

# Interventional Neuroradiology Training Charter

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## **Introduction**

Few years after the foundation of the WFITN, the Executive Committee decided to establish some general rules concerning the training in Interventional Neuroradiology (INR). These first rules have been published in 1998 in the journal *Interventional Neuroradiology*.

The very rapid development of our specialty needed to regulate its activity and to organize its daily practice. It is the reason why, in 2006, after two working seminars, the Rules of Practice in INR have been published.

During the last years, not only has INR grown in a lot of countries, but Neurointerventionists have also originated from different specialties. To maintain and to improve the general level of our specialty, it appeared therefore necessary to write an "INR Training Charter" establishing more precise rules which could be used as references all over the world. To reach this goal, during his Presidency of the WFITN, Pierre Lasjaunias decided to organize a first European seminar in Venice in March 2008 in order to think about what could be achieved in that field; during this seminar a first draft has been discussed and built up. It has been then decided to submit this initial project to all the main concerned scientific societies in order to reach a final consensus. This has been organized by Pierre Lasjaunias during other meetings and

working groups in the USA, Asia, or South America.

After his sudden and unexpected death, it became a real emergency to finish this work. We have decided to use the document written by Serge Bracard, as Chairman of the Interventional Committee of the European Society of Neuroradiology (ESNR), as a basis of discussion. Consequently a group of experienced Neurointerventionists, coming from all the continents, worked during a seminar held in Val d'Isère, immediately before the beginning of the last ABC WIN meeting in January 2009. The final version of the Charter was unanimously adopted by the group who has decided to publish it on behalf of WFITN, after a vote by the WFITN members. The vast majority of voting members have approved this text.

Our medical and scientific world is very various, coming from different horizons. Consequently such a Charter cannot be perfect for everybody. Our goal is to propose a fundamental reference which could be adapted to the regional specificities by those who wish to organize INR at best in their own country. I would like to thank all the participants of these different working seminars who are listed above.

**Luc PICARD**  
*Honorary President of WFITN*

# WFITN

## Recommendations for Education and Training in Therapeutic NeuroIntervention

### (Interventional Neuroradiology / Endovascular Neurosurgery)

#### **Foreword**

This document sets out standards and guidelines for residency training in Therapeutic NeuroIntervention and for approval of training programs in all countries. It is recognised that there are a number of structural and operational differences in the health care systems, appointment procedures and training systems in these different countries. This document provides the basis for the development of a harmonised, comprehensive, structured and balanced training program in Therapeutic NeuroIntervention.

The future of Therapeutic NeuroIntervention will depend on the quality of training offered to our trainees. Apprentice style training, which has been at the heart of traditional training, is increasingly being threatened by regulation and legislation. Time available for both trainers and trainees is coming under increasing pressure from many competing demands and these threaten further fragmentation of the available training opportunities.

#### **Goal of training program**

The primary goal of a training program is to provide the trainee with a broad knowledge base, the procedural skills and experience as well as the professional judgement needed for independent Therapeutic NeuroIntervention practice. A further goal is to teach the trainee self-criticism to assess their clinical results and an ability for self-directed learning which will equip them for professional growth and expert practice in the future.

#### **Definition and scope of Therapeutic NeuroIntervention**

Therapeutic NeuroIntervention (TNI) is a medical speciality using interventional procedures for patients with diseases of the brain, sensory organs, head & neck, spinal cord, vertebral

column and adjacent structures and the peripheral nervous system in adults and children.

The objectives of TNI are to provide expert interventional treatment of all diseases in the anatomical areas mentioned above and in relation to other specialities in neuroscience.

#### **Article 1: General rules on monitoring and accreditation**

##### ***1.1 Manpower planning***

Manpower planning should be developed, based on the demands and provisions of a safe neurointerventional practice across all countries. Planners will have to take into consideration demographic changes in any given population such as growth and ageing, changing diagnostic and treatment modalities and actual workload, the possible effects of legislation on working hours and, in academic centres, the involvement in research and education of medical professionals.

##### ***1.2 Monitoring authority***

National professional bodies (responsible for the recognition of medical specialists in individual countries) can monitor and recognise neurointerventional training programs using WFITN standards based on this training charter.

##### ***1.3 Accreditation of training program***

Authorization to train the candidates within a program of TNI can only be granted or renewed if the applying program documents a minimum annual activity (200 neurointerventional procedures with a minimum of 80% endovascular). Projected activity is permitted during the development phase of a service. An agreed intermediate level of activity will be defined by the accrediting authority for each applying institution.

The program must be associated with a neuroscience institution or network with all the appropriate related specialities represented.

The institution's patient population must have a diversity of illness (brain, head & neck, spine) from which a broad experience in TNI can be obtained.

Authorization to train in TNI is valid for a limited time only but may be renewed.

## **Article 2: General aspects of training in Therapeutic NeuroIntervention**

### **2.1 Selection for and access to the speciality**

#### **2.1.1**

Applicants should have a valid licence to practice medicine within their respective country; this licence has to be recognised by the country where he/she will train.

Applicants with an accredited training in Neuroradiology can complete the programme in two years if they enter the programme with proof of at least 1 year's training in clinical neurological assessment.

Applicants with an accredited training in Neurology or Neurosurgery can complete the programme in two years if they enter after at least one year of elective training in an accredited Neuroradiology training program.

Training programs or responsible bodies should select or appoint trainees suitable for the speciality in accordance with an established selection procedure.

#### **2.1.2**

After appointment of a trainee, a training agreement should be entered into by the Director of the Program and the trainee and duly signed by both. The agreement should define – in terms of education and training – the relationships, duties and obligations on each side.

### **2.2 Duration of Education and Training**

#### **2.2.1 Fully trained Therapeutic Neurointerventionist**

The education and training needed to become a fully trained Therapeutic Neurointerventionist is a minimum of two years full time study in an TNI training program, accredited by the relevant body.

After validation of the background acquired in neuro imaging or clinical neuroscience training, this additional training in Therapeutic NeuroIntervention should be for a minimum of two years.

This experience must include training in treatment-planning, patient care, the fundamentals of invasive monitoring, neurointensive care, the

pathophysiology and natural history of the diseases to be treated.

### **2.3 Curriculum of general and specific training periods**

#### **2.3.1 Training Curriculum**

The documented program Training Curriculum must be designed to provide a diversified and balanced mix of theoretical and practical neurointerventional education and describe the contents and aims in each year of training. This must be available to faculty and trainees. Emphasis should be placed on adequate time allocated for study, independent of clinical duties. It may be necessary for some programs to formally organize specific training periods in associated therapeutical units, if adequate experience cannot be organised internally.

#### **2.3.2 Rotation Periods**

There should be established Rotation Periods covering the main areas of Therapeutic NeuroIntervention. These rotations should be organized in such a way as to give trainees increasing responsibility as they progress through their training with regard to diagnostic skill and procedural experience. Rotations may include basic neuroscience, neurology, neurosurgery, spinal Therapeutic NeuroIntervention, vascular Therapeutic NeuroIntervention, paediatric Intervention, head & neck intervention or research, depending on the requirements, local availability and the involved department's emphasis.

#### **2.3.3 Trainee Portfolio**

Trainees should keep a Trainee Portfolio, containing details of previous training posts, examinations passed, lists of publications and presentations at meetings, courses attended, cumulative procedural totals and copies of assessment forms of the different training periods.

## **Article 3: Specific aspects of training in Therapeutic NeuroIntervention**

### **3.1 Educational and Training program**

#### **3.1.1 Objectives**

The overall objective is to teach the resident in training the core curriculum and to prepare to become a competent and independent practitioner neuroInterventionist.

A specialist in Therapeutic NeuroIntervention shall have the skill to independently perform, conduct, consult, interpret and communicate with referring physicians and patients re-

garding common neurointerventional procedures.

A specialist in Therapeutic NeuroIntervention shall have acquired knowledge in basic and clinical neurosciences, including neuroanatomy, neurobiology, pathophysiology and natural history of neurological disorders.

A specialist in Therapeutic NeuroIntervention advises other clinicians and carries the main responsibility for diagnostic and therapeutic methods are used within the domain of NeuroIntervention.

A specialist in Therapeutic NeuroIntervention shall understand the diagnostic and master the therapeutic methods used within the domain of NeuroIntervention and shall be aware of their development, strengths, weaknesses and risks.

Research should be encouraged and time and facilities made available during training

### 3.1.2 Knowledge-based Objectives

The level of education and training should be structured along the established levels of knowledge and skill:

A) A body of knowledge well mastered by the specialist. Diagnostic or therapeutic procedure that is understood, performed, interpreted, and communicated independently without assistance.

B) A body of knowledge well known to the specialist. Diagnostic or therapeutic procedure that can be understood, performed, interpreted, and communicated with assistance of a senior colleague.

C) A body of knowledge familiar to the specialist. Diagnostic or therapeutic procedure that is familiar to the specialist but not to be performed interpreted or communicated independently by the specialist.

#### 3.1.2.1 Embryology, morphological and functional anatomy

#### 3.1.2.2 Pathology & Pathophysiology

#### 3.1.2.3 Imaging Technology

#### 3.1.2.4 Image Interpretation

### 3.1.3 Clinical, objectives

The objective is:

To have a good knowledge of patient care and to be able to evaluate the clinical status of the patient prior to, during and after an interventional procedure.

To have a basic knowledge and understanding

of clinical management in neuro-intensive care.

To have in depth knowledge in pathophysiological conditions, indications and contraindications, complications and adverse events in Therapeutic NeuroIntervention.

To master and be able to explain to the patient the risks and benefits of the strategy proposed and alternative therapies.

To obtain informed consent where applicable.

### 3.1.4 Attitude and Ethics in Decision making

The objective is:

To be able to make independent and well founded decisions in matters of a medical-ethical nature within NeuroIntervention.

- To prioritize and optimize the use of resources.
- To understand the implications and priorities in management of incidentally discovered or associated lesions.
- To understand medical risk management.
- To understand medico-legal implications pertaining to Therapeutic NeuroIntervention.

To acquire communications skills necessary for:

- To discuss the indications and contraindications for diagnostic and interventional procedures.
- To appropriately report of diagnostic and interventional procedures.
- To consult and to communicate with other clinicians.
- To communicate with residents in training.
- To communicate with patients and relatives.
- To communicate with hospital staff and administration.

### 3.2 Clinical Components

The clinical and educational experience must include the following clinical components:

- Regular clinical rounds and conferences in related disciplines.
- Exposure to a sufficient volume of patients and procedures.

Each trainee must participate in a minimum of 160 procedures (at least 80% must be endovascular) over 2 years of which in at least 30 he/she should be the principal operator.

### 3.3 Didactic components

- Trainees are expected to attend and participate in local conferences including morbidity-mortality meetings and reviews of case management.



- They should be strongly encouraged to attend conferences, national or international meetings and postgraduate accredited courses in neurointervention while in training.

### **3.4 Research**

The educational environment should encourage trainees to undertake investigative study in relevant clinical or basic sciences subject areas.

- Trainees may participate in research projects conducted by the faculty or other trainees or may undertake a project as principal investigators.
- They should learn the fundamentals of the experimental design, performance and interpretation of results.
- They should learn how to develop and complete a project.
- They should be encouraged to submit their work for presentation at national or international meetings and to publish in scientific journals.
- To understand ethical aspects and what constitute conflicts of interest
- To should acquire a basic knowledge of medical statistics and epidemiology.

### **3.5 Training log-book and periodic progress assessment of trainees**

#### **3.5.1 Log-book**

Each trainee must keep a personal Log-book for documentation of procedural experience. The trainee will have to demonstrate that he/she has participated in a wide spectrum of neurointerventional procedures which should include a balance of trainer assisted and personally performed procedures under supervision. Log-book entries must be monitored by regular inspection and signed off by the appropriate trainer. The log-book must be available at Board and other summative examinations.

#### **3.5.2 Evaluation of trainee**

The program director, in consultation with the co-directors and faculty, must evaluate the competence and progress of each trainee at least twice a year. The evaluation includes an assessment of their knowledge, technical skills, attitudes and interpersonal relationships as well as decision-making skills and clinical management skills. These evaluations should be documented and provided to and discussed with each trainee.

The program director certifies the competence of the trainees at the completion of training.

### **Article 4: Requirements for training institutions**

#### **4.1 Requirements on equipment and educational facilities**

The optimal NeuroIntervention training centre must be in accordance with the WFITN recommendations on practice. They are published in *Interventional Neuroradiology*, 2006, 12:7-8.

There should be ready access to general medical/neurointerventional texts and periodicals. Computerized literature search facilities should be available.

### **Article 5: Requirements for training program director and trainers**

#### **5.1 Criteria for Program Director, Co-directors and Faculty**

The director of a training program must be certified according to local regulations. He/she is responsible for enforcing the Curriculum, selecting and supervising trainees and faculty members. The program director is expected to insure that the program is of the required academic standard. The program director should seek accreditation of the program by an external authority.

A program can be a formalised network of accredited institutions coordinated by the program director. Any co-director in a network must be appropriately trained and accredited in Therapeutic NeuroIntervention.

The faculty must include at least one additional full-time member with expertise and accreditation in the field of Therapeutic NeuroIntervention. The faculty must provide supervision of trainees. The proportion of trainers to trainees must not exceed a ratio of 1:2.

Trainees must be given an opportunity to provide a documented evaluation of the program and the faculty, at least once, annually.

### **Article 6: Certification of Training**

The program director is responsible for certification of the training. The National/ Regional Authority is the responsible body for the recognition/certification of specialization in each country. The WFITN strongly encourages a final Board examination.