

**MATERNAL-FETAL MEDICINE
RESIDENCY TRAINING PROGRAM**



University of Toronto

GOALS AND OBJECTIVES

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1. Overall Goal:

The training program and its objectives are designed to fulfill the specific standards of accreditation for residency programs in maternal-fetal medicine as revised in April 2007 by the Royal College of Physicians and Surgeons of Canada. In addition, the training program provides a comprehensive clinical and research training for general obstetricians and gynaecologists planning an academic career in Maternal-Fetal Medicine. The expected roles of the trainee as a Medical Expert / Clinical Decision-Maker, Communicator, Manager, Health Advocate, Scholar and Professional will be evaluated and integrated with the objectives of the training program.

2. Pre-requisite for the Trainee:

Five years of obstetrics and gynaecology including a basic clinical year that must be completed prior to entry into the Maternal-Fetal Medicine Program.

3. Recognition of the Trainee at Completion:

The training program in maternal-fetal medicine at the University of Toronto is a program accredited by the Royal College of Physicians and Surgeons of Canada currently approved as Accreditation without Certification (AWC). For individuals who successfully complete the current AWC program there will be individual recognition at the Royal College and a registry will be maintained of those individuals. However, Royal College recognition and registry of added competence will be maintained only for individuals who have Royal College specialty certification in Obstetrics and Gynaecology in Canada. Otherwise, recognition will be given from the University of Toronto only.

4. Duration of Training:

Two years of maternal-fetal medicine including:

- a) A six month block in which the resident will develop proficiency in fetal surveillance including dynamic ultrasound imaging and antepartum / intrapartum assessment of fetal health in addition to reproductive genetics and neonatal medicine.
- b) A six month block during which the resident will function in a consultant capacity under supervision of a senior consultant in maternal-fetal medicine with increasing professional responsibility to achieve the level of a junior consultant. During this block the resident will also be exposed to the principles of medical complications of pregnancy, obstetrical anaesthesia, perinatal organization at the local, provincial and national levels, perinatal follow-up, and community outreach.
- c) Six months elective devoted to neonatal medicine, diagnostic imaging and reproductive genetics: **OR** elective experiences sufficient to achieve the objectives outlined; **OR** an investigative project if the objectives of clinical training have been fulfilled.
- d) Six months devoted to an investigative project in maternal-fetal medicine, either of a basic or clinical nature.
- e) If the trainee wishes, a Masters Degree Epidemiology or Medical Sciences may be integrated into the training program. However, for successful completion of both degrees, an extension of the duration of the training to three years will be needed.

5. Content and Sequence of Training:

During the Maternal/Fetal Medicine Training Program, year one is divided into four three month CORE rotations encompassing Perinatology & High-Risk Obstetrics (two three-month rotations), Fetal Medicine and Ultrasound (three months), Medical Diseases of Pregnancy (three months). These are designated as “core” rotations and will be spent at both Mount Sinai Hospital (nine months) and Women’s College Hospital (three months).

The Maternal/Fetal Medicine Fellowship program is two or three years duration with an evolving level of responsibility and the following levels of expectations.

Maternal/Fetal Medicine Fellow, Year One

- focus on obtaining a refined history and physical examination.
- develop a detailed management investigation plan and liase with Maternal/Fetal Medicine staff.
- develop knowledge of appropriate laboratory and medical imaging interpretation skills.
- participate in teaching of clinical clerks and resident in Obstetrics and Gynaecology
- become aware of patient flow considerations
- review all cases with staff

Maternal/Fetal Medicine, Year Two

- by the end of the second year of the fellowship the fellow should have all of the above skills plus:
- a clear focus on detail of patient management
- effective thorough management and disposition of patients
- effective development of skills and diagnostic consultation
- teach housestaff with minimal Maternal/Fetal Medicine staff input
- to work effectively with allied medical and nursing staff to Maternal/Fetal Medicine and fill the role of staff physician with teaching
- manage a functional area of the division (such as the high-risk floor) with minimal staff intervention

Program Year	Content and Sequence of Rotations (Order of rotations may vary)											
	Number of Months											
Month	1	2	3	4	5	6	7	8	9	10	11	12
First	C ₁	C ₁	C ₁	C ₂	C ₂	C ₂	MDP 1	MDP 1	MDP1	FM1	FM1	FM1
Second	PP/ RG	PP/ RG	PED CVS	PED CVS	B FM2	B MDP2	* R	* R	* R	FC R	FC R	EL+ R

C = Core maternal fetal medicine and obstetric ultrasound training 1 = MSH & 2= WCH)

M = Medical complications of pregnancy

PE = Paediatrics / NICU / Follow up / HSC subspecialty clinics

G = Genetics

PA = Pathology

R = Research

OA* = Obstetric anaesthesia/critical care * = Part-time – remainder time = research

T/P = Teratology and pharmacology

FC = Fetal cardiology * = one/day week – remainder time = research

B = Brain module / MRI / Neuropathology

The above rotations are all mandatory. There is a four-week elective period (EL) that can be used flexibly for a research extension, additional clinical training, or remedial training.

Selective Rotations

NICU = Full-time rotation in Neonatal Intensive Care (2-4 weeks)

CC = Critical Care at MSH (2-4 weeks)

T/P = Teratology and Perinatal pharmacology (Mother Risk, HSC)

R = Research

Mandatory Content of Training

Description	Duration	Sites in which this training may be taken
C = Core Maternal Fetal Medicine and Obstetric Ultrasound Training (1 = MSH & 2= WCH)	6 months	MSH, WCH
MDP1 = Medical diseases of pregnancy	3 months	MSH
FM1 = Fetal Medicine / obstetric ultrasound training	3 months	MSH
PED = Paediatrics / NICU – 2 weeks full-time / Developmental Follow up clinics / HSC subspecialty clinics	2 months	MSH, WCH, HSC
RG = Reproductive Genetics	2 months	MSH
PP = Perinatal and Placental Pathology	2 months	MSH
FC = Fetal cardiology * = one/day week – remainder time = research	2 months (1 day/week)	HSC
B = Brain Module – Comprises: / MRI / Neuropathology / Newborn Head Ultrasound	2 months	MSH, HSC
CVS = Chorionic villous sampling (2 sessions/week - 40 cases for both trans-abdominal and trans-vaginal)	2 months (1 day/week)	MSH
R = Research	6 months	Hospitals/University
FM2* = Fetal Medicine Year 2 (Advanced)	2 months (part-time or full-time)	MSH
MDP2* = Maternal Diseases of Pregnancy Year 2 (Advanced)	2 months (part-time or full-time)	MSH

FM2 or MDP2 is chosen in year 2. Clinically-focussed fellows, who have chosen a clinical research project, may undertake both modules (part-time or full-time) provided this does not impact on progress with their research program.

MDPS2 rotations / clinics are available at University Health Network Hospitals (cardiology, haematology, organ transplant, rheumatology), Princess Margaret Hospital (oncology) and at Sunnybrook Health Sciences Centre (nephrology).

Research:

In accordance with the University of Toronto Mission Statement, we aim to select Fellows that are keen to pursue research ideas, many of whom already have a background of successful research publications. All first year rotations include 1-2 weekly research sessions, to be used to pursue avenues of research ideas, based on previous interests or from new interactions with U of T Faculty. The program Director, Dr. John Kingdom, will begin the process of helping you to identify areas of research interest even before commencing the Fellowship, and to connect you with members of faculty that can take your ideas forward. Many Fellows write grant applications (typically with Physicians Services Inc. of Ontario) to support their research, and several Royal College Residents have secured personal fellowship awards from CIHR (to permit an extension of the research period). By the end of year 1, individual fellows are expected to present their plans for research block to Dr. Kingdom. Research block is 80% protected time, with 1 day of clinical responsibilities, and no in-house call (year 2).

You must have a Faculty supervisor (not necessarily in clinical MFM or ObGyn) for all research projects that you undertake. The program encourages the concept of a written agreement between Faculty and Fellow, regarding future authorship, before the fellow invests time in any particular project. That way, misunderstandings regarding authorship are avoided, and both parties are clear regarding their responsibilities to ensure publication success.

It is important to remember that research does not always go smoothly. Many fellows who choose to get involved in laboratory research find that this is a very new and different experience. Unless you have very effective supervision, you can easily become discouraged because of unfamiliar terminology and techniques. Similarly, those who pursue a clinical research project without a formal background in clinical epidemiology many meet several hurdles such as obtaining appropriate approvals, sample sizes, inclusion and exclusion criteria, systematic review of the literature, and looking for extramural funding. The goal of research block is therefore to become experienced in the process of research rather than its content.

The majority of Fellows recruited to our program has prior research experience, and wish to build on this, for example by securing external peer-reviewed grant-funding. Every encouragement and support will be given to achieve this higher goal.

All research protocols, basic and clinical, must be reviewed by at least one member of the MFM Faculty before implementation and/or submission to the relevant Ethics Committee for approval. This process is designed to increase your chances of success, and thus satisfaction, with your research plans.

Intramural Presentation of Research

Fellows are expected to submit an abstract to the Department of Obstetrics & Gynaecology Annual Research Day (held in May) in both years of the program. The content may be based upon; recent research before joining the program, ideas/work in progress, or new research data. Fellows are likewise expected to submit an abstract to the combined Neonatal-MFM joint fellowship Research Day each year, held also in May. Participation in these intramural events qualifies you for funding to present your work externally in year 2 with fellowship funding.

Extramural Presentation of Research

Fellows are strongly encouraged to submit abstracts to approved National and International meetings, within the financial constraints of the program. The following Societies are considered suitable for submission of abstracts;

Society for Gynecologic Investigation
 Society for Maternal-Fetal Medicine
 British Society for Maternal-Fetal Medicine
 International Fetal Medicine and Surgery Society
 Society for Obstetrical Medicine

Society of Obstetricians & Gynaecologists of Canada
International Society for Hypertension in Pregnancy

Attendance at one or more of these meetings is made possible by your annual Academic /Educational Allowance: This is currently \$3,000 CDN per year. Pre-approval must be obtained from the program office prior to submitting an abstract for oral or poster presentation. You may claim up to CDN\$2,000 of this annual allowance for any individual meeting, paid retroactively against proof of payment for the following items;

1. Economy air fare
2. Room rate & tax (max CDN\$150/night) – please pay sundries separately
3. Ground transportation to/from destination airport
4. Meeting registration (fellow/in-training rate only)
5. Pre-conference satellite educational meeting

You may attend a meeting in your 1st year without an abstract as an educational experience to the value of \$1500. All subsequent conference leave and expenses is conditional upon having an abstract accepted for presentation, either as a poster or oral. All fellows may attend SMFM each year. Vacation leave is not permitted during either SMFM week or SGI week, in order that a maximal number of fellows and staff can attend, leaving the remainder to maintain the perinatal referral services.

Prior planning of abstract submission to conferences is expected. You are not permitted to submit an abstract from the University of Toronto without prior approval of the Faculty supervisor/Principal investigator.

Elective Content of Training

Description	Duration	Sites in which this training may be taken
O/A* = Obstetric Anaesthesia/Critical Care	1-2 months	MSH, UHN Hospitals, HSC
T/P* = Teratology and Pharmacology	1-2 months	
External Elective time (for Royal College Residents only)	1 month	Clinical or research training may be taken at any Canadian, American or International Academic Health Sciences Institution, subject to PD and RPC approval.

Electives:

Elective training of 1-2 months within the University of Toronto can be arranged during the final 6 months of the program provided that the fellow has passed all clinical evaluations and has made satisfactory progress in their research block. You will be expected to maintain your on-call commitments during any elective period. All electives must have a pre-designated supervisor and written educational objectives and an evaluation must be completed at the end of the rotation.

Overall Objectives:

At the completion of training, the resident will demonstrate:

1. An understanding of the basic sciences relevant to Maternal-Fetal Medicine: these include knowledge of maternal, placental, fetal and newborn anatomy, embryology, genetics, pharmacology, biochemistry, endocrinology, microbiology, physiology and pathology;
2. Special competence in the assessment and management of acute and chronic maternal and fetal conditions including history, physical examination and other investigative procedures such as lab tests, ultrasound, and invasive technology;
3. The evaluation and treatment of Maternal-Fetal and early newborn disorders: and understanding of genetics, teratologic, metabolic, endocrine, immunologic and infectious disorders that relate to pregnancy; diseases of fetal growth and development; abnormal placental and uterine function; diseases of maternal systems and behaviour disorders occurring in pregnancy, and diseases of the neonate;
4. Continued empathic, sensitive and ethical attitudes to women and their families during the reproductive process. An ability to communicate with such individuals as well as with other members of the health care team is essential. A recognition of the importance of continuing self education, an awareness of the limitations of current methods of clinical management and the important contribution that research brings to an improvement in the care of the pregnant woman, her fetus, infant and family, is necessary;
5. An understanding of the organization of and participation in audit of health services in Maternal-Fetal Medicine.

CORE MATERNAL/FETAL MEDICINE – MSH

Goals and Objectives

I. Medical Expert:

During this rotation the fellow should demonstrate competence in:

1. In-depth assessment of obstetric complications of pregnancy requiring admission to hospital including; preterm labour, premature rupture of membranes, cervical incompetence, multi-fetal pregnancy complications, antepartum hemorrhage, intrauterine growth restriction.
2. In-depth knowledge of maternal and fetal infectious diseases or pregnancy, complications from substance abuse, evaluation of abdominal pain or abdominal mass in pregnancy.
3. In depth knowledge of placental complications of pregnancy, including invasive placentation, placenta previa, complications of twin pregnancy (selective IUGR, co-twin death, twin-twin transfusion syndrome), hypertensive disorders of pregnancy, mirror syndrome.
4. In depth theoretical and practical knowledge of the methods of acute and chronic fetal health assessment, including Doppler methods, fetal biophysical profile score, and fetal heart rate patterns. This includes logical approach to determining optimal timing and mode of delivery.
5. In depth knowledge of hematological complications of pregnancy, including anemia, thrombocytosis, thrombocytopenia, venous thrombo-embolism, thrombophilia disorders, hemoglobinopathies, sickle cell disease.
6. In depth knowledge of adult congenital and acquired maternal cardiac disease in pregnancy.
7. In depth of a range of common general medical complications of pregnancy, including renal tract, gastrointestinal tract, respiratory, neurological, dermatological, ocular, auto-immune and musculoskeletal diseases.
8. Appreciation of the planning role for antenatal anesthesia consultation of high-risk women.
9. In depth management of all forms of diabetes, and common endocrinology problems
10. Management of common maternal malignancies complicating pregnancy.
11. Appreciation of role of general obstetric medicine physician input to the MFM team vs. role of relevant subspecialty physicians.
12. Appreciation of the need to conduct individual patient-care conferences ahead of complications or delivery.
13. Undertake, directly supervise, or observe as appropriate, all relevant elective obstetrical surgical procedures planned for high-risk pregnant women under the fellow's supervision including: elective preterm Cesarean delivery and more complicated near-term elective Cesarean deliveries, elective and rescue/emergency cervical cerclage, laparoscopic cervico-isthmic cerclage, external cephalic version, management of preterm labour in twins, breech presentation.
14. Participate in all unusual medical or surgical interventions required in pregnancy, including: interventional radiology, surgical biopsy, laparotomy or laparoscopy in pregnancy, cardiac catheterization in pregnancy.

15. Participate in care of pregnant women admitted to hospital for psychiatric reasons.
16. Participate in the care of pregnant women admitted (antepartum or post-partum) to Intensive Care for any reason.
17. The fellow is expected to become competent is discussing the medical and surgical methods for termination of pregnancy with women and their families. The fellow is expected to become competent in recognizing and managing all medical and surgical complications that may arise from such procedures. The fellow is expected to examine delivered anomalous fetuses following delivery (usually in the presence of a clinical geneticist) to recognize common malformations and to appreciate the importance of external examination of the stillborn fetus.

Participation in the active process of termination of pregnancy is entirely at the discretion of the individual fellow. This implies the writing of orders and administration of utero-tonic medications.

All fellows are expected to ensure that women admitted to hospital for termination of pregnancy receive optimal multidisciplinary care, including input from genetics, liaison with perinatal pathology, and discharge planning. This responsibility includes assessment and management of emergencies such as bleeding, fever and retained placenta

II. Communicator:

1. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
2. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
3. Be able to deliver bad news to women and their families in a sensitive and humane manner
4. Be able to effectively involve social work and children's aid society services.
5. Be able to recognize stress and mental illness in pregnant women and effectively involve psychiatric services.
6. Be able to discuss relevant issues around timing of delivery preterm.
7. Be able to formulate and discuss plans for non-interventional / palliative care of the pregnancy.
8. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
9. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
10. Demonstrate an ability to assist families to deal with perinatal loss
11. Handle upset or abusive patients and/ or caretakers.

III. Collaborator:

1. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.
2. To develop understanding of the Provincial referral systems, including effective telephone communication with CritiCall bed-service, referring physicians requesting advice, and logistics of patient transfer to and from the level III perinatal units, including HSC newborn transfers.
3. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care.

IV. Manager:

1. Master the appropriate use of medical and surgical consultations for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
2. Demonstrate appropriate documentation of inpatient patient management
3. Demonstrate ability to manage personal time efficiently.

4. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
5. Demonstrate ability to identify medico-legal risks and take steps to address them.
6. To gradually master the ability to manage a busy high-risk inpatient floor with gradually-reducing direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff..
3. Demonstrate ability to apply the principles of evidence-based medicine.
4. Supervision and bedside teaching of residents and undergraduates

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

CORE MATERNAL/FETAL MEDICINE – SWCHSC

Goals and Objectives

I. Medical Expert:

During this rotation the fellow should demonstrate competence in:

1. In-depth assessment of obstetric complications of pregnancy requiring admission to hospital including; preterm labour, premature rupture of membranes, cervical incompetence, multi-fetal pregnancy complications, antepartum hemorrhage, intrauterine growth restriction.
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4. In depth theoretical and practical knowledge of the methods of acute and chronic fetal health assessment, including Doppler methods, fetal biophysical profile score, and fetal heart rate patterns. This includes logical approach to determining optimal timing and mode of delivery.
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2. To develop understanding of the Provincial referral systems, including effective telephone communication with CritiCall bed-service, referring physicians requesting advice, and logistics of patient transfer to and from the level III perinatal units, including HSC newborn transfers.
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2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
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5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

FETAL MEDICINE AND ULTRASOUND

Goals and Objectives

I. Medical Expert:

During this rotation the fellow should demonstrate:

1. Comprehensive understandings of all the options open to a pregnancy woman with regard to prenatal fetal testing and diagnosis.
2. Competence in counseling pregnant women about prenatal diagnosis options. This competence to include an ability to explore the relative merits and disadvantages of all options and help the patient to choose the testing most appropriate for her.
3. Competence in carrying out each of the prenatal diagnosis ultrasound tests:
 - Nuchal translucency measurement
 - Nasal bone evaluation
 - Limited first trimester fetal anatomic review
 - Comprehensive multi-system fetal anatomic survey in the second and third trimester
4. Competence in counseling patients about the risks, benefits and roles of invasive fetal testing. If these should be independently competent in:
 - Amniocentesis
 - Chorionic villous sampling

The fellow should also be familiar with fetal blood sampling and be a competent assistant for this procedure.

5. When prenatal diagnosis testing has been completed, the fellow should demonstrate proficiency in assimilating the results into the patients care as follows:
 - a. Fetal testing normal
 - Communication of results to patient
 - Acknowledgment of test limitations (false negative etc.)
 - Appropriate follow-up
 - Communication of results to referring obstetric caregiver
 - b. Fetal testing abnormal
 - Sensitive communication of test results (see section on communication)
 - Comprehensive knowledge of options open to patient
 - Multidiscipline involvement to aid management
 - Meticulous arrangement of subsequent care and follow-up (see next section)
6. The fellow will demonstrate competence in the diagnosis and management of all common fetal complications:
 - In-depth theoretical and practical understanding of fetal alloimmune anemia ("Rhesus disease") including antibody titres, Doppler studies, ultrasound appearance amniocentesis and cordocentesis. This knowledge includes formulation of a surveillance plan for pregnancy, response to abnormal results and timing of delivery.

- The fellow will also demonstrate competence in the diagnosis and management of alloimmune fetal thrombocytopenia.
- Fetal anatomic anomalies. The fellow will demonstrate independent competence in the diagnosis and management of the common frequent fetal structural anomalies including, but not limited to:

CVS

- open neural tube defect
- holoprosencephaly
- Ventriculomegaly
- Intracranial hemorrhage
- Dandy Walker variations

Chest

Cardiac – AS / VSD

- hypoplastic left or right heart
- anomalies of the great vessels
- tachy or brady arrhythmia
- non-immune hydrops congenital

Lungs

- cystic adenomatous malformation (CCAM)
- bronchogenic cyst
- diaphragmatic hernia

Abdomen

- gastroschisis
- omphalocele
- meconium peritonitis
- echogenic bowel
- bowel obstruction/perforation

Genitourinary

- lower or upper tract obstructions
- Renal anomaly/dysplasia/absence
- Abnormal/ambiguous genitalia

Head & Neck

- cleft lip or palate
- ocular anomalies
- retrognathia
- govtres/neck masses
- cystic hygroma

Limbs

- limb anomaly/absence
- movement disorders
- positional anomalies – talipes etc
- digit anomalies

7. Fetal minor anatomic variations

Fellows will demonstrate competence in the evaluation of minor fetal anatomic variations such as choroid plexus cysts, echogenic foci in the cardiac ventricles and echogenic bowel. They will be indepthly competent to counsel patients regarding the significance of these findings.

8. Fetal health assessment – as # 4 four in the perinatology and high risk ob section (John Kingdom)

9. Placental complications – as for # 3 in the perinatology and high risk ob section (John Kingdom)
10. Fetal Macrosomia
Fellows will be competent in reviewing ultrasound estimations of suspected fetal macrosomia and counseling patients about the implications of the results.
11. Multiple pregnancy: Fellows should demonstrate competence in accurate diagnosis of the number and chorionicity of multiple gestation. They will also be knowledgeable in surveillance for complications including discordant twin growths/well-being; twin-to-twin transfusion syndrome; co-twin death. Knowledge of the issues in fetal reduction will also be acquired by all fellows.
12. Preterm labour/cervical assessment
Fellow will gain proficiency in measurement of the cervix with transabdominal and transvaginal ultrasound. They will be able to assimilate these findings into the patient counseling with regard to preterm birth risk and use ultrasound to guide cervical cerclage.
13. Fetal procedures
Fellows will develop competence in the knowledge required for counseling regarding the following fetal interventions and assisting in their conducts:
 - Fetal blood sampling
 - Fetal blood transfusion
 - Therapeutic amnioreduction
 - Fetal fluid aspiration – pleural, pericardial, abdominal
 - Fetal cavity to amniotic fluid shunting: chest, bladder
 - Selective umbilical cord ligation in anomalous multiple gestation
 - Fetal reduction in high-order multi-fetal pregnancy
 - Laser coagulation of placenta in twin-to-twin transfusion syndrome
 - Fetal skin/muscle biopsy
 - Fetoscopy

II. Communicator:

Fellows should demonstrate competence in the following:

1. Communication of test results in a sensitive easily understood manner to the patient and her partner
2. Explain the implications of the test results and further follow up and options, again in a sensitive and easily understood manner
3. Involvement of ancillary services, as indicated, in order to optimize the patient understanding of her options, e.g.:
 - Translation services
 - Family support members
 - Social work
 - Pastoral care
 - Patient peer support groups
 - Internet websites
 - Patient information documents/publications
 - Psychology/psychiatry

4. Communicate test results and subsequent follow-up to the referring obstetric caregiver
5. Communicate effectively with allied health profession where appropriate – including nursing, neonatology, sub-specialist pediatrics, genetics, social work, psychiatry and administration, medical ethics, laboratory staff.
6. Where necessary, convene and chair multi-disciplinary patient care conference
7. Documentation, and appropriate discrimination of documentation, following all patient care events.

III. Collaborator:

Fellows will demonstrate confident and considerate collaborative skills in the following areas:

1. Understanding of this referral system for fetal complications of pregnancy – locally, provincially and rationally. They will understand pressures of timeline and resources on referring caregivers and make appropriate adjustments in the triaging of referrals.
2. In the optimal management of complex cases, fellow will collaborate with allied caregivers to optimize counseling and care for the patient. Fellows will obtain input from genetics, pediatrics, diagnostic imaging as accessory and oversee synthesis of these inputs to ovid the patients care.
3. Where appropriate, fellows will collaborate with active research with the patients with alloimmune fetal thrombocytopenia would be offered enrollment in international randomised trial of steroids versus intravenous immunoglobulin.
4. Fellows will collaborate with all quality assurance programs in order to optimize patient care.

IV. Manager:

By the end of their rotation, Fellows should demonstrate competence in the following management areas:

1. Manage of the team
Fellows will be aware of their roles as of junior staff and trainees – both medical and allied professions. These roles will include supervision of patient care, education, research mentoring and role modeling.
2. Triage of referrals
Knowledge of the appropriate timelines for seeing patients after consultation requests concerning possible fetal complications. Fellows will also demonstrate an understanding of reasonable workloads for clinics and support staff. Organization of feedback to referring caregivers and patients after consultation requests.
3. Conduct of antenatal clinics
Fellows will demonstrate confidence in the management of patient flow in clinics, appropriate utilization of ultrasound machine time and appropriate recommendation for additional visits as they impact on clinical workload and patient care.
4. Admission
Fellows will demonstrate independence in decision making regarding need for admission to hospital.

5. Discharge
Fellows will confidently make decisions regarding discharge of care back to referring caregivers, if there is no further role for the MFM service.
6. Documentation
Fellows will demonstrate an understanding of the need for clear contemporaneous documentation and/or dictation of all patients of care encounters. They will demonstrate diligence in surveillance for medical-legal risk and appropriate precautions/preventative measures.
7. Fellow will manage their own time, balancing the agendas of clinical commitments, research, teaching, personal health and family commitment.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff.
3. Demonstrate ability to apply the principles of evidence-based medicine.
4. Supervision and bedside teaching of residents and undergraduates
5. Demonstrate interest in contributing experience to the literature with case reports/service
6. Demonstrate awareness of potential benefits to the patient of active clinical trials appropriate to her case and demonstrate support for enrollment of the patient wishes.
7. Demonstrate openness to asking clinical questions and initiating research in areas of clinical uncertainty, if opportunities arise.

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

MEDICAL DISEASES OF PREGNANCY

Goals and Objectives

I. Medical Expert:

During this rotation the fellow should demonstrate:

1. Comprehensive understandings of maternal and fetal implications encountered in women whose gestation is complicated by medical disorders.
2. Competence in counseling pregnant women whose gestation is complicated by medical disorders.
3. Competence in carrying out and interpreting pertinent investigations necessary to maintain optimal health of a gravid female (and that of her unborn child) whose pregnancy is complicated by medical disorders.
4. Understanding when surgical intervention is necessary when encountering gravidas with surgical conditions in which surgical intervention will optimize the overall maternal and fetal well being
5. Understanding and indications for invasive intrapartum monitoring in females whose pregnancy is complicated by complex and advanced medical disorders.
6. Competence in counseling patients about the fetal risks of inheritance of medical conditions associated increased risk of inheritance. The candidate will understand the role of invasive and non invasive diagnostic options. The candidate should be independently competent in:
 - Amniocentesis
 - Chorionic villous sampling
7. When testing has been completed, the fellow should demonstrate proficiency in assimilating the results into the patients care as follows:
 - Communication of results to patient
 - Acknowledgment of test limitations (false negative etc.)
 - Appropriate follow-up
 - Communication of results to referring obstetric caregiver
 - Sensitive communication of test results
 - Comprehensive knowledge of options open to patient
 - Multidiscipline involvement to aid management
 - Meticulous arrangement of subsequent care and follow-up
8. The fellow will demonstrate understanding of cardiovascular adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by cardiovascular disorders. The knowledge will extend to but be not exclusive to:
 - Rheumatic heart disease; valvular disease; prosthetic heart valves; cardiomyopathies; arrhythmias; congenital heart disease such T of F, ASD, VSD, Epstein anomaly, PDA and others; surgical repairs such as Mustard repair, Fontan procedure and others.
9. The fellow will demonstrate understanding of pulmonary adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose

pregnancy is complicated by pulmonary disorders. The knowledge will extend to but be not exclusive to:

- Asthma, pneumonia, primary pulmonary hypertension, cystic fibrosis and others.

10. The fellow will demonstrate understanding of gastrointestinal adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by gastrointestinal disorders. The knowledge will extend to but be not exclusive to:

- Crohns disease, ulcerative colitis, appendicitis, and others

11. The fellow will demonstrate understanding of hepatologic adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by hepatologic disorders. The knowledge will extend to but be not exclusive to:

- Cirrhosis and esophageal varices, hepatitis, liver transplant, cholestasis, cholelithiasis and others.

12. The fellow will demonstrate understanding of hematological adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by hematological disorders. The knowledge will extend to but be not exclusive to:

- Anemia, thrombophilia, thrombosis, coagulation disorders and others.

13. The fellow will demonstrate understanding of MSK and autoimmune adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by MSK and autoimmune disorders. The knowledge will extend to but be not exclusive to:

- SLE, sarcoidosis, arthritis, antiphospholipid antibody syndrome and others.

14. The fellow will demonstrate understanding of hypertensive adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by hypertensive disorders. The knowledge will extend to but be not exclusive to:

- Chronic hypertension, PET and others.

15. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by malignancy. The knowledge will extend to but be not exclusive to:

- Breast, hematological malignancy, neurological malignancy, GTN and others.

16. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by neurological disorders. The knowledge will extend to but be not exclusive to:

- Epilepsy, AVM, aneurisms and others.

17. The fellow will demonstrate understanding of endocrine adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by endocrine disorders. The knowledge will extend to but be not exclusive to:
- Diabetes, thyroid disorders, pituitary disorders, adrenal disorders and others.
18. The fellow will demonstrate understanding of renal adaptations to pregnancy. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by renal disorders. The knowledge will extend to but be not exclusive to:
- Nephropathy, nephrotic syndrome, renal transplant, pyelonephritis, nephrolythiasis, dialysis, renal failure and others.
19. The fellow will demonstrate competence in medical, obstetrical and fetal management of gravidas whose pregnancy is complicated by morbid obesity.

II. Communicator:

Fellows should demonstrate competence in the following:

1. Communication of test results in a sensitive easily understood manner to the patient and her partner
2. Explain the implications of the test results and further follow up and options, again in a sensitive and easily understood manner
3. Involvement of ancillary services, as indicated, in order to optimize the patient understanding of her options, e.g.:
 - Translation services
 - Family support members
 - Social work
 - Pastoral care
 - Patient peer support groups
 - Internet websites
 - Patient information documents/publications
 - Psychology/psychiatry
4. Communicate test results and subsequent follow-up to the referring obstetric caregiver
5. Communicate effectively with allied health profession where appropriate – including nursing, neonatology, sub-specialist pediatrics, genetics, social work, psychiatry and administration, medical ethics, laboratory staff.
6. Where necessary, convene and chair multi-disciplinary patient care conference
7. Documentation and appropriate discrimination of documentation, following all patient care events.

III. Collaborator:

Fellows will demonstrate confident and considerate collaborative skills in the following areas:

1. Understanding of this referral system for maternal complications of pregnancy – locally, provincially and rationally. They will understand pressures of timeline and resources on referring caregivers and make appropriate adjustments in the triaging of referrals.
2. In the optimal management of complex cases, fellow will collaborate with allied caregivers to optimize counseling and care for the patient. The fellow will initiate patient care conferences as appropriate
3. Where appropriate, fellows will collaborate in active research activity within the field of medical disorders of pregnancy.
4. Fellows will collaborate with all quality assurance programs in order to optimize patient care.

IV. Manager:

By the end of their rotation, Fellow should demonstrate competence in the following management areas:

1. Management of the team
Fellows will be aware of their roles as of junior staff and trainees – both medical and allied professions. These roles will include supervision of patient care, education, research mentoring and role modeling.
2. Triage of referrals
Knowledge of the appropriate timelines for seeing patients after consultation requests concerning possible medical complications. Fellows will also demonstrate an understanding of reasonable workloads for clinics and support staff. Fellow will provide feedback to referring caregivers and patients after consultation requests.
3. Conduct of antenatal clinics
Fellows will demonstrate confidence in the management of patient flow in clinics, and will provide recommendation for additional visits as they impact on clinical workload and patient care.
4. Admission
Fellows will demonstrate independence in decision making regarding need for admission to hospital.
5. Discharge
Fellows will confidently make decisions regarding discharge of care back to referring caregivers, if there is no further role for the MFM service.
6. Documentation
Fellows will demonstrate an understanding of the need for clear contemporaneous documentation and/or dictation of all patient encounters. Fellow will demonstrate diligence in surveillance for medical-legal risk and appropriate precautions/preventative measures.
7. Fellow will manage their own time, balancing the agendas of clinical commitments, research, teaching, personal health and family commitment.
8. The fellow will manage and organize Thursday MCP rounds.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff.
3. Demonstrate ability to apply the principles of evidence-based medicine.
4. Supervision and bedside teaching of residents and undergraduates
5. Demonstrate interest in contributing experience to the literature with case reports/service
6. Demonstrate awareness of potential benefits to the patient of active clinical trials appropriate to her case and demonstrate support for enrollment of the patient wishes.
7. Demonstrate openness to asking clinical questions and initiating research in areas of clinical uncertainty, if opportunities arise.

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

Academic:

For fellow to successfully complete this rotation the fellow will need to complete a minimum of two standard letters. In order to successfully complete this rotation the fellow will need to complete a structured review for the International Society of Obstetric Medicine (ISOM) peer review electronic publication.

SUBSPECIALTY ROTATION (YEAR 2 OR 3): ADVANCED MEDICAL DISORDERS OF PREGNANCY

Goals and Objectives

I. Medical Expert:

During this rotation the fellow should demonstrate competence in:

1. Comprehensive understanding and appropriate management of pregnant patients with multiple and complex medical disorders.
2. Coordinating care of critically-ill pregnant patients in the ICU or labour and delivery setting, demonstrating effective use of the multidisciplinary patient care conference and care coordinators.
3. Specific areas of subspecialty medicine such as hematology, oncology, cardiology, infectious disease, nephrology and/or obstetric medicine.

II. Communicator:

1. Be able to communicate patient management plans to referring physicians; coordinate co-management arrangements with physicians in the community.
2. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
3. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
4. Be able to deliver bad news to women and their families in a sensitive and humane manner.
5. Be able to effectively involve social work and children's aid society services.
6. Be able to recognize stress and mental illness in pregnant women and effectively involve psychiatric services.
7. Be able to discuss relevant issues around timing of delivery preterm.
8. Be able to formulate and discuss plans for non-interventional / palliative care of the pregnancy.
9. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
10. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
11. Demonstrate an ability to assist families to deal with perinatal loss
12. Handle upset or abusive patients and/ or caretakers.

III. Collaborator:

1. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.
2. To develop understanding of the Provincial referral systems, including effective telephone communication with referring physicians requesting advice, and logistics of patient transfer to and from other medical facilities and adult intensive care units.
3. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care.

IV. Manager:

1. Be able to work with nursing specialists on the antenatal and postnatal wards to coordinate care of complex medical/surgical obstetrical patients.
2. Master the appropriate use of medical and surgical consultations for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
3. Demonstrate appropriate documentation of inpatient patient management
4. Demonstrate ability to manage personal time efficiently.

5. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
6. Demonstrate ability to identify medico-legal risks and take steps to address them.
7. To master the ability to manage a busy high-risk inpatient floor with minimal direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of maternal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women at risk.

VI. Scholar:

1. Suggest areas for future clinical investigation based on deficiencies in our clinical knowledge of rare conditions affecting pregnancy.
2. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care, demonstrated by effective standardized patient letters and patient care conferences.
3. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff.
4. Demonstrate ability to apply the principles of evidence-based medicine.
5. Supervision and bedside teaching of residents and undergraduates

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

SUBSPECIALTY ROTATION (YEAR 2 OR 3): ANESTHESIA

Goals and Objectives

I. Medical Expert:

During the rotation the Fellow should demonstrate competence in:

1. Assessing patient's physical status according to ASA Classification
2. Assessing patient's history and identifying risk factors for anesthesia
3. Assessing patient's airway and Identifying potential difficult airway
4. Informing patient about risks and benefits of anesthesia
5. Understanding different techniques of analgesia and anesthesia in Obstetrics
6. Understanding complications of different anesthesia techniques
7. Understanding the importance of optimization of high risk patient for anesthesia
8. Understanding unique drug interactions in obstetric anesthesia
9. Understanding how to convey the necessary information for decision-making in anesthesia
10. Understanding recovery from anesthesia
11. Diagnosing and treating most common complications in PACU
12. Treating immediate post-operative pain in PACU
13. Treating post-operative pain until hospital discharge
14. Assessing postural puncture headache
15. Understanding and interpreting invasive monitoring

II. Communicator:

1. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
2. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
3. Be able to deliver bad news to women and their families in a sensitive and humane manner
4. Be able to effectively involve social work and children's aid society services.
5. Be able to recognize stress and mental illness in pregnant women and effectively involve psychiatric services.
6. Be able to discuss relevant issues around timing of delivery preterm.
7. Be able to formulate and discuss plans for non-interventional / palliative care of the pregnancy.
8. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
9. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
10. Demonstrate an ability to assist families to deal with perinatal loss
11. Handle upset or abusive patients and/ or caretakers.

III. Collaborator:

1. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.
2. To develop understanding of the Provincial referral systems, including effective telephone communication with CritiCall bed-service, referring physicians requesting advice, and logistics of patient transfer to and from adult intensive care unit.
3. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care.

IV. Manager:

1. Master the appropriate use of medical and surgical consultations for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
2. Demonstrate appropriate documentation of inpatient patient management
3. Demonstrate ability to manage personal time efficiently.
4. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
5. Demonstrate ability to identify medico-legal risks and take steps to address them.
6. To gradually master the ability to manage a busy high-risk inpatient floor with gradually-reducing direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of maternall morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff..
3. Demonstrate ability to apply the principles of evidence-based medicine.
4. Supervision and bedside teaching of residents and undergraduates

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

SUBSPECIALTY ROTATION (YEAR 2 OR 3): FETAL CARDIOLOGY

Goals and Objectives

I. Medical Expert:

During the rotation the Fellow should develop competence in:

1. Understanding fetal /prenatal cardiac anatomy and physiology.
2. Understanding indications for referrals to fetal cardiology.
3. Screening pregnant women for risk factors for congenital heart disease.
4. Use of ultrasound tools appropriately to perform fetal echocardiography.
5. Performing basic fetal echo views (4 chambers, outflow tracts, 3 vessel views).
6. Interpretation of fetal echo data.
7. Formulating basic plans for pregnancy, delivery and postnatal management related to fetal cardiac problems.

II. Communicator:

1. Able to write concise and accurate report of study results.
2. Communicates relevant features of the exam to team members.
3. Communicates effectively with patient and family relevant issues around pregnancy management, timing of delivery and postnatal management of fetal cardiac conditions including non-interventional/palliative care and outlining basic active cardiac / cardiac surgical management pathways.
4. Demonstrates sensitivity to the cultural, ethnic and religious backgrounds of patients.
5. Demonstrates ability to deliver bad news effectively with compassion and sensitivity.

III. Collaborator:

1. Demonstrate an ability to work effectively with sonographers and fetal echocardiographers.
2. To develop understanding of the Provincial referral systems as they relate to the organization of the subspecialty of pediatric cardiology.

IV. Manager:

1. Able to request fetal echo examination and follow-up appropriately.
2. Demonstrate ability to manage personal time efficiently.
3. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
4. Demonstrate ability to identify medico-legal risks and take steps to address them.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting pregnant women and their fetuses with congenital heart disease.
2. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality related to structural or functional fetal heart disease
3. Recognize and respond appropriately in advocacy situations.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrates initiative and curiosity.
3. Demonstrate ability to critically evaluate the relevant literature.

4. Attends and participates in fetal echo education programs.
5. Demonstrates a strategy for personal continuing education.

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

SUBSPECIALTY ROTATION (YEAR 2 OR 3): FETAL BRAIN (NEUROPATHOLOGY AND MAGNETIC RESONANCE IMAGING)

Goals and Objectives

I. Medical Expert:

1. Describe the process of fetal MRI in order to counsel patients prior to the procedure.
2. Be familiar with the indications and contra-indications for fetal MRI.
3. Be familiar with the major neuroanatomical structures and development of the brain.
4. Be familiar with the neuropathology of common congenital and acquired brain lesions.
5. Be familiar with the diagnosis and neuropathology of antepartum and prenatal brain asphyxia.
6. Be familiar with newborn cranial ultrasound including the common abnormalities.

II. Communicator:

1. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
2. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
3. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
4. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
5. Demonstrate an ability to assist families to deal with perinatal loss
6. Handle upset or abusive patients and/ or caretakers.
7. Be able to communicate and explain fetal MRI and neuropathology finding to the health care team.

III. Collaborator:

1. Collaboration on research projects is encouraged, particularly in conjunction with pathology, medical imaging and genetics
2. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.
3. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care.

IV. Manager:

1. Master the appropriate use of neuro imaging for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
2. Demonstrate appropriate documentation of patient management
3. Demonstrate ability to manage personal time efficiently.
4. Demonstrate an ability to motivate, inspire and educate more junior members of the health-care team.
5. Demonstrate ability to identify medico-legal risks and take steps to address them.
6. To gradually master the ability to manage a busy high-risk inpatient floor with gradually-reducing direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition

and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.

2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to the use of MRI in the diagnosis of fetal brain diseases.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff.
3. Demonstrate ability to apply the principles of evidence-based medicine.

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

SUBSPECIALTY ROTATION (YEAR 2 OR 3) – MEDICAL GENETICS

Goals and Objectives

- To understand the role of genetics in Medicine and in Prenatal diagnosis
- To understand the concepts involved in the classification and inheritance patterns of genetic disorders.
- To understand the molecular basis of genetic disorders.
- To understand the modern methods of detecting genetic disorders.
- To understand the principles of clinical genetics and its importance in prenatal diagnosis.
- To understand key ethical considerations involved in medical genetics and prenatal diagnosis
- To understand the principles of cytogenetics and its importance in medical genetics and prenatal diagnosis
- To understand the principles of fetopathology and its importance in prenatal diagnosis
- To understand the principles of screening for fetal aneuploidy and other structural abnormalities
- To understand the principles of genetic counseling

I. Medical Expert:

During the rotation the Fellow should demonstrate competence in:

1. Counselling patients with fetal cytogenetics abnormalities
2. Counselling patients with a family history of chromosome abnormality, single gene disorders, multifactorial conditions, and abnormalities/mental retardation of an unknown etiology
3. Counselling patients with fetal abnormalities of an unknown etiology
4. Counselling patients with abnormal screening test results
5. Searching the literature and using computer programs to delineate conditions of an unknown etiology

II. Communicator:

1. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
2. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
3. Be able to deliver bad news to women and their families in a sensitive and humane manner
4. Be able to effectively involve social work and children's aid society services.
5. Be able to recognize stress and mental illness in pregnant women and effectively involve psychiatric services.
6. Be able to discuss relevant issues around timing of delivery preterm.
7. Be able to formulate and discuss plans for non-interventional / palliative care of the pregnancy.
8. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
9. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
10. Demonstrate an ability to assist families to deal with perinatal loss
11. Handle upset or abusive patients and/ or caretakers.

III. Collaborator:

1. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.

2. To develop understanding of the Provincial referral systems, including effective telephone communication with CritiCall bed-service, referring physicians requesting advice, and logistics of patient transfer to and from the level III perinatal units, including HSC newborn transfers.
3. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care for genetic indications.

IV. Manager:

1. Master the appropriate use of medical and surgical consultations for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
2. Demonstrate appropriate documentation of inpatient patient management
3. Demonstrate ability to manage personal time efficiently.
4. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
5. Demonstrate ability to identify medico-legal risks and take steps to address them.
6. To gradually master the ability to manage a busy high-risk inpatient floor with gradually-reducing direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff..
3. Demonstrate ability to apply the principles of evidence-based medicine.
4. Supervision and bedside teaching of residents and undergraduates

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

SUBSPECIALTY ROTATION (YEAR 2 OR 3): PEDIATRICS

Goals and Objectives

- To learn about daily management of babies in the NICU
- To learn about outcomes of NICU babies
- To learn about Neonatal resuscitation – especially Bag/mask ventilation
- To place one or two UV lines
- To learn about relevant subspecialty clinics at The Hospital for Sick Children.

I. Medical Expert

During the rotation the Fellow should demonstrate competence in:

1. Stabilization of the newborn in the Resuscitation Room
2. Daily assessment of babies in the NICU
3. Interpretation of Chest X-rays and Cranial ultrasounds
4. General knowledge of long-term outcomes of VLBW infants
5. Insertion of umbilical venous lines
6. Bag /mask ventilation
7. The approach to pediatric follow-up of infants discharged from an NICU.
8. Understanding the Oxford –Vermont reporting system.

II. Communicator:

1. Be part of the team that talks to families about outcomes of NICU babies
2. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
3. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
4. Be able to deliver bad news to women and their families in a sensitive and humane manner
5. Be able to effectively involve social work and children's aid society services.
6. Be able to recognize stress and mental illness in pregnant women and effectively involve psychiatric services.
7. Be able to discuss relevant issues around timing of delivery preterm.
8. Be able to formulate and discuss plans for non-interventional / palliative care of the pregnancy.
9. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
10. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
11. Demonstrate an ability to assist families to deal with perinatal loss
12. Handle upset or abusive patients and/ or caretakers.

III. Collaborator:

1. Collaboration on research projects is encouraged, particularly in conjunction with pathology, medical imaging and genetics
2. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.
3. To develop understanding of the Provincial referral systems, including effective telephone communication with CritiCall bed-service, referring physicians requesting advice, and logistics of patient transfer to and from the level III perinatal units, including HSC newborn transfers.
4. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care.

IV. Manager:

1. Master the appropriate use of medical and surgical consultations for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
2. Demonstrate appropriate documentation of inpatient patient management
3. Demonstrate ability to manage personal time efficiently.
4. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
5. Demonstrate ability to identify medico-legal risks and take steps to address them.
6. To gradually master the ability to manage a busy high-risk inpatient floor with gradually-reducing direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. To encourage breast milk feeding for benefits to both infant and mother
2. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
3. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
4. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
5. Appreciate the principles of health policy development as applied to obstetrics.
6. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
7. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
8. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff..
3. Demonstrate ability to apply the principles of evidence-based medicine.
4. Supervision and bedside teaching of residents and undergraduates

VII. Professional:

1. Demonstrates honesty and integrity.
2. Demonstrates compassion and empathy.
3. Demonstrates respect for others and diversity.
4. Demonstrates reliability, punctuality, responsibility and conscientiousness.
5. Demonstrates an understanding of ethical practice and applies this to one's work.
6. Demonstrates self-awareness/knowledge.

SUBSPECIALTY ROTATION (YEAR 2 OR 3): PERINATAL PATHOLOGY AND LABORATORY MEDICINE

Goals and Objectives

I. Medical Expert:

During the rotation the Fellow should demonstrate competence in:

1. External examination of fetus (under 20 weeks)

- external examination and photography
- understanding and knowledge of embryological and fetal developmental stages
- dissection of major organ systems
- microscopic assessment of major organs

2. Autopsy of the Fetus

- external examination and photography
- dissection of major organ systems
- microscopic assessment of major organ systems

3. Placental examination

- essential aspects of gross placental examination
- sampling sites of normal and abnormal tissue
- approach to microscopic examination
- microscopic features of major placenta abnormalities
- pathology of twin placentas

II. Communicator:

1. Be able to establish an effective and empathetic physician/patient relationship with pregnant women facing challenging maternal and/or fetal complications of pregnancy.
2. Be able to communicate effectively with families of high-risk pregnant women, including appropriate use of cultural and language interpretation facilities.
3. Be able to deliver bad news to women and their families in a sensitive and humane manner
4. Be able to effectively involve social work and children's aid society services.
5. Be able to recognize stress and mental illness in pregnant women and effectively involve psychiatric services.
6. Be able to discuss the content of autopsy and placental pathology reports with patients and their families.
7. Be able to formulate and discuss plans for non-interventional / palliative care of the pregnancy based upon an understanding of fetal/placental pathology.
8. Demonstrate sensitivity to the cultural, ethnic and religious backgrounds of patients.
9. Demonstrate ability to deliver bad news effectively with compassion and sensitivity.
10. Demonstrate an ability to assist families to deal with perinatal loss
11. Handle upset or abusive patients and/ or caretakers.

III. Collaborator:

1. Collaboration on research projects is encouraged, particularly in conjunction with pathology, medical imaging and genetics
2. Communicate and coordinate care with all members of the inpatient antepartum high-risk team. Specialist input will include: nurse practitioners, pharmacy, dietetics, sonography, medical imaging, medical and surgical consultations, social work, psychiatry, pediatrics.
3. To develop understanding of the Provincial referral systems, including effective telephone communication with CritiCall bed-service, referring physicians requesting advice, and logistics of patient transfer to and from the level III perinatal units, including HSC newborn transfers.
4. Demonstrate ability to overcome language and cultural barriers to effective multi-disciplinary care.

IV. Manager:

1. Master the appropriate use of medical and surgical consultations for antenatal care of high-risk pregnant women, including follow-through to ensure effective care and communication.
2. Demonstrate appropriate documentation of inpatient patient management
3. Demonstrate ability to manage personal time efficiently.
4. Demonstrate an ability to motivate, inspire and educate more junior members of the inpatient health-care team.
5. Demonstrate ability to identify medico-legal risks and take steps to address them.
6. To gradually master the ability to manage a busy high-risk inpatient floor with gradually-reducing direct staff intervention, optimal prioritization patient flow and harmonious nurse-physician relationships.

V. Health Advocate:

1. Demonstrate an understanding of the determinants of health affecting patients pregnancy outcome including; family and social circumstances, smoking and substance abuse, nutrition and weight, co-existent medical disorders, patient understanding and compliance with care, psychiatric and emotional health of the pregnant women and her next of kin.
2. Demonstrate ability to act as an advocate for the individual patient to obtain effective and high-quality care.
3. Demonstrate knowledge of preventable causes of perinatal morbidity and mortality
4. Appreciate the principles of health policy development as applied to obstetrics.
5. Demonstrate knowledge of routine preventive health initiatives in pregnancy.
6. Demonstrate an understanding of the principles of identification and reporting of suspected domestic violence.
7. Demonstrate an awareness of legal, ethical, legal and professional obligations to protect women from suspicious circumstances.

VI. Scholar:

1. Demonstrate ability to critically evaluate the literature as it pertains to individual patient care.
2. Demonstrate inquisitiveness around clinical cases and an ability to extract information and previous experience from more senior staff..
3. Demonstrate ability to apply the principles of evidence-based medicine.
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