

## **FETAL MEDICINE**

### **OBJECTIVES OF PROGRAMME:**

Maternal Fetal Medicine is a highly specialized and progressively expanding discipline which is concerned with prevention, diagnosis and treatment of high risk mothers and fetus. Due to lack of high risk units and Obstetrics Consultants practicing only high risk pregnancies there continues to be high maternal and fetal morbidity and mortality. The 'Fellowship programme' would fill some void in the need of maternal and fetal medicine specialist.

### **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

### **Goal of the Fellowship programme is:**

- To provide high quality training in Maternal Fetal Medicine.
- To attain proficiency in treatment of high risk pregnancy.
- To attain proficiency in the prevention/diagnosis/treatment of fetal problems.

- To motivate conduct of epidemiological and clinical research in several Maternal
- Fetal Medicine problems which are unique to India.
- To motivate the fellows to be teachers to the forthcoming generations of Maternal
- Fetal medicine specialists.

## **COURSE CONTENT**

### **The Basic Knowledge**

- High risk pregnancy management techniques including decisions of how and when to deliver and balancing of risks shall form an integral component of the course .
- Anatomy physiology and pathology of mother and the fetus.

### The spectrum of knowledge and skills to be mastered during Fellowship are

- Fetal Physiology, Fetal development and its aberrations.
- Physiology and pathology of maternal adaptation to pregnancy.
- Study of demographic, sociologic and environment factors affecting pregnancy
- Chromosomal disorders, genetic disorders and multifactor organ dysgenesis.
- Aneuploidy -Screening Strategies.
- Infections, immunological disorders and pharmacotherapy and use of pharmacotherapeutic agents.
- Normal puerperium and its deviations.
- Preventive aspects of Obstetrics and means to reduce the maternal and Perinatal mortality and morbidity.
- Fetal Surveillance for well being
- Fetal Invasive Procedures.

### **The Clinical Acumen**

- History takings and examination in conjunction with investigations is the main stay for diagnosis and treatment of high risk pregnancies.

### **Essential investigation and diagnostic procedures**

#### **The noninvasive procedures**

- It is an indispensable part of High risk pregnancy care and many times, supercedes the more invasive and sophisticated techniques. The use of duplex San

(Combination of B mode and Doppler ultrasound) is an essential part of training of Maternal fetal Medicine specialist. The trainee should also be taught the use of hand held Doppler, Fetal surveillance including cardiotocography and various laboratory tests.

#### **Invasive procedure**

- The “Gold Standard” of pathological diagnosis in the fetus is the invasive procedure and obtaining the fetal tissues for pathological diagnosis. This needs specialized training within the “Fellowship” programme. Diagnostic procedures like CVs, amniocentesis, cordocentesis, skin and liver biopsy and therapeutic procedures including amnioreduction, amnioinfusion, intrauterine intra vascular transfusion for Rh isoimmunisation, multi Fetal reduction and selective feticide must be suitably emphasized.

#### **Preventive aspects**

- Maternal fetal Medicine Specialist should be actively involved in the risk factor modification of their patients to prevent progression or recurrence of the diseases. This is not only preventive but also of therapeutic value. This involves premarital and pre pregnancy counseling. Dietetics and nutrition forms an important aspect of this prevention strategy.

#### **The Diabetic Clinic**

- The need for this improperly understood field is of paramount importance in India, since we have the highest number of Diabetics in the world. (30 million) Because of our habits and environments it is likely we will have the highest number of pregnant diabetics leading to maternal and perinatal morbidity and mortality. A multi specialty approach including good glycemic control a thorough understanding of the physiology and pathology and prevention and therapy can improve the outcome.

#### **Anemia clinic**

- Anemia has been recognized to be the highest contributor to maternal morbidity and mortality. Various types of anemia and their prevention and therapy shall be suitable emphasized.

## Hypertension Clinic

- PIH remains one of the biggest killers of mother and babies. It contributes to 12% of all maternal mortalities. Eclampsia is a preventable disorder. Increasing number of chronic hypertensives becoming pregnant makes it mandatory for the fellow to understand pathology, prevention and management of this disorder.

### Procedural and operative skills:

#### Diagnostic procedures

| Procedures | Category |
|------------|----------|
|------------|----------|

#### Fetal surveillance

|                             |       |
|-----------------------------|-------|
| Electronic Fetal Monitoring | PA/PI |
|-----------------------------|-------|

|                 |       |
|-----------------|-------|
| Ultrasound scan | PA/PI |
|-----------------|-------|

|         |       |
|---------|-------|
| Doppler | PA/PI |
|---------|-------|

#### Fetal invasive procedures

|     |      |
|-----|------|
| CVS | A/PA |
|-----|------|

|               |      |
|---------------|------|
| Amniocentesis | A/PA |
|---------------|------|

|               |      |
|---------------|------|
| Cordocentesis | A/PA |
|---------------|------|

|                       |   |
|-----------------------|---|
| Multi Fetal Reduction | O |
|-----------------------|---|

|                        |    |
|------------------------|----|
| Therapeutic procedures | OI |
|------------------------|----|

|                      |   |
|----------------------|---|
| High risk deliveries | O |
|----------------------|---|

|  |   |
|--|---|
|  | A |
|--|---|

|  |    |
|--|----|
|  | PA |
|--|----|

|  |    |
|--|----|
|  | PI |
|--|----|

|                                |      |
|--------------------------------|------|
| Internal Iliac Artery ligation | OI/A |
|--------------------------------|------|

|                 |      |
|-----------------|------|
| Cervical stitch | A/PA |
|-----------------|------|

|                         |        |
|-------------------------|--------|
| Post partum haemorrhage | A/O/PA |
|-------------------------|--------|

|     |         |
|-----|---------|
| DIC | O/PA/PI |
|-----|---------|

#### Cases to be managed

- Severe PIH/Eclampsia
- APH
- Diabetes

- Heart disease
- Neurological problems / epilepsy
- Respiratory disease
- Anemia
- Fetal anomalies
- BOH
- Liver problems including jaundice
- Pre term
- Post term
- IUGR
- Multiple gestation
- Puerperal problems including DVT/CVT/ARF/Sepsis

Keys:

O -Washed up and observed

A - Assisted a more senior surgeon

PA - Performed procedures under direct supervision

PI - Performed independently

OI- Observed when opportunity existed

### **TEACHING AND LEARNING ACTIVITIES:**

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

- a. Journal review meetings- once a month
- b. Mortality / morbidity review and departmental audit - bimonthly.
- c. Subject Seminars- once a month
- d. Clinical Pathological Conferences- once in two months
- e. Inter Departmental meetings- once in two months
- f. Clinical rounds
- g. Project
- h. Participation in Conferences / Paper presentation / tutorials etc.,

| <b>ROTATION AND POSTING IN OTHER DEPARTMENTS:</b>   |                    |
|---|--------------------|
| <b>Basic Medical sciences and allied subjects:</b>  |                    |
| Laboratory medicine including Fetal pathology, Cytogenetics.<br>Molecular diagnosis   | Duration – 1 week  |
| <b>Applied subjects:</b>  |                    |
| Cardiology – For better management of cardiac problem during pregnancy and have first hand knowledge of procedure like BMV and valve replacement  | Duration 1 week.   |
| Nephrology – Basic technique of dialysis and fluid management   | Duration 1 week.   |
| Endocrinology – Physiology, pathology clinical features and management of abnormal hormonal milieu and its effect on mother and the fetus.  | Duration 1 week    |
| Pulmonology – Pulmonary function changes and its effect on pregnancy  | Duration 1 week    |
| Vascular – Vascular disorders affecting pregnancy including coagulation disorders and varicose veins  | Duration 1 week    |
| <b>Allied Subjects :</b>  |                    |
| Radiology   |                    |
| <ul style="list-style-type: none"> <li>To learn the basic and advanced skills in imaging techniques. Mainly Ultrasound and Doppler, but also about X-ray / CT / MRI</li> </ul>  | Duration 1 month   |
| <ul style="list-style-type: none"> <li>Anomaly scan and prenatal diagnostic techniques –. The fellow will rotate through at The Bangalore Prenatal Diagnosis and Therapy associates under the guidance of Dr. B.S Ramamurthy and Dr. Prakash K.Mehta</li> </ul> | Duration 2 weeks   |
| Critical care including central line placement, mechanical ventilation,<br>trauma in pregnancy  | Duration – 1 week. |

**Orientation programme :**

- A team of professionals attached to the hospital will orient the fellows to the use of library and internet. The fellow will also be posted to laboratory to understand the technique and pitfalls of the various tests useful in the field of maternal fetal medicine. Prenatal diagnosis act will form a part of the curriculum. The fellow will participate in the various reproductive and Child health programmes.

**Training in Teaching skills and Research methodology :**

- The fellow will be encouraged to teach their juniors, residents and nurses. Research analysis and paper writing will be an integral part of the programme.

**Monitoring teaching / Learning activities :****Methods & Frequency**

- The students will be monitored for basic clinical work on a day to day basis. Their surgical and communication skills will also be monitored. Once every semester they will face a clinical examination.
- Logbook will be mandatory. Fellows will be asked to keep a record of cases conducted or assisted by them and the number of meetings and papers published / presented by them. Each candidate will be evaluated every semester.
- The candidate will be asked to put in extra hours or days if found lacking.

**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.

**Written**

- Each paper shall consist of long and short questions including MCQ and shall carry 100 marks. 60% needs to be obtained in each of the papers for passing.
- The written examination will consist of 3 papers :
  - Maternal medicine
  - Fetal Medicine
  - New developments

**Clinical**

- 2 long cases: one with Maternal problem and one with fetal problem. Each case shall be evaluated out of a score of 75. (total 150)
- Short cases: one with maternal problem and one with fetal problem. The score for each case shall be out of 50. (total 100)
- Viva Voce: Shall be in 2 parts: Maternal disorders for a score of 25 and fetal disorders for a score of 25. (total 50)
- Thus the written exam shall carry 300 marks, Clinical exam shall carry 250 marks and Viva voce shall carry 50 marks making a total of 600 marks of which in each part the candidate is expected to score at least 60%.
- The exams will have 2 examiners – one internal and one external.

**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.