

## **Curriculum for the Glaucoma EBO-EGS Subspecialty exam/diploma** **(Glaucoma-medical)**

**This curriculum will concentrate on:**

- 1) General requirements for the candidate
- 2) Requirements for the institution and the training faculty
- 3) Content of knowledge requested before applying to the exam
- 4) Teaching methods and program evaluations
- 5) Minimum numbers of procedures requested, log-book

### **1) General requirements for the candidate:**

- I) A minimum of 4 year general ophthalmology training documented by a certificate from the training institution.
- II) A minimum of two years training in the subspecialty of glaucoma in a university/academic setting that must be documented as follows:
  - a) a letter of recommendation from the Trainer(s) responsible for the subspecialty training or the head of department or other authority of the department that guarantees that the candidate is eligible for the exam and confirms that all requirements are fulfilled and document that candidate has had appropriate supervision during such subspecialty training .
  - b) a letter from the program director or administrator confirming the dates of such training
- III) The candidate has fulfilled all the requirements of the curriculum and the log-book.
- The application for the Glaucoma Subspecialty Exam is to be sent together with the documents listed above in I) and II) and proof of the registration fee payment not later than the deadline suggested at the EBO website ([www.ebo-online.org](http://www.ebo-online.org)) for each year.

## **2) Requirements for the institution / trainer**

While EBO-EGS does not limit the training to some particular centers but leaves the choice to each candidate, particular requirements have to be satisfied within the training-center and by the trainer/responsible of the training in order to fulfill the eligibility criteria of the candidate to the EBO-EGS subspecialty exam.

The candidate may choose the center of training of his/her choice specialized in glaucoma in Europe, or an internationally reputed Center/Unit in Europe, or outside Europe.

### **1.1 Institution**

The training must be accomplished in an institution that offers a training program with adequate capacity, appropriate infrastructure for high quality, diverse exposure to glaucoma cases and their management. The institution should have a sufficient number of glaucoma patients as well as an area fully equipped with access to current diagnostic equipment

Adequate operating facilities are mandatory, including an operating microscope to perform and teach surgeries for candidates who apply for the surgical module in addition to the medical module.

The institution must provide access to a medical library and facilities for electronic retrieval of medical literature and information from medical databases.

The institution has to have all facilities to allow to fulfil the requirements of the log-book.

The institution should also be able to suggest educational activities, specifically critical evaluation of literature, didactic lectures and grand rounds. Clinical research activities with presentations at meetings should be encouraged.

## **1.2 The trainer/responsible of the training (not necessarily head of department)**

The following requirements are to be documented:

- a) Appropriate educational qualifications, including certification in ophthalmology and acknowledged expertise in glaucoma
- b) A minimum of 5 years devoted mainly to the care of glaucoma patients
- c) National and international activities in teaching/research in the area of glaucoma

The trainer must be individually responsible for the educational experience during the entire training period, with active supervision of the candidate during his/her training and agrees to document in writing on the appropriate form prepared by EBO the accomplishment of all requirements (theoretical, clinical, surgical, research, reading, behavioral etc) as well as the log book for various procedures (laser and surgery).

Periodical evaluations/progress reports during the training are requested and need to be documented.

## **2) Content of requested knowledge**

### **2.1 Theoretical knowledge**

In addition to the prerequisites from residence training in Ophthalmology listed in Table 1, the candidate must have an extensive and detailed knowledge in the field of glaucoma in:

- Epidemiology
- Pathophysiology
- Diagnostics
- Treatment (medical, surgical , laser procedures)
- Complications
- Follow-up
- Critical evaluation of literature (Evidence-Based Medicine), including health economics

#### **2.1.1 Classification of the Glaucoma and list of pathologies**

- Ocular hypertension/Primary open angle suspect

- Primary open-angle glaucoma (POAG)
- Primary juvenile glaucoma (JG)
- Primary congenital glaucoma
- Secondary open-angle glaucoma (pigmentary, pseudoexfoliative, lens induced, corticoid induced, hemorrhage induced, uveitic, increased episcleral venous pressure )
- Primary angle closure (patient at risk, primary angle closure suspects, primary angle closure, angle closure glaucoma)
- Iris plateau configuration and syndrome/glaucoma
- Secondary angle closure/glaucoma (neovascular, lens/IOL induced, uveitic, traumatic)
- Malignant glaucoma
- Developmental glaucomas with associated anomalies
- Axenfeld-Rieger syndrome, Aniridia, Peter's Anomaly
  
- ICE syndromes (Chandler Syndrome, Essential / Progressive Iris Atrophy, Iris Nevus / CoganReese Syndrome)

## **2.2 Clinical knowledge**

### 2.2.1 Exhaustive knowledge of the following clinical diagnostic procedures and interpretation (beyond residence level of knowledge)

Knowledge of all relevant factors and their interpretation while taking the patient's history (family, personal, medical and surgical).

Slit lamp examination of the glaucomatous eye

IOP measurements (Goldmann applanation tonometry, Dynamic contour tonometry, non-contact tonometry, Ocular Response Analyser, Tono-pen, Rebound tonometry)

Pachymetry

Gonioscopy

Tests of visual function, Standard automated perimetry (SAP), Goldmann perimetry, FDT. Extensive knowledge of analyzing Humphrey and Octopus visual field results

Clinical examination of the optic nerve head and retinal nerve fiber layer (RNFL) structure

Evaluation of disc and RNFL photography

Familiarity with optical imaging techniques technics and knowledge of analyzing results of OCT.

Anterior segment OCT

UBM

Electrophysiology

## 2.2.2 Extensive and detailed knowledge in Medical treatment of glaucoma

All available classes and their:

- Modality and form of administration
- Mechanism of action
- Indications
- Limitations
- Quality of life
- Side effects
- Cost containment
- Neuroprotection
- New modalities of administration
- New molecules in the pipeline

## 2.2.3 Surgical treatment of glaucoma

Laser procedures

- Trabeculoplasty (Argon and SLT)
- Yag iridotomy
- Peripheral iridoplasty
- YAG capsulotomy
- Laser suture lysis

Cataract surgery

Complex cataract surgery

Trabeculectomy

Use of antimetabolites and anti-VGEF

Aqueous shunts (non-valved and valved)

Non-penetrating procedures

MIGS (not mandatory)

Combined procedures

Cyclodestructive procedures

Complications and failures of glaucoma surgery

Management of complications of glaucoma surgery

- Needling of failing/encysted filtering blebs

- Repair of leaking blebs

- Management/reformation of shallow anterior chamber

- Management of hypotony and choroid detachment

Goniotomy/trabeculotomy for primary congenital glaucoma

Examination under anesthesia for congenital glaucoma

New and devices/ surgical methods

### **2.3 Administrative module**

Being able to organize, run and continuously improve a successful and sustainable (cost-effective) care service for glaucoma patients.

Being able to evaluate cost effectiveness of glaucoma screening, diagnosis, therapy and care processes in European countries.

## **3) Teaching methods and program evaluations**

### **3.1 Literature:**

- Suggested literature/textbooks Table 2
- Articles from important Randomized Controlled Clinical Trials in the field of glaucoma Table 3
- Critical evaluation of ophthalmic literature (Evidence Based Ophthalmology)
- Systematic reviews last 5 years including such as Cochrane reviews, Health Technology Assessments
- Evidence based guidelines.

### **3.2 Clinical exposure**

Sufficient exposure to gain experience and be able to run independently a glaucoma clinic, either medical only or medical and surgical management if both modules are chosen for the exam.

### **3.3 Scientific activity**

The minimum level consists of fluent skills in critical evaluation of literature Participation in local, regional, national, or international professional and scientific meetings, eventually with active presentations at meetings and publications in peer-reviewed journals.

It is suggested that the candidate has participated in basic and/or clinical research during his/her training

### **3.4. Practical evaluation during the training:**

The EBO-EGS suggests that the candidate undergoes during his/her training a practical evaluation by the trainer, if possible at the beginning and at the end of the training period with evaluation of his/her knowledge, skills, overall performance including the development of professional attitudes consistent with being a physician.

This evaluation should be done in form of an open discussion/evaluation between the candidate and the trainer.

## Appendix

**Table 1. Prerequisites from the residence training acquired before starting the subspecialty training**

Embryology and anatomy of the eye
Embryology and anatomy of the anterior chamber angle
Embryology and anatomy of the retina optic disc and nerve fiber layer
Anatomy of the cornea
Physiology of aqueous humor
Anatomy of the anterior chamber angle
Anatomy of the zonule, the lens of the hyaloid and vitreous
Anatomy of the ciliary body

**Table 2. Textbooks suggested for the preparation of the subspecialty exam**

EGS Guidelines 4 <sup>th</sup> Edition 2014
Shields Textbook of Glaucoma 6 <sup>th</sup> Edition
Glaucoma, A color Manual of Diagnosis and Treatment Jack Kanski, J McAlliester
The Glaucoma Book Schacknow, Samplers
The Glaucomas Bob Ritch
Shaarawy, Sherwood, Hitchings, Crowston: Glaucoma, 2 <sup>nd</sup> ed, 2014. Saunders Ltd, ISBN : 9780702051937

For EBM e.g. Straus SE, Glasziou P, Richardson WS, Haynes RB, Evidence-Based Medicine. How to Practice and Teach it. Churchill Livingstone Elsevier, 2011
AAO Glaucoma book

**Table 3 Relevant randomized controlled clinical trials for glaucoma**

<b>Study</b>	<b>References</b>
CNTGS	
EMGT	
OHTS	
EGPS	
CIGITS	
AGIS	
UKGTS	