

Colour Coding

Global
Regional
National
Local (State)

GREEN
BLUE
ORANGE
PINK

Program: PDCC Maternal and Fetal Medicine


Program duration: One year

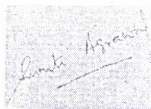
Program objective: The goal of subspecialty in "Maternal and Fetal Medicine" is to impart further training to obstetrician and gynecologist after obtaining their post-graduation degree. This will empower them to take care or guide others in managing complicated pregnancy, predict and prevent maternal complications, fetal disorders and treat fetal diseases. This in turn will improve health indicators like maternal mortality ratio, stillbirthrate, neonatal and infant mortality rates.

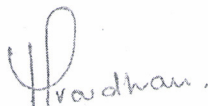
Program outcomes: The objective of this subspecialty program is to train a specialist in the field of "Maternal and Fetal Medicine" keeping in view the fast development of understanding in this field.

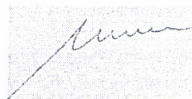
The trainee will acquire knowledge and skill:

1. To diagnose and manage pregnancy in women with medical and surgical disorders e.g. cardiac, renal, endocrinological or immunological disorder or on medications for various diseases like anti-psychotic, anti-epileptic etc prevalent in the community, region and country.
2. To predict and prevent diseases complicating pregnancy like hypertension, preterm labour etc. using different diagnostic tools which are more prevalent in South Asian countries.
3. To identify couple at high risk of having child with mental retardation, genetic disorder or malformation and provide pre-conception care and prenatal diagnosis commensurate to the requirements of regional and national level.
4. Diagnose fetal abnormality and provide antenatal investigation to ascertain the cause and, if required, provide medical or surgical treatment.
5. Perform post-delivery examination of the abortus with congenital malformation.

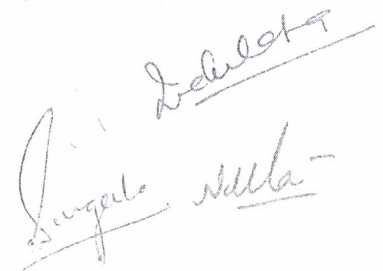

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Regional BLUE
National ORANGE
Local (State) PINK

6. To counsel expectant couple about need of neonatal medical or surgical intervention and prepare them for the same.

7. The specialist in Maternal and Fetal Medicine is expected to be able to function in a tertiary care center and train other obstetricians in this field.

8. Evaluate clinical and scientific data in an analytical manner and choose how and what to use in patient care commensurate to the requirements of the residents of the region, state and country

9. Keep abreast of latest advances in Maternal and Fetal Medicine and critically examine available scientific evidences to decide their place and application in patient management.

10. Make evidence-based decision-making part of the learning process and apply it logically in cost-effective country-centric manner tailored to the needs of the patients.

11. Apart from clinical work, prioritize thrust research areas at institutional, state, national and international levels and network to set up collaborative networking and workforces at these levels to enhance the research milieu of the country.

12. Identify prevalent knowledge gaps in Maternal and Fetal Medicine, conduct cutting-edge research, promote inter-institutional research and help train and guide those who wish to undertake pursue research

13. Acquire skills to become an effective communicator with

- the patients and their caregivers
- hospital and public health administrators
- policy makers and regulatory authorities
- peers and researchers of one's own medical fraternity and other allied streams and
- members of the public and community leaders

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14. Develop mentorship, leadership and networking qualities to help teach, train and impart clinical and research skills to future Maternal Fetal Medicine specialists in the state and country.

Courses offered in the program: Cognitive and Psychomotor Domain

Course I: Basic Science of Maternal and Fetal Medicine

Course II: Applied and recent advances in Maternal and Fetal Medicine

Course I: Basic Science of Maternal and Fetal Medicine

Course objective: Student shall have an in-depth understanding about the development, anatomy, physiology, cellular mechanism involved in physiology and pathogenesis of maternal and fetal diseases pertaining to pregnancy, labor and postpartum period.

Course outcomes: Students shall have acquired in depth knowledge about the following

1. Anatomy of female pelvic organs
2. Embryogenesis
3. Fetal growth and development
4. Genetic basis of diseases and testing
5. Physiological changes in pregnancy and its related pathology
6. Fetal physiology
7. Physiology of parturition
8. Principles and interpretation of laboratory tests
9. Teratology

Course II: Applied and recent advances in Maternal and Fetal Medicine

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Course objective: Student shall have acquired necessary skill, understanding, and knowledge about the epidemiology, clinical presentations, pathogenesis, diagnosis and management of normal and abnormal maternal and fetal conditions during antenatal, intranatal and postnatal period. Student shall be well versed with the new knowledge, cutting edge issues, controversies, new diagnostic and therapeutic modalities, new interventions, and changing trends of epidemiology in maternal and fetal medicine.

Course outcomes: Students shall have acquired the following knowledge and skills at the end of the course.

1. Shall be able to recognize and manage common medical conditions in the pregnant woman.
2. Shall be able to manage intrapartum medical complications and pre-existing conditions.
3. Shall have obstetric medicine skills covering a wide range of maternal medical conditions.
4. Shall recognize key intrapartum scenarios and manages them using the necessary technical and non-technical skills.
5. Shall use ultrasound to optimize outcomes during labor and the immediate puerperium.
6. Shall be able to lead in providing care to women with pregnancies complicated by the full range of fetal concerns.
7. Shall be able to independently manage, in conjunction with specialists from other disciplines, pregnancies complicated by the widest range and most complex of maternal medicine conditions.
8. Shall be able to apply knowledge of clinical and molecular genetics to the management of complex pregnancy.
9. Shall be able to use ultrasound to screen for and manage pregnancy complications, other than fetal abnormalities.
10. Shall be able to confirm fetal normality and manage common fetal structural and functional abnormalities.


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11. Shall be able to describe, obtain informed consent for and perform invasive diagnostic fetal procedures like amniocentesis, chorionic villus sampling and cordocentesis.
12. In depth knowledge of the recent advances and cutting-edge issues in diagnosis and management of different maternal and fetal diseases
13. Shall be aware and capable to diagnose and manage the newly defined disease entities in the field of maternal fetal medicine.
14. Shall be updated with the changing terminology for diseases and conditions pertaining to the field.
15. Shall be well versed with the standard guidelines and recommendations laid for the management of various maternal and fetal diseases by different societies like Fetal Medicine Foundation, World Association of Perinatal Medicine, Society of Maternal Fetal Medicine etc.
16. Shall be well versed with various laws and Acts governing the obstetric practice like PCPNDT, MTP and surrogacy Act.
17. Shall be updated with various government schemes for benefits of antenatal women and newborns like JSK, JSSY, Pradhan Mantri Surakshit Matritva Abhiyan etc.

Method for computing program outcome

The summative assessment examination shall include two heads:

- A. Theory examination.
- B. Practical, Clinical examination, and Viva-voce.


Theory examination and Practical/Clinical, Viva-voce shall be separate heads of passing.

Theory examination shall comprise of two papers, each representing two courses included in the program. Passing percentage shall be cumulatively 50% with minimum of 40% marks in each theory paper.

Practical /Clinical examination consisting of (i) case presentation at least one long case, two short cases (ii) Instruments (iii) Drugs (iv) Spotting like mounted fetal and placental specimens, post abortal X rays of congenitally malformed fetuses, antenatal investigations like NST, CTG, biochemical screening for aneuploidy etc. (v) Live demonstration of ultrasound on antenatal women in all trimesters of pregnancy and (vi)



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vivavoce. Passing percentage shall be 50%.


Passing shall be separate for each head and failing shall be common, meaning thereby that clearance at theory and failure at practical / clinical shall amount to failure at Summative examination and vice versa.

In addition to the above-mentioned formal examination, each student will also be evaluated on day-to-day basis based on their **Affective domain** (Attitudes including Communication and Professionalism) by evaluating following activities

1. Voluntary discussion with other departments (neonatology, pediatric surgery, anesthesia, radiology, allied medical and surgical specialties, pathology, microbiology etc.) as and when required for the management of the patients
2. Measures taken by the student to expedite the management of a patient.
3. Empathy shown by the student towards its patients.
4. Willingness to accept the responsibility by a student.
5. Level of confidence while managing a patient or performing a procedure
6. Depth of knowledge about the procedure while performing it
7. Ownership for the procedure related complications
8. Willingness to learn new skill and acquire new knowledge
9. Self-motivated reading and learning
10. Depth of knowledge about the illness of the patient managed by him/her
11. Involvement in extracurricular activities
12. Punctuality to work and patient care
13. Involvement in research and departmental data management
14. Willingness to teach and train
15. Skill to teach and train others
16. Inter personal relationship

Method for computing course outcomes

Course I: Basic Science of Maternal and Fetal Medicine



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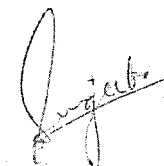

Assessment of the student will be done on his/her performance in the following academic activities

1. Seminars presentation
2. Short topic presentation
3. Journal clubs
4. Group discussion during the rounds and during teaching hours
5. Didactic lectures
6. Invited faculty lectures to elaborate upon specific topics

Course II: Applied and recent advances in Maternal and Fetal Medicine

Assessment of the student will be done on his/her performance in the following academic activities

1. Clinical management of the patients in the ward, labor room and operation theatre.
2. Early identification and management of maternal and fetal diseases and complications.
3. Approach to the patients in OPD care
4. Discussion on consultations sought by other departments
5. Seminars on clinical topics
6. Maternal and Perinatal Mortality meets
7. Case discussion during academic hours
8. Case presentation and discussion during ward rounds
9. Journal club presentation
10. Number of journals followed by the student on regular basis
11. Knowledge on most recent guidelines or recommendations, laid for the diagnosis and management of maternal and fetal diseases
12. Level of knowledge about the new drugs, diagnostic tests, and procedures



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Needs: Local : Pink, National : Orange, Regional: light blue, International : green

13. Critical analysis of the new information's before its application in patient care
14. Application of new information inpatient care
15. Hypothesis generation and planning new research ideas and proposal based on new information.

Revision of the syllabus for PDCC in Maternal and Fetal Medicine

Syllabus for the PDCC in Maternal and Fetal Medicine program has been revised on 4th of March 2022 in the 3rd Board of Studies. This revision is based on the inputs obtained external experts. In revision, we attempted to make our syllabus more comprehensive; further we also tried to make our syllabus appropriate to meet the national and the regional health need and disease burden.

The Syllabus before revision had included the following contents.

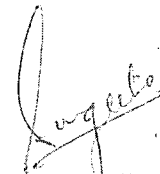
Contents

1. Maternal and fetal physiology

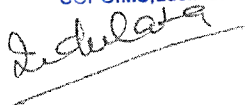
- Maternal physiology
- Endocrinology of pregnancy
- Implantation, embryogenesis, and placental development
- Fetal physiology
- Placental physiology

2. Medical Complications of pregnancy

- Renal Disease
- Hypertension
- Cardiac Disease
- Liver Disease
- Respiratory Disease
- Gastrointestinal Disease



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- Diabetes
- Other endocrine disease
- Neurological Disease
- Connective tissue Disease
- Hematological Disease
- Thromboembolic disease
- Psychiatric Disease
- Substance Abuse
- Skin Disease
- Malignant Disease
- Clinical Scenarios

3. **Genetics**

- Genetics
- Chromosomes and principles of gametogenesis
- Approach to a clinical case
- Methods of prenatal diagnosis (including indications, techniques, complications)
- Prenatal diagnosis of defects
- Genetic tests and it's principle
- Methods of screening for genetic disorder
- Approach to a couple with family history of malformation, mental retardation

4. **Structural fetal anomalies**

- Central nervous System Anomalies
- Cardiac Anomalies
- Genitourinary Anomalies
- Pulmonary Abnormalities
- Abdominal wall and Gastrointestinal
- Neck and face Anomalies
- Skeletal Anomalies
- Fetal Tumours



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- Fetal Hydrops
- Multiple Pregnancies
- Disorders of Amniotic Fluid
- Termination of Pregnancy
- Preconception Counselling
- Fetal autopsy/examination

5. **Ultrasound**

- First trimester including aneuploidy screening
- Second trimester including fetal malformation
- Third trimester including fetal doppler
- Ectopic pregnancy
- Interpretation of malformation and it's further pregnancy management

6. **Antenatal complications**

- Miscarriage and Fetal Death
- Poor and Failed Placentation
- Fetal Growth Disorders
- Antepartum Haemorrhage
- Preterm delivery
- Multiple pregnancy
- Malpresentation
- Red Cell Alloimmunisation
- Platelet Alloimmunisation
- Gynaecological Problems in Pregnancy
- Medical Termination of Pregnancy Act – Amendment 2021
- Pregnancy schemes in India
- Recent updates in Maternal and Fetal Medicine
- Medical computing

7. **Intrapartum Complications**



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- Labour Ward Management
- Respectful Maternity care
- Failure to Progress in Labour
- Non-reassuring Fetal Status in Labour
- Shoulder dystocia
- Genital Tract Trauma
- Postpartum Hemorrhage and Other Third-stage Problems
- Caesarean Section
- Anesthesia and Analgesia Objective
- Resuscitation
- Medical Disorders on the Labour Ward
- Intensive Care

8. Infectious diseases

- Human Immunodeficiency Virus (HIV)
- Hepatitis
- Cytomegalovirus
- Herpes Simplex Virus
- Parvovirus
- Rubella
- Varicella
- Toxoplasmosis
- Malaria
- Tuberculosis
- Streptococcal Disease
- Syphilis
- Other Sexually Transmitted Diseases in Pregnancy
- Bacterial Vaginosis
- Asymptomatic Bacteriuria and Acute Symptomatic Urinary Tract Infection
- Other Infective Conditions

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9. Postpartum care

10. Neonatal care

- Neonatal resuscitation
- Care of newborn
- Infant of diabetic mother
- Hyperbilirubinemia
- Sepsis
- Breast feeding and Kangaroo Mother care



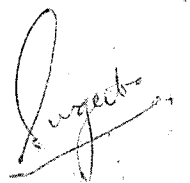
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Proposed additions:

- Psychological disorders in pregnancy
- Substance abuse in pregnancy
- Teratology: Current concepts, modifications and implications
- Interpretation of malformation and it's further pregnancy management
- Respectful Maternity care
- Breast feeding and Kangaroo Mother care.
- Laws and Acts in Obstetric practice in India
- Pregnancy schemes in India
- Recent updates in Maternal and Fetal Medicine
- Evolution of pharmacology and newer drugs in management of maternal and fetal diseases
- Molecular Biology and applications to Maternal Fetal Medicine
- Advances in pathology of maternal and fetal diseases.
- Statistical Methods and tools for analyzing data
- Experimental Design and Methodology in Research
- Biomedical Physics and Instrumentation in Maternal Fetal Medicine
- Medical computing
- Digital health applications in Maternal Fetal Medicine
- Communication skill
- Patient safety
- Hospital infection control
- Needle stick injury to the healthcare workers



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- Environmental safety
- Biomedical waste disposal
- Antibiotic stewardship program
- Gender safety
- Health equity

Credit based compulsory modules for PDCC in Maternal and Fetal Medicine

In addition to the four mandatory courses, defined above, each student will have to complete the following courses available to them. Each of these courses will be for 2 weeks of time.

1. Neonatology
2. Anesthesia
3. Intensive Care Unit / Critical Care Medicine
4. Pediatric surgery
5. Allied medical and surgical branches

Academic flexibility offered to the students in PDCC in Maternal and Fetal Medicine

Our syllabus and duration of courses, offered under our programs are regulated, controlled and guided by Academic Board of SGPGI.

Student may change the sequence of their rotation.

1. Depending upon the interest of the student and their research need, the duration of their rotation may be extended or shortened
2. Additional rotation may be completed during off-duty hours, leaves, or vacations
3. Hand-on experience can be obtained during their rotation in these areas
4. Additional research work can be done during their rotation to these areas
5. Students are permitted to mutually exchange their rotations but each of them has to complete the entire set of rotator postings
6. Student are also permitted to complete their oratory postings in two or more pieces instead of doing it completely in one go
7. Students are also permitted to complete their rotatory posting under **Dr. Col Varun Bajpai VSM** Executive Registrar SGPGIMS, Lucknow



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supervision of a consultant of their choice, if he/she agrees for the same

Credit based optional modules for PDCC in Maternal and Fetal Medicine

In addition to the four mandatory courses, and credit based compulsory modules, defined above, each student will have to options to choose additional optional modules as described below:

1. Communication skill
2. Patient safety
3. Hospital infection control
4. Needle stick injury to the health care workers
5. Environmental safety
6. Biomedical waste disposal
7. Antibiotic stewardship program
8. Gender safety
9. Health equity
10. Universal health coverage
11. Health for All



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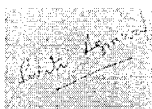
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Details of suggested reading in curriculum: the student can of course go beyond the suggested books and journals as per need.

List of books for Maternal Fetal Medicine

1. Blackburn ST. Maternal, fetal, & neonatal physiology. Fifth edition. St. Louis: Elsevier Inc; 2018.
2. Ács N, Bánhidý FG, Czeizel AE. Congenital Abnormalities and Preterm Birth Related to Maternal Illnesses During Pregnancy [Internet]. Springer Netherlands; 2010.
3. Resnik R, Lockwood CJ, Moore T, Greene MF, Copel J, Silver RM. Creasy and Resnik's Maternal-Fetal Medicine. 8th ed. Philadelphia: Elsevier; 2018.
4. Paladini D, Volpe P. Ultrasound of congenital fetal anomalies: differential diagnosis and prognostic indicators. 2nd ed. Boca Raton: CRC press; 2014.
5. Pijnenborg R, Brosens IA, Romero R, editors. Placental bed disorders: basic science and its translation to obstetrics. Cambridge ; New York: Cambridge University Press; 2010. 301 p.
6. Nyberg DA. Diagnostic imaging of fetal anomalies. Philadelphia: Lippincott Williams & Wilkins; 2003.
7. Callen PW, Scoutt LM, Feldstein VA. Callen's ultrasonography in obstetrics and gynecology. Sixth edition. Norton ME, editor. Philadelphia, PA: Elsevier; 2016.
8. Gardner RJM, Sutherland GR, Shaffer LG. Chromosome abnormalities and genetic counseling. 4th ed. Oxford ; New York: Oxford University Press; 2012. 634 p. (Oxford monographs on medical genetics).
9. Weiner S, Kurjak A. Interventional ultrasound. New York: Parthenon Pub. Group; 1999.



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10. James DK, editor. High risk pregnancy: management options. 4th ed. Philadelphia, PA: Saunders/Elsevier; 2011. 1475 p.
11. Powrie RO, Greene MF, Camann W. De Swiet's medical disorders in obstetric practice. 5th ed. Chichester: Wiley-Blackwell; 2010.
12. Facchinetti F. Stillbirth: understanding and management. London: Informa Healthcare; 2010.
13. O'Leary JA, editor. Shoulder Dystocia and Birth Injury [Internet]. Totowa, NJ: Humana Press;
14. Cunningham FG, Williams JW, editors. Williams obstetrics. 23rd ed. New York: McGraw-Hill Medical; 2010. 1385 p.
15. Rosene-Montella K, Bourjeily G. Pulmonary problems in pregnancy. New York: Humana Press; 2009. (Respiratory medicine).
16. Symonds ME, Ramsay MM, editors. Maternal-fetal nutrition during pregnancy and lactation. Cambridge, UK ; New York: Cambridge University Press; 2010. 208 p.
17. Claman HN. The immunology of human pregnancy. Totowa, N.J.: Humana Press; 1993.
18. Greer IA, Walters B, Nelson-Piercy C, editors. Maternal medicine: medical problems in pregnancy. Edinburgh ; New York: Elsevier/Churchill Livingstone; 2007.
19. Carp H, editor. Recurrent pregnancy loss: causes, controversies and treatment. 3rd ed. Boca Raton: CRC Press; 2020. (Series in maternal-fetal medicine).
20. Hod M, Jovanovic L, Di Renzo GC, Leiva A de, Langer O, editors. Textbook of diabetes and pregnancy. Third edition. Place of publication not identified: CRC Press; 2018.
21. Nelson-Piercy C, Girling J. Obstetric medicine: a problem-based approach. London: Springer; 2007. 188 p.
22. Briggs GG, Towers CV, Forinash AB. Briggs drugs in pregnancy and lactation: a reference guide to fetal and neonatal risk. Twelfth edition. Philadelphia, PA: Wolters Kluwer; 2022.

List of Journals for Maternal Fetal Medicine

1. American Journal of Perinatology
2. Clinics in Perinatology
3. Contraception
4. Early Human Development

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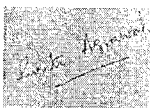
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5. Fetal Diagnosis and Therapy
6. Journal of Maternal-Fetal & Neonatal Medicine
7. Journal of Perinatal Medicine
8. Journal of Perinatology
9. Placenta
10. Prenatal Diagnosis
11. Seminars in Perinatology
12. American Journal of Obstetrics and Gynecology
13. International Journal of Obstetrics and Gynecology
14. Obstetrics and Gynecology Clinics of North America
15. Green Journal of Obstetrics and Gynecology
16. Obstetrics and Gynecology Survey
17. Achieves of Gynecology and Obstetrics
18. Obstetrics and Gynecology

E learning resources

1. <https://education.smfm.org>
2. <https://portal.e-lfh.org.uk>
3. <https://www.isuog.org>
4. <https://portal.medicinafetalbarcelona.org>
5. <https://portal.medicinafetalbarcelona.org>
6. <https://onlinelibrary.wiley.com>
7. <https://www.acog.org>
8. <https://icogonline.org>
9. <https://fetalmedicine.org>



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