



Course Curriculum

Fellowship In Glaucoma

Prepared by:

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Guidelines & Affiliation:

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1) Name of the subject: Glaucoma**2) Description:****a. Goals**

The goal of the 12-months glaucoma fellowship is to provide

- Advanced training for diagnosis and medical and surgical management of glaucoma as well as management of difficult glaucoma problems.
- The program's emphasis is on providing adequate clinical experience that allows fellows to become thoroughly familiar with the state-of-the-art diagnosis and therapeutic equipments.
- Opportunities for research experience focusing on glaucoma.

The glaucoma fellowship thus offers the opportunity to learn all aspects of the diagnosis and management of primary, secondary and complicated glaucoma problems in patients of all ages. The Fellows also may get opportunities to treat related anterior segment disorders, including cataract, based on availability of surgical volume.

b. Statement of the Objectives of the course**i) Knowledge**

The clinical training fellowship focuses on diagnosis and management of primary and secondary glaucomas. The fellow gets to observe and participate in medical, laser and surgical management of glaucoma, with faculty members of Narayana Nethralaya.

ii) Skills and Attitudes

The institution is equipped with the latest state of art diagnostic equipment including imaging modalities such as the optical coherence tomography, GDX and HRT, automated perimetry examination with Humphrey, Octopus and frequency doubling instruments and ultrasound biomicroscope for anterior segment imaging. Applanation tonometry and 4-mirror gonioscopes, form part of routine glaucoma workup. The department is also equipped with 2 tonopen instruments and 2 hand held slit lamp instruments.

The fellow will be able to familiarize himself with all these instruments. Photographic services including slit lamp photography, gonioscopy and disc photography are available. The fellow also gets to observe assist and perform laser and incisional glaucoma surgery. The institution is equipped with various lasers for management of glaucoma including Yag laser, Argon laser, diode laser and frequency doubled ND - Yag Laser for selective laser trabeculoplasty.

The first 6 weeks of the fellowship constitute a probation period during which the fellows will learn basic examination techniques and relevant diagnostic procedures in ophthalmology through rotation with faculty members in various subspecialties (Cornea, glaucoma, Retina, Oculoplasty, Uveitis, Pediatric Ophthalmology & Strabismus) and also in paraclinical departments). In the next 7.5 months the fellow will work in the Glaucoma department. In the final 3 months of the program, subject to satisfactory performance, the fellow may see and treat cases independently as an adjunct faculty of the institute and work in the peripheral outreach centres of the institute.

This fellowship program thus involves comprehensive patient care instruction with state of the art diagnostic and surgical equipment care backed by extensive work experience. The course provides them with up-to-date skills to ensure that diagnosis, treatment and surgery are accurate and timely. A patient friendly and compassionate attitude is inculcated at every stage of the knowledge and skills transfer program. Emergency patient care is an essential component for the fellows training and fellows will have emergency postings by rotation once in every few days.

iii) **Communication abilities**

Periodic sessions will be organised to train the fellows in the following:

- Communication skills: oral and written
- Leadership skills: through participation in community work as the working head of the camps and screening programmes
- Use of technology for teaching and communication
 - Internet to access journals, emails and websites
 - Pubmed and Medline search for bio-medical literature
 - Training sessions on PowerPoint presentations, use of Microsoft excel for statistics and projections

c. Course contents (Syllabus)

iv) Essential knowledge

BROAD OUTLINE OF SYLLABUS: MAJOR AREAS

a) Congenital and childhood

- Epidemiology, inheritance, and pathophysiology
- Diagnosis and management

b) Open angle glaucoma

- Epidemiology
- Pathophysiology
- Clinical features: visual field changes and visual field examination techniques,
- Measurement and significance of intraocular pressure
- Optic disc changes and their assessment
- Medical, laser and surgical treatments

c) Angle closure glaucoma

- Pathophysiology
- Medical, laser and surgical treatments

d) Glaucoma syndromes

- Clinical features and management of:
- Pseudoexfoliation syndrome
- Pigment dispersion syndrome
- Secondary glaucomas

Other desirable outcomes :

- Evaluation and management of a patient with cataract and the management of the postoperative complications
- Evaluation and timely referral of patients with more advanced diseases in the following subspecialties: Cornea, Glaucoma, Retina, Oculoplasty, Uveitis, Paediatric Ophthalmology and Strabismus
- Basic practice management principles: setting up a private practice, basic financial issues, and other issues and support systems for practice

- Communication basics: communicating with other doctors, paramedical personnel, community workers etc
- Optional: based on candidate's interest, performance and availability of case load, fellows may get to do commonly performed surgical work in other subspecialties

v) Essential Investigation and Diagnostic Procedures (Medical Curriculum)

- **Broad Management Principles:**
 - The clinical evaluation of the retinal nerve fibre layer .
 - The appropriate selection and interpretation of visual fields.
 - The drawing up of an individual management plan leading to a target IOP.
 - Pharmacological lowering of IOP
- **Practical skills:**

To have undertaken (under supervision until proficient) the following:

 - Applanation tonometry.
 - Assessment of peripheral and central anterior chamber depth including pachometry.
 - Assessment of irido-corneal angle structures by gonioscopy.
 - Methods of optic disc cup measurement.
 - Visual field testing, including Goldmann/kinetic perimetry and automated/static perimetry.
- **Specialized procedures:** GDX, OCT

vi) Procedural and Operative Skills: (SURGICAL CURRICULUM)

Core competence

1. Trabeculectomy, bleb management and laser suture lysis.
2. Management of the complications of trabeculectomy, including overfiltration, flat anterior chamber etc.
3. Management of glaucoma in the presence of cataract.
4. Cycloablation (including cyclodiode laser) for refractory glaucoma.

5. Laser trabeculoplasty.
6. Management of acute angle closure glaucoma, including medical and laser treatment.

Desirable clinical experience

- Management of malignant glaucoma.
- Use of antimetabolites in trabeculectomy.
- Use of drainage tubes/stents in complex glaucoma surgery.
- Non-penetrating glaucoma surgery.

d. Teaching / Learning Activities

- Departmental activities (please see below section e)
- Practical clinical training of post graduates (DNB in ophthalmology): Fellows are expected to participate in the training of DNB candidates. This can involve activities such as discussion of cases in an informal way on a regular basis to formal presentations in weekly meetings.
- Training of paramedicals, and community health workers: Fellows may be requested by advanced notice to participate in training of paramedical personnel in the hospital or team members in community level. Hands on experience of conducting camps, communication and training of field workers is expected to provide excellent experience and learning for the fellows.
- Journal Access: Our institution has access (both hard copies and online) to peer-reviewed, reputed journals. The fellows are guided by their faculty to regularly update their knowledge by reviewing latest articles from these journals.
- Participation in state level and national level conferences, CMEs, seminars: fellows are expected to present at least one paper/ poster during their tenure in a CME meeting outside of the institution.
- Research Methodology Training: Periodically (every 3-6 months) training will be organized to cover the following topics:
 - Research paper writing : basics
 - Basics of epidemiology and biostatistics
 - Regulatory issues in human research: Indian regulations and others
 - Good clinical Practice (GCP) training

e) (1) Participation in Departmental Activities

- a. **Journal review meetings:** Will be held once in every 2 weeks. One of the presenters will (typically a fellow or a post-graduate) presents an interesting article from a recent journal. The validity of research methods, the findings, the applicability, and clinical implications of the findings will be critically reviewed and discussed. One of the faculty members moderates the entire proceedings and will summarize the discussion at the end of the session.
- b. **Seminars:** Subject seminars will be held once a week. Topics of importance are covered. Either the fellow or a faculty will present a detailed account of a particular topic for ex. : a diseases or drug or new therapy etc. Interaction is strongly encouraged in such presentations.
- c. **Clinico-pathological conferences:** Basic science faculty from Narayana Hrudayalaya will be invited to discuss challenging cases wherein a diagnosis was finally achieved through the laboratory help.
- d. **Interdepartmental meetings:** These will be of great importance in better understanding of diseases which have involvement of different disease processes or involve multiple structures in the eye. Also some the patients may have associated systemic conditions and having a meeting with other specialists such as physicians, neurologists, endocrinologists may be of great importance.
- e. **Community work- camps/ filed visits:** Fellows are expected to participate in community programs. We have regular weekly camps as well special camps organized from time to time.
- f. **Clinical case presentations:** Every week, interesting and important cases will be discussed. Learning by case study approach is a well established method of training and fellows will be strongly encouraged to discuss cases with the mentors on a regular basis.
- g. **Participation in conferences/ presentation of papers:** Narayana Nethralaya has a strong and growing research team. Fellow are strongly encouraged to work with faculty in producing good quality research and they are encouraged to present and publish such papers. One paper presentation or a journal article submission is required for course completion.

(2) **Rotation and Posting in other departments** (duration and Learning requirements to be specified)

- a) Fellows will be rotated through other specialties in ophthalmology to allow for understanding of co-management, referral practice and academic challenges.
- b) For 6 weeks the fellows work in rotation with faculty members in the various subspecialties. 1 week each in :
 - Cornea including eye banking
 - Glaucoma
 - Retina including medical and surgical retina
 - Orbit and oculoplasty,
 - Paediatric Ophthalmology and Strabismus
 - Uveitis

During this period the fellow would also visit, discuss and learn from interaction with the relevant para-clinical departments like microbiology and pathology.

Learning requirements during the subspecialty rotation

- Examination and management of simple diseases
- Assisting and Performing common procedures and surgeries
- Learning Evaluation and timely referral of patients with more advanced diseases

3. Orientation Programme

An orientation programme for a period of 7 days will be scheduled at the beginning of the fellowship program. The following components will be included in the orientation:

- General and Human resource related:
 - Hospital policies regarding patient care, employment, leave and all human resource related matters
 - Security, emergency, disaster management in the hospital
 - Employess benefits
- Patient care
 - Policies
 - Emergency management
 - Documentation
 - Surgery scheduling, OT procedures, preanesthetic evaluation
 - Policies for Referrals to other doctors and hospitals : internals, external

- Laboratory : Requests, communication, precaution for specimen handling, emergency handling of specimens
- Eye bank and Eye donation
- Library:
 - Rules regulations
 - Procedures for borrowing
 - Plan for materials not available inhouse
 - Online access , use of internet, use of pubmed and medline search
 - Access to password protected library e.x: RGUHS library (after the access becomes available to us)
- National Programmes for Prevention of blindness
 - NPCB
 - Other NGO and programmes

4. Training in teaching skills and research methodology

A half a day session will be organized every 3-6 months that will train all the post graduates and fellows in the following:

- Communication skills: oral and written
- Use of technology for teaching and communication
 - Internet to access journals, emails and websites
 - PowerPoint presentations, excel for statistics and projections
 - Pubmed and Medline search
- Research Methodology
 - Research paper writing : basics
 - Basics of epidemiology and biostatistics
 - Regulatory issues in human research: India regulations
 - Good clinical Practice (GCP) training

f. Monitoring of Teaching and Learning Activities

Monitoring of Learning

Periodic evaluation of log book (end of every month):

- Fellows are expected to document clinical and surgical work in a systematic manner in a logbook that is specifically designed for this purpose. Academic program participation should also be documented in the log book.
- Periodic Internal examinations: clinical assessment (end of every 3 months): Clinical assessment would be held at the end of every 3 months. This may include clinical case presentation, and clinical case quiz.
- Theory and Practical examination at the end of the course (per RGUHS regulations: section 10. Scheme of assessment: RGUHS notification, dated 22-09-2006, Ref: ACA/Fellowships/Rules-1/2006-07).

Monitoring of operative skills:

- Surgery performed under supervision: Fellows will perform surgeries under supervision till an appraisal is given by the faculty regarding the competence level to handle independent surgeries.
- Review of video recorded surgeries with the trainees (once a month): Faculty members will review the approach, alternatives and potential ways of handling complications if any while reviewing an actual surgical procedure. Such learning experience can be supplemented by viewing additional videos of surgeries performed by the faculty.

Monitoring of teaching and communications skills:

- Grading and appraisal of post graduate teaching seminars: Faculty members will critically appraise a fellow of their performance during a seminar or case presentation that they may do for the post graduates.
- Encouraging presentation in conferences at state and national levels: Fellows will be encouraged and trained to present papers at conferences outside of the institution.

Monitoring of research:

Fellows are expected to complete at least one project work during the course duration which will result in one submission to a conference and or a journal

Appraisal of faculty:

Anonymous trainee appraisal of the faculty: Fellows will be requested to give a 360⁰ evaluation of their faculty and appraise regarding them at the end of each posting. Such evaluation will be kept anonymous and confidential to avoid any conflicts or fear.

Faculty appraisal by fellowship monitoring committee: A monitoring committee from the institute will be set up to constantly monitor the progress of the programme, fellows well being and to facilitate an excellent learning and teaching environment.

g. Scheme of Examinations

Examination and assessment will be conducted as per directions from RGUHS (section 10. Scheme of assessment: RGUHS notification, dated 22-09-2006, Ref: ACA/Fellowships/Rules-1/2006-07).

h. Recommended Books and Journals:

- The Current American Academy of Ophthalmology Basic and Clinical Science Course (12 volumes)
- Abrams D. Duke Elder's *Practice of Refraction*. Churchill Livingstone. This text covers the basic principles of refraction.
- Duane's Clinical Ophthalmology By William Tasman, Edward A. Jaeger, Thomas David Duane 2005
- Principles and Practice of Ophthalmology by Daniel Myron Albert, Frederick A. Jakobiec - 2000. *Principles and Practice of Ophthalmology*. W B Saunders.
- Ophthalmology, 2nd Edition By Myron Yanoff, MD and Jay S. Duker, MD
- Kanski JJ. *Clinical Ophthalmology*. Butterworth/Heinemann. Fifth Edition
- The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease (Paperback)
- Shields Text Book of Glaucoma - Fifth Edition. R Rand Allingham
- Field of vision. Jason J S Barton
- Glaucoma- The Requisites. Jay H Krachmer
- Illustrated Automated Static Perimetry. G R Reddy
- Essential perimetry. 3rd edition. Michael Patella
- Atlas of complications in Ophthalmic Surgery. Theodore Krupin
- Shields text book of glaucoma -4th edition. M. Bruce Shields
- Atlas of visual fields. Donald L Bundenz

**i. Availability of the material related to the speciality-
Ophthalmology:**

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| 1. Text books | : 300 |
| 2. Journals subscribed per year | : 08 |
| 3. video Tapes | : 50 |
| 4. Audio Tapes | : 05 |
| 5. CD- ROMS | : 05 |
| 6. Internet Facility | : yes |