licensed (senior) colleagues to increase the active knowledge of the English scientific language to encourage their participation in international courses and congresses. On the other hand may translation into the Ukrainian language of on line Paediatric Neurology training courses in cooperation with and by means of the electronic platform of the Ukrainian academy of childhood disabilities a realistic future possibility.

5. EEG and other neurophysiological investigations are now carried out by physicians fully trained according to the local program. The quality of the assessments and interpretations of EEG and other neurophysiological investigations of outside the major centers is not always optimal.

Advice 12: The quality of neurophysiological investigations and their assessment could be ameliorated by concentrating this type of investigations in one department or center under the care of a dedicated paediatric neurologists/neurophysiologists.

Advice 13: Ukrainian regulatory bodies are encouraged to decide that some EPNS training programs should also be obligatory for all teachers of PN and heads of paediatric neurology departments of regional hospitals

6. The presence of a multidisciplinary working paediatric rehabilitation center under the expert guidance of paediatric neurologists is seen as a very positive development which should be supported by all means. It is undesirable that well trained paediatric neurologists de facto work as a paramedical professionals.

Advice 14: It is of utmost importance to spread the theoretical and practical message of this multidisciplinary approach among Paediatric Neurologists in Ukraine.

Advice 15: Together with the upgrading of the paediatric neurology training to European standard, programmes should be developed for training of paramedical professionals such as physiotherapists, speech and language pathologists/ therapists, sensory therapists.

Advice 16: Non evidence based therapeutic programmes in the sphere of complementary and alternative medicine do not belong in regular medical therapeutic programmes and should be canceled.

Feedback

A feedback-report to the Training Advisory Board about one year after this visit is agreed upon with the Ukraine Paediatric Neurology Association. Subjects suggested to be brought up in the feedback are:

- Development of the political process on basic medical training and initiation of specialization, including discussions on a rotation system.
- Development of the position of the trainee-doctors during their training and their development into independent specialists.
- Development of a post-license training program.
- The employment and financial situation for training doctors and (young) paediatric neurologists.
- The total length of child neurology training – further development and discussions.

Bucharest and Rotterdam December , 2021

Dana Craiu

Coriene Catsman-Berrevoets