



European Training Requirements for Training in Paediatric Nephrology

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Preface

Paediatrics is an independent medical specialty based on the knowledge and skills required for the prevention, diagnosis and management of all aspects of illness and injury affecting children of all age groups from birth to the end of adolescence, up to the age of 18 years. It is not just about the recognition and treatment of illness in babies and children. It also encompasses child health, which covers all aspects of growth and development and the prevention of disease. The influence of the family and other environmental factors also play a large role in the development of the child, and many conditions require life-long management and follow-up before a smooth transition of care to adult services.

For these reasons we believe that all doctors practising **Paediatric Nephrology** require a solid basic training in General Paediatrics, as set out by many National Training Authorities (NTAs), and in the recommended European Common Trunk Syllabus, approved by the EAP-UEMS. This training, which should be of 3 years minimum duration, should act as a prelude to specialist training, and will underpin many of the principles set out in this specialist syllabus.

This document sets out the minimum requirements for training in Tertiary Care **Paediatric Nephrology**. **Paediatric Nephrology** was recognised as such by the Confederation of European Specialists in Paediatrics (CESP) at the Annual Meeting and is a subsection of the Tertiary Care Group of the European Academy of Paediatrics, itself a section of the European Union of Medical Specialists (Union Européenne des Médecins Spécialistes (UEMS) through the European Board of Paediatrics (EBP).

Paediatric Nephrology is a specialty concerned with the care, investigation and non-surgical treatment of patients with congenital and acquired renal disease, disorders of glomerular and tubular function, molecular biology and genetic aspects of renal diseases, metabolic consequences of renal failure (acute and chronic renal failure), treatment of chronic renal failure (peritoneal dialysis, haemodialysis and continuous renal replacement therapy, transplantation: pre-, postoperative and long-term outpatient care), clinical epidemiology, prevention of renal disease (screening programmes), fluid and electrolytes/acid - base disorders, blood pressure/hypertension, nutrition in patients with renal disease, urinary tract

infection, urinary stone diseases, genetic renal diseases, metabolic disorders affecting the kidney.

Composition of the syllabus subcommittee

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Methodology for generating the syllabus

Revision and adaptation of training recommendations provided by the ESPN educational commission in February 2015. Peer review by ESPN council in February 2018.

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1. Introduction

This syllabus intends to:

- Harmonise training programmes in **Paediatric Nephrology** between different European countries.
- Establish clearly defined standards of knowledge and skill required to practice **Paediatric Nephrology** at the tertiary care level.
- Foster the development of a European network of competent tertiary care centres for **Paediatric Nephrology**.
- Improve the level of care for children with **kidney and urinary tract diseases**.

2. Aim of tertiary care training

The aim of tertiary care training in **Paediatric Nephrology** is to provide training to allow competent practice to be undertaken as a Tertiary Care Specialist whose practice would be expected to deal with complex problems in **Paediatric Nephrology**:

- Specialised knowledge and skills are essential, both for diagnosis and related procedures and for treatment.
- History and physical examination, urinalysis and urine microscopy and familiarity with renal histopathology and interpretation of urinary tract imaging. Performing needle renal biopsy is desirable.
- Measurement of glomerular filtration rate and assessment of tubular functions. Performance of renal ultrasound is advantageous.
- Management of glomerular and tubular diseases, body fluid and electrolyte disorders and diseases of the urinary tract.
- Hypertension.
- Maintenance of growth and physical and mental development in children with renal disease.
- Application of renal replacement therapies in children with acute and chronic renal failure and other non-renal disorders. Placement of acute PD and acute haemodialysis catheters are desirable.
- Medical management of renal transplantation (pre-transplant workup, indication, preparation, post-op care, management of immunosuppression/medical complications, transplant follow-up).
- Ethical issues in the management of patients with renal diseases.
- Management of critically ill children with renal involvement in an intensive care setting.
- Care of newborns with renal disorders.

- Management of children with enuresis and dysfunctional bladder syndromes.
- Transitioning teenagers to adult nephrology services

End Result of Training

The training programme envisaged and detailed below will provide for the needs of Tertiary Care Paediatricians who will deliver care for the conditions outlined.

The Tertiary Care in **Paediatric Nephrology**, at the end of training, should:

- Provide clinical care within the framework of a specialised Tertiary Care Unit in the inpatient/outpatient setting using various specialised diagnostic and therapeutic modalities.
- Liaise with the appropriate laboratories and similar departments.
- Liaise with colleagues in Secondary Care Paediatrics in the provision of high quality local care.
- Liaise with and consult other Tertiary Care Specialists.
- Develop an integrated pattern of care with colleagues in the Adult Speciality and Genetics
- Be trained in Clinical Research Practice and capable of conducting/establishing a Research Programme.
- Lead on health administrative issues and research activities.

3. Training period

Clinical training

A medical doctor who has successfully completed his/her training of at least 3 years in general paediatrics will be eligible for access to further specialist training in **Paediatric Nephrology**. A clinical training period **of at least 24 months (preferably 36 months), or the equivalent part-time employment in Paediatric Nephrology** is considered adequate.

4. Research training

Whereas there are no active guidelines at present for prosecution of a research programme within the European Syllabus of tertiary training, research training (clinical or laboratory based) of at least 6 months is highly recommended. These arrangements will need to be negotiated at the national level. The candidates are expected to make at least one presentation at the national or international conferences, and to have at least one peer-reviewed publication.

5. Requirements for Training Institutions

The recognition of training institutions will ultimately be part of a joint process involving NTAs, EAP-UEMS and the specialist society. It is anticipated that **Paediatric Nephrologists** will act as the agent for EAP-UEMS and CESP in executing this task. A list of the names and characteristics of existing national training centres will be created and held by **European Society for Paediatric Nephrology** and EAP-UEMS which will oversee quality assurance of the recognised centres at periodic intervals every 5 years using the guidelines suggested by the UEMS.

Accreditation of Centres

For each EU Member country, a list of centres, units, training directors, tutors and teachers should be compiled and updated on an annual basis. Each centre is characterised by the

available modules or areas of teaching activity, tutors and teachers available and the size of the clinical practice as defined by the needs of the trainee.

Accreditation will initially be given by the NTA and ultimately approved by EAP-UEMS. The approval process will follow the EU Guidelines (currently in preparation). At present **European Society for Paediatric Nephrology** will simply review National Inspections and act as arbiter in situations of disagreement.

A training centre can be a single institution or a group of related establishments.

Full Training Centre

The centre must provide adequate experience in all fields of **Paediatric Nephrology** including emergency, neonatal and intensive care. It is expected to provide all Training modules. The number of activities must be sufficient to provide at least a minimum experience for a trainee.

A group of related establishments can be considered a centre and each component considered as a unit contributing one or more modules.

The centre must have easy access and close relationships with other relevant specialities such as paediatric surgery and urology, transplant surgeon, paediatric cardiology, endocrinology, gastroenterology, oncology, adult nephrology, dermatology, radiology, nuclear medicine, renal pathology, human genetics.

Demonstration of involvement of other care teams particularly specialised nurses, paediatric nutritionists, physiotherapists, social workers, psychologists, and school teachers is essential for recognition. The centre must provide evidence of on-going clinical research and access to basic research. In countries that have approved centres for Paediatric Nephrology care then the Full Training Centre must be one of these.

The centre will be responsible for weekly clinical staff/seminar teaching and participation in regional/national meetings. Basic textbooks in Paediatric Nephrology should be immediately available and there should be easy access to a comprehensive reference library either in paper or electronic format.

Training Unit

Training Units are institutions that provide training in one or more aspects (Modules). They must provide adequate exposure in the defined area and a teacher who is deemed competent in these areas.

6. Requirements for Trainers in Paediatric Nephrology

The training staff in a Centre should include at least two trainers. The Training Programme Director (TPD) must have been practising **Paediatric Nephrology for at least 5 years** and have specialist accreditation in those countries where the speciality is recognized.

There should be additional Educational Supervisors/Trainers who should provide training across all aspects of the speciality and be research active in **Paediatric Nephrology**. At least one additional trainer should also have specialist accreditation in those countries where the speciality is recognized. When an aspect of training cannot be provided in one centre it will be necessary for the trainee to be taught at another suitable centre by a trainer approved for that purpose.

A Trainer is a person who holds acknowledged expertise in one or several aspects of **Paediatric Nephrology**. This person's contribution may be restricted to these areas of

expertise. Both educational supervisors and trainers must have practised **Paediatric Nephrology** for a **minimum of 2 years**.

Trainers should work out a training programme for the trainee in accordance with the trainee's own qualities and the available facilities of the institution. Regular review will be required to allow for flexibility and for early identification of problems/deficiencies. The trainer should work with the Trainee to create a Personal Development Plan (PDP).

Trainers are expected to provide appraisal and assessment of progress. Appraisal consists of determining what is needed and what evidence is required to show that this has been achieved. Assessment evaluates progress against objectives. Trainee assessment should be provided in terms of:

- Training and career ambitions
- Training experience related to syllabus
- Achievements related to current plan

In order to provide a close personal monitoring of the trainee during his/her training, the number of trainees should not exceed the number of teachers in the centre.

Trainers will meet the trainee at the beginning of the programme to define the educational contract for that trainee. Reviews of progress should take place at 3 monthly intervals during the first year of training to appraise the individual.

An annual assessment should be undertaken, ideally at a National level, to review competencies achieved and to allow progress within the teaching programme. Assessments should be detailed and contain statements of theoretical and practical experience accumulated by the trainee. It is expected that the trainee will also provide an account of the training received and problems encountered (portfolio). Reports will be submitted to the TPD or national body.

7. Requirements of Trainees

In order to gain the necessary depth of experience each trainee should be actively involved in the management care of a range of patients during the whole period of his/her speciality training. This should include the care of outpatients, inpatients (including emergency and intensive care admissions) and community care where appropriate.

Many countries have recently reformed their postgraduate medical education. New pedagogic initiatives and blueprints have been introduced to improve quality and effectiveness of the education in line with outcome-based education, for example using the CanMEDS framework. Competency based assessment, as an adjunct to knowledge assessment and portfolio completion, is an important aspect of evaluation.

CanMEDS consists of the following competencies:

- **Medical expert:** integration of all CanMED roles applying medical knowledge, clinical skills and professional attitudes.
- **Communicator:** effectively facilitates doctor-patient relationship and dynamic exchanges before, during and after medical encounter.
- **Collaborator:** effectively work within healthcare system to achieve optimal patient care.
- **Manager/integral participant** in health care organisations, allocating resources and contributing to health care system.
- **Health advocate:** responsibly use expertise and influence to advance the health of individual patients, communities or populations.

- Scholar: demonstrates lifelong commitment to reflective learning and to creation, dissemination, translation of medical knowledge.
- Professional: committed to the health and wellbeing of individuals and society through ethical practice, professional led regulation and high personal standards of behaviour.

Log-book

The trainee should keep a written log-book of patients they have seen, procedures conducted, diagnosis and therapeutic interventions instigated and followed-up. This will constitute part of their portfolio.

The trainee will be required to keep his/her personal logbook or equivalent up-to-date according to National guidelines and European Union directives. The logbook must be endorsed by his/her tutor or authorised deputy. The trainee should attend and provide evidence of attendance at local, regional and national meetings.

Attendance at International Meetings is considered essential for Tertiary Care training. It is recommended to give at least 2 - 3 presentations at these meetings. Attendance at summer school or winter school is strongly encouraged.

Competency assessment

Competencies should be evaluated throughout the training period. There are a number of different tools for this, describing different aspects of training. Some of these are set out below with a recommendation for the number that should be completed during each year of training. Formal and informal reflection on these assessments is an important aspect of their success.

Assessment	Purpose	Method
MiniCeX (Mini clinical examination)	Provides feedback on skills needed in clinical care	Trainer observes a trainee examining a patient and explaining the management plan to the parents
CbD (Case based discussion)	Assesses clinical reasoning or decision making	Trainee presents a more complex case to the trainer and has a discussion about the evidence or basis for diagnosis or treatment
DOPS (Directly observed procedural skills)	Assesses practical skills	Trainee undertakes a practical skill whilst being observed
LEADER	Focuses on leadership skills	A trainee is observed leading a team
HAT (Handover assessment tool)	Evaluates handover skills	Handover episodes are supervised and discussed
DOC (Discussion of correspondence)	Assesses letter writing skills	Clinic letters or discharges are reviewed and discussed
MSF (Multi-source)	Provides wider feedback on the	Confidential comments from a wide range of colleagues, patients and the

feedback)	performance of the trainee	trainee are sought
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A guide to workplace-based assessment can be found [here](#).

Knowledge base

Accreditation will be granted to trainees who have satisfactorily completed their higher specialty training in Paediatric Nephrology and undergone a formal assessment. Given the necessary funding we propose that the recognition of training institutions and the assessment of trainees should be conducted by representatives of the European Society for Paediatric Nephrology.

At present, it is recommended (but not mandatory) to include a final examination as part of the training programme or accreditation process. The recognition of Paediatric Nephrology training should be done according to the national legislation and is advocated by European Society for Paediatric Nephrology.

Participation in Audit project

We strongly recommend that the trainee should conduct at least one systematic style review of a topic and in addition prepare a detailed evidence-based appraisal of a diagnostic test or a therapeutic intervention, as well as one scientific paper published in a peer reviewed Journal, preferably as first author.

8. Content Tables

a. Specialty specific skills

Degree of knowledge required:

H = HIGH	Up to date scientific knowledge
B = BASIC	Specialty textbook

A	BASIC KNOWLEDGE	
1	Embryology of the kidney and urinary tract	B
2	Anatomy, histopathology and physiology of the kidney and its circulation under normal and abnormal conditions	B
3	Pathology and pathophysiology of congenital and acquired diseases of the kidney and urinary tract in the growing child	B
4	Aetiology, symptomatology, diagnosis and differential diagnosis of congenital, genetic and acquired renal diseases in the foetus, infant and child and their appropriate investigation by imaging, tests of function and histopathology	H
B	BASIC SKILLS	
1	Urinalysis and urine microscopy Renal biopsy Urinary tract ultrasound Voiding cysto-urethrogram	B
2	Application of peritoneal dialysis, haemodialysis and related techniques together	H

	with peritoneal and vascular access	
3	Diet and drugs for the treatment of renal diseases	H
4	Clearance techniques for the measurement of glomerular filtration rate and the activity of functionally distinct segments of the renal tubule	H
C	BIOSTATISTICS	
1	Application of parametric and nonparametric statistics	B
2	Statistical modelling	B
4	Principles of screening and surveillance programmes	B
5	Study design	B
6	Systematic review principles	B
D	MANAGEMENT SKILLS	
1	Time management	B
2	Chairing meetings and team participation	B
3	Appraisal and assessment	B
4	Health economics and service provision	B
E	EDUCATION	
1	Defining aims of teaching course/programme/lecture	B
2	Targeting different audiences	B
3	Preparation of teaching material	B
4	Distance based learning using web sites	B
5	Evaluation and feedback materials and management	B
F	CLINICAL EPIDEMIOLOGY, PREVENTION OF RENAL DISEASE	
1	Screening programmes	B
G	INVESTIGATION AND NON-SURGICAL TREATMENT OF PATIENTS WITH THE DIAGNOSIS AND MANAGEMENT	
1	Congenital and acquired renal disease	H
2	Disorders of glomerular and tubular function	H
3	Molecular biology and genetic aspects of renal diseases	H
H	METABOLIC CONSEQUENCES OF RENAL FAILURE	
1	Acute renal failure	H
2	Chronic renal failure	H
I	TREATMENT OF ACUTE RENAL FAILURE	
1	Conservative, renoprotection	H
2	Peritoneal dialysis	H
3	Haemodialysis /continuous renal replacement therapy	H
J	TREATMENT OF CHRONIC RENAL FAILURE	
1	Conservative, renoprotection	H

2	Peritoneal dialysis	H
3	Haemodialysis /continuous renal replacement therapy	H
4	Transplantation: pre-, postoperative and long-term outpatient care	H
5	Pharmacology in children with renal diseases, especially antibiotic and immunosuppressive agents	H
K	OTHER	
1	Fluid and electrolytes/acid and base disorders	H
2	Blood pressure/hypertension	H
3	Nutrition in patients with renal disease	H
4	Urinary tract infection	H
5	Urinary stone diseases	H
6	Genetic renal diseases	H
7	Metabolic disorders affecting the kidney	H
8	Management of critically ill children with renal involvement in an intensive care setting	H
L	PSYCHOSOCIAL EFFECT	
1	Prevention, manifestations and management of psycho-social problems in children with chronic renal disease and their parents	H
M	ETHICS	
1	Ethical issues in the management of patients with renal diseases	H
N	KNOWLEDGE OF METHODS TO JUDGE QUALITY OF PATIENT CARE	
1	Taking quality improving measures	B
2	Development and implementation of protocols and guidelines	B

b. Cross cutting skills

A. ATTITUDE

1. Towards patients and parents

Acknowledge the concerns of parents

Information, communication and support for parents
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2. Towards colleagues

Productive communication and collaboration with colleagues regarding all aspects of patient care, education and research
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Acknowledgement of the multidisciplinary character of the specialism
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3. Towards the society

Adequate communication to the society regarding all aspects of renal diseases

Active contribution in the improvement of general healthcare
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4. Towards themselves

Acknowledge personal capacities, emotional reactions and limitations in knowledge, skills, and attitude and the willingness to take appropriate measures to correct this

II. COMMUNICATION

Good communication with families

Gather information on the background of the patients' family

Building a relationship with the patients' parents

Give clear information to parents about their child's disease and involve them in the decision-making regarding their child's care and management

Explain the role of different healthcare professionals to the parents

Collaborate with others, even if the collaboration or communication is challenging

Supply Information regarding the field or department to an extended public or media

III. COLLABORATION

Describe the role, expertise, added value and limitations of all members of the multidisciplinary team involved in patient care, education and research and administrative support of the sub specialism

Make a multidisciplinary diagnostic and treatment plan together with members of a treatment team

In a multidisciplinary discussion, accept and respect the opinions of other participants and involve these arguments in the decision making

Possess communication skills to resolve misunderstandings and conflicts with and between members of the treatment team

IV. ORGANISATION

Function effectively in a hospital organisation, in particular in paediatrics

Have access to and make adequate use of wide information regarding healthcare

Knowledge of the population-based approach of healthcare and the realise the consequences of this approach

V. SOCIETAL APPROACH

Knowledge of the way government policies are developed and the potential positive and negative effects of these policies

In the approach of an individual patient take individual determinants of disease into account and adjust diagnostics and treatment accordingly

Dealing with the media

VI. KNOWLEDGE AND SCIENCE

Formulate a clinical question

Signal own lacks in knowledge and expertise in clinical problems

Formulate a plan improve own knowledge

i. Perform literature search related to a clinical question

ii. Use of relevant international databases

iii. Assess literature content and quality

iv. Develop a system to store and relocate relevant literature

v. Appropriately request expert advice from others

Formulate a research question
Make a proposal to answer a research question: i. Perform a relevant literature search based on a research question ii. In relation to the conduction of research look for and collaborate with the right experts iii. Propose a methodological approach to answer a question
Conduct research according to protocol
Present research results
Formulate new questions based on scientific results
Knowledge of educational techniques best used for students, trainees and colleagues