

REPRODUCTIVE MEDICINE

OBJECTIVES OF PROGRAMME:

The aim of this course is to provide professional experience in Embryology and Reproductive Technology with Post Graduate knowledge to understand and study the causes of infertility in humans.

The special focus of this specialty is on the study of female infertility, Andrology and Embryology as pertaining to Assisted Reproductive Technology (ART). This course is meant for Doctors who are MD / DNB (Obs & Gyn)

CRITERIA FOR SELECTION:

- The candidate should be a Post Graduate in Obstetrics & Gynaecology – either MD / DNB.
- Flair for in-depth study of Reproductive Biology and must have a research oriented approach in their activities. The candidate must be sincerely interested in Embryology and Biochemistry.
- Must possess the ability to absorb knowledge from focused journals and Internet to keep abreast with the latest developments in the field which is rapidly growing every day.
- Dedication, Devotion, commitment, patience are the human qualities one must possess to be successful in the field with an ability to translate knowledge to action..

DURATION OF THE COURSE & SITE OF TRAINING: 18 months, BACC , kumara krupa Branch & Kamini Rao Hospital Jayanagar

On completion of the course, the candidates will be capable of the following:

1. Methodical investigation of problems leading to infertility in individual couples.
2. Categorizing them according to clinical condition.
3. Conducting necessary investigations and diagnostic procedures
4. Manage Hysteroscopy and Laparoscopy for diagnostic and therapeutic purposes.
5. Trans vaginal ultrasound examination for study of uterine and ovarian activities, blood supply, endometrium and nature of follicular growth studies during induction of ovulation.
6. Bio Chemical assays of reproductive hormones in serum.
7. Acquire knowledge of therapeutics of ovulation induction.

8. Display detailed knowledge and understanding of human Gamete Biology and Molecular perspective.
9. Critical evaluation of new advances in Biotechnology
10. Acquire ability to establish an IVF Centre.
11. Conducting Quality Control procedures that are essential to the reliable operations of an IVF clinic.
12. To familiarize oneself with the technique or handling Male and Female Gametes use in IVF / ICSI etc.
13. Competence in In Vitro Culture techniques used for Gametes and Embryos.
14. To be capable of Cryopreservation of Gametes, Embryos and Tissues for later use in human infertility treatment.
15. Reasonably predict the viability of an Embryo prior to its transfer in IVF.
16. Achieve / demonstrate skills for Micromanipulation Procedures as in Intra Cytoplasmic Sperm Injection required for clinical ART.
17. Display some knowledge about the techniques used for Karyotyping (eg. Lymphocyte cultures, amniotic fluid, cell culture etc.,).
18. Understand the ethical implications of ART and Cloning.
19. Develop adequate skills in report writing, oral and visual presentations.
20. Basic use of computers, data analysis and record maintenance.

COURSE CONTENT

Clinical

SI No	PROCEDURE	CATEGORY
1.	History taking, clinical examination, teaching of protocols, test and study of basal temperature chart	PI
2.	Investigation procedures in infertility	PI
3.	Super Ovulation and Monitoring	PI
4.	Genetics in infertility	O
5.	Tubal causes of infertility	A
6.	Ovulatory disorders	PI
7.	Immunological infertility	PI
8.	Endometriosis	PI & PA

9.	Polycystic Ovarian Syndrome (PCOS)	PI
10.	Selection of patients for ART / IUI	PI
11.	Complications in ART	PA
12.	Early pregnancy loss	PI
13.	Counseling in ART	PI
14.	Prenatal diagnosis	PA

Embryology

Sl. NO	PROCEDURE	CATEGORY
1.	Basic Cell Biology	PI
2.	Reproductive Physiology and Endocrinology	PI
3.	Fertilization and early embryo development	PI
4.	Embryo culture	PI
5.	Sperm Analysis and processing	PI
6.	Micromanipulation	A
7.	Cryopreservation	A
8.	Implantation	PA
9.	Pre-implantation genetic diagnosis	O
10.	Ethics and regulations in ART	PI
11.	Cloning – principles and ethics	PI
12.	Stem Cells	O
13.	ART Laboratory setup and maintenance	PI
14.	Data recording / statistics	PI

Keys:

O – Washed up and observe

A- Assist a more Senior Surgeon

PA – Perform procedure under the direction of a Senior Specialist.

PI – Perform Independently

TEACHING AND LEARNING ACTIVITIES:

It is envisaged that the trainee has to participate in the following departmental activities:

- a. Journal review meetings
- b. Seminars
- c. Clinical Pathological Conferences
- d. Inter Departmental meetings
- e. Clinical rounds
- f. Project
- g. Participation in Conferences / Paper presentation / tutorials etc.,

ROTATION AND POSTING IN OTHER DEPARTMENTS:

12 lectures over 3 months . Each lecture 1 hr.

Basic Medical Sciences related subjects

Histology and Anatomy of male / female reproductive organs

Lectures in Embryology and development Pathology of Reproductive organs

Applied Subjects:

12 Lectures over 3 months & 20 Lectures over 6 months. Each lecture 1 hr respectively

Therapeutics related to fertility promoting drugs

Endoscopic surgery

Allied subjects

12 lectures 3 months. Each lecture 1 hr.

Bio chemistry of endocrine glands like thyroid, adrenal glands, ovarian testicular glands, pancreatic glands (insulin secretion)

Study of Diabetes / obesity and its relation to infertility etc

Lab Procedures:

20 lectures over 6 months. Each lecture 1 hr.

Preparation of media, weighing of chemicals, alteration and preparation of media preparation of dishes for IVF and ICSI (enriching of media) ; processing semen for IUI & IVF ; processing of epididymal and testicular aspiration Biopsies for the purpose of ICSI.

Maintenance of laboratory, the atmosphere, use of laminar flow bench, disinfecting incubators, priming of incubators with gases etc., auto claving of

materials and of Ethylene Oxide for Sterilization etc.,

Monitoring of Teaching and Learning activities:

Discussions in Out Patient Department, Didactic Sessions, lectures from Specialists and Experts recruited from out side the Institution

Daily participation in Laboratory work.

Maintenance of Log Books which will be periodically inspected.

TRAINING IN CLINICAL DEPARTMENT

Minimum Duration 8 Weeks respectively.

FEMALE INFERTILITY OPD

MALE INFERTILITY

Activities

Clinical examination

Examination of Male

Taking Vaginal smears

Taking History

Taking Pap smears

Clinical Examination

Post Coital Test (PCT)

Endocrine Assay

Body Basal Temperature Chart

The trainee will attend the Laboratory / Theatre at the time of Testicular Sperm Processing and Microepididymal Sperm Aspiration, Processing and during operations like Varicocoelectomy etc.

Hysterosalpingogram (HSG)

Intra Uterine Insemination (IUI)

Counselling of Infertile Couples.

TRAINING IN ULTRASONOGRAPHY

Minimum Duration 12 Weeks

Evaluate the size of the uterus.

Nature of myometrium (Cervico Uterine Length)

Endometrial Thickness

Serial Follicular Monitoring

Assessment of Corpus Luteum and Retention Cystectomy

Accessibility of the ovaries

Endometrioma

Presence of Fibroids etc.,

Doppler study of blood flow to uterus and ovaries

Ultrasound guided ovum up and guided cyst aspiration.

TRAINING IN INFERTILITY RELATED SURGERY

Minimum Duration 12 Weeks

- Operation theatre and ward work consisting of infertility related Operation
- Theatre wardwork consisting of infertility related Laparoscopy, Laparotomy , Hysteroscopy and management of complications created by ovulation induction.
- Endoscopy work related to preparation of patient for ART. Eg. Adhesiolysis to produce accessibility of the ovaries per vagina follicular aspiration, removal of hydrosalpinx, drainage of chocolate cysts, ovarian drilling and aspiration of simple functional cyst. Laparoscopic aspiration of follicles collecting oocytes and cannulation of the fimbrial end of the fallopian tube for the purpose of GIFT/ ZIFT will be taught.
- Hysteroscopic examination and study of the plane of uterine cavity and cervix and anticipation of difficulties for Embryo Transfer will be a part of ART training.

BIOCHEMISTRY LABORATORY

Minimum Duration 6 Weeks

Learn the principles of steroid assays

ANDROLOGY

Minimum Duration 8 Weeks

Evaluation of Sperm Quality

Processing of Semen

Cryopreservation of Sperms

TRAINING IN ART LABORATORY

Minimum Duration 20 Weeks- hands on training

Laboratory Maintenance

- Setting up of the laboratory
- Selection of equipment and consumables
- Design of equipment, positioning of equipment and environment standards
- Staff selection and training
- Cleaning methods

- Maintenance of Millie –Q-systems
- Sterilization of consumables
- Quality control and quality assurance
- Microscope selection, usage and maintenance

Aseptic Techniques

- Laminar flow and work bench maintenance
- Pipetting technique
- Media preparation and handling
- Dish preparation
- Handling of consumables

Oocyte handling

- Oocyte cumulus washing
- Denuding

Sperm Processing

- Sperm analysis – morphology, motility, viability etc.,
- Sperm processing methods, swim up, gradient method etc.,
- Sperm preparation for IUI / IVF / ICSI – obtaining required concentration of motile
- Cryopreservation of sperm

Embryo handling

- Embryo Culture
- Cryopreservation of embryos
- Zygote of embryo grading
- Selection of embryos for transfer and freezing

Insemination Methods

- IVF
- ICSI – Set up of equipment, needle aligning, dish preparation, sperm preparation and technique.

Cell Culture

- Cell line culture – serial passage
- Co-culture.

Trouble shooting in IVF laboratory

Schemes of Examination:

Examinations will be conducted as per the guidelines and format of Rajiv Gandhi University. However a plan has been given below which can be used if feasible.

Day	Paper	Subject
1 st	1 st	Anatomy, Embryology and Gametology
	2 nd	Endocrinology and Therapeutics
2 nd	3 rd	Clinical paper in infertility
	4 th	IVF and Assisted Reproductive Technology
3 rd Day	Practical	Clinical Examinations ½ day Viva Voce – ½ day

ASSESSMENT PLAN

During the Course

- Logbook will be maintained and signed by the Course Supervisor
- Regular evaluation on a 4 weekly basis will be done by viva-voce and review of the logbook by the Section Head.
- Training period will be divided into 2 semesters and an internal assessment test will be given after each semester and trainee assessed.
- The tests will be both written & oral a. MCQ's
- Essay Type and
- Viva Voce

For Certification

- Logbook
- MCQ's – written
- Essay Type – written
- Viva-Voce
- Lab Practical
- Lab – viva voce

Log Book Requirement

Assist Perform

- General Gynaec Procedures
- Myomectomy
- Cystectomy,
- Ectopic
- Diagnostic Laparoscopy
- Operative Laparoscopy
- Diagnostic Hysteroscopy
- Operative Hysteroscopy
- Tubal Surgery(Reversal / Cornual Block)
- Trans Vaginal Oocyte Retrieval
- Semen Preparation
- IUI
- Folliculometry
- PESA / TESA
- Counselling Sessions

FEES STRUCTURE

The candidate has to pay approximately Rs. 23,000/- (cost may vary depending on the RGUHS board decision) to the university at the time of admission.

Stipend of Rs.15000/- per month to the trainee is envisaged.

ACCOMMODATION FOR TRAINEES:

Availability of accommodation for the trainee: **No**

JUSTIFICATION HIGHLIGHTS WHY THE INSTITUTION SHOULD BE

ACCREDITED FOR THIS PROGRAMME.

Bangalore Assisted Conception Centre is recognized by the National Board of Examinations for Fellowship in Reproductive Medicine and is one of the four Centres in

India to be so recognized.. It would not be out of place to mention that our institution was also the very First Institution to produce a baby by the SIFT Technique in India, the first to produce a baby by the ICSI Technique in South India as well as the first to produce a baby by the Assisted Hatching Technique in South India. It has been pointed out to us that our institution is of the best of Institutions to have the kind of infrastructure that is necessary by way of man, machine and environment to carry out work on “Assisted Reproduction” in Human Beings.

Facilities available

- Sufficient space for patient examination / counselling / spermcollection / IUI room.
- Board Room for discussion, Auditorium for conferences, tutorials, seminars, and all types of audio equipment and computers are available for lectures, etc.
- Adequate space in the laboratory to accommodate trainees without over crowding
- Good library stacked with journals related to Fertility and Human Reproduction, General Medicine and Ultrasound.
- Full fledge laboratory having the following equipments:
 - Laminar flow work benches
 - Centrifuges
 - Compound Microscopes
 - Dissecting Microscope with warm stages
 - Micromanipulator and Microscope set with warmers
 - Freezing Machine with Liquid Nitrogen Tanks
 - Weighing balance for media preparation
 - Millie-Q-water-system
 - Work benches in plenty
 - Incubators
 - Refrigerators

Our laboratory has been engineered to FDA class 10 K Clean Room Standards and regularly maintained and validated for its conformance to these standards. The laboratory has adequate space for accommodating trainees without over crowding. We have a very good library which has all the relevant journals necessary for PG studies on the subject. A good collection of books, periodicals and scientific journals are available for keeping abreast with the rapid progress made in this area of human reproduction and genetics.

Students will be given plenty of reading materials like laboratory protocols of various techniques etc. Besides Web Site and Internet facilities are available.

Further more facilities at St. Johns Hospital and Indian Institute of Sciences are available. We have ever since been updating our facilities and never looked back. We believe that a time has now come when we can pass on to the medical profession, some knowledge of what we have acquired over the years, so that infertile patients can get the right type of treatment at the most reasonable cost, which may not be happening now due to lack of technically qualified professionals in this field. There is a very severe shortage of such technologists and this is being partly overcome by visiting foreign specialists. If we can train more Doctors in the field of Infertility, a reverse flow will be possible and this is really our goal.