AMRITA VISHWA VIDYAPEETHAM

PROGRAM

DM Reproductive Medicine

(With effect from 2017-2018 onwards)

Contents

AIMS AND OBJECTIVES

The DM in Reproductive Medicine is designed as a Subspecialty course aimed at training

candidates who having obtained a primary MCI-recognized postgraduate qualification in Obstetrics & Gynecology i.e. MS/MD or equivalent (DNB) and desire to pursue a career in the subspecialty of Reproductive Medicine. The DM in Reproductive Medicine has been designed as a comprehensive formal 3-year training program in all aspects of reproductive medicine. It also includes training in the allied surgical subspecialties of Urology, Radiology, Perinatology , Endocrinology, and Clinical psychology

The program is designed to provide the candidate with every opportunity to gain proficiency in the principles, of diagnosis and evidence based management. The program also stresses the importance of clinical and basic research relevant to the Subspecialty.

A candidate who successfully completes the course will be expected to have gained proficiency in the following:

- History taking and evaluation and have the knowledge in relevant investigation eg;USG, CT, MRI

- Ability to function as an independent consultant clinician in Reproductive Medicine
- Have a sound knowledge of the principles of peri-operative patient care

PROGRAM OUTCOMES

PO1 : MEDICAL KNOWLEDGE : Acquisition of theoritical knowledge regarding the basic sciences (anatomy, Physiology, Pathology, Pharmacology) pertaining to reproductive system

PO2 : EFFICIENT DIAGNOSTICIAN : Differentiate physiological & pathological states pertaining to reproductive system

PO3 : SKILL ACQUISITION : Acquiring skills to manage the physiological & pathological states.

PO4 : STANDARDISED CARE : Offering Standard, Ethical & unbiased patient care

PO5 : MASTERLY PERFORMANCE : Efficient in Managing Infertility & Assisted reproduction

PO6 : INDIVIDUALISED APPROACH : Providing Individualised Counselling sessions.

PO7 : MODERN DAY LEARNING : Updation of the knowledge regarding ongoing advances in management of disease conditions & inqusitiveness in research materials.

PO8 : LIFE LONG LEARNING : Participation in Workshops / Conferences / research activities

PO9 : CLINICAL EMBRYOLOGIST : Performing basic embryology work related to ART.

PO10 : COMPETANT CLINICIAN :Diagnosing and managing common adolescent gynaecologic problems

PO11 : ETHICAL & EMPATHETIC PRACTIONER : Ethical practice in managing Infertility

PO12 : HEALTH PROGRAMMES : Awareness of National health policies, state helth policies, scientific committee & bodies related to Infertility

PROGRAM SPECIFIC OUTCOMES

PSO1 : Acquiring skills & scientific knowledge in Reproductive Medicine

PSO2 : Performing procedures & interventions abiding to standard protocols & practices.

PSO3 : Participation in research activities

ELIGIBILITY

The candidate must fulfill the following requirements to be considered eligible to apply for the course:

- Hold the MBBS degree and be fully registered with either the Medical Council of India (MCI) or possess full registration with the Medical Council of the domicile State
- Hold a MCI-recognized postgraduate degree in Obstetrics & Gynecology or any other qualification declared as equivalent i.e. MD/MS, DNB

ADMISSION

Admission to the course at Amrita School of Medicine shall be based strictly on merit and as per the guidelines laid down by the MCI & Amrita School of Medicine.

TYPE OF COURSE

The DM in Reproductive Medicine is a Full time superspecialty course of three years duration

GENERAL RULES

- **T**he course will be strictly in-service training in nature and the candidate will have all clinical responsibilities including emergency duties
- The candidate will actively participate in the weekly Departmental Academic Program which includes didactic lectures, multi-disciplinary tumor board Meetings, Journal clubs, Case discussions and Grand Rounds
- The candidate will be required to undertake one research project (thesis) and be responsible for the planning, execution, analysis and presentation of the same. The research topic will be provided by the Teacher and should be approved within the first six months of commencing the course. The defense of the same will be required during the viva voce as a separate session. The conclusions of the study should be presented at a forum within the institution and at a suitable National Oncology conference and the same should also be accepted for publication in a peer-reviewed Journal

- The candidate will maintain a daily Training Record/Logbook for recording the following:
    - Clinical attendance
    - Attendance at Departmental/Institutional Meetings
    - Record of case presentations and academic activities.
    - Record of the patients in whose management the candidate has been actively involved.

This record will need to be checked and signed regularly by the Teacher. The Record Book is intended as a means of continuous self-assessment. It is designed to stimulate the Trainee towards greater efforts in areas where the assessment reveals a standard that is below par and also to record progress in skill acquisition made by the Trainee.

- Regular 6-monthly evaluation of the overall performance of the Trainee will be done by the supervisor in consultation with other departmental Faculty, according to the criteria as indicated below (vide infra). The evaluation is to be discussed with the trainee to facilitate improvements and correct deficiencies in the training system
- Additional formal internal assessment will be performed in the form of a written and oral examination conducted at the end of two years. This evaluation is independent of the 6-monthly internal assessments of Trainee performance indicated above
- The leave period sanctioned to a Trainee during the course will be as per Institutional and MCI rules. Absence during the course exceeding the number of days specified will have to be made up by the extra days of work in that particular posting in which the candidate availed of leave prior to the acceptance of the candidate for the examination and the payment of the examination fees

CLINICAL ROTATION

The Trainee will undergo a Clinical Rotation during the 3-years as a DM Reproductive Medicine Trainee as outlined below:

- Reproductive Medicine (Parent Unit) 25 months
- 1-Embryology-5 months
- 2-Urology-2weeks for Andrology
- 3-Reproductive Endocrinology-3 months
- 4-Radiology and Foetal Medicine-1 month
- 5-Clinical Psychology-1 week
- 6-IVFCentre -1 month
- 7-Sexology classes weekly

TRAINING MODULES

Specific training modules have been designed and it will be the responsibility of the Faculty and Teachers/Mentors to ensure that the Trainee is trained as per the recommendations provided within each module as given below:

- Consolidate information received from prior investigations if any
- Initiate further investigations
- Communicate clinical plan to patient and relatives

- Ability to demonstrate counseling skills with respect to screening tests as also treatment/prognosis-related issues

- Working knowledge of anesthesia techniques
- Professional skills and Attitude
- Ability to interpret preoperative investigations and liaise with anesthesia colleagues.
- Ability to counsel patients regarding extent of surgical treatment
- Ability to select and perform appropriate surgical procedures according to patients needs and acceptance
- Ability to manage postoperative care and complications thereof
- Ability to counsel patients and relatives regarding diagnosis ,investigation and to

discuss treatment options, advantages and disadvantages of each

- Ability to convey decisions of the multidisciplinary team to patients and relatives
- Ability to liaise with colleagues and other health professionals regarding coordinating investigations and management strategies pertinent to individual patients.
- **General surgical skills**
- **A**natomical knowledge
- Surgical skills
- Personal audit
- **Knowledge criteria**
- **D**etailed knowledge of surgical anatomy of the female abdomen and pelvis
- Principles of good surgical techniques

- **Detailed syllabus:**

PAPER I - BASIC SCIENCES (MCRM1)

CO1: Thorough Knowledge of embryogenesis, anatomy of the genital system
CO2 : Knowledge of Reproductive physiology, menarche, menstrual cycle & role of hormones in female reproductive system.
CO3 : Understand the normal & abnormal flora of the genital tract, infectivity of the organism & pathogenesis of STDs.
CO4 : Elaborate on the etiopathogenesis of congenital & inflammatory diseases pertaining to female reproductive system & correlation with histopathologies.
CO5 : Relevant knowledge of common drugs, hormonal supplements & fertility enhancing medications relevant to reproductive health.

Anatomy :	**Male and Female genital tract**
Physiology :	Menstrual cycle / ovulation
Endocrinology :	Relevant to human reproduction – Pituitary hormones / Thyroid function / Control of reproduction
Embryology :	Cell cycle, gametogenesis, Fertilization & cleavage structure of sperm and oocytes

Genetics : Nomenclature / Basic principles prenatal diagnosis / Preimplantation diagnosis

Laboratory orientation: Principles / Laboratory equipment – handling and maintenance Record keeping

Andrology : Spermatogenesis, Components, Seminogram / Sperm function tests.

PAPER II - GYNECOLOGY RELATED TO INFERTILITY (MCRM2)

CO1 : Complete knowledge of physiological changes in reproductive system
CO2 : Prescription writing for common gynecological conditions related to Assited conception.
CO3 : Performing office procedures like Transvaginal ultrasonography, Post coital tests, Hydrotubation, SSG & Interpreting Semen Analysis reports.
CO4 : Knowledge of Semen Preparation, Processing & Performing IUI.
CO5 : Acquiring minor / major surgical skills - D & C, Polypectomy, tubal recanalisation, ovarian cystectomy, myomectomy.

Andrology laboratory

Semen analysis

Processing sperm for various procedures – **intrauterine insemination**

Processing samples – testicular / epididymal

Chorionic villous sampling

PAPER III - ART & REPRODUCTIVE MEDICINE (MCRM3)

CO1 : Deal with general principles, protocols, practical problems in Assited conception
CO2 : Deal with general principles, protocols, practical problems in managing IVF/ ICSI - ET
CO3 : Role in managing Emergency situations like OHSS, Ectopic pregnancies.
CO4 : Acquisition of minor & major surgical skills in reproductive care - Ovum pickups, Embryo Transfers, IUI, Hysterolaparoscopies.
CO5 : Knowledge of Legal & ethical issues pertaining to ART, Surrogacy & third party reproduction.

Laboratory

Observe 20 **semen analysis** &

20 sperm preparation

Perform 10 semen analysis & 10 sperm wash procedures

Follow up 5 cases of IVF/ 5 ICSI retrieval to

embryo transfer (written records)
IntraUterine Insemination(IUI)
Zygote Intra Fallopian Transfer(ZIFT)

Counseling sessions

Observe 10 sessions

Perform 25 sessions

Assisted reproductive technology

Evolution

Different technologies

Embryology laboratory

Culture media
Scans including Abdominal ultrasound

Egg identification

Insemination

Fertilization and cleavage technique.

Embryo transfer technique

Blastocyst culture

Embryo hatching

Techniques of intracytoplasmic sperm injection

Cryopreservation

Principles of cryopreservation

Semen freezing / Embryo freezing

Slow freeze techniques / Vitrification

IVF Assist 25 **Oocyte retrieval**

Perform 10 Oocyte retrieval

Assist 5 **GIFT**

Perform 2 GIFT

General operative gynaecology

Proficient in the etiology, pathophysiology, diagnosis and management of common gynaecological problems related to infertility like – fibroids / endometriosis / pelvic infections / dysfunctional bleeding / early pregnancy related problems.

Proficient in the surgical management of common gynaecological problems like ovarian cyst / fibroids/early pregnancy related problems. A clear understanding of the principles of reconstructive surgery as applied to Mullerian duct abnormalities – vaginal agenesis, Uterine unification etc. is essential.

Proficient in the practice of microsurgical principles as applied to the treatment of tubal disease especially with regard to proximal Tubal obstruction and Tubal recanalisation.

Minimally invasive surgery

Proficient in the principles and practice of diagnostic and operative laparoscopy for infertility like release of adhesions / cystectomy / endometriosis, etc.

Adhesiolysis / cannulation of ostium / vaginal myomectomy & submucous fibroid etc.

Reproductive Endocrinology including laboratory techniques

Attain expertise: menstrual cycle. Follicular recruitment and retrieval procedures including GIFT.

Understand and be able to manage OHSS.

Trans Vaginal Ultrasonography with particular reference to follicular monitoring and

Early pregnancy scanning.

Andrology: PESA, TESA etc
Laboratory Technology:

Familiarity with Laboratory equipment, maintenance and trouble shooting.

Detailed knowledge of ART procedures carried out like semen preparation,

Oocyte identification and grading, embryo grading, micromanipulation, cell culture, freezing techniques etc

Microsurgery Assist 15 Tubal recanalisations

Assist 15 Proximal cornual block

Perform 10 Tubal recanalisation procedures

Minimally Invasive

Assist 20 diagnostic laparoscopies

Assist 20 operative laparoscopies

Andrology Assist 20 PESA, TESA, Biopsy testis

Perform 5 PESA, TESA, Biopsy testis

PAPER IV - RECENT ADVANCES (MCRM4)

CO1 : Knowledge about the **Sperm retrieval techniques** & its post processing.
CO2 : Knowledge of management of **recurrent Implantation failure**.
CO3 : Knowledge about Micromanipulation & aspects of "Clean room".
CO4 : Knowledge and practical difficulties in **Uterine transplant** & ART outcomes following the surgery.
CO5 : Newer modalities for **Embryo selection**.

Reproductive Endocrinology including laboratory techniques

Attain expertise:

In the use of ovulation inducing agents and hormonal control of the Proficient in the principles and practice of diagnostic and operative laparoscopy for infertility like release of adhesions / cystectomy / endometriosis, etc.
Competency in performing Hysterosalpingogram
Competency in performing uterine myomectomy
Management of PolyCystic Ovarian Disease (PCOD)

Proficient in the principles and practice of diagnostic and operative hysteroscopy for infertility like removal of foreign body, polyps, IUCD / biopsy / septum resection / adhesiolysis / cannulation of ostium / vaginal myomectomy & submucous fibroid etc.

SOFT SKILLS (MCRM5) – Elective Course

CO1: Competency to work as a team leader.
CO2: Knowledge of medical ethics and etiquette.
CO3: Ability to interact with the patients and their relatives in an effective manner.
CO4: Attitude to be a lifelong learner.
CO5: Ability to be an effective teacher/communicator.

Ethical principles in ART
After completion of the course the reproductive medicine specialist will be proficient in the following areas of learning

General operative gynaecology

Minimally invasive surgery and microsurgery

Reproductive endocrinology including laboratory techniques.

There will be structured sessions to achieve the course outcomes. The candidate will be assessed by the faculty from her behavior and initiative.

Log book: to be maintained to ensure practical exposure.Suggested minimal requirements:

CANDIDATE EVALUATON METRICS

Outlined below is a representative scheme, which could be used while evaluating the trainees during their periodic appraisals:

Metrics

- Theoretical knowledge of the subject
- Knowledge of current, relevant evidence-based literature
- Ability to practically apply his/her knowledge to clinical scenarios
- Involvement with patient care
    - Outpatient clinics
    - Inpatients
- Surgical skill set commensurate with seniority
- Keenness and aptitude to learn
- Rapport with peers/colleagues - ability to be a part of a team
- Rapport with Senior colleagues - ability to take criticism constructively
- Understanding of the of ethics of clinical medicine
- Research ability/aptitude
- Leadership and people management qualities

Grades of Evaluation

- Excellent
- Exceeds objectives
- Just meets objectives
- Needs improvement

- Below par

Log Book Format for DM Reproductive Medicine

No	MRD	Age	Diagnosis	Surgery /Procedure	Done Independently /Done under supervision / Assisted	Additional procedure /Comments	Signature of consultant

EXAMINATION SCHEME **(As per MCI rule)**

The DM examination in Reproductive Medicine will be conducted as per the norms laid down by Amrita School of Medicine. The examination shall consist of Written paper (theory), Practical(clinical) , viva voce and Thesis Total marks shall be 700 (400+200+100)

Practical

Clinical and viva voce
Long case
Short cases
Viva voce

Criteria for declaring pass

Minimum (separate)
50% for theory (aggregate of four papers)
50% for clinical
50% for viva voce
acceptance of thesis / dissertation

Question Papers (100*4 = 400 marks)

Paper I- Basic sciences

Section A

1) Development and anatomy of Placenta (20)
2) Describe the events involved in spermatogenesis and Oogenesis (10+10)
3) Describe the development of Uterus and Ovary (10+10)
4) Discuss about the surgical anatomy of anterior abdominal wall. Describe the branches of internal iliac artery and its clinical significance. (10+10)

Section B (5 marks each)

5) Mitosis and Meiosis

6) What do you mean by sampling? What are the different techniques in sampling?

7) Ovarian steroidogenesis

8) Principles of cryobiology

Paper II- Gynecology related to infertility

Section A

1) USG and doppler in infertility Practice (20)

2) Describe the use of laparoscopy in infertility. What are the complications of Laparoscopy? (10+10)

3) Diagnosis and management of Tubal factor in infertility (10+10)

4) Describe the clinical features and evaluation of Endometriosis. Outline the ESHRE guidelines for management of Pain and Infertility in Endometriosis. (10+10)

Section B (5 marks each)

5) Medical management of Fibroids

6) Dienogest

7) Hysteroscopy in Infertility

8) Semen Analysis

Paper III- ART and Reproductive Medicine

Section A

1) What is ART? Outline the salient features of different stimulation protocols in ART. (20)

2) What is OHSS? Describe its causes, diagnosis, management and prevention. (20)

3) What are the tests available for assessing ovarian reserve? Describe the treatment modalities in diminished ovarian reserve. (10+10)

4) Describe the pathophysiology of PCOS. Outline the different options of ovulation induction in PCOS. (10+10)

Section B (5 marks each)

5) Obstructive azoospermia

6) Clomiphene citrate

7) Embryotransfer

8) Luteal support in ART

Paper IV- Recent advances

Section A

1) Describe Gestational surrogacy and the various steps involved in it including the counselling and consent for it. (20)

2) What are the events happening during the peri-implantation period? Outline the management options in a couple with recurrent implantation failure (10+10)

3) Discuss about micromanipulation. Describe the various aspects of clean room. (10+10)

4) What are the uses, advantages and drawbacks of Embryoscope? Discuss the various criteria used in Embryo Selection . (10+10)

Section B (5 marks each)

5) Omics

6) IMSI

7) Three Parent IVF

8) Sperm retrieval techniques