



WHITE BOOK ON  
HAND SURGERY IN EUROPE  
EUROPEAN BOARD OF HAND SURGERY

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# WHITE BOOK ON HAND SURGERY IN EUROPE

produced by the European Board of Hand Surgery – EBHS

## 1.1 What is hand surgery?

Hand surgery is the field of medicine that deals with problems of the hand and wrist, whether of congenital, traumatic, degenerative, inflammatory or tumoral origin. The aim is to restore the function of the hand, which should be regarded as the key organ of prehension and sensibility. In this context, hand surgeons are also involved with complex problems of the whole upper extremity, including lesions of the peripheral nerves and the brachial plexus. Hand surgeons are also involved in the restoration of prehension in cases of tetraplegia and spasticity. Because of their special expertise, hand surgeons are also frequently involved in the repair of lower extremity nerve lesions.

## 1.2 The scope of hand surgery

The scope of hand surgery is broad and requires a wide range of diverse operative skills necessary to diagnose and treat, conservatively or surgically, hand and pertinent upper extremity and peripheral nerves affections.

The hand surgeon masters microsurgery as well as orthopaedic and plastic surgery techniques, as applied to the complex and delicate anatomy of the hand and upper limb. Hand Surgery considers also the cosmetic aspects of the reconstruction of the hand. A close cooperation with other specialists is required, including orthopaedic and trauma surgeons, plastic surgeons, radiologists, paediatric surgeons, rheumatologists, anaesthetists, specialized physiotherapists, occupational therapists and other paramedics for rehabilitation, orthotics and prosthetics.

The treatment of a lesion of the hand/upper extremity in the earliest phase by a surgeon trained in hand surgery offers the patient the best chances of early and best recovery, and also reduces the costs related to the disability and time-off work for society. This is particularly true for the hand traumas, which are particularly frequent.

This book is made by cooperation of the specialist sections of UEMS, which deal with the education and qualification in hand surgery in EU countries, and FESSH in order to set the minimal requirements for a surgeon, who treats the complex problems of the hand. The UEMS Council has endorsed it in Prague, October 9, 2010.

## 2.1 Training and Qualification in hand surgery

Qualification in hand surgery is based on the clinical and surgical training received after basic accreditation in plastic or orthopaedic surgery in the majority of European countries. In some countries qualification is also possible through general, paediatric or trauma surgery; a separate specialty of hand surgery exists only in a few countries of Europe.

Training includes theoretical and clinical activities. The trainee should be exposed to the following conditions:

- n Anatomy of hand and upperlimb.
- n Physiology of muscle, tendon, nerve and joints, blood perfusion and bone metabolism.
- n Conservative treatments of hand disorders including post injury pain syndromes
- n Operative surgery, including micro-surgical techniques
- n Rehabilitation and functional splinting

In addition, a certified training course in microsurgery on laboratory animals should be included in the curriculum.

## 2.2 Certification: European Diploma Examination

According to the bylaws of EU, qualification in Hand Surgery is certified nationally by the local authorities. The “European Diploma in Hand Surgery” is not a prerequisite to practice Hand Surgery: it is an added qualification and attests the European standard of the surgeon’s skill and knowledge. It is released by the European Board of Hand Surgery; provider is the Federation of the European Societies for Surgery of the Hand.

Strict conditions are required to obtain the qualification certified by the Diploma. The candidate is required to report academic records and training posts held and provide proof of a significant number of operations as operator or first assistant. Because of the differences in training which exist in different parts of Europe, different sets of criteria will have to be utilized according to the prevailing pattern of training in the candidate’s own country.

- a. In countries where training in hand surgery follows accreditation in Orthopaedic or Plastic Surgery, one year’s training with 100% exposure to hand surgery in an accredited centre is sufficient for the Diploma Examination.
- b. In countries where training in hand surgery follows accreditation in a major surgical specialty other than Orthopaedic or Plastic Surgery, two years’ training in an accredited centre with 100% exposure is required, and at least one year before this time must have been spent in either the specialty of Orthopaedic or Plastic Surgery.
- c. Candidates from countries in which hand surgery is already a separate specialty in its own right, may take the European Diploma Examination without further training provided that:
  - I. Their general background training (minimum duration 2 years) has incorporated exposure to orthopaedic and/or plastic surgery for at least one year.
  - II. Their specialty in Hand Surgery has been for a minimum of three years in an accredited centre with exposure to both orthopaedic and plastic surgery techniques, including microsurgery.
  - III. They have achieved accreditation in hand surgery in their own countries.

A countersigned logbook indicating performed and assisted operations, academic records and training posts held is also required. The logbook contains 14 subsets, including tendon, joint surgery, replantations and congenital conditions and has a guide to the recommended number of required operations. The candidate should prove a significant number of operations as operator or first assistant. If possible, the training must be done in an accredited hand surgery training center or, at least, under the supervision of an experienced hand surgeon. At this moment the accreditation of hand surgery training centres is based on the proposals made by national societies. It is also expected that the candidates pursue a scientific activity. The candidates should also have a recommendation from his/her national society for surgery of the hand. If the candidate fulfils the above requirements he may take the European Examination.

The examination is open, not only to hand surgeons from European member countries, but also to anyone who fulfils the above requirements and desires to participate and receive certification in this specific competency, in conformity with European standards.

The European Board Examination in Hand Surgery (EBHS) is intended both as a quality mark, and to help in the harmonisation of standards in EU and UEMS member countries. The European Board examination is not an alternative to a national examination, where one exists. Passing the EBHS Examination does not give the right to work in a member country of the EU. Such rights are granted by the National Authority in each country.

The Diploma Examination is annually organized by of the European Board of Hand Surgery and usually takes place at the site of the Congress of the Federation of European Societies for Surgery of the Hand, two days prior to the event, with the participation of 10-15 volunteer examiners invited from the countries of the examinees, with the idea of providing at least one examiner for each candidate speaking the same native language. The examiners are proposed by the national societies. The format of the examination is a multiple choice questions elimination test, followed by two 40 minute oral examinations conducted by two examiners. The chairman of the Examination Committee and two supervisors survey the flow of the examination to provide feedback for following examinations. The main topics covered in the orals are trauma, general reconstructive surgery and other topics, like systemic diseases, arthritis, Dupuytren, tumours and congenital malformations. The official language of the exam is English.

### 3.1 Hand surgery in Europe

European hand surgeons are represented by national societies consolidated in the Federation of European Societies for Surgery of the Hand (FESSH). At a political level they are represented through the European Board of Hand Surgery (EBHS).

The Federation was established in 1990 as an association of European national societies for surgery of the hand, to represent these societies and their members at a supranational level, to rationalize and unify education and training in hand surgery while promoting uniformity among the different countries of Europe, to set a qualification standard for the practice of hand surgery within the Council of Europe, to improve the indications for hand surgery for the benefit of the patients, to define the highest standards for treatment of hand pathologies, and to implement and sustain study and research.

At present FESSH represents 24 national hand societies (there is no national society in Europe which is not a member of the Federation) formed by over 4,200 surgeons, whose main interest is hand surgery. The Federation is officially represented by its Secretary General. The Council comprises ten members: the Secretary General, the Treasurer, the Chairmen of the Committees for Examination, Training, Research, Hand Trauma, Journal of Hand Surgery, European Accreditation. Professional Relations, Technology and an Historian.

The FESSH Examination Committee organizes each year the European Board of Hand Surgery Diploma Examination. Two delegates from each UEMS Section actively involved in the activities of the European Board act as contributors to the organization of the European Board Examination. The applicants are selected by reviewing the documents submitted, the preparation of the MCQs for the written examination are provided and the oral sessions are organized; these are held by a group of examiners, mainly invited from the countries of the examinees. The first Diploma Examination was held in Paris in 1996.

The Training Committee aims to stimulate, assist and foster training in Hand Surgery in Europe amongst young surgeons, as well as established ones. The European Federation offers through its website a database of centres in Europe that provide training in all or in particular aspects of hand surgery. There, young surgeons can find details of the centre for training, fellowships or research. The centres offering these opportunities can upload onto the database details of the type of experience offered, funding and contact information. This committee, through a web-based application form, also administers the Training and Travelling Awards. Every year awards, currently funded at up to 4000 Euros each, are given to surgeons from a member society to visit other Hand Centres in Europe with the purpose of furthering their knowledge of Hand Surgery.

The Federation of European Societies for Surgery of the Hand promotes scientifically sound basic and clinical research studies in hand surgery. As an example, the Research Committee has promoted activities focused on reconstructive hand surgery in tetraplegia, by organising an internet-based survey directed towards patients living with tetraplegia in Europe, several dedicated courses in tendon transfer surgery, and by organising a 3-month fellowship in reconstructive hand surgery in tetraplegia.

Complex traumatic lesions of the hand represent a substantial chapter in hand surgery. Optimal management of these traumas requires specific individual skills of the surgeons (microsurgery, replantation surgery) and a specific organisation of the centres (permanent availability). For this reason the Hand Trauma Committee is currently identifying and mapping these centres throughout Europe.

The Journal of Hand Surgery, European Volume is the official journal of the Federation, and includes not only contributions by European authors, but also any noteworthy paper written by hand surgeons, from any country, which chooses to publish in the Journal.

Finally, the Federation of European Societies for Surgery of the Hand works on the history of hand surgery in Europe, especially reviewing research and advances made by European hand surgeons and collecting

meaningful pertinent documents. The history of the Federation of European Societies for Surgery of the Hand may be found in an article published by S. Hovius in the Journal of Hand Surgery in 2002, as well as in the attached document and on the FESSH website (<http://www.fessh.com>).

## 3.2 Congress and Courses in Hand surgery in Europe

The Federation of European Societies of Surgery of the Hand organises a congress each year. At each congress there is an Instructional Course in Hand Surgery. The lectures are published as a book, distributed at the time of the course. An independent Scientific Committee judges the anonymous abstracts of the free papers submitted for presentation.

If possible, the meetings are organised in conjunction with the European Federation of Societies for Hand Therapists. The attendance at the meetings so far has ranged from 400 to over 1,000 registrants. In addition to its annual congress, the Federation of European Societies for Surgery of the Hand organises Basic Hand Surgery Courses in Eastern European Countries (three in the last five years).

Education is also provided by national hand surgery societies from yearly national meetings, local and regional meetings, instructional courses ((Austria, Belgium, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Rumania, Spain, Sweden, Turkey, UK) and formal lectures, research presentation and informal discussion.

The FESSH congress is granted European CME credits by the European Accreditation Council for Continuing Medical Education (EACCME).

## 4.1 Multidisciplinary Joint Committee (MJC) on Hand Surgery

The Multidisciplinary Joint Committee on Hand Surgery is a committee of the Union Européenne des Medecins Specialistes (UEMS), whose main task is to promote the harmonization of Hand Surgical education and training in EU countries. It was established in 1999 by the initiation of UEMS Surgical Section, and all Sections interested in Hand Surgery are invited to join. The Federation of European Societies for Surgery of the Hand reported its interest for collaboration. The disciplines, in which hand surgery is closely linked, and which were interested in joining the Committee by their representatives were General Surgery, Orthopaedic and Trauma Surgery, Plastic Surgery, Paediatric surgery. The function of the committee was activated no earlier than 2008, when the first meeting with representatives of UEMS and FESSH took place on January 26, 2008 in Brussels, after which regular meetings have been organised.

## 4.2 European Board of Hand Surgery (EBHS)

The European Board of Hand Surgery (EBHS), formed by the MJC on Hand Surgery and the European Federation of the Societies of Hand Surgery (FESSH), was initiated in 2010 and endorsed by the UEMS Council in Prague, October 9, 2010.

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## 1. PREFACE

### 1.1 Particular qualification

Hand Surgery has developed into a particular qualification with practitioners derived from orthopaedic surgery, plastic surgery, general surgery and occasionally other disciplines such as trauma surgery, paediatric surgery and emergency medicine. The term Hand Surgery includes conditions of the hand and wrist and peripheral nerves, including the brachial plexus (primary and secondary surgery). The term, in some centre, also involves elbow conditions.

In Europe, different countries have different training programmes and thus different emphasis on the requirements for becoming a Hand Surgeon. In Finland, Hand Surgery is regarded as a separate speciality with training in Hand Surgery undertaken without prior Orthopaedic or Plastic surgical training. In some countries (e.g. Germany, Hungary, Sweden) Hand Surgery is a particular qualification with practitioners formally trained in Hand Surgery following training in Orthopaedics, Plastics and General Surgery. In some countries (Turkey, UK) Hand Surgery is a separate speciality in some centres and part of plastic surgery or orthopaedic surgery in others. In other countries, (Austria, Belgium, France, Italy, Netherlands, Norway, Poland, Portugal, Rumania, Russia, Slovakia, Spain) Hand Surgery is a particular qualification professed by an Orthopaedic, a Plastic or a General surgeon. Training and qualifications change regularly; the FESSH Training Committee updates the White Book each year with these changes through the FESSH Delegate network.

Within countries, there are some hospitals with separate hand/peripheral nerve surgery units and others, which manage hand conditions within the orthopaedic or plastic surgery department. Even within Hand Surgery, there are sub-specialities such as brachial plexus, congenital differences, micro-vascular surgery and complex wrist reconstruction.

## 2. INTRODUCTION

### 2.1 Learning resources

The trainee in Hand Surgery has many learning resources available.

#### 2.1.1 Clinical Experience

Trainees will learn from their present employment post by observation, supervised operating, discussion. This apprenticeship is a crucial part of surgical training.

#### 2.1.2 Fellowships

Further training is gained from a Hand Fellowship. This provides concentrated experience, not diluted by general orthopaedic or plastic surgical duties. Some Fellowships provide very specialised training within Hand Surgery depending on the practice and reputation of the Consultant to whom the Fellow is attached.

Fellowships are available in Europe; FESSH has developed a European Fellowship Directory accessible through the FESSH website. Overseas Fellowships are also available across the world, which offer excellent experience.

Observerships are also available, in which the trainee can visit a centre with a particular reputation or expertise, to learn by observation rather than practical involvement in patient care. Constraints on salary, time and medical registration make short observerships a valuable opportunity.

Funding is available for some fellowships. FESSH offers several Travel Awards of up to 4000 Euros each year. .  
National Societies also offer support (see individual Society websites).

## 2.1.3 Reading

### 2.1.3.1 Journals

Journal of Hand Surgery, European Volume

Journal of Hand Surgery (American)

Chirurgie de la Main (France)

Handchirurgie, Mikrochirurgie, Plastische Chirurgie (Germany)

Magyar Traumatológia, Ortopédia, Kézsebészet, Plasztikasebészet (Hungary)

Revista Ibero-Americana de Cirugía de la Mano (Spain)

Rivista di Chirurgia della Mano (Italy)

Rumanian Journal of Hand and Reconstructive Microsurgery

Scandinavian Journal of Plastic and Hand Surgery

Orthopaedic Surgery Literature

Plastic Surgery Literature

Microsurgery Literature

Hand Clinics of North America

### 2.1.3.2 Internet sources

Pubmed

Medscape

Web of Science

### 2.1.3.3 Textbooks

Many are available to cover all aspects of Hand Surgery in various depths and formats.

## 2.1.4 Meetings

Meetings provide education from formal lectures, research presentation and informal discussion. There are very many suitable meetings

n National Hand Surgery Society Meetings

n FESSH Annual Meeting

n Local, regional and national Meetings

n Instructional Courses (organised or endorsed by most national Societies)

## 2.1.5 Tutorials

Training programmes should be encouraged to provide tutorials for individual or groups of trainees as a powerful tool for personal education.

## 2.2 Learning Outcomes

The Hand Surgery curriculum should lead to the following outcomes and core competencies:

- Knowledge and Understanding
- Practical Skills
- Intellectual skills
- Personal Qualities
- Other skills

## 2.3 Assessment

It is envisaged that an individual's expression of an interest in hand surgery should be supported by formal assessment.

### 2.3.1 Ongoing work-based assessment

A trainee should be regularly assessed by formal individual appraisal from his supervisor or trainer. The appraisal should have a structured form so that learning goals are set, reviewed mid term and then reviewed at the end of training. This can include structured practice Based Assessment where basic and advanced procedures are formally demonstrated to the Trainer then discussed and marked.

### 2.3.2 Formal Examination

2.3.2.1 European Diploma in Hand Surgery, endorsed by the European Board of Hand Surgery of UEMS and provided by FESSH (see 4.3 Certification in Hand Surgery)

2.3.2.2 National Diplomas in Hand Surgery

### 2.3.3 Other Tests

Examples for self assessment include

- n American Society for Surgery of the Hand Self Assessment Questionnaire [www.assh.org](http://www.assh.org)
- Journal of Hand Surgery (European) "So you think you have read this Journal?"

## 3. CORE COMPETENCIES OF THE EUROPEAN HAND SURGEON

### 3.1 Knowledge and Understanding

#### 3.1.1 Basic Science

- n Anatomy of the hand and upper limb
- n Embryology of the Hand and Upper Limb
- n Physiology of muscle, nerve and bone metabolism
  - Principles of infection, microbiology
  - Healing of wound, tendon, bone, nerve
  - Anatomy and physiology of blood supply to limb including skin
  - Imaging (MRI, Ultrasound, Plain radiographs, CT)
  - Pathology of rheumatic, degenerative and neoplastic disorders
  - Biomechanics of the hand and wrist

#### 3.1.2 Principles of Hand Surgery

- n Examination of nerves, tendons, vascular system, joints
- n Injured hand - wound care, management of skeletal, vascular, tendon and nerve injuries
- n Treatment of fractures and malunions of the hand
- n Ligament ruptures and joint instabilities of the hand
- n Arthroscopy of the hand and wrist
- n Amputations in the hand and upper limb
- n Burns of the hand
- n Reconstructive surgery of mutilated hand
- n Management of upper limb nerve injuries, including brachial plexus injuries
- n Management of tetraplegia, stroke, brain injury and cerebral palsy
- n Tendon transfers
- n Congenital abnormalities of hand and upper limb

- n Arthrosis of the hand and wrist
- n The arthritic hand in rheumatoid arthritis and other inflammatory arthritides, e.g. LES and scleroderma
- Dupuytren's contracture
- n Overuse syndromes
- n Nerve compression syndromes
- n Infections of the hand
- n Vascular disorders (inc ischaemia, HAVS)
- n Tumours of the hand
- n Psychiatric manifestations, secondary gain etc.
- n Principles of hand Therapy
- n Complex regional pain syndrome
- n Skin grafts
- n Local, distant and free flaps
- n Extravasation injuries
- n Enhancing wounds including specialised dressings and vacuum therapy
- n Spasticity

## 3.2 Practical Skills

### 3.2.1 Requirements

Hand Surgery has a very large repertoire of procedures for which the surgeon needs detailed knowledge of the complex anatomy of the hand and wrist, as well as competency in microsurgery, reconstructive plastic surgery and orthopaedics. Some procedures requiring specific practice and skill should be undertaken by only a few (e.g. pollicisation of the thumb, brachial plexus exploration) whereas others (e.g. trigger finger, carpal tunnel) can be undertaken by many practitioners with surgical qualification and basic training; still other procedures, although complex and rarely performed, can be performed by a trained Hand Surgeon by applying familiar techniques to familiar anatomy.

Hand Surgery contains such a broad spectrum of procedures, and comprises complex subspecialities. Therefore experience and competence in each and every topic and procedure cannot be expected. Competence can be classified as:

- Has observed
- Can do with assistance
- Can do but may need assistance
- Competent to do without assistance including complications

### 3.2.2 List of procedures

Herein follows a description with the operations to be performed independently by the trainee or, for operations of a higher degree of difficulty, as a participant. Microvascular experience is essential.

Surgical procedures can be listed according to the anatomical structures involved:

- A) Skin and subcutaneous tissue
  1. Free skin graft
  2. Pedicled local flaps
  3. Regional and/or island flaps
  4. Free flap with microvascular anastomosis
  5. Treatment of retracting scars of the hand and wrist
  6. Application of vacuum therapy
  7. Dupuytren's including PNF, collagenase, limited and radical surgery
  8. Extravasation
  9. Infection

- B) Tendons
  1. Flexor tendon repair
  2. Flexor tendon graft
  3. Flexor pulley reconstruction
  4. Flexor tendon tenolysis
  5. Trigger finger release
  6. Extensor tendon repair
  7. Extensor tendon graft
  8. Extensor tendon tenolysis
  9. Tendon sheath synovialectomy
  10. Tendon reconstruction in rheumatoid arthritis
  11. Tendon transfers (injury, paralysis, spastic conditions)
  12. Free muscular flap with microvascular anastomosis
  13. Flexor sheath infection
- C) Bone and Joints
  1. Closed reduction and fixation of fractures and dislocations
  2. Open reduction and fixation of fractures and dislocations
  3. Corrective osteotomies
  4. Treatment of non-union
  5. Bone resections
  6. Bone grafts and substitutes
  7. Free bone transfers with microvascular anastomosis
  8. Finger joint ligament or palmar plate repair/reconstruction
  9. Wrist ligament repair/reconstruction
  10. Arthrolysis
  11. Digital/wrist arthroplasty (incl. allo-arthroplasty)
  12. Wrist partial and total fusion, PRC
  13. Hand Arthrodesis
  14. Denervation
  15. Synovectomy
  16. Arthroscopy
  17. DRUJ reconstruction
  18. Fractures in children
- E) Nerves
  1. Microsurgical repair of nerve lesions
  2. Nerve grafting and neurotisation and conduits
  3. Neurolysis
  4. Neuroma
- F) Vascular
  1. Tumours and malformations
  2. Ischaemia (inc Kienbock' s, Raynauld' s)
  3. Replantation
  4. Revascularisation
- G) Other
  1. Congenital disorders
  2. Children' s disorders
  5. Oncology- biopsy (transcutaneous, open); excision, reconstruction
  4. Brachial plexus repair/reconstruction
  5. Neuromas
  6. Nerve tumours
  7. Treatment of nerve compression syndromes
- G) Blood vessels
  1. Microsurgical arterial anastomosis
  2. Microsurgical venous anastomosis
  3. Vein graft
  4. Adventitiectomy

List of procedures should also include operations for the treatment of complex trauma of the hand, special diseases, malformations:

- A) Amputations
  1. Hand level
  2. Carpal or forearm\upper limb level
- B) Replantation in limb amputations
  1. Digital or metacarpal level
  2. Carpal or forearm\upper limb level

- 3. Lower limb
- C) Treatment of thermal burn, chemical injury, electrical trauma
- D) Mangled hand treatment
- E) Fasciotomy
  - 1. Acute
  - 2. Chronic
- F) Infections of the Hand
  - 1. Treatment of wound infection incl. tendon sheath
  - 2. Treatment of paronychia or pulp infection
  - 3. Treatment of osteomyelitis or septic arthritis
  - 4. Necrotising fasciitis
- G) Tumours
  - 1. Resection of skin and soft tissue tumour
  - 2. Resection of bone tumour
  - 3. Resection of tumour-like lesion
- H) Contracture.
  - 1. Dupuytren's
  - 2. Volkmann's
  - 3. Stiffness
  - 4. Burns
- I) Treatment of congenital malformations of the hand

### 3.3 Intellectual Skills

#### 3.3.1 Education

A Hand Surgeon must be able to critically assess a research article or podium presentation, to understand the strengths and weaknesses of the material and to apply it to his own practice.

##### 3.3.1.1 Continuing Medical Education

Education is a life-long process; the Hand Surgeon should take personal responsibility to use all resources to improve and update his knowledge and practice.

#### 3.3.2 Research

The Hand Surgeon should undertake some research during his/her training. At the very least, a thorough understanding of the basics of research is essential:

- n formulating a hypothesis
- n designing an appropriate methodology to test that hypothesis
- n using appropriate statistics to report the research
- n deducing appropriate conclusions from the data
- n understanding the limitations of a study
- n epidemiological principles

#### 3.3.3 Audit

The Hand Surgeon should review the outcome of his own practice. As a minimum, a log book should be kept. Procedures with uncertain outcomes or surgeon-dependent outcomes such as joint replacement, scaphoid fracture fixation, tendon grafting, should be routinely monitored for quality. Validated scoring schemes are available for example the QuickDASH, Patient Evaluation Measure (PEM) and Michigan Hand Score.

#### 3.3.4 Teaching

Teaching is part of learning. Also, an individual has a responsibility to pass on acquired knowledge and skills so that others can benefit. The Hand Surgeon should also teach the patient so they are better informed of their condition and the treatment options.

### 3.4 Personal Qualities

### 3.4.1 Team working

Hand Surgeons work with theatre teams, therapists, nurses, junior doctors and many others who are involved in the care of patients. The Hand Surgeon will often be the leader of the team and should develop the necessary qualities of leadership.

### 3.4.2 Delegation

Many problems in Hand Surgery can be shared with others. The Hand Surgeon should develop skills of delegation so that patient care can be safely delegated to the appropriate practitioner to help provide an efficient, safe and cost-effective service.

### 3.4.3 Time Management and Stress Management

Surgery is stressful. It requires long hours with many competing demands on time and skill. Some decisions are uncertain; some procedures are very complex with potentially serious complications and uncertain outcome. The Hand Surgeon must learn to manage time and cope with stress.

### 3.4.4 Referral

The Hand Surgeon must appreciate the responsibility of asking for advice or referring to another practitioner when a case is beyond his expertise or comfort.

## 3.5 Other Skills

### 3.5.1 Consent

Informed consent is important in developing the confidence of a patient by engaging them in the choice of treatment and avoiding medico-legal issues with unexpected outcomes.

### 3.5.2 Documentation

Clear contemporaneous documentation is important for many reasons: to allow proper handover, for example post-operative instructions; to record the basis of clinical decisions; for medico-legal protection; to collect data for research and audit.

### 3.5.3 Service Management

A Hand Surgeon must be able to prioritise and also develop the skills to manage their service with the skills, resources and personnel available.

## 4. STRUCTURE OF TRAINING OF EUROPEAN HAND SURGEONS

Standards of postgraduate medical education have been developed (see reference list) upon which the training of Hand Surgeons in Europe should be based.

### 4.1 Routes into Hand Surgery

Trained Hand Surgeons derive from four routes:

- a) An individual who trains in a country where Hand Surgery is a speciality in its own right
- b) A trained and accredited Orthopaedic or Plastic Surgeon who develops Hand Surgery as a particular qualification
- c) A trained and accredited Surgeon (not Orthopaedics or Plastics) who develops Hand Surgery as a particular qualification interest

An accredited Orthopaedic or Plastic Surgeon who develops Hand Surgery as a particular qualification interest will cover a broad range of Hand Surgery and so less specific Hand Surgery training is required compared with an individual who has training, with or without accreditation, in another major surgical discipline. Hand Surgery certification therefore has to take account of these different routes.

### 4.2 Assessment

Assessment takes two forms, formative and summative.

#### 4.2.1 Formative assessment

This is an ongoing process in which the trainee has teaching, advice and review of his/her progress. It allows the trainee to grow in knowledge and confidence; gaps are identified and filled.

- n Regular appraisal and documentation of progress
- n Assessment in the workplace
  - Case based discussion
  - Observation of history- taking, examination, surgical procedures
- n Assessment outside the workplace
  - Case presentations, research presentations, teaching of colleagues

#### 4.2.2 Summative assessment

This is a formal test of whether the trainee has reached an appropriate standard. The requirements for the Diploma, which provides the summative assessment, are described below

### 4.3 Certification in Hand Surgery

#### 4.3.1 European Board of Hand Surgery Diploma

This recognises the varied routes into Hand Surgery across Europe. Because of the differences which exist in training in different parts of Europe, different sets of criteria will have to be utilised according to the prevailing pattern of training in the candidate's own country.

- a) In countries where training in hand surgery follows accreditation in Orthopaedic or Plastic Surgery, one year's training with 100% exposure to hand surgery in an accredited centre is sufficient for the Diploma Examination.
- b) In countries where training in hand surgery follows accreditation in a major surgical speciality other than Orthopaedic or Plastic Surgery, two years' training in an accredited centre with 100% exposure is required.
- c) Candidates from countries in which hand surgery is a separate speciality in its own right, may take the European Diploma Examination without further training provided that:
  - I. Their general background training (minimum duration 2 years) has incorporated exposure to orthopaedic and/or plastic surgery for at least one year.

- II . Their speciality in Hand Surgery has been for a minimum of three years in an accredited centre with exposure to both orthopaedic and plastic surgery techniques, including microsurgery.
- III . They have achieved accreditation in hand surgery in their own countries.

A countersigned logbook indicating performed and assisted operations, academic records and training posts held is also required. The logbook contains 14 subsets, including tendon, joint surgery, replantations and congenital conditions and has a guide to the recommended number of operations. The candidate should prove a significant number of operations as operator or first assistant. If possible, the training should be done in an accredited hand surgery training center. At this moment the accreditation of hand surgery training centres is based on the proposals made by national societies. It is also expected that the candidates pursue a scientific activity. The candidates should also have a recommendation from his/her National Society for Surgery of the Hand.

If the candidate fulfils the above requirements he may take the European Examination.

The examination is open, not only to hand surgeons from European member countries, but also to anyone who desires to participate and receive certification in this specific competency, in conformity with European standards. The examination involves

- n Log book submission
- n Elimination MCQ
- n Two 40 minute oral examinations by two examiners each

### 4.3.2 Recognition of Hand Surgery and National Diplomas

Status of each FESSH member Country

Please note: this document is regularly updated. If the criteria change, please immediately inform FESSH Office ([office@fessh.com](mailto:office@fessh.com)).

Austria

Update June 2016: Hand Surgery is an established specialty. Trauma, Orthopaedic, Plastic & Reconstructive, General or Paediatric Surgeons that have finished their specialty training then go through a maximum 3 year special education in Hand Surgery at defined centres to achieve the title of a Hand surgeon ("Spezialisiert in Handchirurgie"). During 2011/2012 many of the regular members of the Austrian Society for Hand Surgery achieved the title of Hand surgeon by interim regulation (defined by a list of surgical procedures according to the FESSH certified log book and reviewed by a committee). Starting from 2013 approved centres start regular hand surgical training.

Belgium

Update June 2016: Hand Surgery is not a separate specialty, but follows training in orthopaedic, plastic or general surgery. There is no official examination, but 4 universities organize a course with a dissertation and an examination (Université Libre de Bruxelles, Université Catholique de Louvain, Université de Liege, Université de Lille II). Training occurs over a period of 2 years with: 4 theoretical modules and a practical module (dissection) per year and 1 year training in a specialized hand centre. Further details can be obtained from: [olivier.barbier@uclouvain.be](mailto:olivier.barbier@uclouvain.be)

## Bulgaria

Update December 2016: Hand Surgery is not a separate specialty. However, it is certified by taking a training course followed by an examination. The present Hand surgeon should be an orthopaedic surgeon to acquire Hand Surgery certificate. The course is one month, but can be separated in 4 week-long courses performed at different time of the year. It includes lectures and practical parts. The exam is organised by the president of the National Society (presently Prof. Margarita Kateva) and takes place in the university hospitals in Sofia. The examiners are professors from the Society.

## Czech Republic

Update June 2016: The national curriculum is not established yet. It is supposed that to achieve the Hand Surgery specialty as a particular competence, it will be necessary to complete each of the six theoretical and practical courses of Hand Surgery, organized by the Czech Society for Hand Surgery, and to have practical experience in Hand Surgery, proved by sufficient period of practice with a sufficiently large number of Hand Surgery operations, performed or assisted, and with final examination. However, training requirements and national exam are not established yet. We also consider, that specialization in Hand Surgery should be automatically granted to anyone who successfully obtains European Hand Diploma.

## Denmark

Update June 2016: Hand Surgery is not a separate specialty and there is no examination. Hand Surgery is a part of Orthopaedic Surgery as a subspecialty. The Danish Society for Surgery on the Hand, DsfH, has made recommendations for education in Hand Surgery, where the Surgeon, after Certification in Orthopaedic Surgery, has to train for at least 2 years on a minimum of two different specialised Hand Surgery units.

## Estonia

Update January 2017: Estonian Society for Surgery of the Hand in cooperation with the Estonian Association of Traumatology and Orthopaedics have set criteria for and give out the certificate of Hand Surgery subspecialty that is not yet accepted by the Government health care authorities.

## Finland

Update June 2016: Hand Surgery is recognized as a separate specialty. After 3 years of general training, including Orthopaedics, Plastics and Paediatric Surgery, there is a 3 years training program organized by the Hand Centres of the University Hospitals completed by a final national examination in Hand Surgery.

## France

Update June 2016: Hand Surgery is not a separate specialty, but a particular competence is delivered by the "Conseil National de l'ordre des Médecins" (French National Medical Association) following the analysis of an application form by the French Hand Surgery Society. To qualify as a Hand surgeon, the orthopaedic or plastic surgeon must spend 1 year as resident and 2 years as Fellow in Hand Surgery training centres accredited by the "Collège de Chirurgie de la Main" (Hand Surgery College). The trainee must pass a University Diploma of Hand Surgery (2 years) and an University Diploma of Microsurgery (1 year). A University Diploma in Microsurgery can be obtained in almost all universities. There are 4 Universities where a Diploma of Surgery of the Hand can be achieved: DIU Chirurgie de la main Paris; DIU Chirurgie de la main région Sud (Bordeaux, Grenoble, Lyon, Marseille, Montpellier, Nice); DIU Chirurgie de la main région Est (Strasbourg, Nancy, Besançon); DIU Chirurgie de la main région Ouest (Brest, Anger, Caen, Nantes, Rennes, Poitiers, Rouen).

## Germany

Update Jan 2017: Hand Surgery is a particular competence (i.e. Zusatzbezeichnung). After 6 years of training for any surgical specialty (usually General Surgery, Plastic Surgery or Orthopaedic Surgery), surgeons need a further 3 years training of Hand Surgery with completion of a logbook, finished by an oral examination in Hand Surgery.

## Greece

Update June 2016: Hand Surgery is not a separate specialty and there is not any examination.

There are 6 Hand Trauma Centres qualified by FESSH: 4 in public university hospitals and 2 in private ones. The 4 public university hospitals train residents of Orthopaedics for 6 to 12 months during their 6 year residency. The Hellenic Society is trying to establish the prerequisites for Hand Specialty.

## Hungary

Update June 2016: Hand Surgery has been recognized as a separate specialty since 1994. After training in Orthopaedics & Trauma (80%) or General Surgery, there is a two-year tailor-made training programme, accepted by the Hungarian Hand Surgery Board, as well as a practical and theoretical oral examination. The oral examination takes 30-40 min that involves at least 4 topics in Hand Surgery as well as a radiological evaluation. The examinations are organized and held by the 4 Hungarian medical universities, which are also responsible for the organization and holding of the prescribed courses that are necessary for the examination. A small minority of Hungarian hand surgeons derive from General Surgery and Trauma. The Hungarian Hand Society hopes to achieve the recognition of the European Diploma as equivalent to a national examination.

## Ireland

Update June 2016: Hand Surgery is not a separate specialty. Hand Surgery is incorporated in training programmes for Plastic and Reconstructive Surgery and Orthopaedic Surgery. Intercollegiate specialty exams are undertaken in common with UK trainees. Additional hand fellowship training is encouraged. There is no mandatory Hand Surgery examination. Optional examinations are: 1) Diploma Examination of the European Board of Hand Surgery; 2) Diploma in Hand Surgery, British Society for Surgery of the Hand and University of Manchester.

## Israel

Update June 2016: Hand Surgery is an established specialty since 1990, which is approved by the Israeli Medical Association and the Ministry of Health. Orthopaedic or plastic surgeons, having finished their specialty training, are eligible for Hand Surgery training at defined centres. The training period is 2.5 years, including specified procedures (including microsurgery training), and with oral and written examinations at the end of the period. After completing the requirements, the surgeon is awarded the title Hand Surgery Specialist with a licence number.

## Italy

Update June 2016: Hand Surgery is a Supplement Diploma (Particular Competence) delivered either within the Specialty of Orthopaedics and Traumatology or the Specialty of Plastic and Reconstructive Surgery. The Supplement Diploma is an integrative part of the Specialty Diploma and is obtained by achieving 45 Hand Surgery CFU (Crediti Formativi Universitari : University Educational Credits) within the total of 300 CFU required for the Specialty Diploma in Orthopaedics or Plastic Surgery. Hand Surgery is not a separate specialty and there is no special examination. There are University Masters in Hand Surgery in which the participant must attend 1500 hours of teaching (i.e. 800 lectures and 700 clinical). Each Master gives 60 formative credits. The educational path to become a Hand Surgeon passes from Orthopaedics or Plastic Surgery specialties. Thus, Hand Surgery is a further diploma of Plastic and

Orthopaedics. Surgery schools: during the 5 years residency program only those schools recognized as Hand Trauma Centres are allowed to certificate and provide a "Hand Surgery profile".

#### Latvia

Update Jan 2017: Hand Surgery has been recognized by Latvian Medical Society as a subspecialty of Plastic Surgery or Orthopaedic Surgery since 2009. It has a separate examination (practical and written) after compulsory training (fellowship) for one year in a certified institution in the country or abroad. Most Hand Surgeons in Latvia are Plastic Surgeons with 6 years of postgraduate training. There are two centres where candidates can undergo training: 1) Centre of Plastic and Reconstructive Microsurgery of Latvia, Department of Hand Surgery (affiliated with Riga Stradņš University) and 2) the Hospital of Traumatology and Orthopaedics.

#### Netherlands

Update June 2016: Hand Surgery is not a separate specialty. The Netherlands does not offer a Hand Surgery examination. However, the European Board of Hand Surgery (EBHS) examination is recommended by the Netherlands Society for Surgery of the Hand. There are no binding criteria to classify or define a Hand surgeon. There are no set criteria by which an individual can be classified as a Hand surgeon. Currently, we are in the process of producing a definition and of setting criteria for surgeons to be recognised as Hand Surgeons in The Netherlands. Most Hand Surgeons have trained in Plastic Surgery, occasionally in Orthopaedics. Two centres offer a Hand Surgery fellowship for the duration of 12 months. One of the requirements to obtain the Hand Surgery fellowship certificate is to pass the EBHS Diploma Examination.

#### Norway

Update June 2016: There remains a Diploma in Hand Surgery awarded by the Norwegian Society for Surgery of the Hand. To obtain the Diploma, the candidate has to be a specialist in Orthopaedic, Plastic Surgery or General Surgery and in addition has to fulfil certain criteria (detailed in "the Log Book" made by the Hand Society).

#### Poland

Update June 2016: Hand Surgery is presently not a separate specialty in Poland and there is no specialist examination. Hand Surgery, together with microsurgery, is an obligatory part of training during General Surgery, Orthopaedic-Traumatology, and Plastic-Reconstructive Surgery. In the first two, there is an obligatory participation in a one week course devoted to Hand and Microsurgery. However, since 2009 we have made efforts to establish Hand Surgery as a separate sub-specialization or competency. The required documents have been submitted to the Ministry of Health, including a specialization program which was produced in cooperation with the British Society for Surgery of the Hand. The programme is partly based on this British program. It needs Parliamentary approval to be accepted, which will be a long and hard process.

#### Portugal

Update January 2017: Hand Surgery is not a separate specialty and there is no examination. There is no formal training programme or examination; thus, there are no set criteria by which an individual can be classified as a Hand surgeon.

#### Romania

Updated June 2016: There is no formal training and no examination. Hand surgeons derive from Plastic Surgery.

## Russia

Updated Jan 2017: Hand Surgery is not a separate specialty. It is included as an obligatory part in residency training program for both Orthopaedic and Plastic Surgery specialties, which last 2-3 years. Most of the Hand Surgeons are certified in Orthopaedics and General Surgery. Still, there are not any established criteria to be board certified in Hand Surgery. Fellowship programs in medical specialties in general, specifically in Hand Surgery, are not yet established. Currently, there are 23 Hand Surgery departments and centres in different regions of the country; two of them are private ones. Since 2014, four of them have been validated as the European Hand Trauma Centre by the FESSH Trauma Committee, i.e. located in: Moscow, Saint Petersburg, Yaroslavl and Tomsk.

## Spain

Update January 2017: There is no specialty recognition and no examination. Training is through Orthopaedics or Plastic Surgery. The National Society (SECMA) has prepared a document that has been submitted to the Ministry of Health for the creation of an Area of Special Qualification. Regulations for this procedure have been stated by a government decree, but not yet put into practice. The procedure consists of a request for the creation of an Area of Special Qualifications in Hand Surgery, made by the National Commissions of the Specialties of Orthopaedic Surgery & Traumatology, and Plastic, Reparative and Aesthetic Surgery, that must be elevated to the Ministry. By now, there is no information of the process from the Ministry, but there is support from the National Commissions of the Specialties.

## Sweden

Update April 2016: For many years (i.e. 1969-2007) Hand Surgery was a separate specialty in Sweden. During the period 2008-2014 Hand Surgery was a branch specialty of Orthopaedic Surgery requiring a full orthopaedic training and then additional two years of training in Hand Surgery. From May 1st, 2015, the National Board of Health and Welfare in Sweden re-established Hand Surgery as a basic specialty with its own structured training. To be a hand specialist, a minimum of 5 years of training and attendance of several courses are required. The training has to be at least 3 years of Hand Surgery and included in the 5 years must be training in related specialties, like Orthopaedic Surgery and Plastic Surgery. The Swedish Society for Surgery of the Hand strongly recommends the residents or fresh consultants to take the European Board of Hand Surgery Diploma Examination and recommends the diploma to entitle to a monthly salary raise of 150- 200 Euros.

## Switzerland

Update Jun 2016: Hand Surgery is recognized as a separate specialty. After 2 years of general training in General Surgery, there is a 4-year training programme in at least 2 different centres. The trainee must attend 6 national or international conferences or courses and must be the first author of a peer-reviewed article in Hand Surgery. The trainee must also give 2 oral presentations at a hand surgical congress and complete a log book. The European Board of Hand Surgery Examination, organized by FESSH, is the official examination for Hand Surgeons from 2015.

## Turkey

Update June 2016: Hand Surgery is an established specialty since 2012. After a 5 to 6 years of Plastic Surgery or Orthopaedic Surgery training surgeons need a further 2 years of Hand Surgery training, completed by an oral and written exam and a case surgery. After completing the requirements, the physician establishes the title of "Hand surgeon" with a diploma and license number by Ministry of Health.

Currently, Hand Surgery training is available at 9 different hospitals. These are Istanbul University Faculty of Medicine; Istanbul University Cerrahpasa Faculty of Medicine; Ankara University Faculty of Medicine; Uludag University Faculty of Medicine; Mersin University Faculty of Medicine; Pamukkale University Faculty of Medicine; Afyon University

Faculty of Medicine; Baltalimani Bone and Joint Diseases Teaching Hospital (Istanbul) and Sisli Etfal Teaching Hospital (Istanbul). Besides that, 12 other established Hand Surgery centres actively work clinically and soon to be registered as a residency training centre.

#### Ukraine

Update July 2016: Hand Surgery is not a separate specialty in Ukraine and there is no examination in the field. Hand surgeons derive from Orthopaedic and Plastic Surgery.

#### United Kingdom

Update July 2016: Hand Surgery is not a separate specialty, although holding of the EBHS Diploma and appropriate training has led to recognition by the licensing body (General Medical Council). There is a national Hand Diploma run by BSSH & the University of Manchester, which is a one-year programme of education in Hand Surgery, culminating in an examination leading to the Diploma in Hand Surgery being. Hand Surgeons gain their board examinations in Orthopaedic or Plastic Surgery and can then specialise in Hand Surgery. At least one year as a Fellow in a recognized centre in the UK or abroad, is expected, although there are no formal requirements for someone to promote themselves as a Hand surgeon. For further details: [www.bssh.ac.uk/education/diploma](http://www.bssh.ac.uk/education/diploma)

## 4.4 Trainers

Trainers will be trained Hand Surgeons who are able to provide the time, enthusiasm and resource to support the educational needs of the trainee. The Trainer should be recognised by his or her peers as an individual with the proper attitude, reputation and credentials to train.

## 4.5 Training Centres

There are very many excellent centres for training in Hand Surgery throughout Europe. Formal recognition is a future option (see 5.)

## 4.6 Trainees

### 4.6.1 Personal responsibility

The trainee has a personal responsibility to follow the curriculum. This means dedication of time to reading and observing and to arranging time with the trainer. Hand Surgery is diverse and an individual trainee will have deficiencies in experience. A trainee with an orthopaedic background may need to make special effort to fill gaps in knowledge of the plastic surgical aspects of hand surgery. Fellowship training and observerships, often meaning travel away from home, is usually required.

### 4.6.2 Logbook

The trainee must keep a log book of procedures that have been performed or participated in. The logbook should form a part of the ongoing formative assessment of the Trainee, as well as a marker for entry into summative assessment (i.e. Diploma). An adequate range of procedures should be accumulated to allow competent unassisted performance of many procedures and at least an understanding of more complex procedures.

## 5. FUTURE DEVELOPMENTS

Education is a developing process.

### 5.1 Fellowship and Training Post Directory

The FESSH website suggests a database of training, research and fellowship posts. Centres can upload information about the location, experience available and financial arrangements. The database can be searched by potential applicants. It is hoped that the database will be populated by more and more centres over the next few years.

### 5.2 Hand Trauma Centres

A European network of Hand Trauma centres has been developed by FESSH. These centres can provide intensive training in the management of hand trauma, as well as opportunities for audit and research. (see [www.fessh.com](http://www.fessh.com))

### 5.3 Joint Registry

Anatomical joint replacements are available for the wrist, metacarpophalangeal joints, proximal interphalangeal joints, thumb base, ulna head, radial head and elbow. New designs and biomaterials are evolving. Whereas hip and knee replacement give reliable long term results, there are few data on the outcome of most implants in the hand. Some devices fail early and have been withdrawn. A European Joint Registry based on a web-based proforma would produce a very large database from which the best-performing implants can be selected and by which poor designs can be detected and withdrawn as soon as possible.

### 5.4 Hand Surgery Training Centres

There are no recognised criteria at present for a recognised training centre. The EBHS plans to consider criteria, such as volume of work, exposure to special interests within hand surgery, emergency work, academic opportunities and others so to provide for these centers a label of excellence, not the exclusivity.

### 5.5 Continuing Professional Development

Hand Surgeons have a responsibility for life-long learning. FESSH supports all aspects of learning, with an annual Congress. National Societies also have their own contributions. FESSH will continuously review and develop opportunities for continuing professional education. European CME credits can be granted by the European Accreditation Council for Continuing Medical Education (EACCME).

### 5.6 Medical Student Bursaries

An interest in Hand Surgery can be inspired at the earliest stages of training. FESSH Council has agreed to funding of a number of bursaries which will be advertised and then awarded to Medical Students by competitive application across member countries.