



**UNIVERSITY OF  
CALGARY**

Maternal-Fetal Medicine  
Residency Information

Section of Maternal-Fetal Medicine  
Department of Obstetrics & Gynecology  
April 2022

## Welcome and Introduction

Welcome to the postgraduate residency program in Maternal-Fetal Medicine (MFM) at the University of Calgary!

The MFM residency is a dynamic two-year program (PGY-6 and -7) with a goal of developing specialists equipped with skills to become future leaders in Maternal-Fetal Medicine. The program is supported by a diverse range of highly qualified faculty and provides excellent training in clinical and academic Maternal-Fetal Medicine in one of the busiest obstetrical centers in Canada. During this two-year program, the resident will:

- Develop proficiency in tertiary maternal and fetal medicine, including maternal medicine, fetal medicine, fetal imaging and procedures, and in high-risk obstetrics.
- Learn to function as an independent MFM consultant (under both direct and indirect supervision of MFM faculty). The resident will manage complex pregnancies, from pre-conception to the postpartum period, as part of a multidisciplinary team, with defined graduated responsibility.
- Undertake clinical experiences to gain exposure and appreciation of the principles of obstetric internal medicine, reproductive genetics, pathology, neonatology, obstetric anaesthesia, and paediatric and imaging subspecialties relevant to MFM.
- Lead a scholarly project in (or related to) Maternal-Fetal Medicine, which could be basic/clinical research, educational, or QA/QI/Patient Safety in nature.
- Undertake elective options to further explore areas of interest in Maternal-Fetal Medicine, either locally or at an approved site, in either Canada or abroad.

The MFM residency is fully accredited by the Royal College of Physicians and Surgeons of Canada and uses a competency-based framework for curriculum development and assessment. While MFM belongs to a late cohort for transition to Competence By Design (CBD), this program has long integrated elements of CBD and intends to be an early adopter of CBD principles. We have already established our Competence Committee and have adapted our assessment strategy to include frequent low-stakes direct assessments. CBD for MFM launches in July 2022!

We believe that the MFM residency program in Calgary offers several advantages in MFM Training:

**1) Individualized program.** Presently, there are only 1-2 funded residents per year, which offers the advantages of individual attention, close working relationships with faculty, and responsiveness to concerns, both individual and program-related. This flexibility, combined with well-defined goals, objectives, and competencies with graduated responsibility, enables the resident to take an active role in their training, explore areas of interest in depth, and easily identify and address deficiencies. We also place emphasis on resident education and well-being over clinical service, and thus are able to support our residents to meet their individual goals and objectives. Pending individual residency and career goals, we offer flexibility as to required protected time for scholarly activity of between 3 to 6 blocks, in keeping with RCPSC Specialty Training Requirements.

**2) Experienced and diverse faculty.** Despite being still relatively new, the MFM residency program is supported by an experienced Section consisting of highly qualified faculty with a wide range of expertise. Our faculty distributed in experience (new grads to >20 years' experience),

background (graduates from a range of MFM programs and other training) and areas of interest (including clinical researchers, clinician educators, and QI specialists). The clinical practice of MFM varies across Canada; centers are usually homogenous in how the specialty is practiced. Within our group, there are a variety of practice patterns – a true microcosm of MFM practice within Canada. Practice patterns include tertiary center and community, consultative and continuing care, clinical and academic, inpatient and outpatient, with and without Obstetrics practice, with and without Fetal Therapy practice ... MFM residents can experience the full depth, breadth, and range of MFM that they may choose to practice in their careers. Learning in our program lets residents see first-hand the variety of options inherent to a career in MFM in Canada.

**3) Large referral center.** There were 48,799 births in Alberta in 2020-2021, with over half of these occurring in our MFM referral catchment area (Southern Alberta, and parts of Eastern British Columbia). While the birth rate in Calgary has fallen some from the astronomical peaks of recent years, there are still >14,500 births per year. Our region has significantly more complicated pregnancies than national and provincial averages, with higher rates of late maternal age, multiple births, low birth weight, and prematurity. As a result, there is a large volume of referrals to the Calgary MFM Center and to our AHS MFM services, resulting in a high concentration of patients with complex maternal and fetal problems for residents to learn from. The state-of-the-art outpatient Calgary Maternal Fetal Medicine Centre has one of the highest volumes of MFM ultrasound and consultation in Canada. Being one of the largest tertiary referral centers in Canada with a relatively small residency program gives excellent clinical opportunity for our residents, without competition from other trainees.

**4) Obstetric Internal Medicine.** Obstetric Internal Medicine remains strong and unique presence in Calgary, with 5 internists with specialty training in Obstetric Internal Medicine and their own clinical fellowship program. There is daily inpatient consultation service and expanded outpatient clinics, and includes a pre-pregnancy consult clinic. The MFM group works very closely with the OB-IM program, with shared case-based educational rounds, collaborative clinics, and generally close involvement with complex patients. The OB-IM group considers the training of the MFM residents as a priority and has undoubtedly strengthened our program and team.

**5) Academic excellence.** The program strives to meet the goals, objectives and specialty-training requirements as outlined by the Royal College of Physicians and Surgeons of Canada. The depth of faculty both within MFM and the affiliated disciplines provides excellent training in both clinical and academic MFM. A clinical ARP has facilitated development of a more academic and patient-focused model of care within AHS that is of significant benefit to the education of residents. All members of the Section of MFM make significant contributions to clinical care and education and/or research. As a program, we recognize that there are varied paths for residents to take for academic excellence in scholarly activity for residency and in their career. We offer opportunities for residents to pursue an area for focus / “stream,” including clinical / basic research, medical education, QA / QI / patient safety, and leadership / administration. Given some unique resources in Calgary, our residents can gain valuable education / certification in their chosen field and can be supported in a scholarly project to successful completion.

**6) Scholarly opportunities.** The division of MFM is committed to supporting research and scholarly activities. When the MFM outpatient clinic was established in 2002, a priority was to install a state of the art MFM clinical management/research database to enable clinical audit and research within the division (Astraia). This database is linked to the Alberta Perinatal Outcome program, allowing for linkage of antenatal and postnatal data, which provides extensive opportunities for clinical research. The First Trimester Screening program, established in 2006, has national and

international collaborators and budget for epidemiologic and bio statistical support to facilitate research. The section also is supported by the Director of Research for the department (Dr. Stephen Wood) and primary researchers Drs. Amy Metcalfe and Katie Chaput who provide guidance for residents undertaking research projects. In addition to clinical research, there is the opportunity for professional development and scholarly projects in medical education, quality assurance and patient safety, and leadership / administration.

**7) Innovative approach to curriculum and learning.** The MFM curriculum has undergone transformational change since 2015. We have long embraced principles of adult learning, personalization of learning experiences, and flexibility to the needs of the resident. We have worked tirelessly with faculty, current and past residents to develop a curriculum with graduated supervision and resident responsibility, with a specific progress through learning experiences. We have for several years now embraced principles of CBD, with stages of training including Introduction, Core, and Transition to Practice, all with stage-specific objectives and assessments. We have adapted our assessments to include carefully selected multiple points of low-stakes feedback, with progress through the program determined by Competence Committee. We offer personalization of learning experiences to meet the specific learning needs of our residents and have been able to consistently offer flexibility to resident needs and feedback. We also have a philosophy of continuous quality improvement and continue to adjust learning experiences as needed. We anticipate the upcoming transition to CBD in July 2022 to go smoothly with minimal change to the administration of the residency program.

Our program encourages innovation and development of novel educational strategies and welcomes the suggestions and input of any trainees or faculty.

Dr. Anne Roggensack  
Maternal-Fetal Medicine Residency Program Director  
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**Websites / Electronic Resources:**

University of Calgary Postgraduate Medical Education: <http://cumming.ucalgary.ca/pgme/>

Department of Obstetrics & Gynaecology: <https://cumming.ucalgary.ca/departments/obstetrics-gynaecology/obstetrics-gynaecology>

Royal College of Physicians and Surgeons of Canada: [www.royalcollege.ca](http://www.royalcollege.ca)

Provincial Association of Residents of Alberta (PARA): <http://www.para-ab.ca>

## Applications

Interested residents are encouraged to consider an elective with us. However, an elective in Calgary is not mandatory to be matched to our program. The program is funded through the Province of Alberta Health and Wellness (Alberta Health Services), and thus only Canadian / Permanent Resident graduates are eligible to receive funding. All applicants require Canadian RCPSC or equivalent board certification in Obstetrics and Gynecology.

Applications are accepted annually by May 15, and must include:

- Letter of Intent
- Curriculum Vitae
- Copy of university transcripts
- IELTS (International English Language Testing System) academic version completed within 24 months (if required by the CPSA <http://www.cpsa.ca/language-proficiency/>)
- Three letters of reference (sent directly to the program)

Successful candidates will be invited for a site visit and interview (usually in June). The site visit includes tours of the Calgary MFM Centre and Foothills Medical Centre, individual faculty / research meetings as requested by the applicant, lunch with the program director, a private meeting with current residents, and an interview. Given the COVID-19 pandemic, we have developed an equivalent virtual application process. All candidates are requested to prepare and present a short presentation (PPT or other) about themselves (maximum 10 min) at the beginning of the interview. This is meant to allow candidates to demonstrate their communication / presentation skills, and to introduce themselves, their interests, and career goals to the committee. We would like candidates to answer the following questions in their presentations:

- Why are you pursuing a MFM residency and career?
- Why do you want to complete your residency in Calgary (program / city)?
- What are your clinical and academic interests within MFM?
- What are your scholarly interests (and if you have any ideas what scholarly activities you want to pursue during residency)? Scholarly activities may include basic / clinical research, medical education, quality assurance / quality improvement / patient safety, and administration / leadership.
- What is your vision for your career in MFM? Where do you see yourself in 5 years? 10 years?

Our program participates in the national “MFM Match,” administered through the RCPSC MFM Committee Chair and based on similar principles to CaRMS. Candidates and programs submit their rank lists in early September, and match results are made available shortly thereafter. We offer 1-2 positions per year. If 1 position is offered, a start date of July 1 is usually preferred. If 2 positions are offered in one cycle, start dates will be staggered (usually July 1 and Sept / Oct or later). We have the flexibility in our program to accept off-cycle candidates (who require start dates other than July 1), so these applicants should not be deterred! Please feel free to directly contact us with any questions or concerns. We look forward to your application!

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## **Goals and Objectives**

On completion of the 2-year Maternal-Fetal Medicine (MFM) residency program, the resident is expected to:

- Become a competent MFM specialist capable of assuming a consultant's role in the subspecialty.
- Have acquired a working knowledge of the theoretical basis of MFM, including its foundations in the basic medical sciences and research.
- Demonstrate a strong commitment to practicing patient-centered care in MFM to the highest standards academically, ethically, and morally.
- Demonstrate evidence-based practices for screening, diagnosis, management, and prevention in MFM.
- Function effectively as a subspecialist in academic, tertiary, and / or community settings.
- Demonstrate a commitment to life-long learning in the pursuit of delivering the highest standard of care throughout one's career.
- Have participated in teaching, scholarly activity, and knowledge dissemination.
- Demonstrate competency in each of the CanMEDS domains, as outlined in the Maternal-Fetal Medicine Competencies of the Royal College of Physicians and Surgeons of Canada (RCPSC). The roles of Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional will be integrated with the objectives of the residency program and assessed throughout residency.
- Be eligible for and successful at the RCPSC certification by examination in Maternal-Fetal Medicine.

# University of Calgary Section of Maternal-Fetal Medicine

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The Section of Maternal-Fetal Medicine works closely with members of the Department of Obstetrics and Gynecology at the University of Calgary. In addition, we support strong clinical, education and research links with colleagues in other Departments, including Diagnostic Imaging, Obstetric Internal Medicine, other medical sub-specialties, Neonatology, Paediatric Surgery, Paediatric Cardiology, Prenatal Genetics, and Perinatal Pathology.

## Structure & Curriculum of MFM Residency Program

The MFM Residency is a 2-year program, including the following clinical experiences. While MFM is late in the Royal College transition to Competence By Design (CBD), our program has long adopted the principles of CBD, and is structured to encourage stage-appropriate focused acquisitions of knowledge and skills, as well as incorporating graduated responsibility.

BLOCK	YEAR 1	YEAR 2
1	MFM: Introduction to Ultrasound	MFM: Core - Outpatients 2
2	MFM: Introduction to Ultrasound / Inpatients	MFM: Core - Inpatients *with Ob Anesthesia consults, and Pediatric Sub-Specialty consults
3	MFM: Introduction to Inpatients	MFM: Core - Neonatal Antenatal Consults *with Perinatal Follow-up Clinic and Pediatric Sub-Specialty Consults
4	MFM: Introduction to Outpatients	MFM: Core - Fetal Cardiology and Advanced Fetal Imaging
5	MFM: Introduction to Scholarly Activity (Research) *Research Course optional	MFM: Core - Fetal Cardiology and Advanced Fetal Imaging
6	MFM: Core - Outpatients 1	MFM: Core - Elective
7	MFM: Core - Outpatients 1	MFM: Core - Elective
8	MFM: Core - Outpatients 1	MFM: Transition to Practice - Scholarly Activity (research)
9	MFM: Core - Prenatal Genetics	MFM: Transition to Practice - Inpatients
10	MFM: Core - Obstetric Internal Medicine	MFM: Transition to Practice - Outpatients
11	MFM: Core - Scholarly Activity (Research)	MFM: Transition to Practice - Outpatients
12	MFM: Core - Outpatients 2	MFM: Transition to Practice - Outpatients
13	MFM: Core - Outpatients 2	MFM: Transition to Practice - Outpatients

**KEY:** Transition to Discipline (pink), Foundations of Discipline (orange), Core of Discipline (blue), Transition to Practice (green)



## **Competency Continuum**

The Royal College suggest that the stages of the Competence Continuum in Maternal-Fetal Medicine are generally no longer than:

- 2 blocks (8 weeks) for Transition to Discipline
- 5 blocks (20 weeks) for Foundations of discipline
- 18 blocks (72 weeks) for Core of Discipline
- 4 blocks (16 weeks) for Transition to Practice

After mapping the final EPAs to our program's clinical experiences, we estimate that we can expect the following correlation:

- **Transition to Discipline – 2 to 3 blocks**
  - MFM: Introduction of Ultrasound
  - MFM: Introduction to Inpatients
- **Foundations of discipline – 3 to 4 blocks**
  - MFM: Introduction to Outpatients
  - MFM: Introduction to Scholarly activity
  - MFM Core – Outpatients 1
- **Core of Discipline – 16 to 19 blocks**
  - MFM Core – Outpatients 1
  - MFM: Core – Outpatients 2
  - MFM: Core – Prenatal Genetics
  - MFM: Core – Obstetric Internal Medicine
  - MFM: Core – Scholarly Activity
  - MFM: Core – Inpatients
  - MFM: Core – Neonatal Antenatal Consults
  - MFM: Core – Fetal Cardiology and Advanced Fetal Imaging
  - MFM: Core – Elective
  - MFM: Transition to Practice – Scholarly Activity
  - MFM: Transition to Practice – Inpatients
  - MFM: Transition to Practice - Outpatients
- **Transition to Practice – 2 to 3 blocks**
  - MFM: Transition to Practice – Outpatients

Please see the Royal College EPA guide for Maternal-Fetal Medicine: <https://www.royalcollege.ca/rcsite/ibd-search-e?N=10000033+10000034+4294967040&label=Maternal-Fetal%20Medicine>

## **Overview of Clinical Experiences**

### **1) Introduction to MFM Clinical Experiences**

MFM: Introduction to Ultrasound (6-8 weeks)

- Residents work with MFM sonographer educators to develop their hands-on ultrasound skills, focusing on fetal anatomical survey, fetal assessment, and first trimester ultrasound.
- Located at the MFM Centre (EFW Radiology – Cambrian).

MFM: Introduction to Inpatients (4-6 weeks).

- Residents orient to our FMC inpatient MFM service, including hands-on ultrasound skills (focusing on fetal assessment, Dopplers, EV cervix, and placenta), MFM consultation and reporting, antepartum patient care, and L&D.
- Located at the Foothills Medical Centre MFM Unit.

MFM: Introduction to Outpatients (4 weeks).

- Residents orient to the outpatient MFM facility (Calgary MFM Centre), focusing on counselling and reporting of common MFM presentations (including first trimester screen, anatomical survey, soft markers, fetal assessment, hypertension, preterm labour, and disorders of amniotic fluid and fetal growth).
- Located at the MFM Centre (EFW Radiology – Cambrian).

MFM: Introduction to Scholarly Activity (research) (4 weeks).

- During this block, residents may opt to attend the Research Course offered for residents through the University of Calgary (opt-in). This protected block permits residents to begin work on their planned scholarly activity. By the end of the block, residents are to have prepared their proposal, timeline of activity / research time, planned dissemination strategy, ethics application, and (if needed) grant application.

### **2) Core of MFM Clinical Experiences**

MFM: Core - Outpatients 1 & 2 (24 weeks).

- Residents are based in the outpatient MFM clinic and focus on diagnosis and management of fetal anomalies and other complex maternal and obstetric complications. Residents participate in MFM antenatal clinic 1-1.5 days per week, as well as in preconception counselling, and begin having leadership of “Fetal Diagnosis and Therapy Rounds.”
- Located at the MFM Centre (EFW Radiology – Cambrian) and Foothills Medical Centre North Tower MFM Clinic.

MFM: Core - Prenatal Genetics (with Perinatal Pathology) (4 weeks).

- This is an off-service rotation working directly with the Prenatal Genetics service and includes some Perinatal Pathology experience (fetal autopsy).
- Located at the Prenatal Genetics Clinic (co-located with the MFM Centre, EFW Radiology – Cambrian).

MFM: Core - Obstetric Internal Medicine (4 weeks).

- This is an off-service rotation working with the Obstetric Internal Medicine service including inpatient and outpatient consultations, continuing care, and pre-conceptual counselling.
- Located at Foothills Medical Centre and Richmond Road Diagnostic Treatment Centre.

MFM: Core - Scholarly Activity (research) (4 weeks).

- Residents continue their scholarly activity project with protected time.

MFM: Core - Inpatients (includes Obstetric Anesthesia and Pediatric Sub-Specialty Consults) (4 weeks).

- This clinical experience is based at FMC inpatient MFM consults, imaging, and complex antepartum patient care.
- Residents participate in Obstetric Anesthesia consultations (1-2 half-days)
- Often continue to have observational experience with Pediatric Sub-Specialty consultations (antenatal and neonatal) and other in-hospital imaging (including fetal and placental MRI and neonatal head ultrasound).
- Located at the MFM Centre Foothills Medical Centre MFM unit, Unit 51 Triage, and Alberta Children's Hospital.

MFM: Core - Neonatal Antenatal Consults (with Perinatal Follow-up Clinic and Pediatric Sub-Specialty Consults) (4 weeks).

- This is an off-service rotation including inpatient and outpatient antenatal Neonatology consultations, some observational experience in the Perinatal Follow-up Clinic, as well as observational experience with Pediatric Sub-Specialty consultations (antenatal and neonatal).
- Located at Foothills Medical Centre and the MFM Centre (EFW Radiology – Cambrian).

MFM: Core - Fetal Cardiology and Advanced Fetal Imaging (8 weeks).

- Residents work directly with Diagnostic Imaging and Pediatric Cardiology consultants caring for fetuses with cardiac abnormalities (including antenatal consult and pediatric clinical follow-up).
- Residents also work with sonographer educators learning hands-on fetal echocardiography skills.
- Residents will also gain hands-on and reporting experience with 3D ultrasound (fetal anatomy and placenta), and ultrasound experience with pregnancy <11 weeks and reproductive-age uterine and adnexal pathology.
- Located at the MFM Centre (EFW Radiology – Cambrian), Advanced Medical Imaging (EFW Radiology – Cambrian), and Alberta Children's Hospital.

Electives (8 weeks).

- Residents may pursue areas of their interest with electives in MFM or related fields. Electives may be local, in Canada, or be international. Electives may be within MFM, a dedicated off-service clinical experience, or be individualized for a customized experience. Experiences can potentially be arranged per block, per week, or longitudinally.
- Options for electives include (list not exhaustive):

Description of Elective	Duration	Sites in which the elective may be taken
<b>University of Calgary</b> Level II Maternal Fetal Medicine All other mandatory rotations Other local clinical experiences	4 weeks 4-8 weeks 4-8 weeks	SHC, PLC FMC, Calgary MFM Centre, ACH ICU, medical sub-specialties, D&E
<b>University of Alberta</b> Fetal Cardiology	4 weeks	Royal Alexandra Hospital
<b>University of Toronto</b> Maternal Medicine Fetal Medicine	4 weeks 4 weeks	Mount Sinai Hospital, Sunnybrook HSC Mount Sinai Hospital, Sunnybrook HSC
<b>University of British Columbia</b> Maternal Fetal Medicine Fetal Neuroimaging Prenatal Genetics Level II/III MFM	4 weeks 4 weeks 4 weeks 4 weeks	BC Women's Hospital BC Women's Hospital BC Women's Hospital Surrey Memorial Hospital

### 3) Transition to Practice MFM Clinical Experiences

MFM: Transition to Practice Inpatients (4 weeks).

- Residents are based at FMC MFM for consultations and imaging, as well as complex antepartum patient care management. Residents lead their longitudinal “Fellow Clinic” of MFM antenatal patients. Residents have increased independence, functioning under indirect supervision as junior staff.
- Located at Foothills Medical Centre MFM unit.

MFM: Transition to Practice Outpatients (16 weeks).

- Residents are based in the outpatient MFM clinic and focus on diagnosis and management of fetal anomalies and other complex maternal and obstetric complications. Residents also gain experience at our higher volume peripheral outpatient clinics. Residents lead their longitudinal “Fellow Clinic” of MFM antenatal patients. Residents have increased independence, functioning under indirect supervision as junior staff.
- Located at the MFM Centre (EFW Radiology – Cambrian) and FMC North MFM Clinic.

Research / Scholarly Activity (4 weeks).

- Residents complete their scholarly activity project with protected time.

## **Research (Scholarly Activity)**

Scholarly activity is a priority in our program, and our residents have a history of success in research. From the RCPSC MFM Specialty Training Requirements, our usual goal is for residents to have “completion of a scholarly research, quality assurance, or educational project relevant to Maternal-Fetal Medicine.”

As part of any visiting elective or site visit / interview, we would be pleased to offer meetings with any faculty requested by applicants.

Given the short duration of the residency, residents are encouraged to consider scholarly projects and be in contact with prospective supervisors if not prior to commencement of the program, then shortly after starting the program. We encourage residents to focus on an area of interest, usually in basic / clinical research, medical education, quality assurance and patient safety, or leadership / administration. In Calgary, there are opportunities for further education in each of these fields, which would complement resident development and projects.

### **Protected Time**

Protected time for scholarly activity is offered both by block and longitudinally, with opportunity for personalization to individual needs and project timeline. This approach allows for research time to be available when needed for the individual project and allows the resident and their supervisor to direct the planning of their research time. Residents have the option (“opt-in”) to participate in the Research Course (over 4 weeks in Block 5 annually) and could utilize this course to develop their project. This 4-week course through the Cummings School of Medicine teaches the fundamentals of developing and conducting a research study. This course consists of a combination of didactic lectures and small group workshops and is available to the MFM resident. Residents participate in the course (and are protected from any daytime clinical commitments in this block), and by the completion, are expected to have prepared a research proposal and a submission to ethics for their project.

Regardless of Research Course participation, all residents will have a protected block for scholarly activity / research as part of the “Introduction” phase, and by the end of this block it is expected that residents can (with mentoring from their supervisor) present a proposal for their scholarly activity during residency, including plans for learning, funding, ethics, planned dissemination, timeline (for protected time and expected progress), and definition of project completion. We strongly recommend that residents plan to submit a paper for publication by the end of residency but can support other definitions of completion as proposed by the resident and their supervisor (and as approved by the RPC).

In addition to protected block early in residency, protected research blocks are usually planned as part of “Core” and “Transition to Practice.” Additionally, up to 12 longitudinal research weeks may be taken from selected MFM-based rotations during residency. Further personalization is possible (such as, weekly protected time for completing a course). Thus over 2 years, there could be up to 24 fully protected weeks for research. Depending on individual research plans and career goals, we offer personalization for duration of protected time for scholarly activity (up to 3 additional blocks). The need for protected blocks vs. weeks vs. days, and well as timing / duration of blocks, can and should be individualized with

the research supervisor and program director. We expect residents and their supervisors to take an active role in determining and advocating for the protected time needed to successfully complete the project(s) prior to the end of the residency program.

To support our residents in scholarly success, we offer:

- Academic half-day sessions, both PGME-lead and MFM-specific.
- Optional participation in the Cummings School of Medicine “Research Course.”
- Three to six blocks (12 to 24 weeks) of protected time for scholarly activity during residency (protected blocks and / or weeks nested within MFM clinical experiences).
- Specialized streaming for developing a focus and experience in basic / clinical research, medical education, QA/QI/ patient safety, or leadership and administration.

Focus:	BASIC TRAINING (all residents)	SPECIALIZED TRAINING (options for streaming)	DISSEMINATION
<b>Basic or Clinical Research</b>  (lead: Dr. Metcalfe)	<ul style="list-style-type: none"> <li>• Research Course (optional)</li> <li>• PGME Seminars</li> <li>• MFM AHD sessions</li> </ul>	<ul style="list-style-type: none"> <li>• CIP Seminars</li> <li>• Graduate Courses</li> <li>• M.Sc. (through CIP)</li> </ul>	<ul style="list-style-type: none"> <li>• O&amp;G Research Day</li> <li>• Manuscript Submission (1<sup>st</sup> author)</li> <li>• Optional / encouraged:               <ul style="list-style-type: none"> <li>○ National / international meetings (i.e. SOGC, SMFM, ISUOG, ISPD, other)</li> </ul> </li> <li>• Other individualized goal accepted by RPC</li> </ul>
<b>Medical Education</b>  (lead: Dr. Roggensack)	<ul style="list-style-type: none"> <li>• PGME Residents as Teachers</li> <li>• MFM AHD</li> <li>• Instructional Skills Workshop (Taylor)</li> </ul>	<ul style="list-style-type: none"> <li>• CSM Teaching Excellence in Medical Education Program (TEMEP)</li> <li>• Taylor Centre Courses</li> <li>• Graduate Courses</li> <li>• M.Sc. (CIP)</li> <li>• WISE</li> <li>• OHMES</li> </ul>	<ul style="list-style-type: none"> <li>• O&amp;G Research Day x 2</li> <li>• Manuscript Submission (1<sup>st</sup> author)</li> <li>• Optional / encouraged:               <ul style="list-style-type: none"> <li>○ National / international meetings (i.e. SOGC, APOG, ICRE, CCME)</li> <li>○ OHMES Health and Medical Education Symposium</li> </ul> </li> <li>• Other individualized goal accepted by RPC</li> </ul>
<b>QA / QI / Patient Safety</b>  (leads: Dr. Cooper and Dr. O’Quinn)	<ul style="list-style-type: none"> <li>• PGME QA Seminar</li> <li>• Neonatal Perinatal Medicine QA/QI AHD</li> <li>• MFM AHD</li> <li>• Calgary Perinatal Mortality Committee</li> <li>• Attend one AHS PPQA Committee meeting</li> </ul>	<ul style="list-style-type: none"> <li>• AHS Courses</li> <li>• U of C Courses</li> <li>• QI Committee membership</li> <li>• AHS PPQA Committee membership</li> </ul>	<ul style="list-style-type: none"> <li>• O&amp;G Research Day</li> <li>• Manuscript Submission (1<sup>st</sup> author)</li> <li>• Required QA/QI certificate</li> <li>• Other individualized goal accepted by RPC</li> <li>• Optional / encouraged:               <ul style="list-style-type: none"> <li>○ Communication to department (action from results)</li> <li>○ National / international meetings (i.e. SOGC, SMFM, ISUOG, ISPD, other local or provincial meeting(s))</li> <li>○ W21C Research Day</li> </ul> </li> </ul>
<b>Leadership and Administration</b>  (lead: Dr. Roggensack)	<ul style="list-style-type: none"> <li>• PGME Seminars</li> <li>• MFM AHD sessions</li> <li>• CMA / Joule PLC Introduction Courses</li> </ul>	<ul style="list-style-type: none"> <li>• Joule PLI (or other) Courses</li> <li>• PGME Leadership Grant</li> </ul>	<ul style="list-style-type: none"> <li>• O&amp;G Research Day</li> <li>• Manuscript Submission (1<sup>st</sup> author)</li> <li>• Completion of PLI (or other) course(s)</li> <li>• Optional / encouraged:               <ul style="list-style-type: none"> <li>○ National / international meetings (i.e. SOGC, SMFM, ISUOG, other)</li> </ul> </li> <li>• Other individualized goal accepted by RPC</li> </ul>

## Basic / Clinical “Stream” Resources:

Graduate courses are available through Open Studies / Community Health Sciences <https://cumming.ucalgary.ca/departments/community-health-sciences/education/our-programs/graduate-degrees-community-health-sciences>

- Biostatistics
- Epidemiology
- Health Economics
- Health Services Research
- Population / Public Health

## Education “Stream” Resources:

- University of Calgary CSM Teaching Excellence Program <https://www.ucalgary.ca/ofd/temep>
- University of Calgary CSM Office of Health & Medical Education Scholarship <https://cumming.ucalgary.ca/office/ohmes>
- Medical Education graduate courses are available through Open Studies / Community Health Sciences. <https://cumming.ucalgary.ca/gse/about/programs/community-health-sciences/specializations>
- University of Calgary Taylor Institute for Teaching and Learning <http://www.ucalgary.ca/taylorinstitute/>

## QA / QI / Patient Safety “Stream” Resources:

Course	Description	Operated by
<b>Introductory Investigating and Managing Patient Safety Events (I)</b>	<a href="https://www.hqca.ca">https://www.hqca.ca</a> <a href="https://www.w21c.org/education/">https://www.w21c.org/education/</a> <ul style="list-style-type: none"><li>• Obtain the investigative skills required to complete patient safety reviews</li><li>• Focus on the practical application of the SSA:PSR methodology</li></ul>	<ul style="list-style-type: none"><li>• U of C Medicine</li><li>• W21C</li><li>• Health Quality Council Alberta</li></ul>
<b>Advanced Investigating and Managing Patient Safety Events (II)</b>	<a href="https://www.hqca.ca">https://www.hqca.ca</a> <a href="https://www.w21c.org/education/">https://www.w21c.org/education/</a> <ul style="list-style-type: none"><li>• Gain further exposure on the use of SSA:PSR methodology</li><li>• Learn about the other aspects of managing a patient safety event</li></ul>	<ul style="list-style-type: none"><li>• U of C Medicine</li><li>• W21C</li><li>• Health Quality Council Alberta</li></ul>

<b>Certificate Course in Patient Safety &amp; Quality Management</b>	<a href="http://www.patientsafetycourse.ca">www.patientsafetycourse.ca</a> <ul style="list-style-type: none"> <li>Distinguish and describe the components of a healthcare safety &amp; quality model</li> <li>Describe core principles of patient safety &amp; quality</li> <li>Identify key strategies for designing and delivering safer / higher quality healthcare</li> <li>\$500 for residents (faculty \$2750)</li> </ul>	<ul style="list-style-type: none"> <li>U of C Medicine</li> <li>W21C</li> <li>Health Quality Council Alberta</li> </ul>
<b>AHS QHI Quality &amp; Patient Safety Integrated Curriculum</b>	<a href="http://www.albertahealthservices.ca/assets/info/hp/edu/if-hp-edu-qps-integrated-curriculum.pdf">http://www.albertahealthservices.ca/assets/info/hp/edu/if-hp-edu-qps-integrated-curriculum.pdf</a> <ul style="list-style-type: none"> <li>Quality is everyone's business certificate (12 hrs)</li> <li>Patient safety certificate (20 hrs)</li> <li>AIQ Yellow belt certificate (10 hrs)</li> <li>Partnering with patient's certificate (3 hrs)</li> <li>Targeting teams certificate (4 hrs)</li> </ul>	<ul style="list-style-type: none"> <li>AHS</li> </ul>

### **Leadership and Administration "Stream" Resources:**

- CMA / Joule Physician Leadership Institute <https://joulecma.ca/learn>
- Peak MD - The Raft <https://peakmd.ca>

### **Scholarly Activity (Research) Expectations for MFM Residents:**

- Plan a primary project that will be feasible for completion during MFM Residency.
- Either before residency or in the first 4 blocks of residency, identify a supervisor and topic / question for your scholarly activity.
- Complete the TCPS: 2 Core Tutorial [https://ethics.gc.ca/eng/education\\_tutorial-didacticiel.html](https://ethics.gc.ca/eng/education_tutorial-didacticiel.html)
- Utilization of the first block of research to develop a Scholarly Activity (research) Proposal to be submitted and or presented to the MFM RPC in approximately the 6<sup>th</sup> block of residency. This proposal must include:
  - The composition of the research team and roles within the project.
  - Research question.
  - Background information / rationale for project.
  - Any plans for additional resident learning.
  - Funding plans.
  - Ethics approval or submission (if required).
  - Project timeline and milestones within the MFM residency program (including plans / timing of needed protected time).
  - Definition of project completion.



- Plans for dissemination (meeting abstract, paper encouraged).
- Provide updates prior to scheduled Competence Committees (at present, via One-45).
- Demonstrate collaboration with their research team and time management, including advocacy for their research needs.
- Present scholarly activity proposal and or findings at the Department of Obstetrics and Gynecology Research Day (annually).

### **Funding Opportunities for MFM Residents**

- All trainees funded by MFM Program Educational Enhancement Fund (up to \$2000 CDN) to attend a MFM conference in 1<sup>st</sup> year (prefer SMFM, ISUOG) without a requirement for presenting their research.
- All trainees funded by MFM Program Educational Enhancement Fund (up to \$500) to attend the Canadian National Perinatal Research Meeting at least once during training (Quebec or Banff), without a requirement for presenting.
- Additional funding for attending local / away meetings, online courses, online references, UpToDate etc may be available (pending annual budget allocation).
- Residents are provided with core MFM texts for personal use, including:
  - Creasy and Resnick's Maternal-Fetal Medicine: Principles and Practice
  - Fetology: Diagnosis and Management of the Fetal Patient
- All trainees will be funded (up to \$2000 CDN) to present their research when an abstract has been accepted for research undertaken during residency. Residents will first apply to PGME Research Grant (quarterly competition), but otherwise will be supported by either the Dept O&G DEAR Fund (quarterly competition) and/or the MFM Program Educational Enhancement Fund.
- Trainees may apply for research grants through the Dept O&G DEAR Fund (quarterly competitions).

Funding for a 3<sup>rd</sup> year could be available through the Clinician Investigator Program (CIP) (<http://cumming.ucalgary.ca/cip/>), and could include M.Sc., M.ChS (including Medical Education), MBA, or other programs available at the University of Calgary. This requires application to the CIP program **prior** to starting the MFM Residency Program.

## MFM Residency Academic Curriculum

The MFM Residency offers a 2-year curriculum to residents addressing knowledge / medical expert role, as well as all other CanMEDS roles. This curriculum assigns a subject area to residents for every block (26 total) and includes both preceptor-led teaching and self-study.

BLOCK	CYCLE 1	CYCLE 2
1	Fetal and maternal physiology	Amniotic fluid physiology and disorders
2	Placental physiology and placenta-related complications	Hydrops fetalis
3	Prenatal screening and diagnosis	Diabetes in pregnancy
4	Aneuploidy	Isoimmunization and NAIT
5	Fetal anomalies of the abdominal wall, GI, and GU systems	Maternal thyroid, adrenal, and hematologic disease
6	Fetal anomalies of the skeleton	Fetal cardiac abnormalities
7	Maternal hypertension	Fetal anomalies of the thorax
8	Maternal cardiac disease	Maternal pituitary and neurologic disease
9	Multiple gestation	Fetal anomalies of the CNS
10	Maternal and fetal infections	Fetal anomalies of the face and neck, and fetal exposure to drugs
11	Maternal renal disease, autoimmune disease, and venous thromboembolism	Severe obstetric complications
12	Neonatology for MFM Residents	Preterm birth
13	Key concepts in epidemiology, biostatistics, and critical appraisal	Surgery and trauma in pregnancy, and obstetric anesthesia

The MFM Residency collaborates with Diagnostic Imaging Residency on Obstetrical Ultrasound teaching monthly (2-year cycle of topics), as well as the Neonatal-Perinatal Medicine Residency academic half-day (2-year cycle) for sessions appropriate for MFM. Additionally, the MFM Residency accesses other learning opportunities at the University of Calgary, including PGME workshops, NRP, and the University of Calgary Taylor Institute for Teaching and Learning, as well as various excellent online learning resources (CMPA, MD Management, Joule PLI, Fetal Medicine Foundation, ISUOG, CLEAR).

Residents have a protected academic half-day weekly (Mondays 1PM-4PM), and incorporates both direct teaching, resident-lead sessions, and independent study. The academic half-days are protected, and residents are not expected on any clinical service (regardless of if on MFM Core or off-service rotations). Should a resident be away from Calgary on elective, we will offer web conferencing. Medical Expert topics are taught, as well as sessions dedicated to the other CanMEDS roles relevant to MFM PGY-6/7 learners.

An excellent curriculum is offered through PGME for all residents and is especially beneficial for small programs like ours. As part of our curriculum, some of the PGME workshops are designated as mandatory and some as optional for our residents. Residents are made aware of the mandatory and optional certifications for our program, including those financially supported by PARA (NRP, ACLS, BCLS). Residents are required to provide evidence of the NRP Certificate / Recertification by the end of the residency. Certification from the Fetal Medicine Foundation in nuchal translucency, nasal bone, and cervical assessment are also expected.

The MFM CBD Required Training Experiences (RTEs) will be met through the academic half-day preceptor-taught curriculum and other learning opportunities (including PGME workshops and eLearning, organized per stage and per year of residency).

Residents participate in a variety of other sectional and departmental learning activities, as described below:

Event Title	When	Frequency	Description
Department of O&G Grand Rounds	Fridays 7:30-8:30 AM	Weekly, Sept to June	Weekly presentations by local and visiting faculty (from O&G and from other specialties), as well as senior residents on topics from general as well as sub-specialty O&G. Additional topics include current research, QA/QI reviews, medical education, and morbidity and mortality reviews. Accredited by RCPSC.
Department of O&G Tuesday EBM Rounds	Tuesdays 7:30-8:30 AM	Weekly, Sept to June	Weekly presentations generally by O&G residents on clinical questions and the EBM reviews in general and sub-specialty O&G. Accredited by RCPSC.
Fetal Diagnosis and Therapy Rounds (MFM)	Thursdays 7:30-9 AM	Weekly, year-round	Multidisciplinary rounds presented by MFM staff and senior MFM residents. New fetal anomaly cases are presented (and complicated cases updated) with respect to patient history, ultrasound findings, consultations, and plans of care (including plans for interruption of pregnancy). Rounds are routinely attended by MFM, Diagnostic Imaging, Genetics, Neonatology, Pediatric Cardiology, Pediatric Surgery, and other pediatric specialties (as dictated

			by cases). Updates are also provided by neonatology on recently delivered neonates. Accredited by RCPSC.
Fetal Pathology Rounds (MFM)	Thursdays 8-9 AM	Every 3 <sup>rd</sup> Thursday, year-round	Once per month, the FD&T rounds are modified to focus on fetal and placental pathology cases. Complex cases are presented with history, ultrasound findings, and the fetal and/or placental pathology results. Rounds are routinely attended by Perinatal Pathology, MFM, Diagnostic Imaging, Genetics, Neonatology, Pediatric Cardiology, Pediatric Surgery, and other pediatric specialties (as dictated by cases). Accredited by RCPSC.
Section of MFM Journal Club	Mondays 7:30-9:30 PM	5-6x/year	The Section of MFM gathers in a private dining room for dinner in a social setting and review 1-2 significant journal articles. Articles are presented by the MFM residents, as to critical appraisal of the study methodology and applicability of the results to our patient population. Additionally, local clinical care guidelines are frequently discussed. Accredited by RCPSC.
Obstetric Internal Medicine Complex Care Rounds	Tuesdays 3-4 PM	Monthly, Sept to June	Multidisciplinary rounds presented by Obstetric Internal Medicine staff or residents. Rounds usually highlight a current patient case, and the review the published and pertinent evidence from the medical literature. Rounds attended by MFM, O&G, OB-IM, Obstetric Anesthesia, and other medical specialties as appropriate. All presentations are evidence-based and include 25% time reserved for interaction.
Maternal Cardiac Obstetrical Case Conference	Tuesdays 4-5:30 PM	Monthly, year-round	Multidisciplinary rounds presented by senior MFM residents. Updates on all current obstetric patients with maternal cardiac issues are presented (clinical, investigations). Evidence is presented as needed on maternal cardiology. Multidisciplinary patient care plans are developed for antepartum, intrapartum, and postpartum case. Rounds attended by MFM, O&G, OB-IM, Obstetric Anesthesia, and other medical specialties as appropriate. All presentations are evidence-based, and include >25% time reserved for interaction
Department of Obstetrics and Gynecology Research Day	2 <sup>nd</sup> Friday in May	Annually	The Department of Obstetrics and Gynecology hosts an annual research day, where both faculty and trainees at all levels present their research. There are poster and oral presentations of completed research, as well as poster presentations of works in progress. Presentations are assessed, and awards given for best oral / poster for faculty and trainees. Usually a visiting professor also presents at Clara Christie Day. Following the research day, residents are hosted by faculty at an annual social event / dinner.

## **Resident Assessment and Promotion**

Assessment of resident performance utilizes a competency-based model. We have transitioned away from traditional ITERs, and towards a system of multiple feedbacks / assessments from clinical supervisors (“coaches”) with assessment of progress / competence determined by our Competence Committee. At present, we are supported by ePortfolio, One45, an AHS survey platform, and paper-based tools. Assessment methods

vary by clinical experience and stage of training and are targeted to provide appropriate feedback during each stage of training or clinical experience.

Methods of Assessment
Entrustable Professional Activities (EPAs) and Milestones (ePortfolio)
<ul style="list-style-type: none"> <li>Form 1</li> <li>Form 2 (procedures)</li> </ul>
Narrative Observations (ePortfolio)
Clinical Experience-Specific Block Assessments (one45)
On-demand assessment forms (one45)
<ul style="list-style-type: none"> <li>General MFM: Direct Observation of Counselling Feedback (modified mini CEX)</li> <li>General MFM: Fetal Procedures – Daily Assessment (modified OSATS)</li> <li>General MFM: High-Risk Obstetrics – Daily L&amp;D Assessment</li> <li>General MFM: High-Risk Obstetrics – Daily OB Procedural Assessment (modified O-SCORE)</li> <li>General MFM: Narrative Observation Form</li> <li>General MFM: Weekend MFM on-call assessment</li> </ul>
Paper-based assessment
<ul style="list-style-type: none"> <li>Intro to Ultrasound - Checklist</li> <li>Fetal Cardiology &amp; Advanced Fetal Imaging - Checklist</li> <li>Sonographer Feedback</li> <li>Feedback / Reflection Tool (for use with pediatric clinics, anesthesia consults, other short experiences)</li> <li>Short-answer question examinations (2-3 per year)</li> </ul>
Longitudinal assessments (q4 months)
<ul style="list-style-type: none"> <li>Fetal Procedures – Longitudinal Assessment (q4 months)</li> <li>High-Risk Obstetrics – Longitudinal Assessment (q4 months)</li> <li>Scholarly Activity (Research) Longitudinal Assessment (q4 months)</li> <li>Resident Self-Assessment Longitudinal (q4 months)</li> </ul>
Feedback for presentations / teaching / rounds (AHS survey software)
<ul style="list-style-type: none"> <li>FD&amp;T Rounds</li> <li>Journal Club</li> <li>Grand Rounds (and other teaching)</li> </ul>
Multisource Feedback (from junior residents, nurses, sonographers, and referring physicians) (AHS survey software)
Completion of a scholarly project
Completion of the Required Training Experiences (RTEs)

The Competence Committee meets 3 times per year to review the resident assessments and to determine progress and promotion within the program. Assessments and competence committee recommendations are summarized in a standard template. Residents review the competence committee recommendations with their program director and academic advisor.

## Calgary and Surrounding Areas:

Calgary is a fantastic city for a 2-year residency (also a great place to stay and build your life and career!). Calgary is a vibrant and growing urban centre (population of > 1 200 000), recently ranked as the “World’s 5<sup>th</sup> Most Liveable City” by Forbes. Whatever you like, Calgary’s got it – fantastic restaurants to impress the toughest foodie (from fine dining to local farmers markets), a busy arts scene (including Calgary Philharmonic Orchestra, Calgary Opera, Theatre Calgary as well as many other professional and amateur theatre companies, and a thriving folk / blues scene), and of course sports (Calgary Flames, Calgary Stampeders, Calgary Hitmen, Winsport, Olympic Oval, fly-fishing, rafting the Bow River). You could be part of the “sea of red!” Festivals abound in Calgary ... you might have heard of the Calgary Stampede – the greatest outdoor show on Earth! And of course, the Rocky Mountains are just 1 hour’s drive from Calgary, for all the hiking, skiing, and adventure you could want. If you can’t see the mountains from your house, you definitely see them on your way into work every day. We have lots of sunshine here ... and don’t be too afraid of the winters (It’s a dry cold, not a wet cold! No ice storms! Frequent chinooks - when everything melts! The mountains!). Calgary is also fantastic city for young families, with great options for public and private schools, and lots of family-friendly activities (Calgary Zoo, Telus Spark, Calaway Park, Canadian Music Centre, Glenbow Museum, Heritage Park, Calgary Parks, Bow River ...) Join us in Calgary and “Be a part of the energy!”

The City of Calgary

<https://www.calgary.ca/home.html>

Visit Calgary

<http://www.visitcalgary.com>

Life in Calgary

<http://www.lifeincalgary.ca/moving>

20 things you should know before moving to Calgary

<https://notablelife.com/20-things-you-should-know-before-moving-to-calgary/>

Be a part of the energy

<http://www.bepartoftheenergy.ca>

Banff National Park

<http://www.pc.gc.ca/en/pn-np/ab/banff>

Banff Lake Louise Tourism

<https://www.banfflakelouise.com>

Tourism Canmore

<http://www.tourismcanmore.com>

Travel Alberta

<https://www.travelalberta.com/ca/>

Top 14 attractions in Calgary for families

<https://www.visitcalgary.com/things-to-do/stories-from-calgary/calgary-attractions>

115 things to do with kids in and around Calgary

<https://www.calgaryschild.com/family-fun/activities/1581-115-things-to-do-with-kids-in-and-around-calgary>