

# **A Framework of Competences for Level 3 Training in Paediatric Nephrology**

July 2006



Royal College of Paediatrics and Child Health  
[www.rcpch.ac.uk](http://www.rcpch.ac.uk)

(c) 2006 Royal College of Paediatrics and Child Health

## CONTENTS

FOREWORD by Dr Patricia Hamilton	6
<b>Section 1 Introduction</b>	<b>7</b>
Progression in the Professional Development of a Paediatrician	9
What is a Paediatrician?	10
Contexts for Learning	11
<b>Section 2 General Competences</b>	<b>13</b>
Knowledge and Understanding	13
Skills	15
Values and Attitudes	19
Teaching and Research	20
Leadership and Management	22
Personal Commitment to Professional Standards	23
Communication Skills in Paediatrics	25
<b>Section 3 General Clinical Competences</b>	<b>29</b>
Development	29
Emotional development	30
Social development	30
Educational development	30
Growth and Nutrition	31
Adolescence	32

<b>Section 4 Specialty-specific Competences in Paediatric Nephrology</b>	<b>34</b>
Urinary tract	34
Urinary tract structure	34
Urinary tract infection	34
Disorders of micturition	34
Haematuria and Proteinuria	35
Glomerular disorders	35
Nephrotic syndrome	35
Vasculitis	36
Haemolytic uraemic syndrome	36
Interstitial nephritis	36
Cystic disorders	36
Nephrolithiasis and Nephrocalcinosis	37
Tubular disorders	37
Hypertension	37
Renal function	38
Acute renal failure	38
Chronic renal failure	38
Dialysis and Plasmapheresis	39
Haemodialysis	39
Peritoneal dialysis	39
Plasmapheresis	39
Transplantation	40
Pre-Transplantation	40
Transplantation	40
Post-Transplantation	40

<b>Section 5</b>	42
Practical procedures and Investigations	42
Diagnostic procedures	43
Therapeutic procedures	44
Pharmacology and Therapeutics	45
References	46

## **FOREWORD**

I am very pleased to present this final stage, Level 3, of our Framework of Competences in Paediatrics. This level 3 document builds on the two preceding frameworks we have published, for Basic Specialist Training and for Core Higher Specialist Training, now re-named as Levels 1 and 2. The emphasis is firmly on the achievement of competences and not on a time-based training programme. From August 2007 all trainees will enter specialty training within the framework outlined in the Modernising Medical Careers initiative. Achievement of these competences will determine a trainee's progress through the specialty training programme.

The development of this Level 3 framework, with our fifteen sub-specialty curricula, has represented a huge amount of work. I would like to thank all those chairs and members of our College Specialist Advisory Committees (CSACs) who have shown such commitment and support to this project. In particular, we would like to thank Dr Edward Wozniak and Dr Gabrielle Laing, Chairs of General Paediatrics and Community Child Health CSACs respectively, who have been involved in the development of the competences at all three levels.

The College Officers responsible for training have guided and supported this work unstintingly for the last eighteen months and I would like to thank Dr Mary McGraw, Dr Claire Smith and Dr Ian Doughty for their commitment and involvement in the project. In addition, we would like to thank Kim Brown for the development and co-ordination of this work.

These documents have been prepared for submission to PMETB in July 2006 and we hope to publish them, subject to their approval, by Christmas 2006.

Patricia Hamilton  
President, Royal College of Paediatrics and Child Health  
1 July 2006

## **Section 1 Introduction**

### ***Who is this book for?***

It is for doctors at Level 3 in their training in Paediatric Nephrology, their tutors and educational supervisors.

### ***Why do I need it?***

The book gives you and your tutors guidance about the areas you need to cover during your training. It gives a clear picture of what you have to have achieved by the end of this stage of training, before you become a consultant. You need this book as it forms the basis of your assessment at the end of Level 3 Training.

### ***How do I use the book?***

You can sit down with the book on your own and use it to help you identify areas of practice that you need to work on and those areas in which you feel fairly confident. You can talk to your tutor about the balance of your experiences and look for ways to ensure that you cover all the areas you need to.

### ***Progression***

This is the final stage in your training as a paediatrician. The competences you gained during Level 1 (Basic Specialist Training) and Level 2, Core Higher Specialist Training have formed the basis for your progression into Level 3 training and on to a Consultant post. Table 1 (page 9) illustrates this progression through your training.

### ***A note about the format of this document***

This framework sets out the competences that you need to achieve by the end of Level 3 Training. These build on and develop statements of competence set out for Levels 2 and 3. You are expected to work from all three documents throughout this final stage of your training to ensure that you maintain and continue to develop areas of competence already acquired as well as developing new ones.

Sections 2 and 3 present new statements of competence for Level 3 only, in order to keep the focus clear. Trainees will need to refer back to previous documents for Level 1 and 2 competences in General and General Clinical competences

### **A note about assessment**

The statements in this book have been expressed as *learning objectives*. These are the focus of your training.

When it comes to your assessment, at the end of this phase of your training, we will want to know how *well* you have achieved these objectives and to be confident that you are fit to practise as a Paediatric Consultant. This is what we mean when we talk about your *competence*. So while here you may have, for example, a number of detailed objectives relating to consultation skills or communicating with children, in your assessment we will want to see how you bring all these together and how competent you are overall in your communication skills. This document is not intended as an assessment document but to support training. The assessment of your competence will be by work-based assessments already in use and currently being developed.

Working group:

<b>Kim Brown</b>	<b>Training and Assessment Adviser</b>
<b>Ian Doughty</b>	<b>Officer for Level 3 Specialist Training</b>
<b>Gabrielle Laing</b>	<b>Chair, Community Child Health Specialist Advisory Committee</b>
<b>Mary McGraw</b>	<b>Vice-President for Training and Assessment</b>
<b>Claire Smith</b>	<b>Donald Court Fellow</b>
<b>Edward Wozniak</b>	<b>former Chair, General Paediatrics Specialist Advisory Committee</b>

## Progression in the Professional Development of a Paediatrician

During BST	During HST	Continuing development as a consultant
<i>Acquires fundamental knowledge base</i>	<i>Applies knowledge base to provide appropriate clinical care</i>	<i>Evaluates knowledge and modifies clinical care pathways to enhance patient care.</i>
<i>Acquires clinical examination and assessment skills and applies these in clinical practice</i>	<i>Analyses clinical findings to derive appropriate differential diagnosis and management plans.</i>	<i>Evaluates assessment findings; refines and modifies management plans.</i>
<i>Acquires all basic technical skills and basic life support</i>	<i>Proficient at all basic technical procedures, some complex procedures and provides advanced life support.</i>	<i>May relinquish some skills in these areas dependent on area of clinical practice. May acquire specialty specific skills.</i>
<i>Performs allocated tasks and begins to plan tasks</i>	<i>Plans and prioritises tasks appropriately.</i>	<i>Increasing expertise with evaluation of priorities and appropriate delegation across a wide range of professionals.</i>
<i>Performs allotted teaching tasks</i>	<i>Plans and delivers teaching to trainees and other professionals. Develops peer mentoring skills.</i>	<i>Plans and modifies curricula. Performs assessment and appraisal. Able to provide mentorship.</i>
<i>Aware of management issues</i>	<i>Develops management skills and able to take responsibility for a defined project. Contributes to Committees.</i>	<i>Can negotiate and deal with conflict. Can contribute to and lead committees. Evaluates and modifies management structures.</i>
<i>Performs allocated audit projects and understands the audit cycle</i>	<i>Designs audit project and understands risk management. Able to write appropriate clinical guidelines. Understands the Clinical Governance implications</i>	<i>Facilitates audit, and evaluates results. Evaluates guidelines and ensures implementation of appropriate changes</i>
<i>Understands the principles of critical appraisal and research methodology</i>	<i>Able to appraise the literature critically and apply to clinical practice</i>	<i>Able to evaluate critical appraisal performed by others. Able to lead research projects and support others in research.</i>
<i>Works in multi-professional teams</i>	<i>Able to take the lead and accept leadership from other members of the multi-disciplinary team</i>	<i>Evaluates and modifies multi-professional team-working</i>

DRAFT

## **What is a Paediatrician?**

Paediatricians have a detailed knowledge and understanding of diseases in children. They are skilled in looking at health and ill-health in babies, children and adolescents, and at specific health issues, diseases and disorders related to these stages of growth and development. They develop expertise in practical procedures specifically related to the good clinical care of small babies and children. Paediatricians work in multi-disciplinary teams and with colleagues from a wide range of professional groups in hospitals, general practice and in the community, in social services and schools and with the voluntary sector. They have strong communication and interpersonal skills and take on a variety of roles within their different communities of practice. They share expertise effectively and assume the responsibilities of teaching, leadership and management roles where appropriate. They work with colleagues to ensure consistency and continuity in the treatment and care of children and young people in all aspects of their well-being. They are committed to a policy of advocacy for a healthy lifestyle in children and young people and for the protection of their rights.

Paediatricians are doctors who have a particular compassion and respect for children, young people and their families and enjoy working with them. They have an expert understanding of the ways in which illness affects the child, the parents and the rest of the family and are skilled in the management of emotionally complex family situations. They show patience and sensitivity in their communications with children and their families and a particular ability to explore each individual's perspectives of a problem. They are aware of religious and cultural beliefs that parents might hold about the treatment of their children. They know how to respond in these cases, when to seek support and where to find legal and ethical guidelines to support their practice.

Paediatricians ensure that they are up-to-date in their practice and endeavour to promote evidence-based medicine where possible. They are keen to develop innovative approaches to teaching in paediatrics and to research. They are committed to the highest standards of care and of ethical and professional behaviour within their specialty and within the medical profession as a whole. Central to their work is the principle that all decisions should be made in the best interests of the child or young person in their care.

## **Contexts for Learning**

In drawing up this framework of competences, we have envisaged a wide range of opportunities in which trainees will learn. They will be expected to work on their own, using databases and electronic libraries to research particular conditions or areas of professional practice. This work might be in preparation for a clinic, or a presentation to a group of trainees and supervisors. Trainees may engage with a distance-learning programme in order to develop greater expertise in an area that interests them or that they need to strengthen. Supervisors will need to ensure opportunities for trainees who have undertaken independent study of this kind to share their learning with others. It is through teaching about something you have read or learned or understood differently that learning is consolidated and questioned.

*Feedback* is essential at all stages of the teaching and learning process. Even in the course of a lecture or on a ward round trainees can communicate important messages about their learning needs through facial expressions and body language as well as in their answers to questions. Tutors need to be ready to pick up on these, to seek out actively trainees' responses to their teaching so that they can make adjustments accordingly and ensure that effective learning takes place.

As well as independent study, trainees will find themselves in a number of different communities of practice. In many cases, their learning will result from shared discussion around the diagnosis of a condition, for example, or the identification of an injury. Experienced colleagues from a range of disciplines may join a specialist team, each sharing their expertise, in order to come to a safe diagnosis or decision about how to proceed, for example in the case of suspected abuse. Trainees need to be encouraged to join these discussions so that they develop confidence in their communication skills with colleagues and in their ability to contribute to clinical decision-making.

Supervisors need to be aware of the importance of asking questions in these situations and of the most effective way to do this, so that trainees are fully engaged and learning as they listen. Closed and open questions have their place, and explicit educational strategies such as 'scaffolding' are essential. The teacher takes the

learners, step by step, from their initial level of understanding of a condition or a process, for example, to a deeper or more extensive understanding, through a formal cycle of informing, questioning, informing, testing out and consolidating new information. Ward rounds and clinics offer good opportunities for this kind of interaction, with individual trainees and groups. The exchange may be brief or sustained and it is the close focus on understanding which gives this teaching technique its power. Trainees are also encouraged to write a reflective log and it is important to make clear that this needs to go beyond a narrative of events to an analysis of the process of learning they are experiencing. This, in turn, will equip them well to become teachers themselves of less experienced colleagues.

The college is committed to an explicit educational approach. Identifying contexts for learning is the first step. But it is important to go beyond this to a consideration of the way in which different contexts influence the teaching and learning that take place or that are required. It is helpful to be able to identify apprenticeship models, or experiential learning but these alone do not tell us much about the teaching and learning process. The curriculum sets out *what* is to be learned and we know *where* these things will be learned. But it is also essential to understand *how* teachers and trainees will learn.

With the completion of the curriculum, the college is now working on resources to support the teaching and learning of its contents and on guidance for trainees and supervisors on the pedagogical process of training in Paediatrics.

*For an overview of teaching and learning in postgraduate medicine, see Liberating Learning (COPMED, 2002).*

## **Section 2 General Competences**

### Knowledge and Understanding

#### *Substantial re-wording or new statements of competence for Level 3 Training*

- understand the impact of physical illness on mental functioning, for both children, young people and their parents and the effect of each upon the behaviour and functioning of the other
- understand the impact of relations and mental health upon a child's or young person's current and past emotions and behaviour
- understand the impact of culture and ethnicity in presentations of physical and psychological conditions
- know, understand and be able to compare and contrast medical and social models of disability
- understand the relationship between local health, educational and social service provision
- know about the agencies, both statutory and voluntary, that can provide general and condition-specific support to children, adolescents and their families in coping with their health problems
- know the objectives of paediatric follow-up
- understand and take account in their practice of risk issues to themselves and others, including those related to personal interactions, and bio-hazards
- have a working knowledge of risk assessment and its application to personal, professional, clinical and organizational practice
- understand and take account in their practice of measures to reduce clinical risk
- know how relative and absolute risks are derived and the meaning of the terms predictive value, sensitivity and specificity in relation to diagnostic tests
- know the legal and ethical guidelines to support their work and where to find more information when required
- be aware of the multidisciplinary investigation of sudden unexpected death in infancy
- understand the management of bereavement and be aware of national guidance documents on this

- understand the purpose of post-mortem examinations and know about procedures
- understand the process of bereavement in children and families and recognise abnormal grieving patterns

*Competences specific to the speciality*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- know the embryology and development of the genito-urinary system
- know the anatomy and structural abnormalities of the genito-urinary system
- know the anatomy of native and transplant kidneys
- understand salt and water metabolism in the fetus and the transitional events of birth
- understand the normal regulation of plasma electrolytes, calcium phosphate and acid-base regulation in premature babies, neonates, infants and children
- understand disorders of calcium and bone metabolism especially those induced by kidney disease, as it affects all stages of infancy and childhood
- understand normal maturation during childhood of renal vascular, glomerular and tubular physiology and their roles in achieving homeostasis
- understand the structural adaptation of the kidney to reduced renal mass
- know and understand the role of surgical and radiological intervention in the management of nephro-urological conditions
- know and understand the role of nephro-urological imaging techniques, their interpretation and limitations
- know and understand the immunological basis of renal disease
- know and understand the indications for a renal biopsy and its complications, and know normal and pathological histological appearances
- know the pharmacology and side-effects of agents used to manage nephrological disease including immuno-suppressants and anti-hypertensives
- understand the normal adaptive response of the kidney to fluid and electrolyte disturbance
- understand the disorders of the kidney that cause fluid and electrolyte disturbance know the endocrine diseases associated with electrolyte imbalance

- know that child abuse may present with a range of nephro-urological symptoms, including urinary tract infection and disturbances of bladder control

*(see Good Medical Practice (GMC, 2001) - Good Clinical Care: 2, 3; Delegation and Referral: 45, 46.)*

## Skills

### *Substantial re-wording or new statements of competence for Level 3 Training*

- recognise the breadth of different presentations of common disorders
- recognise features of undifferentiated illness which suggest serious or unusual pathology and initiate the appropriate clinical response with appropriate urgency
- recognise the diseases and host characteristics which make certain presentations life-threatening and manage these situations with vigilance and appropriate urgency
- be able to recognise when both physical and psychological problems are present and when more than one condition or disorder may be present
- be able to assess and manage co-morbidities associated with the range of paediatric presentations
- take a history from a child, young person and parent of the presenting difficulties to acquire information in sufficient breadth and depth in a range of possible symptom areas to allow accurate formulation of the problem
- be able to undertake an assessment of the mental state of children and young people, taking into account their age and stage of development and know whether they have the skills to help them and when to seek more expert paediatric, mental health or psychiatric assessment
- have developed observation skills to support their interpretation of children's or young people's developmental levels and possible physical signs when they are unable to co-operate with formal assessments
- be able to supplement clinical assessment with standardised instruments or questionnaires
- know when to gather information from other professionals eg those working in education, social work or from others who see the child in a variety of settings

- be able to seek the views of children and young people, whatever their illness, regarding individual care and service planning, using expert resources appropriately
- be able to make a decision on the ‘most likely’ diagnosis and discuss this effectively with children and young people and their parents or carers, and with other colleagues, in the context of a plan of investigation and management
- be able to formulate a management plan for complex cases
- be able to review and modify a management plan as appropriate and know when to request help from senior colleagues or other services
- be able to take responsibility for the longer-term management of common acute and chronic cases leading or working with the multi-disciplinary and multi-agency teams, sub-specialists or networks as appropriate
- have developed expertise in practical procedures specifically related to the clinical care of small babies and children, and young people
- be able to develop and work within care pathways
- be able to manage and know how to obtain support for the consequences of chronic illness for a child, young person and their family
- be able to work effectively in multi-disciplinary teams and with colleagues from a wide range of professional groups
- be able to interact effectively with professionals in other disciplines and agencies and from the voluntary sector
- be aware of their role in the team and of their impact in the team
- have developed skills in recording consultations accurately and sensitively whilst maintaining a good rapport with the young person and family
- have developed a wide range of effective age-appropriate communication skills specific to their work with babies, children, young people and their families
- have developed credibility in their relationships with children, young people and their families, and with colleagues through their knowledge and skills and experience in clinical practice and in their ability to work independently
- have developed strategies to manage a child’s or young person’s anxiety and personal anxieties

- have developed basic behavioural management skills with parents, children and young people and with other professional colleagues
- be able to recognise, acknowledge and manage different levels of parental anxiety
- be able to assess patterns of relationships and functioning within a family and how these might impact on a child's or young person's illness, seeking professional advice where appropriate
- have developed effective skills in the management of emotionally complex family situations
- be able to recognise indicators of stress or mental health problems in family members and communicate appropriately with relevant professionals
- be able to remain calm in stressful or high-pressure situations and take a timely, rational approach to the problem
- be able to approach new situations which require good clinical judgement with an analytic and informed approach
- show confidence and independence in decision-making in the care of patients
- be able to apply effectively to their practice the knowledge and understanding acquired during training
- have developed a reflective approach to their practice, with an awareness of their level of expertise and limitations and their development needs
- show an ability to learn from their previous good practice, and from clinical errors
- be able to practise evidence-based medicine and understand and analyse critically its limits
- be able to understand the limitations of guidelines, how to use guidelines effectively and when it is appropriate to work outside guidelines
- have developed skills to deal with issues of confidentiality and stigma associated with the presenting difficulties and family background issues
- be able to discuss an assessment of the psychosocial health of a child or young person with the multi-disciplinary team while respecting patient confidentiality

### *Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- be able to perform urinalysis and teach this to children, young people and parents
- be able to supervise nurses and carers in the technique of collecting urine samples from children suitable for bacteriological investigation
- be able to investigate and manage nephro-urological conditions
- be able to develop care pathways for the investigation and management of urinary tract infection at regional and local level
- be able to provide nephrological support to other paediatric services and primary care
- be able to refer families to appropriate resources for the management of nephro-urological conditions
- be able to advise and provide dietetic instructions as appropriate for the renal disease
- be able to develop care pathways for the investigation and management of urinary tract infection at local and regional level
- participate in audit, for example, auditing biochemical and haematological results against national guidelines
- be able to investigate immune-mediated renal disease and apply specific therapies in their management
- be able to manage metabolic bone disease, particularly that associated with renal disease
- be able to perform native and transplant biopsies safely, and in conjunction with the histopathologist to interpret the histology
- be able to treat and manage fluid and electrolyte imbalances in renal and non-renal diseases
- be able to advise other clinicians on the diagnosis and management of fluid and electrolyte disturbance

*(See Good Medical Practice (GMC, 2001) - Good Clinical Care: 2,3; Maintaining Trust: 19; Working with Colleagues 34,36; Probity: 50.)*

### *Values and Attitudes*

*Substantial re-wording or new statements of competence for Level 3 Training*

- be committed to a policy of advocacy for a healthy lifestyle in children and young people and for the protection of their rights
- understand national and contribute to local initiatives aimed at reducing inequalities in child health and well-being
- practise with compassion and respect for children, young people and their families and act as a role model for others
- adopt an open-minded approach to equality and diversity in their practice
- be aware of the effects of social, cultural and religious context and conflict upon families
- understand the importance of cultural diversity and the difficulties where religious and cultural beliefs that parents might hold about the treatment of their children are in conflict with good medical practice and know when legal and ethical guidelines will support your management or view of the situation
- have developed strategies to manage relationships where health-care beliefs might cause conflict
- be able to advise patients appropriately on debates and controversies in health care
- be sensitive to the effects of stigma on children and families in relation to medical conditions
- be able to work effectively with children, young people and parents or carers, to agree and help them follow management plans
- be able to work effectively with young people who may have or may develop health care beliefs which are in conflict with those of parents or professionals, and know when legal and ethical guidelines will support your management or challenge of the situation
- be able to accept complex and difficult challenges
- show an understanding of the importance of ensuring a healthy balance between professional and domestic priorities
- have the willingness to acknowledge and reflect on the way in which they may, influenced by their earlier life experiences, have an impact on

perceptions of and interactions with young people, their families and professionals

### *Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- be aware of the controversies around the investigations and management of nephro-urological conditions, particularly urinary tract infection
- understand the ethical issues surrounding organ donation
- be aware of issues relating to concordance, with particular reference to transplantation

*(See Good Medical Practice (GMC, 2001) - Good Medical Practice: 1; Good Clinical Care: 5; Maintaining Trust: 19; Working with Colleagues: 36.)*

## Teaching and Research

### *Substantial re-wording or new statements of competence for Level 3 Training*

- have developed a range of effective teaching and learning skills in a range of clinical contexts
- be able to identify learning needs in a wide range of professionals and build on this in their teaching
- be able to elicit and act upon feedback on content and presentation of teaching
- be able to participate in teaching and research on topics within their specialty and in related areas
- conduct research with honesty and integrity, seeking ethical approval where appropriate and safeguarding the interests of patients
- demonstrate an understanding of ‘good clinical practice’ for all aspects of the conduct of clinical trials
- demonstrate an understanding of the role of ethics committees for clinical studies and the process of ethics applications
- understand the techniques used in epidemiological studies
- demonstrate an understanding of how to perform and interpret systematic reviews, how they differ from narrative reviews and understand the principles of meta-analysis

- understand the difference between population-based assessments and unit-based studies and be able to evaluate outcomes for epidemiological work
- be able to develop clinical guidelines, understand how they are produced nationally and how these should be used to guide their own practice
- be able to evaluate research effectively in paediatrics and child health
- take responsibility for the training, supervision and assessment of undergraduates and trainees and other professionals such as nurses, teachers and social workers in and outside the specialty
- have developed skills in the presentation of information relevant to their clinical practice for a range of audiences, including spoken presentations at meetings, written information for children and families and training materials for different groups of colleagues
- be able to lead departmental teaching programmes, including journal clubs
- be willing to accept mentoring as a positive contribution to their own professional development
- be willing to learn from others, to discuss cases openly and to seek advice as appropriate and as necessary

*(See Good Medical Practice (GMC, 2001) - Teaching and Training, appraising and assessing: 13, 14, 15, 16; Probity: 51.)*

## Leadership and Management

*Substantial re-wording or new statements of competence for Level 3 Training*

- be able to provide specialist support to hospital- and community-based paediatric services including primary care
- be able to take on a leadership role in a multi-disciplinary team when appropriate, for example by representing the health needs of a child, young person and their family at a discharge meeting, and know when it may be inappropriate to do so
- be able to work effectively in multi-agency teams, for example, with social workers and teachers, and have developed an awareness of their own role within the team and of the skills and expertise of others
- be confident to make decisions within a team and be aware of their impact on other team members

- be able to advise the team providing advanced life support and to liaise effectively with anaesthetic and PICU staff
- demonstrate effective leadership skills in clinical situations, for example through their ability to organise, prioritise and delegate, and be able to help others to develop these skills
- have skills and strategies to manage conflict effectively
- have understanding and skills to be able to participate effectively in clinical and management meetings
- have developed effective administrative skills including ways to make best use of secretarial resources
- be able to handle enquiries from the press and other media effectively
- recognise their own working preferences and accept different approaches of colleagues
- know how to respond appropriately to health service targets and be able to participate in the development of services
- be able to work with stake-holders so that a client- or patient-centred service is created and sustained
- have gained an understanding of national and local regulatory bodies, particularly those involved in standards of professional behaviour, clinical practice and education, training and assessment
- understand the value and limitations of evidence-based medicine

*Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- be able to work within the full multi-disciplinary team of the tertiary nephrology department, including liaison with dietitians, specialist nurses, transplant and vascular surgeons, transplant co-ordinators, interventional radiologists

(See Good Medical Practice (GMC, 2001) - Working with Colleagues: 34, 35, 36, 39, 42.)

## Personal Commitment to Professional Standards

### *Substantial re-wording or new statements of competence for Level 3 Training*

- understand the duty of all professionals working with children to report concerns about child protection issues to Social Services
- be able to contribute to the implementation of national and local health policy initiatives
- know and follow key legal and ethical guidelines relating to confidentiality, consent to treatment, the right to refuse treatment, continuing changes in the law and its interpretation and be aware of variability in Scotland, Wales and Northern Ireland
- be able to generate local and evaluate national clinical guidelines and protocols in paediatric practice and public health and recognise the individual patient's needs when using them
- participate and take responsibility for clinical governance activities, and encourage and support colleagues in their participation
- be able to carry out audit in a range of settings in partnership with all stakeholders in order to identify best practice
- know about and participate in clinical and research special interest groups relevant to their specialty
- know when in the interest of the child it may be necessary to break confidentiality
- know how to find, review and maintain relevant knowledge in their specialty in order to maintain their fitness to practise
- ensure that they are up-to-date in their practice and promote evidence-based medicine where possible
- be able to evaluate their own performance critically
- be open about sharing and reviewing their practice with others
- be aware of local processes for dealing with and learning from clinical errors and to be able to work within them

### *Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- know specific national audit standards and guidelines relating to renal disease

- understand the care of the dying child, with particular regard to reasons for not choosing dialysis or transplantation and the ethical issues surrounding the withdrawal of care
- know the role of the Renal Registry, UK Transplant, the Renal Association, British Association for Paediatric Nephrology and other related professional organisations

*(See Good Medical Practice (GMC, 2001) - 1; Maintaining Good Medical Practice: 10, 12; Relationships with Patients: 17; Working with Colleagues: 35; Dealing with Problems in Professional Practice: 26, 27, 29, 30. Probity: 58.)*

*See also for all of these sections: Good Medical Practice in Paediatrics and Child Health,<sup>2</sup> London: Royal College of Paediatrics and Child Health (2002).*

## Communication Skills in Paediatrics

*Substantial re-wording or new statements of competence for Level 3 Training*

- understand the importance of directing communications to the baby, child or young person as well as to parents and carers
- have developed skills to establish a child's or young person's and family's understanding of a situation and to build on this effectively in discussion about the condition and its management
- understand the importance of seeking the views of all children and young people to inform decisions about their individual care and to encourage their participation in their care
- encourage children and young people to participate in their individual care and in the development of services, using expert resources appropriately
- have effective active listening skills in consultations with children and young people and understand the need to respect their views in accordance with their age and maturity and to respond appropriately where, for example, a child or young person is felt to be vulnerable
- have developed effective skills in working with children, young people and families to achieve concordance in planning management and treatment,

---

<sup>2</sup>*Good Medical Practice in Paediatrics and Child Health*, London: Royal College of Paediatrics and Child Health (2002). Online at [www.rcpch.ac.uk/publications/recent\\_publications.html](http://www.rcpch.ac.uk/publications/recent_publications.html)

enabling children and young people to maximise control over their illness and its management

- be able to respond appropriately, and know where to find assistance, in cases where a child, young person or family may not all speak English or where there is a sensory impairment that may affect understanding
- be able to respond to babies, disabled children or young people who may not be able to express themselves verbally, including those who might be in pain or distress
- be able to recognise, interpret correctly and respond to verbal and non-verbal cues from children, young people and parents
- have developed observation skills to support their interpretation of children's or young people's developmental levels and possible physical signs when they are unable to co-operate with formal assessments
- demonstrate appropriate responses and empathy for children, young people and their families experiencing difficulty and distress
- have developed a range of language strategies, such as the use of metaphor or images which relate to everyday life, to explain clearly to a child or young people and their family, their symptoms, condition or treatment, their feelings or behaviour
- be able to counsel parents about serious conditions and abnormalities within their area of expertise
- have effective strategies for careful and appropriate use of language in difficult and challenging circumstances, for example, at the birth of a baby with disabilities or where there is a conflict with colleagues
- be able to discuss the indications, benefits and adverse events of a procedure to patients, relatives and carers in a manner that will allow informed consent
- have developed a range of approaches to communicating the breadth of diagnostic possibilities and other clinical information to children, young people and their families so that consent is always informed and the plan and progress of treatment understood
- be able to advise children, young people and their families about the importance of concordance and about medication interactions and side-effects

- be able to convey and share effectively difficult or bad news, including end-of-life issues, with children, young people, parents or carers and help them to understand any choices they have or decisions to be made about ongoing management
- be able to prepare and discuss with parents, carers and other professionals “Do not attempt resuscitation” policies as appropriate, taking due account of the Human Rights Act (1998), ensuring that the best interests of the child are held as paramount at all times
- be able to seek consent for post-mortem examinations and communicate effectively with the Coroner
- be able to confirm with children, young people and their families their understanding of a situation from what has been said and written and clarify this as appropriate
- be able to explain the role of other professionals and agencies to children, young people and their families
- have the confidence to be firm and diplomatic in difficult situations, for example, when dealing with angry parents
- understand the limits of their competence, particularly in stressful situations and be willing to seek help in managing sensitive and complex situations
- be able to demonstrate to trainees how to communicate a diagnosis and prognosis effectively to children, young people and their families
- be able to demonstrate and explain to trainees strategies used to conduct effective consultations with babies, young children, adolescents and their families
- have effective skills in written communications for a range of audiences, for patients and their families, colleagues and other professional organizations
- ensure that spoken and written communications with patients and families are presented in clear, straightforward English, avoiding jargon whenever possible
- ensure that written information in the form of booklets, leaflets, information sheets and websites support verbal communications wherever possible
- ensure that written communications summarise accurately discussions with children, young people and parents or carers, and, to avoid confusion and anxiety, do not include information that was not part of the original discussion

- be able to liaise with parent support and self-help groups when necessary
- be able to prepare a court report as a professional witness and develop the skills to present such material in court
- know how to write reports about alleged abuse of children and young people for social services or the courts
- be able to write reports that explain the condition of a child or young person to non-health personnel working in the courts, social services or education
- be able to use electronic communication media, taking into consideration the principles of confidentiality outlined in the Data Protection Act
- have developed effective professional networks to support clinical practice and other activities, including research, education and management

*Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- be able to counsel patients about renal replacement therapy, the benefits and risks of haemodialysis and peritoneal dialysis

## **Section 3 General Clinical Competences**

### **Development**

#### *Substantial re-wording or new statements of competence for Level 3 Training*

- know the range of patterns of normal development from birth to adulthood
- know and understand the range of children's or young people's psychological and social development, including the normal range and what is outside it
- be able to identify when patterns of development are abnormal and where there may be a risk of abnormality which may only become apparent with time
- know the causes of disability, how disability might affect clinical examination and assessment and be able to contribute to a multi-disciplinary approach to management
- understand the severity of the presentation, taking into account normal development in appropriate domains
- know how to institute further assessment and investigation
- know about different modes of screening and health promotion strategies
- understand the ways in which children's or young person's mental health difficulties may present in infancy, childhood and adolescence
- understand the impact of biological factors, including genetic and cognitive factors, on the mental health of children and young people
- understand the impact of other environmental factors (including violence, trauma, neglect, abuse and disruption, wherever this has occurred) on a child's development, mental health and functioning
- be able to assess the effects of recurrent or chronic illness and its treatment on growth, psycho-social, emotional, physical and sexual development and have strategies to minimize adverse effects

#### *Competences specific to the Specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- understand the impact of chronic renal disease on the emotional and physical well-being of the child and family, and on their later life, with regard to reduced independence, educational and employment issues

## Emotional development

### *Substantial re-wording or new statements of competence for Level 3 Training*

- understand and recognise somatisation disorders and know how to provide initial management and how to access appropriate support
- recognise pointers to fabricated and induced illnesses and know how to provide initial management and how to access available support
- understand the emotional impact of illness and hospitalisation on children, young people and their families and take action to minimize this impact
- understand how a family's, child's or young person's attitude to the problem and services may have a significant impact on the presentation and its management
- recognise the need for specialised input in cases of serious emotional distress or mental illness and ensure their needs are met within local health provision
- understand the emotional dimensions of eating disorders and recognise and initiate treatment
- be able to assess parenting skills and recognise and respond to indications of unsatisfactory or unsafe parenting
- know how to access help in cases where children or young people of different ages might be deprived of opportunities to play and to learn
- know how to manage common behavioural problems

## Social development

### *Substantial re-wording or new statements of competence for Level 3 Training*

- be able to recognise and understand the impact of autistic spectrum disorders and other organic disorders on social development

## Educational development

### *Substantial re-wording or new statements of competence for Level 3 Training*

- demonstrate, in all aspects of their practice, an understanding, of the vulnerability of a child or young person with learning difficulties

*Competences specific to the Specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- understand the impact of haemodialysis on educational development and be aware of strategies to minimise this

## Growth and Nutrition

*Substantial re-wording or new statements of competence for Level 3 Training*

- know the reasons for faltering growth, including emotional factors and how to investigate appropriately
- understand and assess normal and abnormal pubertal development and its relationship to growth
- understand the environmental factors contributing to obesity and how these might be altered
- be able to recognise feeding problems and work with parents directly to offer simple advice and to treat co-morbid conditions
- know about the principles and methods and indications for nutritional support and common problems that may arise from invasive methods or refeeding
- be able to identify nutritional deficiencies and growth failure which may occur in children and young people who undergo unsupervised dietary modification

*Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- understand the dietary restrictions resulting from renal disease and the issue of concordance with dietary changes and restrictions
- understand the principles of nutritional support and the impact of renal disease on growth and development
- be able to monitor growth and work with dieticians to optimize growth in patients with renal disease

## Adolescence

### *Substantial re-wording or new statements of competence for Level 3 Training*

- understand what the specific needs of young people are, in terms of their emotional, mental and physical health, and how these are different from those of children
- know the epidemiology of the main causes of morbidity and mortality in young people
- ensure that young people have access to ‘in-patient’, ‘outpatient’ and other medical services that best meet their needs
- understand why young people harm themselves and respond appropriately to actual or threatened episodes of self-harm in adolescents
- understand the consequences of self-harm and be able to work as part of a clinical network in the management of the young person who self-harms
- be able to discuss sexual health issues including basic contraceptive advice and know how to help the young person access appropriate sexual health or genetic advice
- know about national policies concerning the health care of young people, including those which help to reduce teenage pregnancy
- understand the processes of adolescence including experimental behaviours, learning by experience, achieving independence from the family, and the consequences of these on health and illness in young people
- be able to discuss comfortably with young people important health behaviours such as the use of tobacco, alcohol or recreational drugs, and intimacy and sexual activities together with the promotion of appropriate strategies for these in relation to specific conditions such as asthma, diabetes, cystic fibrosis, physical disability
- understand the particular needs of adolescents with regard to their independence and autonomy, education and work, body image and sexual identity, concordance with medication and risk-taking and understand how these factors may be affected in young people with chronic conditions
- be able to support young people in self-management of both acute and chronic disease where they want to, and have an understanding as to how to best help when the young person cannot or does not want to manage this

- be able to discuss the implications of chronic illness or disability for career options
- where appropriate and at a negotiated time, be able to raise and agree management of end-of-life issues with young people and their families and record conclusions in medical notes
- understand issues around transition from paediatric to adult care in adolescents with chronic conditions and disabilities, and be able contribute effectively to transitional care services
- understand and value the roles of members of the multidisciplinary team in the delivery of a transitional care programme

*Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- understand that experimental adolescent behaviour can lead to an increase in transplant rejection and loss and have developed strategies to minimise this

## **Section 4 Specialty-specific Competences in Paediatric Nephrology**

### Urinary tract

#### Urinary tract structure

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- know the importance of genital abnormalities, ambiguous genitalia and intersex, and their associations with renal and other diseases
- be able to lead and co-ordinate multi-disciplinary teams including radiologists, urodynamic nurses, urological and plastic surgeons, obstetricians and geneticists

#### Urinary tract infection

- know the epidemiology and microbiology of urinary tract infection (UTI) and the role of host defense mechanisms
- understand the clinical signs and symptoms of UTI in different ages of children
- know the appropriate antimicrobials to treat UTI
- understand the management of vesico-ureteric reflux (VUR), reflux nephropathy, and the secondary progression of renal damage
- be able to investigate and manage UTI in different age groups appropriately
- be able to counsel families on the inheritable nature of VUR

#### Disorders of micturition

- know the physiology of normal micturition and understand the normal acquisition of bladder control
- know the causes of disturbed micturition
- pathophysiology of the neuropathic bladder
- understand the role of urodynamics in the investigation of disturbed micturition
- be able to interpret urodynamic studies, and instigate appropriate management
- know the appropriate medical and surgical management of different types of bladder dysfunction

- understand management strategies for enuresis including behavioural and pharmacological therapies
- be able to lead and co-ordinate other professionals, including urodynamic staff, specialist nurses, urologists, neurologists, neurosurgeons continence advisers and psycho-social support

## Haematuria and Proteinuria

- know the causes of, and appropriate investigations for, haematuria and proteinuria
- understand glomerular and tubular handling of protein
- be able to differentiate between pathological and physiological proteinuria, and develop a diagnostic care pathway
- be able to lead and co-ordinate investigation and management of a child with haematuria and/or proteinuria, working with radiologists, urological surgeons, histologists and geneticists

## Glomerular disorders

- understand the aetiology, pathophysiology, genetic and immunological basis of glomerular disease
- know the different forms of presentation, and clinico-pathological correlations
- understand the clinical course and prognosis of acute and chronic glomerular disease
- know the indications for therapy eg immunosuppressive agents, cytotoxic drugs, plasmapheresis and dialysis
- be able to diagnose and manage nephritic and nephrotic syndromes

## Nephrotic syndrome

- know and understand the pathophysiology and genetics of nephrotic syndromes
- be able to detect and manage the associated complications of the nephrotic state

- be able to investigate and manage the various forms of the nephrotic syndrome

## Vasculitis

- know and understand that vasculitides presenting with renal disease may also affect other organ systems
- know the appropriate use of tissue diagnosis from other organs including skin
- be able to lead and co-ordinate the investigation and management to involve other specialties including neurology, ophthalmology and rheumatology
- be able to prescribe appropriately specific therapies including plasmapheresis

## Haemolytic uraemic syndromes

- know and understand the disorders that comprise the haemolytic uraemic syndromes (HUS), their aetiology, genetics, multi-system clinical manifestation, pathogenesis and outcome
- know the epidemiology, public health aspects of verocytotoxin-producing *Escherichia.coli* infection
- be able to apply specific therapies in the management of the haemolytic uraemic syndromes, including plasma infusions and plasma exchange.
- work with other specialties including paediatric intensive care surgery and neurology

## Interstitial nephritis

- know the causes of interstitial nephritis and tubulo-interstitial disease, and the relationship to systemic conditions
- liaise with histopathology, toxicology, microbiology and ophthalmology departments

## Cystic disease

- know and understand the causes, clinical manifestations and outcomes of renal cystic diseases
- understand the modes of inheritance and methods of screening

- be able to investigate and manage cystic kidney disease, including liaising with hepatologists and geneticists

## Nephrolithiasis and Nephrocalcinosis

- know and understand the aetiology of renal stone formation and nephrocalcinosis, including underlying metabolic and genetic disorders
- understand the acute and chronic medical and surgical management of renal stones including lithotripsy
- be able to investigate and manage the child with renal stones and nephrocalcinosis, in conjunction with radiologists and urologists

## Tubular disorders

- know and understand the different causes and clinical presentations of primary and secondary tubular disorders
- investigate and manage tubular disorders with particular emphasis on the correction of acid base and electrolyte disturbance
- liaise with other specialties including metabolic medicine and geneticists

## Hypertension

- be able to define hypertension according to normal blood pressure data in children
- understand the techniques of blood pressure measurement, their advantages and limitations
- know the renal and non-renal diagnoses implicated in hypertension in different age groups, and the mechanisms causing primary (essential) and secondary hypertension
- be able to investigate and manage acute and chronic hypertension, hypertensive crises, encephalopathy and cardiac failure
- be able to liaise with professionals in other specialties, including interventional radiology, ophthalmology, cardiology, and vascular surgery

## Renal Failure

### Acute renal failure

- be able to investigate and manage the underlying cause of acute renal failure
- understand the principles of dialysis and filtration and know the indications for their application
- be able to assess and manage fluid and electrolyte disturbances, hypertension and nutrition
- be able to select and prescribe the appropriate dialysis modality, working with renal nurses, paediatric intensive care staff, interventional radiologists and surgeons
- be able to provide nephrological support in the management of patients with multi-organ failure or systemic disease

### Chronic renal failure

- know and understand the presentation, clinical course and prognosis of diseases causing chronic renal failure
- be able to investigate and manage chronic renal failure
- understand the pathophysiology of systemic complications, including bone disease and anaemia
- be able to assess the degree of renal failure, monitor its progression and instigate the appropriate renal replacement therapy
- be able to manage the effects of chronic renal failure including biochemical disturbance, renal bone disease and anaemia
- be able to assess and manage growth and nutrition, including the use of enteral feeding and growth hormone
- be able to identify and manage cardiovascular risk factors including hyperlipidaemia and hypertension
- be able to counsel children, young people and families on the diagnosis and implications of permanent kidney failure, including the need for dialysis and transplantation

## Dialysis and Plasmapheresis

### Haemodialysis

- know and understand the principles of haemodialysis and its comparison with other methods of dialysis
- know and understand the various techniques for obtaining vascular access, and the complications of access and of dialysis itself
- be able to manage different forms of vascular access, and their complications, working with dialysis nurses, vascular surgeons and interventional radiologists
- be able to plan and prescribe haemodialysis and monitor its effects and adequacy
- be able to diagnose and manage the complications of haemodialysis

### Peritoneal Dialysis

- know and understand the principles of peritoneal dialysis, the different available modalities and the advantages and disadvantages compared to haemodialysis
- know and understand the surgical procedure of insertion of peritoneal dialysis catheters, and the complications of peritoneal dialysis access and of the dialysis itself
- be able to diagnose and manage the complications of peritoneal dialysis, and of peritoneal dialysis access, working with dialysis nurses, and surgeons
- be able to plan and prescribe peritoneal dialysis and monitor its effects and adequacy

### Plasmapheresis

- understand the principles of plasmapheresis, its indications, techniques and complications
- be able to prescribe and manage plasmapheresis, working with dialysis nurses, access surgeons and interventional radiologists, and other specialties including PICU staff and laboratory staff
- be able to assess the clinical response

## Transplantation

### Pre-Transplantation

- understand the advantages and disadvantages of cadaveric versus live-related donor transplantation, the advantages and disadvantages of pre-emptive transplantation, and how cadaveric donors are selected and organs obtained and preserved
- understand the principles of matching recipient and donor, the immunological basis of graft rejection and tolerance, the importance of blood group and HLA matching and donor-recipient cross matching
- understand what is involved in a transplant work-up, including working with transplant surgeons and co-ordinators, tissue-typing laboratories and UK Transplant
- be able to assess the suitability of a patient for renal transplant including the statutory regulations
- be able to counsel the patient and family about the benefits and complications of transplantation

### Transplantation

- understand the anatomy and basic surgical procedures involved in transplantation, their complications and treatment
- know the range of immuno-suppressives used in transplantation, their mechanisms of action, monitoring their benefits and side-effects
- be able to manage fluid and electrolyte balance and blood pressure in the peri-operative transplant period, and adjudicate the medication required for a successful transplant
- be able to assess renal transplant function

### Post-Transplantation

- understand the mechanisms of change in transplant function and identify their causes, including acute rejection and chronic allograft nephropathy
- know the recurrence rate of the original disease, and other complications pertaining to the original diagnosis and their management

- know the indications for and knowledge of the procedure of renal transplant biopsy
- know the effects and risks of immuno-supression
- be able to diagnose and manage acute and chronic rejection and disease recurrence
- be able to diagnose and manage infective and lympho-proliferative complications
- be aware of issues relating to concordance affecting graft survival
- be able to counsel patients with a failing graft and discuss future management on renal replacement therapy

## **Section 5**

### **Practical Procedures and Investigations**

*By the end of Level 3 Training, trainees will:*

- know the appropriate indications for practical procedures and investigations
- know the contraindications and complications of procedures
- know the local and national guidelines for obtaining informed consent
- know the local and national guidelines for undertaking investigations or procedures
- know the local guidelines for providing sedation and pain relief for practical procedures
- know the relevant anatomical markers for invasive procedures
- know and practise scrupulous aseptic techniques
- be aware of safety issues for patients and staff in relation to investigations of body fluids and radiation
- understand the importance of post-mortem investigations
- know the national and local guidance for obtaining consent for post-mortem
- be able to interpret results of investigations requested and respond appropriately
- be able to record results and document procedures legibly and accurately
- be able to give appropriate medical information when requesting investigations
- know that results should be requested clearly and retrieved promptly
- understand common age-appropriate normal ranges or appearances
- be able to use all equipment required to undertake common procedures and investigations
- be able to explain the investigation results to parents and/or the child
- be aware of the factors that are likely to influence the anxiety of the child, parent and doctor and know how to enlist effectively the help of play-leaders, nursing staff and more senior paediatric staff when necessary
- be receptive to feedback from patients and parents/carers on the effects of medication/treatment

- know about the role of complex investigations eg CT and MRI scans and their diagnostic potential and complications
- recognise when the results of commonly-used radiological investigations are abnormal
- have developed confidence in independent performance of practical procedures
- be able to supervise and teach others
- recognise complications of procedures and be able to respond appropriately
- understand and follow the local guidelines for the prevention and management of needle-stick injury
- be able to recognise the importance of universal precautions as well as the disposal of sharps within the department
- have experience of speaking to parents when complications have occurred
- know about processes for critical incident reporting
- obtain informed consent appropriately
- supervise handover of results that still need to be obtained at the end of shifts

## Diagnostic Procedures

*By the end of Level 3 Training, trainees will be able to perform the following diagnostic procedures independently:*

- collection of blood from central lines
- umbilical artery and venous cannulation and sampling
- peripheral arterial cannulation
- venesection
- capillary blood sampling
- suprapubic aspiration of urine
- urethral catheterisation
- routine testing of urine
- perform basic lung function tests
- electrocardiogram
- lumbar puncture
- non-invasive blood pressure measurement

## Therapeutic Procedures

*By the end of Level 3 Training, trainees will be able to perform the following therapeutic procedures independently:*

- administer intradermal, subcutaneous, intramuscular, intravenous injections
- percutaneous long-line insertion
- bag, valve and mask ventilation
- needle thoracocentesis for pleural effusion or pneumothorax
- tracheal intubation
- intubation of newborn infants of most gestations
- administration of surfactant
- external chest compression
- insertion of intraosseous needle

## *Competences specific to the specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- know the practicalities, limitations and special precautions of tests of renal function
- be able to estimate glomerular filtration rate (GFR) by formal clearance techniques and estimation from height
- understand the role of imaging techniques in nephrology, such as ultrasonography, excretion urography and radionuclide imaging, their interpretation and limitations
- be able to perform urine microscopy
- be able to conduct and interpret tests of tubular function, including urinary acidification and concentrating ability
- know the indications for renal biopsy of native and transplant kidneys
- be able to use ultrasound to localize kidneys and use ultrasound guidance to assist in renal biopsies
- be able to perform renal biopsy on native and transplant kidneys
- be able to interpret renal biopsy with the assistance of a renal histopathologist
- be able to manage the complications of a renal biopsy

*By the end of Level 3 Training, trainees will be able to perform the following procedures independently:*

- urine microscopy, renal biopsy, including ultrasound localisation

## Pharmacology and Therapeutics

*By the end of Level 3 Training, trainees will:*

- know and understand the pharmacological basis for treatments
- know the approved indications and justification for prescribing drugs in common paediatric problems
- know the pharmacokinetics and pharmacodynamics of commonly prescribed drugs
- be able to calculate drugs accurately according to specific dose for weight, or age/weight range or on a specific dose/surface area basis
- know the risks of prescribing in the child-bearing years, in pregnancy and in breast-feeding mothers
- know about the roles of the regulatory agencies involved in drug use, monitoring and licensing ( for example the National Institute of Clinical Excellence, the Committee on Safety of Medicines, the Medicines and Healthcare products Regulatory Agency and Hospital Formulary Committees)
- be able to find out information necessary for safe prescribing through use of paediatric formularies and pharmacy liaison
- know about drug interactions of commonly used drugs
- know about procedures for obtaining consent in children and young people for the administration of drugs
- be able to use the local and national guidelines for the relief of pain in children
- know and follow local policies for intrathecal cytotoxic therapy
- respond appropriately to errors of prescription or administration and be able to talk to parents about this
- be able to prescribe safely and supervise prescription for the newborn, and for children of all ages
- know about the licensing of medicines for paediatric patients and unlicensed and off-label use and the implications of extemporaneous products

- know how to explain relevant potential adverse side-effects
- be able to advise and supervise safe prescription of intravenous fluids to medical and surgical patients
- be able to prescribe in a manner that enhances adherence and provide information and explanation that enhances concordance

### *Competences specific to specialty*

*By the end of Level 3 Training in Paediatric Nephrology, trainees will:*

- understand the renal handling of drugs
- understand how renal disorders affect drug pharmacokinetics
- understand how different drugs affect the kidney
- be able to adjust drug prescription in accordance with renal function
- understand how dialysis or plasmapheresis affect drug pharmacokinetics
- be able to work with pharmacists and nursing staff to promote safe prescribing, including informing other health professionals of the implications of prescribing in renal disease

### References

1. *Good Medical Practice*, London: General Medical Council (2001)
2. *Good Medical Practice in Paediatrics*, London: Royal College of Paediatrics and Child Health (2002)
3. *The Victoria Climbié Inquiry, Report of an inquiry by Lord Laming*, London: HMSO (2003)
4. UN Convention on the Rights of the Child 1990. Online at, for example, [www.unicef.org/crc/crc.htm](http://www.unicef.org/crc/crc.htm)
5. Millennium goals agreed at Millennium Summit 2000. Online at, for example, [www.europeintheworld.info](http://www.europeintheworld.info)
6. *Liberating Learning: a practical guide for learners and teachers to postgraduate medical education and the European Working Time Directive*, London: COPMED (2002)