

**European Paediatric Neurology Training Advisory Board**

**Report nr 12:**

**EVALUATION OF THE PAEDIATRIC NEUROLOGY  
TRAINING IN CROATIA 2013**

**Authors: Richard Newton and Heikki Rantala**

**Presented and approved at the Training Advisory Board September 2013**

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**EPNS Education and Training Committee delegates**

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**Peter Baxter**

**Secretary EPNS**

### ***Summary of conclusions***

- 1) Each Croatian centre has the neurology services and facilities which meet the criteria sought by the European Paediatric Neurology Society training syllabus.
- 2) The Croatian Society of Paediatric Neurology (the HDDN) presents a united voice on Training voice content.
- 3) There is good central manpower planning.
- 4) There is good dialogue between influential groups to achieve required changes.
- 5) Some service delivery issues need addressing to achieve best use of resource and appropriate training.
- 6) Trainees are marvellously enthusiastic but they often have to rely on their own initiative and invention to create adequate exposure to the specialty, given the current short period in training and shortage of accredited posts which nonetheless offer good facilities and supervision.
- 7) There are plans to lengthen the current inadequate training period to be EPNS syllabus compliant.

### **Summary of Recommendations**

#### Training

The training period in paediatric neurology should be lengthened to three years as per EPNS syllabus.

#### Service delivery – best use of resource

In our view the clinical service of paediatric neurology needs better definition of a paediatric neurologist's role as tertiary or quaternary specialist.

### ***Introduction:***

Child Neurology was accepted at the European level as a subspecialty of both Paediatrics and Neurology in 2002. A European syllabus and training programme for Child Neurology was compiled and endorsed by both the European Paediatric Neurology Society (EPNS) and the Committee of National Advisors in Child

Neurology (CNA). This, in turn has been endorsed by the relevant chapters of the Union of European Medical Specialists (UEMS).

The European Training Advisory Board for Paediatric Neurology is active as a joint effort of the relevant groups in Europe and is comprised of four delegates from the CNA, four from the EPNS Education and Training Committee, the president and secretary of the EPNS, one representative of the European Academy of Childhood Disability and one of the UEMS Neurology board. The chairperson of the CNA chairs the Board.

The Hrvatsko Društvo za Dječju Neurologiju (HDDN), the Croatian Paediatric Neurology Association through representation to the Committee of National Advisors requested an evaluation of the Croatian training programme in accordance with this aim. This visit was carried out on 21<sup>th</sup> and 22<sup>st</sup> March, 2013 by Dr Richard Newton (Manchester, UK) and Prof Heikki Rantala (Oulu, Finland).

### ***Demographic Data:***

The **Republic of Croatia**, an independent state since 1991, is situated between central and eastern Europe bordering the Adriatic Sea between Slovenia and Bosnia and Herzegovina, Hungary on the north and Serbia on the east with an area of 56,594 km<sup>2</sup>.

The Croatian population is 4.4 million with about 915,030 children. The infant mortality rate is 4.4/1000 live births. The life expectancy is 79.8 years for women and 72.38 years for men.

Croatia is a parliamentary republic with a central government in Zagreb. The fundamental administrative divisions of the country are its 20 counties.

The largest cities are Zagreb (792,000 inhabitants plus 317,600 in the surrounding county), Split (189 000), Rijeka (144 000), and Osijek (115 000).



### ***Health and Medical Care***

The Croatian health care is based on a social security system, universally available free of charge for children under the age of 18 years. Some private practice is also available in the country representing only 3% of medical care. Public health doctors are not allowed to work in the private sector. Health care provision, medical education, specialty and subspecialty training are all the responsibility of the Ministry of Health.

### ***Structure of the Visit***

The Zagreb area was visited on 21<sup>st</sup> to 22<sup>nd</sup> March 2013 by Richard Newton (United Kingdom) and Heikki Rantala (Finland). Pre-visit information had been made available to the visiting team beforehand by mailed questionnaires. The host of the visit was Professor Nina Barisic representing the Croatian Paediatric Neurology Society.

***Centres visited and activities performed:***

Thursday 21/3/2013

Morning meeting at the University Hospital Centre Zagreb. Here the TAB members received presentations from:

University Hospital Centre Zagreb – Prof Nina Barisic

University Hospital Centre Sestre milosrdnice – Prof Ljerka Cvitanović-Šojat

Children's Hospital Zagreb – Prof Vlatka Mejaški Bošnjak

University Hospital Centre Split – Assistant Prof Radenka Kuzmanić Šamija

“Kantrida” – University Hospital Rijeka – Prof Igor Prpic

University Hospital Centre Osijek –consultant Krasanka Hafner

Followed by a meeting with Trainee representatives from each centre.

Afternoon meetings: Croatian Institute for Brain Research – HIIM with Professor Kostović, Government representatives Ministry of Health: National Authority for Medical Specialty Training Professor Nada Čikeš, Medical Chamber (Dr. Sekelj-Kauzlarić coordinator), EU coordinator (for matters concerning mutually recognised qualifications) Mrs Pederin.

Friday 22/03/2013

Morning: Hospital visits: Department of Paediatrics in Children's Hospital Klaićeva: developmental neurology and neurophysiology, Department of Paediatrics Neurology, Neurosurgery in Hospital Center Sisters of Mercy HC SM, Institute for Rehabilitation. Afternoon: Croatian Medical Association (President Prof Krznarić).

Followed by Conclusions, Remarks and feedback session - Medical Faculty Old University Hall.

Our findings are summarised here:

### ***Paediatric Neurology in Croatia***

Paediatric Neurology in Croatia is a subspecialty of Paediatrics. There are 6 Paediatric Neurology Centres around the country, integrated in paediatric departments.

Neurodisability and mental retardation are under the responsibility of the paediatric neurology departments. There is a total of 42 paediatric neurologists in the country with a population of 915,030 under 18 years of age which gives a ratio of 21790 potential patients for every paediatric neurologist.

### ***Paediatric Neurology Training in Croatia***

The Croatian Society of Paediatric Neurology, the Hrvatsko društvo za dječju neurologiju (HDDN), was created in 1980 as a part of Croatian Medical Association. The HDDN participates in the accreditation of paediatric neurology subspecialists with the consent of the Croatian Medical Chamber and Ministry of Health. Currently there are 74 members of whom 40 are subspecialists in paediatric neurology.

Following the publication of the EPNS/TAB's European Syllabus the HDDN produced its own compliant version. This is currently awaiting endorsement by the Ministry of Health. The syllabus advocates, alongside experience in paediatric neurology, periods of training in adult neurology, rehabilitation, neuropsychiatry, neurometabolic, neurogenetics, neuropathology, and neuroradiology. Each student has a mentor/tutor who facilitates these training placements. Trainees may rotate between the main training centers in Croatia to achieve their training requirement.

Currently, specialist training in paediatric neurology only follows full specialisation in general paediatrics. Entrance from adult neurology is not accepted either by the HDDN or the Ministry of Health. Thus, the current training period is 5 years of general paediatrics and two additional years for paediatric neurology, seven years in all. The paediatric neurology training period in Croatia consists of 4 obligatory modules which are acute paediatric neurology - 6-12 months in duration, neurology for adults (6 months) and habilitation/rehabilitation (6 months) and child psychiatry for the duration of 6 months once a week. Beside the obligatory modules there are also some obligatory sub-modules (7 in total) viz: neuroradiology, neurophysiology, neuropathology,

academic module (scientific work, lectures), modules of team approach and integrated care, and finally the module of ethics and work organization (management). Under the guidance of the individual trainee's mentor 3 of 9 desirable modules are chosen.

Desirable modules are : neurophysiology , neuropathology, neurogenetics , neurometabolic diseases, neuropaediatric intensive care, neonatal neurology , neuropsychiatry , and paediatric epileptology. A scientific educational program is available which allows some the opportunity for a period of research for a period of 3-4 years with the agreement of the tutor/mentor and in accordance with established legal requirements. Not all periods of training are necessarily pursued in the same hospital as the specialist training can be interrupted for justified reasons.

The proposed EPNS syllabus-compliant training programme is awaiting Ministerial endorsement. This will involve the paediatric common trunk with entry into paediatric neurology subspecialisation after 4 years, following which three years would be spent in paediatric neurology (including six months adult neurology training).

Currently neurodisability training, (including work in a multidisciplinary team) is intercalated. Management of disability is sometimes carried out by adult rehabilitation specialists with additional paediatric training in specialised centres for the training in Neurodisability.

Twenty-four hours' worth of lectures/seminars in paediatric neurology (over one week) for postgraduate students are organised during the clinical paediatric residency.

Additionally there opportunities for:

- A PhD teaching course regular in epileptology.
- Teaching courses in ultrasound, and transcranial Doppler US, in neuromuscular disorders, epilepsy surgery and developmental neurology are organised each year
- Publications and conference presentations which emerge from paediatric neurology residents' clinical research work

There is an exit examination consisting of a theoretical and a practical part (with a minimum of three patients to be assessed ). The members of the exam commission are chosen by the Ministry of Health; the trainee's mentor/tutor is excluded from the

commission. Following this trainees may be employed on paediatric neurology services in those institutions who underwrote their paediatric neurology training.

### ***Trainee feedback***

We were able to meet with seven trainees from four of the centres:

#### UHC Zagreb

Branka Bunoza – 1<sup>st</sup> Year trainee.

Ivan Lehman – 1<sup>st</sup> Year trainee.

#### Children's Hospital, Zagreb

Goran Krakar – 1<sup>st</sup> Year trainee.

Ivana Đaković – Research Fellow.

#### University Hospital Centre, Sestre Milosrdnice (*Sisters of Mercy*)

Maša Malenica – 2<sup>nd</sup> Year trainee.

Monika Kukuruzović – 1<sup>st</sup> Year trainee.

#### Rijeka Children's Hospital

Ivona Modenic

All trainees were very enthusiastic about and grateful for the clinical experience, mentoring and support they receive from their trainers. They were very happy with the clinical training opportunity available recognising the need for a longer period of clinical experience from that offered by the current Croatian training system. Each had shown initiative and inventiveness in finding additional relevant experience. This had come variously from periods of training abroad, a research fellowship, or spending time post-completion of training in paediatrics (five years) in non-accredited posts on the neurology service which, of course, offer identical experience to that experienced by trainees in the accredited training posts.

During their training in general paediatrics each had experienced six months on the paediatric neurology service (though in this period they are not allowed to do supervised

outpatient work). Their period of attachment to related sub-specialities appears to have achieved the required outcomes. They have continuing opportunity for teaching and research.

None of them had experienced any difficulty getting leave and/or funding for conferences either at home or abroad which they wished to attend. They felt their on-call duty accommodation was satisfactory, library access and computer/Internet access did more than meet their needs.

Although the trainees were very used to collecting data to represent service activity we noted that none of them were familiar with the concept of audit and an audit cycle (as a means of improving service provision), nor did any have any formal management training or had attended medical management courses (as one means of understanding cost effectiveness and cost efficiency in medical provision or formulating a case for service expansion).

All the trainees stated that they felt they spent too much time each day on administration and clerical tasks including writing their own letters rather than pursuing professional tasks such as communicating with or assessing children with their families.

The trainees raised criticism related to a lack of flexibility in terms of being able to access some more specialist training opportunities based in other units due to an inflexibility in funding arrangements. Due to their contractual arrangements they are in effect tied in to their own teaching centre and if they were to leave early for another position they would have to pay back the sum invested in their training up to that date.

### ***The Training Centres***

Each training centre kindly sent a delegation to the visiting team and made a presentation to complement data submitted on the pre-visit questionnaires (PVQs). These PVQs are appended to this report and in most cases represent approximate figures or estimated data.

The populations covered were large enough to ensure a steady flow of children and families with acute neurological conditions in need of diagnosis, treatment, help and support to meet the experience required by neurologists in training. These opportunities in acute and outpatient neurology services were complemented by experience and opportunities in rehabilitation services concerning themselves also with diagnosis, the management of spasticity, liaison with related remedial and educational services and the counselling of families. Each service had been able to establish and exploit links with adult neurology services so that this requirement could be met and similarly for child psychiatry.

Each centre offered opportunity for training in practical procedures including competence in the reading of electroencephalograms, cranial ultrasound and Doppler measurements, lumbar puncture, and closed needle muscle biopsy although open muscle biopsy is preferred in practice. Services for the administration of botulinum toxin (including ultrasound controlled) have yet to be developed.

Notes, caveats and specific points in relation to individual units are as follows:

University Hospital Centre Zagreb –

There are three Paediatric Neurologists: Nina Barisic, Maja Jurin, Melita Čačić Hribljan with two Neurodisability consultants: Ida Kovač, Đurđica Babić-Naglić.

There are two accredited-post trainees: Branka Bunoza and Ivan Lehman

A large busy unit offering also quaternary assessment for neuromuscular disorders and pharmaco-resistant epilepsies and autoimmune disorders with access to specialist neurosurgery and radiological intervention including gamma knife facility. The hospital acts as a regional centre for Central and Northern Croatia, with the largest quaternary neonatal and paediatric intensive care Centre in Croatia. There are 188 beds in the Children's Hospital with 18 beds for neurology cases. Activity is reflected by 800 inpatients (including 60 daycases) and 4300 outpatients (1100 new) per year.

University Hospital Centre Sestre milosrdnice (Sisters of Mercy)–

There is one Paediatric Neurologist: Ljerka Cvitanović-Šojat with two Neurodisability consultants: Valentina Matijević and Velimir Susak

There are two accredited-post trainees: Maša Malenica and Monika Kukuruzovic

Again a busy unit covering greater Zagreb, offering a full range of neurological facilities and close access to related specialities including specialist neurosurgery (multiple disciplinary team meetings with neuro-oncology). Ten hospital beds on the neuro-paediatric service dealt with 593 inpatients last year, 23 planned admissions went through the day hospital. There were 1550 outpatient consultations (750 new).

#### Children's Hospital Zagreb

There are four Paediatric Neurologists: Vlatka Mejaški Bošnjak, Lucija Lujčić, Vlasta Đuranović and Tomislav Gojmerac with a consultant: Matija Žutelija Fattorini working in Neurodisability.

There are two accredited-post trainees: Ivana Đaković and Lana Matec; with Goran Krakar in a non-accredited post.

This is a busy stand-alone children's hospital working in rather cramped facilities.

Again it has a regional role and 70% of the children seen are from outside the city of Zagreb. There are 17 beds used by the paediatric neurology service running on 95% occupancy, seeing 1000 inpatients (80 day-cases) and 4600 outpatients (1000 new).

A full range of neurophysiology is offered along with ready access to associated services.

#### University Hospital Centre Split –

There are five Paediatric Neurologists: Radenka Kuzmanić Šamija, Maja Tomasović, Marija Meštrović, Eugenija Marušić working with three neurodisability consultants: Prof. Biserka Rešić (retired neurologist, now working part-time) and Mira Jukica, with Asja Čepnija Rota

There is one accredited-post trainee Anita Ursić.

A busy unit to the south of the coastal plain serving a population of about 450,000.

There are 25 neurological beds plus daycases. Last year the neuro-paediatric service looked after 1500 inpatients and 800 daycases. There 4694 outpatients (1500 new).

#### “Kantrida” – University Hospital Rijeka –

There are two Paediatric Neurologists: Igor Prpic and Antun Sasso with two neurodisability consultants: Darko Kraguljac, and Stošija Bolić.

There is one accredited-post trainee: Ivona Močinić with two trainees in non-accredited post trainees: Nada Sindičić-Dessardo and Ivana Kolić.

A busy unit with good access to related services. Last year saw 2735 outpatients (950 new), 297 children in the neurodevelopmental assessment clinic. Between 400 and 500 inpatients were looked after alongside a well-developed day-case unit seeing 300 to 400 admissions.

#### University Hospital Centre Osijek –

There are two Paediatric Neurologists: Krasanka Hafner, Dunja Čokolić-Petrović with two neurodisability consultants: Tatjana Polovina-Prološćić, and Vera Beck.

There is currently no-one in an accredited-trainee post. Trainees usually rotate to another hospital to secure adequate training experience.

This is a hospital in the East of Croatia serving a million population (2½ thousand deliveries per year). Neuro-paediatric service dealt with 650 inpatients (60 daycases) and 3500 outpatients (700 new).

#### ***Meeting with Government representatives Ministry of Health:***

We met with the head of the National Authority for Medical Specialty Training Professor Nada Čikeš, the president of the Medical Chamber Dr. Kauzlarić and the EU coordinator for matters concerning mutually recognised qualifications Mrs Pederin. Here we learnt of the plans of the Croatian Government to bring their own training programmes in-line with European regulations. The most important point was that they are in favour of adopting the principle of the common trunk. When implemented this will clearly facilitate an extension of time spent in paediatric neurology in-line with the EPNS syllabus without extending the overall training period.

#### ***Conclusions and comments***

The following conclusions have been drawn by the TAB as a result of the visit:

#### **The strengths of the Croatian training programme.**

Each centre has the neurology services and facilities which meet the criteria sought by the European Paediatric Neurology Society training syllabus:-

Keen and enthusiastic trainers and trainees!  
 Good access to related specialities  
 Good access to appropriate technologies (eg Neurophysiology, MRI)  
 Access to adequate supportive facilities, IT, library accommodation and so on.  
 A good mentoring system with bespoke training programme planning.

The HDDN presents a united voice on Training voice content.

There is good central manpower planning.

There is good dialogue with influential groups to achieve change, viz: Ministry of Health, Medical Chamber and Association.

### **Good service delivery creates good training**

We noted the following:

The clinical services each draw on appropriate investigational resource, with good supervision of trainees and good collaboration – as appropriate between units.

Not all referrals are necessarily appropriate (eg febrile seizures, uncomplicated meningitis, headache).

Specialised units are creating an “Hoover effect” by offering free access to non-urgent cases.

The decision to investigate is often too heavily influenced by parents or referring doctor. This often leads to inappropriate investigation.

Currently the template drawn up for the average out-patient consultation allows too little time for adequate clinical assessment. This potentially leads to:

- Over investigation
- Poor explanation – parental dissatisfaction
- Too frequent recall

### **Trainee comments**

They are marvellously enthusiastic!

They often have to rely on own initiative and invention to create adequate exposure to specialty, given current short period in training and shortage of accredited posts.

There are nonetheless good facilities: library, internet, accommodation etc.

The trainees are well supervised.

We note the training period is currently inadequate: ie 16 months plus 6 months in adult neurology.

The period working in paediatric neurology following completion of training in paediatrics is not recognised until official traineeship obtained.

The trainees complain of too much writing/bureaucracy/administrative work

The current contractual arrangements are constraining and lock trainees into an institution, potentially compromising training opportunity.

**Recommendations and comments.**Training

The training period in paediatric neurology should be lengthened to three years as per EPNS syllabus.

The HDDN needs to continue to lobby the Ministry of Health on this point. The introduction of the common trunk ought to facilitate this.

The clinical services need better levels administration and clerical support.

Service delivery – best use of resource

In our view the clinical service of paediatric neurology needs the better definition of a paediatric neurologist's role as tertiary or quaternary specialist. To achieve this it will be necessary:

To address referral patterns

To consider outreach to groups of frequent referrers for better patient-centred care.

For the HDDN to open a dialogue with related specialties (primary care and secondary paediatrics) to redefine care pathways.

We would also recommend that:

The out-patient clinic template is altered in order to lengthen the mean consultation time.

There is a re-evaluation of the frequent use of EEG with no obvious clinical value (see above).

***Follow-up***

Is suggested in five years in accordance with current EPNS policy.

Manchester/Oulu

March 2013

Richard Newton

Heikki Rantala

## **APPENDIX**

**The pre-visit questionnaires:**

### **European Training Advisory Board**

#### **Pre-visit Data Sheet**

**Please fill in one of these sheets for each participating training centre. If data are not readily available, please do not worry. We do not want you to spend too much time on this task. However, where data are not available some sort of explanatory description or approximation would be helpful to allow the visiting team to form a picture of service delivery models.**

## 1: Children's Hospital Zagreb, Paediatric clinic, Child neurology division and outpatient clinic

### GENERAL INFORMATION: STAFFING

(Please include numbers, names and sessional commitment to Paediatric Neurology)

	Number	Names	Sessional Commitment to Paediatric Neurology
Paediatric Neurologists	4	Vlatka Mejaški Bošnjak Lucija Lujčić Vlasta Đuranović Tomislav Gojmerac	Child neurology department and outpatient clinic Full time.
Consultants in Neurodisability	2	Vlatka Mejaški Bošnjak  Matija Žutelija Fattorini	Child neurology department and outpatient clinic Orthopaedic and physical medicine unit
Paediatric Neurosurgeons	1	Miroslav Gjurašin	Child surgery clinic, neurosurgery department
Neuroradiologists	1	Tonći Grmoja	Radiology department, neuroradiology unit
Neurophysiologists (EEG)	3	Vlatka Mejaški Bošnjak Lucija Lujčić Vlasta Đuranović	Child neurology department and outpatient clinic
Neurophysiologists (EMG)	1	Goran Krakar	Child neurology department and outpatient clinic

<b>Paediatric Neurology and Neurodisability Trainee grades:</b>			
SpRs in general paediatrics with an interest in neurology	2	Ivana Đaković Lana Matec	Child neurology department and outpatient clinic
Pediatrician Child neurology resident	1	Goran Krakar	Child neurology department and outpatient clinic
Lecturers	2	Vlatka Mejaški Bošnjak Vlasta Đuranović	Child neurology department and outpatient clinic; Pediatric clinic, Medical school, University of Zagreb; Faculty of health studies; University of Zagreb. Educational and rehabilitational faculty, University of Zagreb.
Research posts	1	Vlatka Mejaški Bošnjak  Vlasta Đuranović Lucija Lujčić Tomislav Gojmerac Goran Krakar	Ministry of science, Project leader: Neurodevelopmental outcome in children with intrauterine growth restriction and/or hypoxia. Project collaborators
Other Career Grades		Vlatka Mejaški Bošnjak	Head of Child neurology department; Professor at Medical school, University of Zagreb; Professor at Faculty of health studies Professor at Educational and rehabilitational

		Vlasta Đuranović	faculty; President of Croatian Academy for developmental habilitation.  Professor at Faculty of health studies
Senior House Officers	/		

<b>Multidisciplinary Team:</b>			
Neurology nurses	14	Slavica Šafran Žaneta Mladina Mirjana Stanić Mirjana Petek Natalija Jurak Marijeta Bošnjak Štefica Volarić Mirjana Frinčić Ivanka Braje Marija Grubišić Ingrid Matko  Renata Metić Brankica Koturić Mirjana Petrljić	Department of Child Neurology  Outpatient clinic for Child Neurology
Liaison nurses	1	Žaneta Mladina	Department for Child Neurology
Physiotherapy	15	Barbara Kralj-Kopač Bosiljka Litera Sandra Mance Katarina Lovrinović  Suzana Skočilić Maja Lenard Simunac Gordana Slak Vera Funduk Ivana Jurkovic	Outpatient clinic for Child Neurology  Department for orthopaedics and physical medicine Outpatient Clinic

		Lidija Telisman Kata Juric Abramovic Nadezda Turkovic Meri Tursan Tabain Liljana Barcot Nevenka Valicevic	Department for orthopaedics and physical medicine Inpatient Clinic
Occupational therapy	1	Nataša Čuček	Department of Child Neurology Outpatient clinic for Child Neurology
Speech and language therapy	2	Suzana Jelčić Jakšić Mirela Marić	Paediatric clinic, Centre for mental health
Social Worker	/		
Psychologists (clinical)	2	Mihaela Rister Mara Vukadin	Paediatric clinic, Centre for mental health Paediatric clinic, Centre for mental health
Psychologists (neuropsychologists)	2	Iva Prvčić Irma Barišić	Paediatric clinic, Centre for mental health Paediatric clinic, Centre for mental health
Adult Neurologists involved in training programme			
Child and Adolescent psychiatrists involved in training programme	2	Nenad Jakušić Aleksandra Klobučar	Paediatric clinic, Centre for mental health
Other	2	Child ENT Child ophthalmology	Children's Hospital

**ACTIVITY DATA: OUTPATIENTS**

Number of paediatric neurology clinics per week:	10
Number of outpatient consultations in paediatric neurology per year:	5000
Number of new paediatric neurology outpatient consultations per year:	1000
Number of outpatients who are GP referrals:	2/3
Number of outpatients who are tertiary referrals:	1/3
Number and type of specialist clinics per month (eg epilepsy, muscle, neuro-oncology etc):	Epilepsy 12 Developmental 12 Neuromuscular 4 Cerebrovascular and headache 6 Neuro-oncology 2 Others are included in general child neurology work 4
Number of peripartetic clinics per month:	/
Number and type of combined clinics per month (eg neuro-ophthalmology, neuro-endocrine):	Neuroophthalmology 4 Neuroendocrinology 1 Neurootology 1-2 Neurodermatology 1-2 Mostly included in general child neurology work
Number of neurodisability clinics per week:	5
Number of paediatric neurodisability consultations per year:	1500

**ACTIVITY DATA: INPATIENTS**

Number of paediatric neurology inpatients per year:	1000
Number of paediatric neurology day cases per year:	80

Number of paediatric neurology PITU patients per year:	40
Number and source of other consultation requests per year:	Total neurological exams 450
<ul style="list-style-type: none"> <li>• PITU</li> </ul>	
<ul style="list-style-type: none"> <li>• Neonatal unit</li> </ul>	
<ul style="list-style-type: none"> <li>• Cardiology</li> </ul>	
<ul style="list-style-type: none"> <li>• Psychiatry</li> </ul>	
<ul style="list-style-type: none"> <li>• Other (please specify):</li> <li>• INPATIENT:</li> <li>• Intracranial ultrasonography</li> <li>• Transcranial Doppler</li> <li>• EEG</li> <li>• EMG and NCV</li> <li>• Evoked potentials</li> </ul>	400 400 2000 150 200
<b>PROXIES FOR UNIT ACTIVITY</b>	
<b>New epilepsy cases seen each year:</b>	150
<b>New brain tumour cases each year:</b>	20
<b>New Duchenne cases seen each year:</b>	2-4
<b>Other:</b>	
Cerebrovascular diseases	7-8
Headaches	200
Hearing problems	30
Vision problems	30
Learning problems	150
Behavioral problems	150
Neuromuscular and musculoskeletal diseases	50
Demyelination diseases (general)	5-10
Heredodegenerative diseases	30
Febrile seizures	100
Non epileptic seizures	50
Neurodevelopmental (severe)	20

## CONTENT OF TRAINING PROGRAMME

Complete the following chart by providing the duration of the activities specified below for each year of the training programme. Answers should be provided as indicated, ie in months, weeks or other appropriate time period.

	<b>First Year</b>	<b>Second Year</b>	<b>Third Year</b>	<b>Fourth Year</b>
1. Clinical Training	11 months	11 months	months	months
<b>Frequency of night call</b>	on duty only	on duty only		
Number of clinical rounds	5 Per week	5 Per week	Per week	Per week
2. Research training and experience	During PHD study months	During PHD study months	months	months
3. Frequency of on-call	-	-		
4. Teaching experience	3-4 Hours/ Month	3-4 Hours/ Month	Hours/ Month	Hours/ Month
5. Audit activity	1-2 Hours/ Month	1-2 Hours/ Month	Hours/ Month	Hours/ Month
6. Number of meetings per month:	1-2	1-2		

<b>Neuropath/muscle histology</b>	-	-		
<b>Neuroradiology</b>	4	4		
<b>EEG</b>	-	-		
<b>Adult neurology clinical</b>	-	6 months		
<b>Research</b>	PhD	PhD		
<b>Journal Club</b>	-	-		
<b>Postgraduate</b>	depends	Depends		
<b>Postgraduate courses (please list)</b>	Epilepsy course Intracranial ultrasonography course EEG course Neuromuscular courses Neurophysiology course Metabolic diseases Palliative care Spring paediatric school Paediatric PhD	the same, depends if available		

February 2013.  
Prof Mejaški Bošnjak Vlatka

**2: Department of Paediatrics, Division for Child Neurology,  
University Hospital Centre Zagreb  
Referral centre of Republic of Croatia for Paediatric  
neuromuscular disorders**

**GENERAL INFORMATION: STAFFING**

(Please include numbers, names and sessional commitment to Paediatric Neurology)

	Number	Names	Sessional Commitment to Paediatric Neurology
Paediatric Neurologists	3	Nina Barišić, Maja Jurin, Melita Čačić-Hribljan	Full time Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb
Consultants in Neurodisability	2	Ida Kovač, Đurđica Babić-Naglić	Full time Department of Rehabilitation and Orthopaedic Devices, University Hospital Centre Zagreb
Paediatric Neurosurgeons	1	Pavle Miklić,	Full time Department of Neurosurgery, University Hospital Centre Zagreb
Neuroradiologists	5	Marko Radoš, Goran Pavliša, David Ozretić, Marina Šeronja Kuhar, Aleksandra Roglić	Department of Radiology, University Hospital Centre Zagreb
Neurophysiologists (EEG)	3	Nina Barišić, Maja Jurin, Melita Čačić Hribljan	Video EEG Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb
Neurophysiologists (EMG)	1	Nina Barišić	Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb

<b>Paediatric Neurology and Neurodisability Trainee grades:</b>			
Paediatric Neurologists	2	Branka Bunoza Ivan Lehman	Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb
SpRs in general paediatrics with an interest in neurology	1	Petra Grđan	
SpRs in tertiary in neurodisability			
Lecturers	1	Nina Barišić	University of Zagreb, School of Medicine Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb
Research posts	1	Nina Barišić  Lehman Ivan Vanja Ivanović Collaborators Branka Bunoza	University of Zagreb, School of Medicine Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb
Other Career Grades			

<b>Multidisciplinary Team:</b>			
Neurology nurses	6	Dragica Beštak Anela Bošnjak Čulo Sanja Španić Mare Zajec Jagoda Bulava Zdenka Olujić	Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Zagreb
Liaison nurses	1	Dragica Beštak	
Physiotherapy	2	Lidija Severović	Department of Pediatrics, University Hospital Centre Zagreb
Occupational therapy	1	Ivanka Gregurinčić	
Speech and language therapy	3	Jasenka Broz Frajtag Ana Dembitz	Department of Otolaryngology, Head and Neck Surgery
Social Worker	1	Vlatka Ivanković	University Hospital Centre Zagreb
Psychologists (clinical)	2	Marina Grubić Ana Bogdanić	Department of Pediatrics, University Hospital Centre Zagreb
Psychologists (neuropsychologists)	1	Ana Bogdanić	Department of Pediatrics, University Hospital Centre Zagreb
Adult Neurologists involved in training programme	5	Sanja Hajnšek Vesna Neseck Marija Žagar Jagoda Stipić Ribarić Branka	Department of Neurology, University Hospital Centre Zagreb
Child and Adolescent psychiatrists involved in training programme	2	Aran Tomac Ivan Begovac	Department of Psychiatry, University Hospital Centre Zagreb

Other		Igor Petriček Nenad Vukojević Tomislav Vidović	Childophthalmology, University Hospital Centre Zagreb
		Duška Markov	Child ENT, University Hospital Centre Zagreb
Developmental centers for early disorders	2	Special hospital for children with neurodevelopmental and motoric disorders “Goljak”  Day Care Center for Rehabilitation of Children and Young Adults “Mali Dom”	

### **ACTIVITY DATA: OUTPATIENTS**

Number of paediatric neurology clinics per week:	6
Number of outpatient consultations in paediatric neurology per year:	4300
Number of new paediatric neurology outpatient consultations per year:	1100
Number of outpatients who are GP+paediatrician referrals:	2/3
Number of outpatients who are tertiary referrals:	600 (1/6)
Number and type of specialist clinics per month (eg epilepsy, muscle, neuro-oncology etc):	4 neuromuscular disorders 20 general neuropediatrics including epilepsy, neurooncology, neuroimmunology)
Number of peripatetic clinics per month:	0

Number and type of combined clinics per month (eg neuro-ophthalmology, neuro-endocrine):	Neuroophthalmology cca 4-5 Neuroendocrine cca 1-2 ENT cca 1-2 Dermatology cca 3-4 Rheumatology, physical medicine and rehabilitation cca 3-4
Number of neurodisability clinics per week:	3
Number of paediatric neurodisability consultations per year:	400 -450

### **ACTIVITY DATA: INPATIENTS**

Number of paediatric neurology inpatients per year:	800
Number of paediatric neurology day cases per year:	60
Number of paediatric neurology PITU patients per year:	40
Number and source of other consultation requests per year:	
• PITU	20
• Neonatal unit	50
• Cardiology	50
• Psychiatry	40
• Other (please specify)	Haematology 20 Nephrology cca 10 Pulmology/allergology cca 15 Endocrinology cca 30 Gastroenterology cca 30 Neurometabolic 30
EEG	4000
EMG	150

<b>PROXIES FOR UNIT ACTIVITY</b>	
<b>New epilepsy cases seen each year:</b>	100
<b>New brain tumour cases each year:</b>	10
<b>New Duchenne cases seen each year:</b>	5
<b>Other:</b>	febrile seizures 150 first afebrile convulsion cca 50 non-epileptic convulsions 50 headaches 150 dizziness cca 40 neurodevelopment cca 20 muscle susp 20-30 learning problems / speech problems / behaviour problems cca 50-60 acute monoparesis 15 demyelinating disorders 10 vision problems cca 12-15 hearing problems cca 5 acute intoxication with alcohol / medicaments cca 10

### **CONTENT OF TRAINING PROGRAMME**

Complete the following chart by providing the duration of the activities specified below for each year of the training programme. Answers should be provided as indicated, ie in months, weeks or other appropriate time period.

	<b>First Year</b>	<b>Second Year</b>	<b>Third Year</b>	<b>Fourth Year</b>
1. Clinical Training	11 months	1 months 1	months	months
<b>Frequency of night call</b>	Only during duty	Only during duty		
Number of clinical rounds	5 Per week	5 Per week	Per week	Per week
2. Research training and experience	during PhD	months	months	months
3. Frequency of on-call				

4. Teaching experience	4	hours/ month	2- 3	hours/ week	Hours/ Month	Hours/ Month
5. Audit activity	1-2	Hours/ Month	1- 2	Hours/ Month	Hours/ Month	Hours/ Month
6. Number of meetings per month: <b>Neuropath/muscle histology</b>		1- 2/ month 1 hr/ week		1 hr / week		
<b>Neuroradiology</b>		1 hr /month		4 hr/week		
<b>EEG</b>						
<b>Adult neurology clinical</b>				6 months		
<b>Research</b>		During PhD		8hr/month		
<b>Journal Club</b>						
<b>Postgraduate</b>						
<b>Postgraduate courses (please list)</b>		PhD course Courses of continuous education  Neuromuscular 1 day  EEG- 2 weeks  Metabolic 1 day  Spring Pediatric School 2 days		PhD course Courses of continuous education  Neuromuscular 1 day  EEG- 2 weeks  Metabolic 1 day		

February 2013.

### 3: Centre –name: Department of Paediatric, Division for child neurology, Clinical medical centre Sisters of Mercy

#### **GENERAL INFORMATION: STAFFING**

(Please include numbers, names and sessional commitment to Paediatric Neurology)

	Number	Names	Sessional Commitment to Paediatric Neurology
Paediatric Neurologists	1	Prof. Ljerka Cvitanovic-Sojat, M. D., Ph. D	Department of Pediatrics, Neuropediatric Unit, UHC Sestre milosrdnice
Consultants in Neurodisability	2	Valentina Matijevic, M.D.Ph.D., Velimir Susak, M. D.	Department of rheumatology, physical medicine and rehabilitation, UHC Sestre milosrdnice
Paediatric Neurosurgeons	1	Tomislav Sajko, M. D. Prof.dr.sc.Vili Beros,M.D.	Department of Neurosurgery, UHC Sestre milosrdnice
Neuroradiologists	4	Marko Pecina, M. D. Darko Bedek , M. D. Diana Zadavec, M. D., Ph. D Tomislav Greguric, M. D.	Department of Radiology, UHC Sestre milosrdnice
Neurophysiologists (EEG)	1	Prof. Ljerka Cvitanovic-Sojat, M. D., Ph. D	Department of Pediatrics, Neuropediatric Unit, UHC Sestre milosrdnice
Neurophysiologists (EMG)	2	Jelena Bosnjak, M. D., Tomislav Nemcic, M. D.	Department of Neurology, UHC Sestre milosrdnice Department of rheumatology, physical medicine and rehabilitation, UHC Sestre milosrdnice

<b>Paediatric Neurology and Neurodisability Trainee grades:</b>			
Paediatric neurology residents	2	Maša Malenica, M. D., Ph. D. Monika Kukuruzovic M. D.	Department of Pediatrics, Neuropediatric Unit, UHC Sestre milosrdnice
SpRs in general paediatrics with an interest in neurology	1	Tamara Zigman M. D., Ph. D.	Department of Pediatrics, Neuropediatric Unit, UHC Sestre milosrdnice
SpRs in tertiary in neurodisability			
Lecturers	2	Prof. Ljerka Cvitanovic-Sojat, M. D., Ph. D.  Masa Malenica, M. D., Ph. D.	School of Dental Medicine University of Zagreb Special Education and Rehabilitation Sciences high education within the University of Zagreb PhD Study at the School of Dental Medicine University of Zagreb Postgraduate courses at University of Zagreb School of Medicine - epileptology and inborn errors of metabolism The Faculty of Teacher Education of the University of Zagreb, Medical School University of Zagreb, Postgraduate class at Law School, University of Zagreb



<b>Multidisciplinary Team:</b>			
Neurology nurses	3	Kristina Kuznik Bacc. Med. Techn. Dobriša Barberić, Bacc. Med. Techn. Ruzica Begić	Department of Pediatrics, Neuropediatric Unit, UHC Sestre milosrdnice
Liaison nurses	1	Kristina Kuznik Bacc. Med. Techn.	Department of Pediatrics, Neuropediatric Unit, UHC Sestre milosrdnice
Physiotherapy	8	Marijana Ricijas Andrea Grcić Irinea Safran Mira Galeta Branka Nikpalj Jasna Perović Mirjana Hajdas Danijela Percela-Kovacic	Department and Outpatient Clinic of rheumatology, physical medicine and rehabilitation, UHC Sestre milosrdnice
Occupational therapy	2	Zdenka Dimić, Prof Maja Lang, Prof	Department of rheumatology, physical medicine and rehabilitation, UHC Sestre milosrdnice
Speech and language therapy	2	Ljerka Kracun Zvezdana Trifunović	Department of rheumatology, physical medicine and rehabilitation, UHC Sestre milosrdnice
Social Worker	1	Irena Balog	Department of Psychiatry, UHC Sestre milosrdnice
Psychologists (clinical)	2	Maja Crnković	Department of Pediatrics, UHC Sestre milosrdnice
Psychologists (neuropsychologists)			

Adult Neurologists involved in training programme	1	Assist Prof Hrvoje Hecimovic	Department of Neurology, UHC Sestre milosrdnice
Child and Adolescent psychiatrists involved in training programme	2	Danijel Crnkovic, M. D.  Enes Kusmic, M. D., Ph. D, Primarius	Department of Psychiatry, UHC Sestre milosrdnice Psychiatric hospital for children and youth, Kukuljeviceva 11, Zagreb
Neuroophthalmologist	4	Prof. Renata Ivekovic, M.D., Ph. D. Prof. Eugenia Tedeschi - Reiner, M. D., Ph.D. Katia Novak-Laus M. D. Jelena Skunca Herman M.D.	Department of Ophthalmology, UHC Sestre milosrdnice
Child ENT Specialist	5	Prof Robert Trotic, M. D., Ph. D. Mihael Ries, M. D. Jakov Ajduk, M. D.  Prof Tomislav Badouin, M. D. Ph. D. Goran Geber, M. D.	Canter for Hearing and balance, ENT Department, UHC Sestre milosrdnice  ENT Department, UHC Sestre milosrdnice
Child Gynecology Specialist	1	Vesna Gall, M. D.  Hrvojka Soljagic, M.D.Ph.D.	Department of Gynaecology, UHC Sestre milosrdnice
Child Dermatology Specialist	1	Lena Kotrlja, M. D., Ph. D.	Department of Dermatology, UHC Sestre milosrdnice

**ACTIVITY DATA: OUTPATIENTS**

Number of paediatric neurology clinics per week:	5
Number of outpatient consultations in paediatric neurology per year:	1550
Number of new paediatric neurology outpatient consultations per year:	750
Number of outpatients who are GP referrals:	350
Number of outpatients who are tertiary referrals:	350
Number and type of specialist clinics per month (eg epilepsy, muscle, neuro-oncology etc):	Each neuropediatric clinic does all neuropediatric problems and diagnoses  Education for parents for children with convulsive disorder 5 x ½ h
Number of peripatetic clinics per month:	/
Number and type of combined clinics per month (eg neuro-ophthalmology, neuro-endocrine):	Neuroophthalmology cca 4-5 Neuroendocrine cca 1-2 ENT cca 1-2 Dermatology cca 3-4 Rheumatology, physical medicine and rehabilitation cca 3-4
Number of neurodisability clinics per week:	5
Number of paediatric neurodisability consultations per year:	cca 350-400

**ACTIVITY DATA: INPATIENTS**

Number of paediatric neurology inpatients per year:	650
Number of paediatric neurology day cases per year:	80-100
Number of paediatric neurology PITU patients per year:	not available
Number and source of other consultation requests per year:	/
<ul style="list-style-type: none"> <li>• PITU</li> </ul>	
<ul style="list-style-type: none"> <li>• Neonatal unit</li> </ul>	cca 30-50
<ul style="list-style-type: none"> <li>• Cardiology</li> </ul>	cca 25 – 30
<ul style="list-style-type: none"> <li>• Psychiatry</li> </ul>	cca 15 – 20
<ul style="list-style-type: none"> <li>• Other (please specify)</li> </ul>	Haematology cca 20 – 25 Nephrology cca 15 – 20 Pulmology/allergology cca 15-20 Endocrinology cca 15-20 Gastroenterology cca 15
Video EEG	1000
Video EEG telemetry	20
EMNG	20
VEP	150
BAER	150
Transcranial Doppler ultrasound	20
Electronistagmogram	60
Tonal audiogram	80

<p><b>PROXIES FOR UNIT ACTIVITY</b></p> <p><b><i>New epilepsy cases seen each year:</i></b></p>	75
<p><b><i>New brain tumour cases each year:</i></b></p>	5-10
<p><b><i>New Duchenne cases seen each year:</i></b></p>	0 – 1
<p><b><i>Other:</i></b></p>	<p>Febrile seizures cca 45-55          First afebrile convulsion cca 50          Non-epileptic convulsions 50 - 70          Headaches cca 150          Dizziness cca 20-25          Neurodevelopment cca 50-60          Muscle susp cca 20-30          Learning problems / speech problems /          behaviour problems cca 50-60          Acute monoparesis 15-20          Demyelination disorder 5          Vision problems cca 12-15          Hearing problems cca 10 - 12          Acute intoxication with alcohol or medi-          caments cca 20 – 25</p>

## CONTENT OF TRAINING PROGRAMME

Complete the following chart by providing the duration of the activities specified below for each year of the training programme. Answers should be provided as indicated, ie in months, weeks or other appropriate time period.

	<b>First Year</b>	<b>Second Year</b>	<b>Third Year</b>	<b>Fourth Year</b>
1. Clinical Training	11 months	11 months		
<b>Frequency of night call</b>	during the duties only	during the duties only		
Number of clinical rounds	5 Per week	15 Per week	Per week	Per week
2. Research training and experience	During postgraduate study	During postgraduate study	Months	months
3. Frequency of on-call	/	/		
4. Teaching experience	4 Hours/ Month	4 Hours/ Month	Hours/ Month	Hours/ Month
5. Audit activity	1-2 Hours/ Month	1-2 Hours/ Month	Hours/ Month	Hours/ Month
6. Number of meetings per month:	Pediatrics 4 Hours/Month Neuropediatrics 2 Hours/ Month	Pediatrics 4 Hours/Month Neuropediatrics 2 Hours/ Month		

<b>Neuropath/muscle histology</b>	1 h per month	1 h per month		
<b>Neuroradiology</b>	4 h per month	4 h per month		
<b>videoEEG video EEG telemetry</b>	10-15 h per week 5 h per week	10-15 h per week 5 h per week		
<b>Adult neurology clinical</b>	/	6 months		
<b>Research</b>	During PH D study	During PH D study		
<b>Journal Club</b>	/	/		
<b>Postgraduate</b>	2 weeks	2 weeks		
<b>Postgraduate courses (please list)</b>	2 weeks: Epilepsy - diagnosis and treatment at the Neurology Department UHC Sestre milosrdnice  5 days: Epilepsy school at Sipan Dubrovnik  1-2 days: School of Split  Ph D course	1 day: Metabolic diseases 1 day: Muscle diseases 1 day: Pain 1 day: Neurocutaneous diseases 1 day Paliative care 1-2 days Rare diseases  1-2 days: School of Split  Ph D course		

February 2013

February 4<sup>th</sup>, 2013

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**4 :Service of Child Neurology- Department of Paediatrics  
 “KANTRIDA” – University Hospital Rijeka, Croatia  
 Republic of Croatia - Ministry of Health - Referral Centre for  
 Childhood Epilepsy and Convulsive Disorders**

**GENERAL INFORMATION: STAFFING**

(Please include numbers, names and sessional commitment to Paediatric Neurology)

	Number	Names	Sessional Commitment to Paediatric Neurology
Paediatric Neurologists	2	Prof. Igor Prpić, MD, PhD Prof. Antun Sasso, MD, PhD	Full time Full time
Consultants in Neurodisability	2	Darko Kraguljac, MD Stošija Bolić, MD (Organisationally Division of Child rehabilitation - Department of Physical and Rehabilitation Medicine)	Full time Full time
Paediatric Neurosurgeons	1	Prof. Darko Ledić, MD, PhD (Department of Neurosurgery)	Full time
Neuroradiologists	2	Ronald Antulov, MD, PhD Izidora Holjar, MD, MSc (Organisationally Division of child radiology- Department of Radiology)	part time part time
Neurophysiologists (EEG- EP)	2	Prof. Igor Prpić, MD, PhD Prof. Antun Sasso, MD, PhD	Full time Full time
Neurophysiologists (EMG)	1	Prof. Antun Sasso, MD, PhD	part time
<b>Paediatric Neurology and Neurodisability Trainee grades:</b>			
SpRs in general paediatrics with an interest in neurology	1	Ivona Močinić, MD- neuroped. resident	
	1	Nada Sindičić-Dessardo, MD, PhD, - paediatric specialist	
	1	Ivana Kolić, MD-paediatric	

	1	spec. starting from 1.3.2013. Jelana Radic - ped. resident	
SpRs in tertiary in neurodisability		Under the decision of the Head of Department of Physical and Rehabilitation Medicine - by our request	Full time
Lecturers	2	Prof. Igor Prpić, MD, PhD Prof. Antun Sasso, MD, PhD	Full time Full time
Research posts	1	Prof. Igor Prpić, MD, PhD (Epilepsy and learning disorders – 2001-2006) Prospective neurodevelopmental follow-up of children prenatally exposed t metil- mercury- 2008-till now )	part time
Other Career Grades			
Senior House Officers			

<b>Multidisciplinary Team:</b>			
Neurology nurses	8	Regular Child Neurology Service nurses	
	4	Trained EEG technicians	
Liaison nurses	1	Child Neurology Service Head nurse – Branka Ćulum	

Physiotherapy	1	Regular daily visits - organisational under the Child Rehabilitation Division of the Department of Physical and Rehabilitation Medicine	
Occupational therapy	2	Regular daily visits- organisationally under the “Scholl hospital Kantrida” and “Kindergarten Kantrida”	
Speech and language therapy	1	Organisationally by the Department of Otorhinolaryngology,	
Social Worker	1		
Psychologists (clinical)	4	Inge Vlašić Ivana Frančula Jelena Vivoda Zrinka Korotaj All specialist in child clinical psychology	
Psychologists (neuropsychologists)	2	Inge Vlašić Zrinka Korotaj	
Adult Neurologists involved in training programme	3	Assist. Prof. Igor Antončić, MD, PhD Assist. Prof. Lidija Tuškan-Mohar, MD, PhD	
Child and Adolescent psychiatrists involved in training programme	2	Assist. Prof. Mirjana Graovac, MD, PhD (Department of Psychiatry) Tanja Kosec- Child Neurology Service	
Other Department of Otorhinolaryngology, Department of Oftalmology  Center for Autisam  Acitive member of “Early intervention program”			

Referral centre for childhood epilepsy and convulsive disorders of Ministr of Health- Republic of Croatia			
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### **ACTIVITY DATA: OUTPATIENTS**

Number of paediatric neurology clinics per week:	5 + 1 for neurodevelopment
Number of outpatient consultations in paediatric neurology per year:	2735 patients + 297 from Outpatient clinic for neurodevelopment
Number of new paediatric neurology outpatient consultations per year:	900-1000
Number of outpatients who are GP referrals:	Almost 90% are referred by primary care paediatricians or GP's- by the health system organisation
Number of outpatients who are tertiary referrals:	200-250
Number and type of specialist clinics per month (eg epilepsy, muscle, neuro-oncology etc):	Due to health system and University hospital organisation we are not allowed do have outpatients neuro-pediatrics specialist clinics
Number of peripatetic clinics per month:	1 – at the Centre for disabled children “Fortica”
Number and type of combined clinics per month (eg neuro-ophthalmology, neuro-endocrine:	
Number of neurodisability clinics per week:	5 – organisationally under the Division for child rehabilitation- Department of Physical and Rehabilitation medicine
Number of paediatric neurodisability consultations per year:	300-400

## **ACTIVITY DATA: INPATIENTS**

Number of paediatric neurology inpatients per year:	400-500
Number of paediatric neurology day cases per year:	300-400
Number of paediatric neurology PITU patients per year:	50-60
Number and source of other consultation requests per year:	
• PITU	50-60
• Neonatal unit	20-30
• Cardiology	10-15
• Psychiatry	70
• Other (please specify)	
<b><i>PROXIES FOR UNIT ACTIVITY</i></b>	
<b><i>New epilepsy cases seen each year:</i></b>	60 – 70
<b><i>New brain tumour cases each year:</i></b>	2-3
<b><i>New Duchenne cases seen each year:</i></b>	0 – 1
<p><b><i>Other: Most common other disease treated (by the appearance): febrile convulsion, headache, neurodevelopmental disorders</i></b></p> <p>Neurophysiology diagnostic- yearly approximately            EEG – 2500 (night EEG-50, EEG in PITU 120)            EMG – 150            EP- 300</p>	

## CONTENT OF TRAINING PROGRAMME

Complete the following chart by providing the duration of the activities specified below for each year of the training programme. Answers should be provided as indicated, ie in months, weeks or other appropriate time period.

	<b>First Year</b>	<b>Second Year</b>	<b>Third Year</b>	<b>Fourth Year</b>
1. Clinical Training	months	months	months	months
<b>Frequency of night call</b>				
Number of clinical rounds	Per week	Per week	Per week	Per week
2. Research training and experience	months	months	months	months
3. Frequency of on-call				
4. Teaching experience	Hours/ Month	Hours/ Month	Hours/ Month	Hours/ Month
5. Audit activity	Hours/ Month	Hours/ Month	Hours/ Month	Hours/ Month
6. Number of meetings per month:				

<b>Neuropath/muscle histology</b>				
<b>Neuroradiology</b>				
<b>EEG</b>				
<b>Adult neurology clinical</b>				
<b>Research</b>				
<b>Journal Club</b>				
<b>Postgraduate</b>				
<b>Postgraduate courses (please list)</b>				

Prof. Igor Prpić

February 2013

## 5: Pediatric Clinic, Department of neurology, University Hospital Centre Split

### GENERAL INFORMATION: STAFFING

(Please include numbers, names and sessional commitment to Paediatric Neurology)

	Number	Names	Sessional Commitment to Paediatric Neurology
Paediatric Neurologists	5	- assist. prof. Radenka Kuzmanić Šamija, MD, PhD - Maja Tomasović, MD, M.Sc. - Marija Meštrović, MD - Eugenija Marušić, MD  - <i>prof. Biserka Rešić, MD, PhD –</i>	Pediatric Clinic, Department of neurology, University Hospital Centre Split  Full time  <i>Outpatient Clinic for rehabilitation of persons with disability- Split Part time</i>
Consultants in Neurodisability	2	- Mira Jukica, MD - Asja Čepnija Rota, MD	Department of physical medicine and rehabilitation, University Hospital Centre Split
Paediatric Neurosurgeons	3	- assist. prof. Mario Tudor, MD, PhD - Vlatko Ledenko, MD, PhD - Željko Bušić, MD, PhD	Clinic of Neurosurgery, University Hospital Centre Split Part time
Neuroradiologists	4	- prof. Ante Buća, MD, PhD - Krešimir Kolić, MD - Gordana Glavina, MD - Marija Lahman Dorić, MD	Institute of Radiology, University Hospital Centre Split Full time
Neurophysiologists (EEG)	3	- Marija Meštrović, MD - Maja Tomasović, MD, M.Sc. - Eugenija Marušić, MD  - <i>prof. Biserka Rešić, MD, PhD –</i>	Pediatric Clinic, Department of neurology University Hospital Centre Split  <i>Outpatient Clinic for rehabilitation of</i>

		-	<i>persons with disability- Split Part time</i>
Neurophysiologists (EMG + EP)	2	- assist. prof.. Radenka Kuzmanić Šamija, MD, PhD - Eugenija Marušić, MD	Pediatric Clinic, Department of neurology, University Hospital Centre Split Full time

**Paediatric Neurology and Neurodisability Trainee grades:**

SpRs in general paediatrics with an interest in neurology	1	- Anita Ursić, MD	Pediatric Clinic, Department of neurology, University Hospital Centre Split Full time
SpRs in tertiary in neurodisability			
Lecturers	2	- assist. prof. Radenka Kuzmanić Šamija, MD, PhD  - <i>prof. Biserka Rešić, MD, PhD –</i>	Pediatric Clinic, Department of neurology, University Hospital Centre Split Medical University Split  <i>Medical University Split</i>
Research posts	2	- <i>prof. Biserka Rešić, MD, PhD –</i>  - assist. prof. Radenka Kuzmanić Šamija, MD, PhD	Investigator
Other Career Grades			

<b>Multidisciplinary Team:</b>			
Neurology nurses	11	- Tamara Tomić - Nađa Stojkić - Leann Coleman Božić - Fani Vrdoljak - Mirija Čipčić - Julija Vladušić - Marija Topić - Božena Čubić - Sanja Matković - Nadica Jelovičić - Katija Bilopavlović	Pediatric Clinic, Department of neurology, University Hospital Centre Split
Liaison nurses	1	- Leann Coleman Božić	Pediatric Clinic, Department of neurology, University Hospital Centre Split
Physiotherapy	3	- Ana Milovac - Vilma Burić - Ana Dorić	Department of physical medicine and rehabilitation, University Hospital Centre Split
Occupational therapy	1	- Ana Milovac	Department of physical medicine and rehabilitation, University Hospital Centre Split
Speech and language therapy	1	Gordana Roguljić	Outpatient Clinic for rehabilitation of persons with disability- Split
Social Worker	1	Sandra Bogavčić	Outpatient Clinic for rehabilitation of persons with disability- Split
Psychologists (clinical)	2	- Katja Kalebić, prof.PhD - Irena Mišetić, prof.	Pediatric Clinic, Department of neurology, University Hospital Centre Split
Psychologists (neuropsychologists)			

Adult Neurologists involved in training programme	1	- prof. Ivo Lušić, MD, PhD	Clinic of neurology, University Hospital Centre Split
Child and Adolescent psychiatrists involved in training programme	2	- Tomislav Franić, MD - Silvana Krnić, MD	Clinic of child psychiatry, University Hospital Centre Split
Child Otorinolaryngologist	1	- Jadranka Vela Ljubić, MD	Clinic of otorinolaryngologist, University Hospital Centre Split
Child Ophthalmologist	1	- Irena Marković, MD, PhD	Clinic of Ophthalmology, University Hospital Centre Split
Genetic	2	- prof. Vida Čulić - Bernarda Lozić, MD, M.Sc.	Laboratory for Human Genetics, Paediatrics Clinic, University Hospital Centre Split,

### **ACTIVITY DATA: OUTPATIENTS**

Number of paediatric neurology clinics per week:	6
Number of outpatient consultations in paediatric neurology per year:	4694
Number of new paediatric neurology outpatient consultations per year:	1500
Number of outpatients who are GP referrals:	90%
Number of outpatients who are tertiary referrals:	10%
Number and type of specialist clinics per month (eg epilepsy, muscle, neuro-oncology etc):	Each neuropediatrician does all neuropediatric problems and diagnoses

Number of peripatetic clinics per month:	
Number and type of combined clinics per month (eg neuro-ophthalmology, neuro-endocrine):	neuro-ophthalmology 1 neuro-endocrine 2 neuro-oncology 1
Number of neurodisability clinics per week:	10
Number of paediatric neurodisability consultations per year:	5000

### **ACTIVITY DATA: INPATIENTS**

Number of paediatric neurology inpatients per year:	1500
Number of paediatric neurology day cases per year:	800
Number of paediatric neurology PITU patients per year:	30
Number and source of other consultation requests per year:	
<ul style="list-style-type: none"> <li>• PITU</li> </ul>	
<ul style="list-style-type: none"> <li>• Neonatal unit</li> </ul>	50
<ul style="list-style-type: none"> <li>• Cardiology</li> </ul>	60
<ul style="list-style-type: none"> <li>• Psychiatry</li> </ul>	50
<ul style="list-style-type: none"> <li>• Other (please specify)</li> <li>• Gastroenterology</li> <li>• Pulomolgy</li> <li>• Endocrinology</li> <li>• Genetics</li> <li>• Nephrology</li> </ul>	40 50 30 50 10
<b><i>PROXIES FOR UNIT ACTIVITY</i></b>	

<b><i>New epilepsy cases seen each year:</i></b>	75
<b><i>New brain tumour cases each year:</i></b>	10
<b><i>New Duchenne cases seen each year:</i></b>	2-3
<b><i>Other: Spinal muscular atrophy</i></b>	2-3  febrile seizures cca 150  first afebrile convulsion cca 50  non-epileptic convulsions 100  headaches cca 100  neurodevelopment cca 50-60  learning problems / speech problems / behaviour problems cca 50-60  acute monoparesis 5-7  multiple sclerosis 4-5  ADEM cca 1-2  vision problems cca 12-15  hearing problems cca 10 - 12  acute intoxication with alcohol / medicaments cca 30-35

February, 2013

assist. prof. **Radenka Kuzmanić Šamija, MD, PhD**  
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**Department of neurology**  
**University Hospital Centre Split**  
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21000 Split  
Croatia

## 6: Department of Paediatrics, Division for Child Neurology University Hospital Centre Osijek

### GENERAL INFORMATION: STAFFING

(Please include numbers, names and sessional commitment to Paediatric Neurology)

	Number	Names	Sessional Commitment to Paediatric Neurology
Paediatric Neurologists	2	Krasanka Hafner, Dunja Čokolić-Petrović	Full time Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Osijek
Consultants in Neurodisability	2	Tatjana Polovina-Prološčić, Vera Beck	Full time Department of Rehabilitation, University Hospital Centre Osijek
Paediatric Neurosurgeons	2	Dinko Štimac, Ivan Hećimović	part time Department of Neurosurgery, University Hospital Centre Osijek
Neuroradiologists	3	Branka Kristek, Tamer Salha, Tatjana Rotim	Department of Radiology, University Hospital Centre Osijek
Neurophysiologists (EEG)	2	Krasanka Hafner, Dunja Čokolić-Petrović	EEG Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Osijek
Neurophysiologists (EMG)	2	Sanja Mišević, Svetlana Tomić	Department of Neurology, University Hospital Centre Osijek

### **Paediatric Neurology and Neurodisability**

#### **Trainee grades:**

SpRs in general paediatrics with an interest in neurology	1	Martina Katić	Department of Pediatrics, University Hospital Centre Osijek
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## SpRs in tertiary in neurodisability

Lecturers

Research posts

Other Career Grades

Senior House Officers

### **Multidisciplinary Team:**

Neurology nurses	6	Branka Kvesić, Mirjana Vangelovska, Ivana Kramarić, Tomislava Cindrić, Ivana Vuković, Magdalena Kozina	Department of Pediatrics, Division for Neuropediatrics, University Hospital Centre Osijek
Liaison nurses	1	Branka Kvesić	
Physiotherapy	1	Tanja Čalo	Department of Rehabilitation, University Hospital Centre Osijek
Occupational therapy	1	Kristijan Copak	Department of Pediatrics, University Hospital Centre Osijek

Speech and language therapy	2	Biserka Mekovec-Decarvalho, Ljubica Stupin	Centre for Speech and language Therapy SUVAG, Osijek
Social Worker	1	Verica Rezić	University Hospital Centre Osijek
Psychologists (clinical)	3	Dunja Baraban, Maja Buljubašić, Vinka Crnjac	Department of Pediatrics, University Hospital Centre Osijek
Psychologists (neuropsychologists)			
Adult Neurologists involved in training programme	4	Silvija Soldo-Butković, Sanja Mišević, Svetlana Tomić, Davor Jančuljak	Department of Neurology, University Hospital Centre Osijek
Child and Adolescent psychiatrists involved in training programme	2	Mirela Dellale, Katarina Dodig-Ćurković	Department of Psychiatry, Division for Child and Adolescent Psychiatry, University Hospital Centre Osijek
Other	2	Ivan Krković, Suzana Matić	Child Ophthalmology, University Hospital Centre Osijek
	3	Andrijana Včeva Zlatko Maksimović, Željko Kotromanović	Child ENT, University Hospital Centre Osijek
Developmental centers for early disorders	2	Day Care Center for Rehabilitation of Children and Young Adults “Zlatni Cekin”, Slavonski Brod  Day Care Center for Rehabilitation of Children and Adults “Mala Terezija”, Vinkovci	

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**ACTIVITY DATA: OUTPATIENTS**

Number of paediatric neurology clinics per week:	3
Number of outpatient consultations in paediatric neurology per year:	3500
Number of new paediatric neurology outpatient consultations per year:	700
Number of outpatients who are GP+paediatrician referrals:	2/3
Number of outpatients who are tertiary referrals:	1/3
Number and type of specialist clinics per month (eg epilepsy, muscle, neuro-oncology etc):	2 neuromuscular disorders 20 general neuropediatrics including epilepsy, neurooncology, neuroimmunology
Number of peripatetic clinics per month:	0
Number and type of combined clinics per month (eg neuro-ophthalmology, neuro-endocrine):	Neuroophthalmology cca 4-5 Neuroendocrine cca 1-2 ENT cca 1-2 Dermatology cca 2-3 Rheumatology, physical medicine and rehabilitation cca 5-6
Number of neurodisability clinics per week:	5
Number of paediatric neurodisability consultations per year:	350 -400

**ACTIVITY DATA: INPATIENTS**

Number of paediatric neurology inpatients per year:	650
Number of paediatric neurology day cases per year:	60
Number of paediatric neurology PITU patients per year:	50
Number and source of other consultation requests per year:	
• PITU	30 0
• Neonatal unit	60 0

•	Cardiology	30 0
•	Psychiatry	40
•	Other (please specify)	Haematology cca 20 Nephrology cca 10 Pulmology/allergology cca 25 Endocrinology cca 30 Gastroenterology cca 80 Neurometabolic cca 40
	EEG	2700
	EMG	60

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**PROXIES FOR UNIT ACTIVITY**

		70
	<i>New epilepsy cases seen each year:</i>	
		8-10
	<i>New brain tumour cases each year:</i>	
		3
	<i>Other:</i>	febrile seizures 120-130 first afebrile convulsion cca 50 non-epileptic convulsions 50 headaches 450 dizziness cca 80 neurodevelopment cca 30 muscle susp 20 learning problems / speech problems / behaviour problems cca 100 acute monoparesis 25 demyelinating disorders 20 vision problems cca 25 hearing problems cca 5 acute intoxication with alcohol / medicaments cca 35-40

## **CONTENT OF TRAINING PROGRAMME**

Complete the following chart by providing the duration of the activities specified below for each year of the training programme. Answers should be provided as indicated, ie in months, weeks or other appropriate time period.

	<b>First Year</b>	<b>Second Year</b>	<b>Third Year</b>	<b>Fourth Year</b>
1. Clinical Training	months	months	months	months
<b>Frequency of night call</b>	Only during duty	Only during duty		
Number of clinical rounds	Per week	Per week	Per week	Per week
2. Research training and experience	during PhD	months	months	months
3. Frequency of on-call				
4. Teaching experience	hours/ month	hours/ week	Hours/ Month	Hours/ Month
5. Audit activity	Hours/ Month	Hours/ Month	Hours/ Month	Hours/ Month
6. Number of meetings per month:	month			

**Neuropath/muscle histology**

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**Neuroradiology**

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**EEG**

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**Adult neurology clinical**

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**Research**

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**Journal Club**

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**Postgraduate**

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**Postgraduate courses**

	PhD course	PhD course
	Courses of continuous education	Courses of continuous education

**(please list)**