

EUROPEAN BOARD OF PAEDIATRICS

THE EUROPEAN TRAINING PROGRAMME IN PAEDIATRIC HAEMATOLOGY AND ONCOLOGY

This training document outlines one of the subspecialist training programmes in Tertiary Care Paediatrics, defined by the European Union of Medical Specialists (UEMS). This programme was drafted by the Education and Training Committee of the Société Internationale d'Oncologie Pédiatrique Europe (SIOPE) and the European Society of Paediatric Haematology and Immunology (ESPHI). It was approved by the European Board of Paediatrics (EBP) in December 2000 and by the Confederation of European Societies of Paediatrics (CESP) which is the UEMS's Section of Paediatrics, in May 2001. UEMS gave its approval on October 19, 2001

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1. **INTRODUCTION**

This document sets out the minimum requirements for training in Tertiary Care Paediatric Haematology and Oncology. It defines the proposed European Training Programme for the education of specialists in Paediatric Haematology and Oncology who will practice their skills and expertise within the framework of a specialised tertiary care unit.

Paediatric Haematology and Oncology are greatly overlapping specialties and in many countries such as North America and Australasia, as well as in many countries in Europe, they are regarded as one specialty. Paediatric Haematology includes the care of children with leukaemia and non-malignant conditions such as coagulation disorders and haemoglobinopathies, and also children having bone marrow transplant. In some European countries Paediatric Haematologists also run haematology laboratories, providing a diagnostic and consultative service for which they require additional training. This extra training is controlled by the relevant national body. Paediatric Oncology incorporates the care of children with leukaemia, tumours of the central nervous system and with other solid tumours and may include the care of children having bone marrow transplants or other stem cell rescue procedures.

In most specialised tertiary centres specialists in Paediatric Haematology and Oncology work as a team, providing mutual cross-cover, individual specialists in the bigger centres often having specific interests and responsibilities, for example in coagulation disorders, bone marrow transplant, leukaemia or CNS tumours.

The suggested training programme has been designed in a modular fashion, the modules containing core knowledge and skills which are essential for all trainees in Paediatric Haematology and Oncology. Guidance is given for the minimum training required in each module. Trainees will be expected to spend additional time in certain modules, depending upon their final career intentions.

It is recognised that Paediatric Haematology and Oncology are academic specialties with the majority of treatments for leukaemia and other cancers being managed within national or international clinical trials. The management of many of the non-malignant disorders is often protocol-driven. Complex laboratory investigations are necessary both for diagnosis and clinical management as well as for better understanding of the diseases. Therefore, in addition to the minimum training described in this document, which should lead to the Certificate of Completion of Specialist Training (CCST), many trainees will choose to spend an extra period of several years undertaking laboratory or other research. While such research training and experience are not considered in this document, all trainees will be expected to become familiar with research methodologies.

2. PAEDIATRIC TRAINING IN EUROPE

The task of harmonising training programmes and training assessments through Europe lies within the remit of the European Board of Paediatrics (EBP) which has been specifically charged by CESP to undertake this task. To achieve this the EBP will recommend the standards for specialist training in paediatrics, including training quality, syllabus and minimal standards for training centres. To this end recognition has been given to the diverse training needs of different types of Paediatrician and carefully constructed training programmes have been proposed.

The EBP has designated the following training system:

A) Common Trunk – a three year training in basic Paediatrics which serves as the common basis and prerequisite for all other training programmes. All trainees complete this before proceeding to

B) Primary Care Paediatrics – a 2-3 year programme to produce a General Paediatrician.

or

C) Secondary Care Paediatrics – a 2-3 year programme producing a Paediatrician with or without a special interest practising in a hospital setting.

or

D) Tertiary Care Paediatrics – a 3 year programme to generate an individual with a commitment of greater than 0.6 Whole Time Equivalents employed in a hospital setting and academically active.

or

E) Social and Community Paediatrics – probably part of (B) but to be defined more adequately in due course.

The training programme described in this document relates to the 3 year programme in Tertiary Care Paediatrics, that is in Paediatric Haematology and Oncology. Trainees will have completed their 3 years Common Trunk training in basic Paediatrics before starting their training in Paediatric Haematology and Oncology. Exceptionally trainees may enter the specialty from adult Medicine and Haematology; these trainees will need to undertake training in basic Paediatrics as well as training in Paediatric Haematology and Oncology.

3, **AIMS OF TRAINING**

On the basis of this training, European specialists in Paediatric Haematology and Oncology will acquire an understanding of children with blood disorders or cancer and will be clinically competent in their diagnosis and management. The trainee will also have an understanding of the scientific principles of haematological disorders and childhood cancers and of the specialty related laboratory test procedures (including safety aspects), interpretation of the results and management aspects of their specialty. The trainee is expected to be familiar with clinical skills (including risk benefit assessment), research methodologies, teaching and presentation methods, and ethical issues pertaining to research and clinical management. This should include in-patient and out-patient care and the routine application of specialised diagnostic and therapeutic methods. The specialist should understand the principles of clinical trials and obtaining consent, and be able to follow protocols and manage patients participating in them. Experience in teaching should be provided during the specialist training.

4 **TRAINING PROGRAMME**

4.1. **Structure of Programme**

The programme is structured to recognise that on completion of training specialists in Paediatric Haematology and Oncology in Europe do not all carry the same range of responsibilities. Many undertake the care of children with all types of non-malignant haematological disorder and also children with leukaemia, lymphoma, solid tumours and CNS tumours. They may also do bone marrow/stem cell transplantation and may have limited laboratory duties such as the reporting of blood and bone marrow films. In the larger centres some Paediatric Haematologists/Oncologists may specialise in, for example, leukaemia, neuro-oncology or transplantation while usually also carrying out other responsibilities in the speciality. Some Haematologists have little or no responsibility for patients with malignancy, but specialise in non-malignant haematology and haemostasis.

In some countries Paediatric Haematologists, as well as having clinical duties, also carry full responsibility for running haematology laboratories. These specialists require additional training to allow them to do this.

Paediatric haematology and oncology encompass a wide range of complex disorders, the diagnosis and management of which are often difficult. Thus, specialisation within the sub-specialty is likely to continue, but all European subspecialists in Paediatric Haematology and Oncology need to have received the broad basic training outlined in this document. The programme therefore allows for further specialisation within the subspecialty. Thereby it is hoped that the programme will ensure high

standards of training across Europe and will facilitate the movement of doctors between countries, while also providing for the service needs of each country.

Appendix 1 shows the nine training modules. It is important that these should be flexibly interpreted. The period shown against each module is to indicate the minimum proportion of the 3-year programme that every trainee must spend in each. In most centres it is likely that several modules will run concurrently. If a centre is not able to provide training in a particular area, such as bone marrow transplantation, then the trainee must move to another centre for the relevant period.

4.2 Syllabus

This is shown in Appendix 2. Modules 1 and 2 are delivered over the whole of the training period alongside other training. Module 1 is suitable for delivery by didactic teaching, preferably in courses held in large centres on a national or international basis. The other modules may be undertaken in any order.

The flexible module will be used to increase the experience of trainees according to their final career intentions. For example, a trainee may spend the flexible period increasing his/her experience in the care of children with coagulation disorders, haemoglobinopathies, CNS tumours, other solid tumours or in laboratory work. Experience in research may also be gained during the flexible module, but trainees wishing to undertake a substantial research project will generally need to do so outside this 3-year tertiary care training programme.

4.3 Duration of Training

The minimum period of specialist training in Paediatric Haematology and Oncology is 3 years of which at least 2 years must be clinical. Additional training may be needed for certain career posts. Thus, Paediatric Haematologists who, as well as having a clinical role, also have responsibility for running haematology laboratories, may need up to 2 years extra training.

5. **MONITORING OF TRAINING**

Each trainee's progress is monitored by the training director (tutor) in the primary training centre, by the national training body and by the trainee him/herself. The trainee should maintain a personal log book (portfolio) where relevant training experiences are recorded. The trainee's progress and portfolio are appraised

with the trainee by the tutor at least every 6 months. Details of the methods for monitoring trainees and assessing their progress will be published elsewhere.

Successful completion of training is certified by the tutor and ratified by the national training body.

6. ACCREDITATION OF TRAINING CENTRES

For each EU Member State a list of centres, units, training directors (tutors) and other teachers should be compiled and updated on an annual basis. A centre must have received accreditation for training and the training tutor (director) must have been practising Paediatric Haematology and Oncology for at least 5 years after the completion of his/her training. When a training module cannot be provided by the centre, it must be taught elsewhere. Neighbouring centres may collaborate in order to provide a complete training programme.

Accreditation will be given initially by the national training body and ultimately by SIOPE and ESPHI. The inspection and approval process will follow the EU Guidelines currently in preparation.

7. NATIONAL TRAINING PROGRAMMES

7.1 EU Countries with Existing Programmes

National training programmes in Paediatric Haematology and Oncology that already exist or are in an advanced stage of development should be considered as compatible when they:-

- have a content that is comparable with but not shorter than the European programme.

Each national syllabus should be scrutinised by the joint Education and Training Committee of SIOPE and ESPHI for compatibility. If compatible the trainees successfully completing training within that programme would be eligible for a European title within Paediatric Haematology and Oncology.

7.2 EU Countries without Existing Programmes

National professional bodies should be encouraged to adopt a national training programme in Paediatric Haematology and Oncology and to structure it in close compatibility with the European model. This should be scrutinised by the SIOPE/ESPHI committee. Until implementation of such a national training programme, individuals should have the opportunity to train according to the European programme and to

document their progress in a similar fashion. Review of progress would be made by the EBP in conjunction with SIOPE and ESPHI.

7.3 Non-EU European Countries

National professional bodies may wish to adopt a national training programme in Paediatric Haematology and Oncology and to structure it in close compatibility with the European model. This can be scrutinised by the SIOPE/ESPHI committee. Until implementation of such a national training programme, individuals should have the opportunity to train according to the European programme.

8. ASSESSMENT OF TRAINEES

Most EU countries do not at present have an exit examination in Paediatric Haematology and Oncology. It is considered premature to come to any final decision as to whether it will be desirable or feasible to establish an examination that would be acceptable to all the member states, though this may turn out to be the most objective way of establishing a uniform standard across Europe. In the short term it may be desirable for exit examinations to be introduced on a national basis, but in any case the Education and Training Committee of SIOPE/ESPHI will be making recommendations on assessment procedures.

APPENDIX 1

MODULAR TRAINING PROGRAMME IN PAEDIATRIC HAEMATOLOGY/ONCOLOGY

Module	Minimum Duration in Proportion to the 3 year Training Period
Scientific basis	Delivered throughout the 3 years
Generic practical training	Delivered throughout the 3 years
Laboratory haematology	3 months
Clinical non-malignant paediatric haematology (including haemostasis/thrombosis)	3 months
Leukaemia	3 months
Bone marrow/stem cell	3 months
CNS tumours	3 months
Other solid tumours	3 months
Flexible for longer training in the above modules, other training in the specialty or research	18 months
TOTAL	3 years of which at least 2 years must be spent in clinical training

Footnote for Appendix 1

The period shown for each module indicates the minimum proportion of the 3 year training programme that every trainee must spend in each. The flexible period of 18 months will be spent preparing the trainee for his/her anticipated future career. For example, trainees expecting to work mainly caring for children with malignant disease would spend most of this time caring for children with leukaemia, CNS and solid tumours, whereas those planning to work mainly in non-malignant haematology would spend the majority of the time increasing their experience in clinical and laboratory haematology ± leukaemia and bone marrow/stem cell transplant.

APPENDIX 2

SYLLABUS FOR TRAINING IN PAEDIATRIC HAEMATOLOGY/ONCOLOGY

Module 1 - Scientific Basis of Paediatric Haematology and Oncology

(suitable to be delivered by didactic course-based teaching on national/international basis)

Epidemiology of cancer and leukaemia

Biology of cancer and leukaemia

Genetics of cancer (cyto- and molecular) and gene therapy

Immunology of cancer

Imaging

Principles of surgery

Principles of chemotherapy, pharmacology, pharmacokinetics, new drug evaluation

Principles of radiotherapy, radiobiology

Emergencies

Supportive care: use of blood products, antibiotics, nutritional support, growth factors etc

Psycho-social aspects

Epidemiology of non-malignant haematological diseases

Haemopoiesis

Coagulation, thrombosis, anticoagulation

Blood transfusion, tissue typing, transplantation immunology

Organisation of care

Statistics, incidence, survival

Clinical trial methodology

Research methodology and audit

Ethical Issues, consent, litigation, data protection

Module 2 - Generic Training in Practical Skills Required in Paediatric Haematology and Oncology

Optimal use of diagnostic services

Ensuring good clinical practice

Supportive care, including central lines

Care of adolescents

Long-term follow-up

Late effects

Palliative care, pain evaluation and treatment

Academic skills: research, audit, teaching, data reporting, trial documentation

Communication/counselling parents and patients

Psycho-social aspects
Organisation and managerial skills
Leadership of multidisciplinary team
Attendance at appropriate national and international meetings.

Module 3 - Laboratory Haematology

Blood transfusion
Bone marrow, blood, CSF cytology and morphology (including to be able to interpret but not necessarily to report the results – training throughout the programme plus evaluation of skills required)
Flow cytometry
Cytogenetics
Immunophenotyping
Histo/cytochemistry
Coagulation
Thrombophilia and anticoagulation
Haemoglobin electrophoresis

Module 4 – Clinical non-malignant Paediatric Haematology

Anaemias including nutritional
Haemoglobin disorders (haemoglobinopathies, thalassaemia etc)
Haemolytic anaemias
Haemostatic disorders, platelet defects, thrombocytopenia, thrombophilia
Neutropenia
Bone marrow failure (aplastic anaemia)
Blood transfusion practice and safety
Neonatal haematology and immunology
Immunodeficiency disorders (congenital and acquired)
Haematological manifestations of systemic diseases including infections, e.g. malaria
Molecular diagnosis
Antenatal diagnosis and genetic counselling
Participation in clinico-pathological meetings

Module 5 – Clinical Malignant Haematology, (Leukaemia, Lymphoma Myelodysplasia, MDS)

Diagnosis, including cytology, morphology, cytogenetics and immunophenotyping (including being able to report the results)
In- and out-patient care
Emergencies
Risk stratification and choice of treatment
Ensuring appropriate samples and data are collected
Delivering treatment following clinical protocols

Response evaluation
Diagnosis and treatment of relapse
Late effects
Participation in clinico-pathological meetings

Module 6 - Bone Marrow Transplant/Stem Cell Transfusion (Clinical)

Indications for transplant/stem cell transfusion
Tissue typing
Donor selection
Donor counselling
Stem cell manipulation
Supportive care
Conditioning/immune suppression/transplant immunology
Graft versus host disease
Acute complications and late effects.

Module 7 - CNS Tumours (Clinical)

In conjunction with neuro-surgeon and radiotherapist, diagnosis, in- and out-patient care
Emergencies
Management of hydrocephalus
Investigation, imaging
Observation of operations for CNS tumours
Risk stratification and choice of treatment
Ensuring appropriate samples and data are collected
Delivering treatment following clinical protocols
Response evaluation
Rehabilitation
Management of neurological handicap, cognitive defects, endocrine dysfunction and other late effects
Diagnosis and treatment of relapse
Participation in Tumour Board Meetings including histopathology

Module 8 - Solid Tumours Outside the CNS (Clinical) – including neuroblastoma, nephroblastoma, soft tissue and bone sarcomas, germ cell tumours, retinoblastoma, liver tumours, endocrine and epithelial tumours

In conjunction with paediatric surgical oncologists and paediatric radiotherapists, diagnosis, in- and out-patient care
Emergencies
Observations of operations for tumours
Staging, risk stratification and choice of treatment
Ensuring appropriate samples and data are collected

Delivering treatment following clinical protocols
Response evaluation
Rehabilitation
Management of handicaps, endocrine dysfunction, prostheses and other late effects
Diagnosis and treatment of relapse
Participation in Tumour Board Meetings including histopathology

Module 9 – Flexible

This may include further experience in aspects of any of the other 8 modules (for example, in laboratory haematology, tumour molecular biology or the care of children with coagulation disorders, haemoglobinopathies, leukaemia, CNS or other solid tumours) or time in research. This experience may be gained in the trainee's country or abroad. A three month period in immunology might be chosen by some trainees, to include neonatal immunology, immunodeficiency disorders, transplantation immunology and immunomodulation. Research must be undertaken under expert supervision in which the trainee learns to plan, conduct, evaluate, publish and present research projects but not more than 6 months may be spent in full time research. Experience abroad will only be acceptable when undertaken in an institution considered suitable by the national body responsible for overseeing training.