UNIVERSITY OF CALGARY

PERIOPERATIVE ULTRASOUND FELLOWSHIP PROGRAM MANUAL

UPDATED JUNE 2019

INTRODUCTION

Preamble

The University of Calgary (U of C) offers a one-year fellowship-training program in perioperative ultrasound (PeriOp US).

To optimize the educational experience, training occurs primarily at 3 sites within the Calgary region: Foothills Medical Centre, Peter Lougheed Hospital, and South Health Campus. Each site has a primary ultrasound training focus, but most skills can be taught and mastered at all three sites. Our goal is to create an environment that fosters development of both clinical and academic skills.

The ultrasound skills that the fellow will gain by the end of the year fall into 4 general categories:

1. Point-of-care ultrasound (POCUS). Includes, but not limited to, abdominal, airway, gastric, lung, and vascular access.
2. Regional Anesthesia. A focus on basic anatomy and regional block techniques.
3. Trans-esophageal echocardiography (TEE).
4. Trans-thoracic echocardiography (TTE).

Code of Conduct

All fellows should be aware of the PGME policies on code of conduct expected of medical trainees. This can be found at http://wcm.ucalgary.ca/pgme/current-trainees/residency-training-policies under 'Code of Conduct'. Although directed towards residents, the same expectations apply to fellows. The PGME complete policy on clinical fellowships can be accessed through the following link: cumming.ucalgary.ca/pgme/files/pgme/clinical-fellows-policy-final.pdf.

Fellows are also expected to be aware of and abide by the College of Physician and Surgeons of Alberta's Standards of Practice (http://www.cpsa.ca/standardspractice/), Code of Conduct (http://www.cpsa.ca/cpsa-code-conduct/) and Code of Ethics (http://www.cpsa.ca/standardspractice/code-of-ethics/).

ROTATIONS AND SCHEDULES

The fellowship typically begins the first week of July each year, however an alternative start date may be considered in special circumstances. The training year is divided into 13 blocks, each bock consisting of a four-week period. A standard fellowship year would involve the following rotations through the sites (training focus):

1. PLC (TTE/POCUS): 5 blocks
2. FMC (TEE): 4 blocks
3. SHC (Regional/POCUS): 3 blocks
4. Echo Lab: 1 block if there is availability
5. Elective Block: 1 block if there is no Echo Lab rotation

Each site has a coordinator. This individual's responsibilities include: 1) assisting the fellow with finding opportunities for POCUS training and practice, 2) shifting training focus towards ultrasound skills that are deemed to be deficient relative to others, 3) completing rotation evaluations, 4) communicate/coordinate with the site's POCUS staff educators, and 5) point of first contact for the fellow for any issues/concerns at that site.

Current site coordinators are:
FMC: Alex Gregory
PLC: Bronwyn Parkinson
SHC: Ryan Endersby

There is some flexibility in the distribution of the clinical rotations depending on any particular area of interest for the fellow. Also, depending on achievement of various ultrasound skills, blocks may be changed towards the end of the fellowship to achieve the minimum competency. Any requests for a non-standard rotation schedule must be reviewed by the fellowship program director, site coordinators, fellowship training committee, and any other directors whose departments/divisions/programs may be affected.

CLINICAL EDUCATION CURICULUM

General Guidelines for Performance and Interpretation of Ultrasound Exams

The fellow will be evaluated for each ultrasound technique using a competency-by-design approach, including entrusted professional activities (EPA). Until EPAs have been completed successfully, all ultrasound exams and procedures should be performed by the fellow under direct supervision from an attending with expertise in the technique being taught. This teaching should include proper use of equipment, image optimization, proper image acquisition, image interpretation and procedural technique. Once EPAs have been achieved, the fellow may begin to perform scans and perform US guided procedures independently.

The decision for independent application of US skillsets will be at the discretion of the Program Director, Site Coordinators, and Fellowship Committee (with input from the fellows). All pertinent US images for exams or procedures should be saved and reviewed (both for image quality, interpretation, and feedback) with an attending within a reasonable time-frame. This time-frame will be determined by the Site Coordinators and given to the fellows. During independent scanning, the fellow should seek out assistance if they are unable to acquire good quality images. The ability for independent scanning/procedures

may be suspended by the Fellowship Program if it is felt that the fellow's US skills are below those required to perform the exams/procedures safely. The educational plan for the fellow will then be adjusted to allow additional opportunity to re-gain the necessary level of competency to scan and perform procedures independently.

Any member of the department of anesthesia with expertise in ultrasound can assist in providing clinical education opportunities for the fellow. At each site there is a select group of anesthesiologists with particular knowledge/expertise in various aspects of perioperative ultrasound. These individuals will be your primary resource for training in all of the aspects of this fellowship, as well as being responsible for supervising and signing-off on EPAs. Their names are listed below for each site, including areas of expertise.

FMC Rotation : TEE (see PLC section for details on TTE/POCUS)
Site Coordinator: Dr. Alex Gregory

Learning Goals and Objectives

Cognitive skills

1. Operation of ultrasonographs, including all controls that affect the quality of data displayed.
2. Equipment handling, infection control, and electrical safety associated with the techniques of perioperative echocardiography.
3. Indications, contraindications, and potential complications of perioperative echocardiography.
4. Appropriate alternative diagnostic techniques.
5. Understand the normal tomographic anatomy as revealed by perioperative echocardiographic techniques.
6. Knowledge of the recommended views to be acquired in a basic PTE exam.
7. Commonly encountered blood flow velocity profiles as measured by Doppler echocardiography.
8. Echocardiographic manifestations of native valvular lesions and dysfunction.
9. Echocardiographic manifestations of cardiac masses, thrombi, cardiomyopathies, pericardial effusions, and lesions of the great vessels.
10. Echocardiographic presentations of myocardial ischemia and infarction.
11. Echocardiographic presentations of normal and abnormal ventricular function.
12. Echocardiographic presentations of air embolization.

Technical skills

1. Operate ultrasonographs, including the primary controls affecting the quality of the displayed data.
2. Insert a transesophageal echocardiographic probe safely in an anesthetized, intubated patient.
3. Perform a basic PTE echocardiographic examination and differentiate normal from markedly abnormal cardiac structures and function.
4. Recognition of:
    a. marked changes in segmental ventricular contraction indicative of myocardial ischemia or infarction
    b. marked changes in global ventricular filling and ejection

    c. air embolization
    d. gross valvular lesions and dysfunction
    e. large intracardiac masses and thombi
    f. large pericardial effusions
5. Ability to recognize common echocardiographic artifacts.
6. Communication of echocardiographic results effectively to health care professionals, the medical record, and patients.
7. Recognize complications of perioperative echocardiography.

Learning Tools

1. Clinical Days (CV OR, Echo days, TEE in non-CV OR)
2. Academic days
3. Learning Goals and Objectives listed in the Program Manual
4. Lecture Series
5. Self-directed TTE/TEE interpretation (Secondary Review – see TEE section)
6. Textbooks
7. Journal publications
8. Online resources- UofT PIE website (*www.pie.med.utoronto.ca*) and SCA On-CUE (*www.scahq.org/Education/ContinuingMedicalEducation/OnCUE.aspx*)

Evaluation Tools

1. Feedback during the day
2. TEE EPA
3. One45 Daily Evaluation
4. One45 ITER
5. Logbook
6. End of rotation meeting with SIte Coordinator

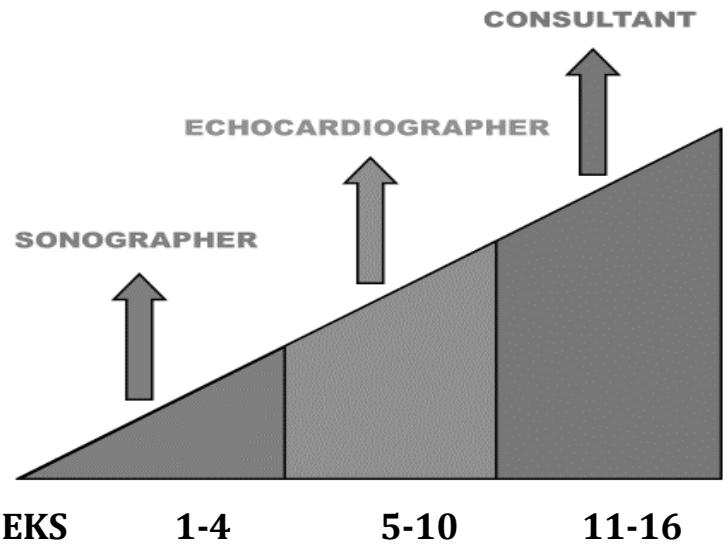
FMC Rotation Achievement Goals and Progression of Training

The dedicated TEE rotations occur at FMC, primarily in the CV OR. Other opportunities for TEE experience in non-CV procedures at all sites exist. These TEE exams will be included on the Fellowship Logbook and are a vital component of the fellowship training. For the purposes of this section they will be considered supplementary due to their unpredictability during the year.

<u>Definitions</u>

1. Sonographer: able to consistently acquire high quality images.
2. Echocardiographer: able to properly interpret the findings of echocardiogram.
3. Consultant: able to apply the echocardiogram to improve and guide clinical management.

Anticipated Progress



The TEE rotation is designed to enable the fellow to progress through the above stages of TEE competency. These stages are seen a progression of skill and expertise. Though the educational focus will shift over time to achieve these stages, it should be viewed as a layering process. The skills/knowledge/expertise from the previous stage will be built on and remain integral in the teaching/evaluation of the fellow. IE: the ability to effectively achieve the stage of "Echocardiographer" will largely depend on continued proficiency of the skills learned in the "Sonographer" stage. There will also expected overlap of the components of these stages week to week, the above outline of progression is merely a reflection of the primary focus of the rotation on those particular weeks.

WEEK 1

1. Indications & contraindications to TEE, including appropriate history from the patient
2. Proper placement of the TEE probe
3. Probe handling and maintenance of the TEE probe
4. Standard terminology for probe manipulation
5. Basic use of TEE machine control knobs
6. Introduction of the ASE/SCA Basic TEE views

WEEK 2-4

1. Completion of TEE EPAs
2. Introduction of the ASE/SCA Comprehensive TEE views
3. Fellowship TEE lecture series
4. Introduction to Xcelera and reporting exams
5. Regular performance of ASE/SCA Basic Exam
6. Teaching/discussions should focus on methods to optimize TEE image quality and anatomy.

WEEK 5-10

1. Regular supervised performance and interpretation of ASE/SCA Comprehensive Exam
2. Regular supervised reporting of TEE exams- both performed and not-performed
3. Teaching/discussions should focus on the interpretation of TEE findings, including use of the ASE guidelines when applicable.

WEEK 11-16

1. Regular facilitated performance and interpretation of ASE/SCA Comprehensive Exam.
2. Regular facilitated reporting of TEE exams- both performed and not-performed
3. Secondary TEE Reports if needed.
4. Teaching/discussions should focus on the application of the TEE findings regarding CV physiology and intra-operative management.

TEE NBE BasicPTE Goals

1. Interpretation and review of 150 peri-operative TEE studies with a qualified attending.
2. Perioperative TEE is defined as a TEE performed 1) intraoperative 2) post operative during the same hospitalization as surgery, or 3) preoperative in patients having surgery during the same hospitalization.
3. 50 of the studies must also have been performed by the fellow.
4. The NBE guidelines for certification will be given to fellow at the start of the fellowship year.
5. Achievement of these numbers will be monitored throughout the year and the distribution of dedicated TEE days will be adjusted as needed to ensure completion.
6. Achievement of exams interpreted only may be accomplished using the CV Fellowship Secondary TEE Report. This document allows the fellow to report an exam that has already been completed (including the report) by another echocardiographer. The fellow will review the images and then complete their own secondary report (without reading the original report). The images and secondary report can then be discussed and reviewed with a qualified attending.

Resource and Evaluation Staff

C Bands (TEE)*
R Chun (TEE)*
A Gregory (TEE/TTE/POCUS)*
D Ha (TEE)*
H Hurdle (TEE/TTE/POCUS)*
C Noss (TEE)*
C Prusinkiewicz (TEE)*
D Seal (TEE)*
J Waechter (TEE)*
N Webb (TEE)*

** Designated EPA Evaluators*

PLC Rotation : TTE/POCUS (see FMC section for details on TEE)
Site Coordinator: Dr. Bronwyn Parkinson

POCUS outline				
TTE	Abdominal gastric volumes	Abdominal free fluid	Lung	Vascular access
Goals and objectives	Goals and objectives	Goals and objectives	Goals and objectives	Goals and objectives
EPA*10	EPA *5	EPA *5	EPA*5	No EPA

Independent scanning in areas where EPA has been achieved.

Assessment:

- One 45 : Daily assessment – use current resident POCUS rotation one 45 – more Can meds roles than technical
- Q path : Logbook as well as assessment tool for tracking technical competency and reporting
- Weekly/biweekly meeting with preceptor to review progress and numbers

Achieve goal numbers of scans

TTE	Abdominal	lung	Vascular access
100 (50 complete studies performed)	50 intra peritoneal fluid 50 gastric volumes	50 normal and pathologies included in objectives	peripheral and central arterial and venous access

Achieve competency in all aspects of POCUS: Image acquisition, interpretation, reporting and integration into clinical practice

Final assessment:
NBE exam for TEE , ITER, Research completed

Pursue quality assurance in all aspects of US practice

Learning Goals and Objectives: Cognitive skills

General

1. Operation of ultrasound machines, including all controls that affect the quality of data displayed
2. Identify proper equipment handling, infection control, and electrical safety associated with the use of diagnostic ultrasound
3. Explain indications, contraindications, and potential complications of point of care ultrasound applications
4. Summarize appropriate alternative diagnostic techniques for each given point of care ultrasound application

Basic transthoracic echocardiography

1. Relate the current recommendations of the American Society of Echocardiography on focused cardiac ultrasound and compare the varied published focused cardiac ultrasound protocols
2. Describe the recommended views, image orientation and cardiac anatomy to be acquired in a basic transthoracic echocardiographic examination
3. Recognize the normal two-dimensional anatomy, colour doppler profiles and doppler blood flow velocity profiles in a basic transthoracic echocardiography examination
4. Discuss methods to assess left ventricular systolic function and grading of severe dysfunction
5. Express the criteria to determine regional wall motion abnormalities and illustrate understanding of relation to coronary artery distribution
6. State methods to estimate left ventricular volume status and discuss differential for under filled left ventricle
7. Define the criteria for severe left ventricular hypertrophy
8. Describe two-dimensional and colour doppler appearance of severe left ventricular outflow tract obstruction
9. Discuss methods to assess right ventricular systolic function and grading of severe dysfunction
10. State the expected echocardiographic findings in severe pulmonary embolism
11. Specify the normal anatomy of each cardiac valve
12. Indicate the echocardiographic two-dimensional and colour doppler appearance of native valvular dysfunction and the associated findings suggestive of significant valvular dysfunction
13. Explain the two-dimensional and doppler findings suggestive of a hemodynamically significant pericardial effusion
14. Outline approach to evaluate hypotension and cardiovascular instability
15. Appraise situations for advanced diagnostic echocardiographic examination

Abdominal Ultrasound

1. Explain probe selection and machine settings for abdominal ultrasound examination
2. Describe the FAST and extended FAST protocol, views required, anatomy and indications
3. Discuss criteria for positive FAST examination
4. List causes of free intraperitoneal fluid in peri-operative patients
5. Review reasons for false positive and false negative results for free intraperitoneal fluid

6. State the protocol and indications for assessment of gastric volume and content with ultrasound
7. Define the anatomy for ultrasound examination of gastric antrum
8. Contrast sonographic appearance of various gastric antrum content
9. Relate the method to calculate gastric volume sonographically
10. Classify risk of aspiration based on gastric antrum sonography
11. Distinguish limitations of gastric volume assessment

Lung Ultrasound

1. Review international based recommendations for point of care lung ultrasound
2. Differentiate focused lung ultrasound protocol versus a complete lung ultrasound examination
3. Explain probe selection and machine settings for lung ultrasound examination
4. Compare lung ultrasound sensitivity and specificity with other imaging modalities for various pathologies
5. List the anatomy and expected findings in a normal lung ultrasound
6. Recite a logical approach to the assessment of the hypoxemic patient with ultrasound
7. Cite the criteria to diagnose pneumothorax with ultrasound
8. Define the ultrasound features of interstitial syndrome
9. Describe the sonographic appearance of lung consolidations and atelectasis
10. Identify characteristics indicating unilateral ventilation and describe causes
11. Indicate the ultrasound features of pleural effusions, methods to estimate severity and potential errors in assessment
12. Discuss approach to evaluate diaphragmatic function and list differential for dysfunction

Vascular Access

1. Differentiate the imaging planes techniques and cite advantages/disadvantages of each
2. Describe normal anatomy, anatomic sites and anatomical variants for central venous access
3. Review guidelines for ultrasound use in central venous access
4. Summarize sonographic approach, anatomic locations and techniques for arterial cannulation
5. Explain techniques for peripheral venous access with ultrasound

Learning Goals and Objectives: Technical skills

General

1. Operate a variety of ultrasound platforms, including the primary controls affecting the quality of the displayed data.
    a. Connection between orientation marker and indicator on screen
    b. Gain
    c. Depth
    d. Sector width
    e. Time gain compensation
    f. Frame rate
2. Ability to recognize common echocardiographic artifacts

3. Communication of echocardiographic results effectively to health care professionals, the medical record, and patients.

Transthoracic echocardiography

1. Acquire the basic transthoracic echocardiographic views including:
    a. Parasternal Long Axis, RV Inflow, RV Outflow.
    b. Parasternal Short Axis at the level of the aortic valve, mitral valve, papillary muscles and apex.
    c. Apical four-chamber, five-chamber, two-chamber and three-chamber.
    d. Subcostal four-chamber, short-axis and inferior vena cava.
2. Perform a basic trans-thoracic echocardiographic examination and differentiate normal from markedly abnormal cardiac structures and function using 2 D, colour, pulse wave and continuous wave doppler.
3. Recognition of:
    a. LV Regional wall motion abnormalities indicative of coronary artery disease
    b. Left ventricular and right ventricular global function
    c. Left ventricular volume status
    d. Signs of pulmonary embolism
    e. Gross valvular abnormalities
    f. Large intracardiac masses and thrombi
    g. Large pericardial effusions
    h. Severe left ventricular hypertrophy
    i. Left ventricular outflow tract obstruction - SAM, HOCM
    j. IVC diameter correlated to patient volume status.
4. Quantification of valvular abnormality to recognize severe stenosis or regurgitation

Abdominal

1. Acquire the 4 FAST (Basic) views:
    a. Subcostal - pericardial space
    b. Right Upper Quadrant- perihepatic pouch (Morrison's pouch)
    c. Left Upper Quadrant- perisplenic space (Splenorenal recess)
    d. Pelvic longitudinal and transverse - retrovesicular and/or retrouterine (Pouch-of-Douglas)
2. Recognition of pericardial effusions and free fluid in the peri-hepatic, peri-splenic, peri-nephric, pleural and peri-vesicular spaces.
3. Identify the gastric antrum and body in the epigastric area
4. Identify the sonographic appearance of a full stomach versus clear fluid or solid content.
5. Estimate gastric volume based on a cross sectional area of the gastric antrum.

Lung Ultrasound

1. Acquire the 8 focused views and additional 6 lung ultrasound views:
    a. Anterior (4)
    b. Lateral (4)
    c. Posterior (6)
2. Recognition of anatomy:
    a. Subcutaneous tissue

b. Intercostal muscles
c. Rib
d. Pleura
e. Diaphragm

3. Recognition of pathology:
    a. Pneumothorax
    b. Pleural effusions
    c. Interstitial syndrome
    d. Lung isolation
    e. Endotracheal vs endobronchial intubation.
    f. Lung consolidation
    g. Diaphragmatic paresis

<u>Vascular access</u>

1. Image acquisition of arteries and veins- peripheral and central
2. Cannulation of peripheral and central arteries and veins with real time ultra sound guidance.
3. Develop out of plane scanning technique.

Learning Tools

1. Clinical Days (CV OR, Echo days, TEE in non-CV OR)
2. Academic days
3. Learning Goals and Objectives listed in the Program Manual
4. POCUS weekend workshops (2 per year, both are mandatory)
5. Lecture Series
6. Self-directed TTE/TEE interpretation (Secondary Review – see TEE section)
7. Textbooks
8. Journal publications
9. Online resources- UofT PIE website (*www.pie.med.utoronto.ca*) and SCA On-CUE (*www.scahq.org/Education/ContinuingMedicalEducation/OnCUE.aspx*)
10. SIM manikin - Heartworks- available at PLC

Evaluation Tools and feedback

1. Feedback during the day
2. TEE EPA
3. One45 Daily Evaluation
4. One45 ITER
5. Logbook
6. Regular meetings with Site Coordinator
7. Quarterly meeting with Program Director

PLC Rotation Achievement Goals and Progression of Training

At the PLC you will have access to the practice of all the anesthesia related ultrasound modalities. Some days will have multiple opportunities for echo and regional anesthesia and so time management , prioritizing your learning goals and good communication with different preceptors will be very important to maximize your learning experience.

Learning opportunities for TTE and TEE

1. Scanning on vascular lists with echo trained preceptors
2. Scanning in pre admission clinic with echo trained preceptors
3. Scanning cases on OR slate in advance of surgery and reviewing with preceptors

Lung and abdominal

Ultrasound can be done on most lists where patients have GA. Any such list with POCUS preceptors can be utilized to obtain basic scanning abilities. Suggested cases to scan once you can get the correct images:

1. Renal failure/ hepatic failure- can have pleural, pericardial effusions and ascites
2. ICU patients coming to OR
3. Esophagectomy patients- lung ultrasound for lung isolation

Regional

You will have focused regional anesthesia training at SHC but there is also a fair amount of regional anesthesia at PLC. Try to do as many blocks as you can without compromising your exposure to other scans.

Progression

Fellows will have varying rates of progression through these phases, so no strict timeline is proscribed.

PHASE 1 - learning image acquisition
PHASE 2- recognizing pathology and produce an accurate report
PHASE 3- integrate into clinical management and advise colleagues.

Resource and Evaluation Staff

Bishop (TEE)
Dobson (TEE/TTE/POCUS)*
Kruger (TEE/TTE/POCUS)*
Jadavji (TEE)*
Maher (TEE/TTE/POCUS)*
Parkinson (Regional)*
Santosham (TEE)
Yang (TEE/TTE/POCUS)*

** Designated EPA Evaluators*

SHC Rotation : Regional
Site Coordinator: Dr. Ryan Endersby

Cognitive Skills

Modified from: Guidelines for Fellowship Training in Regional Anesthesiology and Acute Pain Medicine Third Edition, 2014. Regional Anesthesia and Pain Medicine 2015; 40: 213-217

Nerve Anatomy

1. Discuss the anatomy of neurons
2. Describe the differences between motor and sensory nerves
3. Describe the microanatomy of the nerve cell

Local Anesthetics

1. Describe the pharmacology of local anesthetics, including new liposomal formulations with respect to mechanism of action, physicochemical properties, comparative attributes, and appropriate dosing for single injection or continuous infusion
2. Determine the selection and dose of local anesthetics as indicated for specific medical conditions
3. Compare the dosing, advantages, and disadvantages of local anesthetic adjuvants
4. Understand signs, symptoms, and treatment of local anesthetic systemic toxicity or neurotoxicity of local anesthetics

Neuraxial Opioids

1. Describe indications/contraindications, mechanism of action, physicochemical properties, effective dosing, and duration of action of neuraxial opioids
2. Recognize complications and adverse effects, including related monitoring, prevention, and therapy
3. Differentiate intrathecal versus epidural administration relative to dose, effect, and adverse effects

Regional Anesthesia Techniques

1. Nerve Localization Techniques
2. Explain principles, operation, advantages, and limitations of the peripheral nerve stimulator to localize and anesthetize peripheral nerves
3. Describe principles of paresthesia-seeking perivascular or transvascular approaches to nerve localization
4. Explain principles, operation, advantages, and limitations of ultrasound to localize and anesthetize peripheral nerves

Spinal Anesthesia

1. Describe the anatomy of the neuraxis
2. Describe the indications, contraindications, adverse effects, complications, and management of spinal anesthesia
3. Recognize the cardiovascular and pulmonary physiologic effects of spinal anesthesia
4. Describe common mechanisms for failed spinal anesthetics
5. Compare local anesthetics for intrathecal use: agents, dosage, surgical and total duration of action, and adjuvants
6. Explain the relative importance of factors affecting intensity, extent, and duration of block such as patient position, dose, volume, and baricity of injectate
7. Define meningeal puncture headache and describe symptoms, etiology, risk factors, and treatment
8. Differentiate advantages and disadvantages of continuous spinal anesthesia

Epidural Anesthesia (Lumbar and Thoracic)

1. Describe the indications, contraindications, adverse
2. effects, complications, and management of epidural anesthesia and analgesia
3. Compare the local anesthetics available for epidural use: agents, dosage, adjuvants, and duration of action
4. Differentiate between spinal and epidural anesthesia with regard to reliability, latency, duration, and segmental limitations
5. Explain the value and techniques of test dosing to minimize certain complications of epidural anesthesia and analgesia
6. Interpret the volume-segment relationship and the effect of patient age, pregnancy, position, and site of injection on resultant block
7. Differentiate combined spinal-epidural anesthesia from lumbar epidural anesthesia or analgesia, including advantages/disadvantages, dose requirements, complications, indications and contraindications
8. Categorize outcome benefits of thoracic epidural analgesia for thoracic and abdominal surgery and thoracic trauma
9. Differentiate thoracic epidural anesthesia/analgesia from lumbar epidural anesthesia/analgesia, including advantages/disadvantages, dose requirements, complications, indications and contraindications
10. Explain the impact of antithrombotic and thrombolytic medications on neuraxial and peripheral anesthesia/analgesia with specific reference to the American Society of Regional Anesthesia and Pain Medicine guidelines: “Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy”

Upper-Extremity Nerve Block

1. Describe the anatomy and sonoanatomy of the brachial plexus in relation to sensory and motor innervation
2. Compare local anesthetics for brachial plexus block: agents, dose, duration of action, and adjuvants
3. Explain the value and techniques of intravascular test dosing to minimize local anesthetic systemic toxicity associated with peripheral nerve block

4. Differentiate the various brachial plexus (or terminal nerve) block sites including indications/contraindications, advantages/disadvantages, complications, and management specific to each
5. Contrast the indications and technique for cervical plexus, suprascapular, or intercostobrachial block as unique blocks or supplements to brachial plexus block
6. Discuss the technical and nontechnical aspects unique to brachial plexus perineural catheter placement and management

Lower-Extremity Nerve Block

1. Describe anatomy and sonoanatomy of the lower extremity: sciatic, femoral, lateral femoral cutaneous, and obturator nerves, as well as the adductor canal and options for saphenous nerve blockade
2. Compare local anesthetics for lower-extremity block: agents, dose, duration of action, and adjuvants
3. Explain the value and techniques of intravascular test dosing to minimize local anesthetic systemic toxicity associated with peripheral nerve block
4. Differentiate the various approaches to lower-extremity blockade, including indications/contraindications, side effects, complications, and management specific to each
5. Discuss the technical and nontechnical aspects unique to lower-extremity perineural catheter placement and management

Truncal Block

1. Describe the relevant anatomy for intercostal, paravertebral, ilioinguinal-hypogastric, rectus sheath and transversus abdominis plane blocks
2. Compare local anesthetics for truncal blockade: agents, dose, and duration of action
3. Summarize the indications, contraindications, side effects, complications, and management of truncal blockade
4. Discuss the technical and nontechnical aspects unique to continuous truncal catheter placement and management

Complications of Regional Anesthesia

1. Discuss, recognize, and know how to manage complications specific to regional anesthesia and acute pain medicine practice.
2. A partial list of these complications includes:
    a. Hemorrhagic complications in the patient receiving antithrombotic or thrombolytic agents
    b. Infectious complications of neuraxial and peripheral blockade
    c. Neurological complications of regional anesthesia and acute pain medicine
    d. Knowledge and basic interpretation of tests recommended after plexus/nerve lesion such as electromyography, nerve conduction studies, somatosensory evoked potentials, and motor evoked potentials
    e. Local anesthetic systemic toxicity
    f. Opioid-induced respiratory depression

Patient Care and Procedural Skills

1. Describe rational selection of regional anesthesia and/or postoperative analgesic techniques for specific clinical situations. Such options include regional techniques, multimodal analgesia, and/or opioid and nonopioid pharmacological management.
2. Debate the advantages/disadvantages of regional versus general anesthesia for various procedures and patients with regard to patient recovery, patient outcome, operating room efficiency, and cost of care.
3. Recognize and intervene to manage inadequate operative regional anesthetic and postoperative analgesic techniques with supplemental blockade, alternate approaches, and/or pharmacological intervention.
4. Demonstrate the knowledge (including an understanding of the applied anatomy) and skills necessary to perform and to effectively teach a wide range of advanced practice block techniques, achieving a high success rate and a low complication rate. Demonstrate appropriate interpersonal and communication skills to manage patients.

Learning Tools

1. Clinical Days (Regional Anesthesia and Acute Pain block days)
2. Academic days
3. Learning Goals and Objectives listed in the Program Manual
4. Lecture Series
5. Self-directed learning and scanning
6. Textbooks
7. Journal publications
8. Online resources- University of Toronto USRA website - www.usra.ca, NYSORA website www.nysora.com, University of Toronto Virtual Spine website http://pie.med.utoronto.ca/VSpine/index.htm and SCA On-CUE (www.scahq.org/Education/ContinuingMedicalEducation/OnCUE.aspx)

Evaluation Tools

1. Feedback during the day
2. Regional Anesthesia EPA (Core Regional Blocks- see below)
3. One45 Daily Evaluation
4. One45 ITER
5. Logbook
6. Quarterly meeting with Program Director

SHC Rotation Achievement Goals and Progression of Training

The Regional Anesthesia and Acute Pain rotation is designed to enable the fellow to progress quickly and gain enough confidence and experience to practice independently some of the more basic and common regional anesthesia techniques early on in their fellowship. Uncommon and more advanced regional anesthesia techniques will be acquired when the opportunities are presented, however they are likely to occur later on in their fellowship. Once a fellow is comfortable and competent performing a regional anesthesia technique the focus will shift to being able to teach junior learners these techniques as a progression to a consultant level Regional Anesthesia specialist.

WEEK 1

1. Indications & contraindications to regional anesthesia including appropriate history from the patient
2. Proper placement of the ultrasound probe
3. Probe handling and maintenance of the ultrasound probe
4. Standard terminology for probe manipulation
5. Basic use of ultrasound machine control knobs
6. Review of basic needling techniques of in plane and out of plane with continued practice using gel phantoms
7. Review of basic ultrasound guided regional anesthesia blocks (Brachial plexus blocks of interscalene, supraclavicular, infraclavicular and axillary blocks, popliteal sciatic block, adductor canal block, femoral block, fasica iliaca block, ankle block, lateral or classic transversus abdominal plane (TAP) block, subcostal transversus abdominal plane block, ilioinguinal block, rectus sheath block, and spinal ultrasound)

WEEK 2-4

1. Completion basic ultrasound guided regional anesthesia EPAs
2. Transition to full independence with most basic ultrasound guided regional anesthesia blocks
3. Introduction of more advanced level blocks (paravertebral block, PEC I and II blocks, Quadratus Lumborum I, II and III blocks, transversalsis fascia plane, serratus anterior blocks, Erector spinae plane block, lateral femoral cutaneous block, obturator block, subgluteal sciatic block, superficial cervical plexus block, axillary nerve block, suprascapular nerve block,
4. Fellowship ultrasound and regional anesthesia lecture series

WEEK 5 AND BEYOND

1. Completion of more advanced Ultrasound Guided Regional Anesthesia EPA
2. Transition to consultant level Regional Anesthesiologist and Acute Pain specialist by being able not only to perform various basic and advanced regional anesthesia techniques but to be able to teach junior learners in these areas
3. Possibly formulate a research project related to regional anesthesia
4. Assistance with the management of ongoing regional anesthesia research projects

Minimum Core Regional Blocks and EPA

Each of the blocks listed below requires 6 completed EPAs with no mark lower than a 4, along with a record in the logbook of 10 of these blocks having been performed. Of the 6 EPA's no single preceptor can sign off on no more than 2 of the EPAs. Preceptors can sign off on multiple different EPAs.

Upper Extremity Blocks

1. Brachial plexus blocks of interscalene and/or superior Trunk
2. 2 of the following brachial plexus blocks:
    a. Supraclavicular
    b. Infraclavicular
    c. Axillary

Lower Extremity Blocks

1. Popliteal sciatic
2. Adductor canal

Trunk Blocks

1. Lateral or classic transversus abdominal plane (TAP)
2. Rectus sheath
3. Ilioinguinal and/or transversalis fascia plane
4. Spinal ultrasound

Resource and Evaluation Staff

Baghirzada (Regional)*
Banasch (Regional)
Bharwani (Regional)*
Brown (Regional)*
Chu (Regional)*
Demarty (Regional)
Endersby (Regional/POCUS)*
Goldstein (Regional)
Ho (Regional)
Jack (Regional)
Joo (Regional)*
Kostash (Regional)*
Moazeni (Regional/POCUS/TTE/TEE)*
Montgomery (Regional)*
Nemish (Regional)
Olivieri (Regional)
Sancheti (Regional)
Schubert (Regional)
Spencer (Regional/POCUS)*
Stephan (Regional)*
Swedlo (Regional)
Trinh (Regional)

** Designated EPA Evaluators*

ADDITIONAL EDUCATIONAL OPPORTUNITIES

In addition to teaching that takes place in the setting of direct patient care there is also a formal educational component to the program.

1. Physics of Ultrasound Lecture Series: Takes place during the first 2 months of the fellowship year. Exact time/dates vary year to year. Additional academic days will be given as needed (see section on Scheduling & Educational Polices).
2. Introduction to Clinical Echocardiography Lecture Series: Takes place during the first 2 months of the fellowship year. Exact time/dates vary year to year. Additional academic days will be given as needed (see section on Scheduling & Educational Polices).
3. OnCue Level 1 Online Course: Fellows are required to complete this online course by the end of their fellowship year. The earlier it is completed, the more it will assist with POCUS training. The cost of this course is covered by the program. Once accepted into the Fellowship Program, the fellow may begin this course prior to their arrival in July.
4. Advanced FATE: This course is taught locally. Fellows are strongly encouraged to attend. The cost will be covered by the Fellowship Program.

EVALUATION POLICY

1. Verbal/hands-on feedback during the course of each day while working with preceptors.
2. Entrusted Professional Activity (EPA). These are formal methods to demonstrate minimum competency in various ultrasound techniques. An EPA must be successfully completed in its entirety and with no assistance from a preceptor in order to be marked as “complete”. A specific number of EPAs must be successfully completed for each technique prior to the fellow being considered ready for independent scanning. If it becomes apparent that certain ultrasound skills are lacking, the fellow may be asked to redo certain EPAs. No more than 3 EPAs for any one technique can be completed in a single day and no more than 3 EPAs for a technique can be signed-off by a single preceptor.
3. Daily Evaluation. It is mandatory for fellows to submit a one45 evaluation for each day, even if EPAs were performed that day. Only one evaluation per day is necessary, so if the fellow works with multiple preceptors only one evaluation is required for that day (please choose the preceptor with whom you worked the most that day). It is acceptable to fellows to submit one evaluation for a block of serial days if that is agreeable to their preceptor.
4. At the end of each block a final evaluation (ITER) will be produced by the program director for the fellow. This ITER will be based on the daily evaluations as well as any other formal feedback received by the program director.
5. Ultrasound Logbook: The fellow will be required to maintain a logbook of ultrasound exams/procedures performed. The log-book will be provided to the fellow by the program. This will function as a tool to assist the Fellowship Program assess the learning experience, as well as be portfolio for the fellow to keep any future certification/job applications.
6. Academic Progress Report: The fellow will meet twice per year with the program director to review the progress/status of their academic activities. This includes research projects, manuscript submissions, teaching, administrative involvement, and conference attendance.

7. The fellow will meet quarterly to review his/her progress in the training program. This review will include the ITERs, logbook, and any other feedback received by the program director/site coordinators.

NON-CLINICAL ACADEMIC REQUIREMENTS

Research

Participation in research is a mandatory component of the fellowship program. The degree of involvement can be tailored to each fellow's personal education goals. Fellows will be linked with a research mentor who will assist in matching them to a suitable research project in-progress and/or help them start a new study.

Teaching

PeriOp US fellows will be involved in teaching other medical trainees. This includes other attendings (for example the fellow may be asked to precept an basic FATE course at the end of their year), residents (both anesthesia and non-anesthesia), medical residents, and other trainees. The fellows will also be given the opportunity to formally teach the residents during their Resident Core Program for topics relevant to POCUS.

Academic Day

Fellows will have 2 dedicated academic days each rotation. The only exception is the Echo Lab rotation where no Academic Days are included. The purpose of these days is to allow time for reading, research, teaching, or completing the On-Cue course.

REMUNERATION/LOCUM

Locum Scheduling

The fellow's income for the training year is generated through locum Main OR assignments where the fellow bills the day as an independent practitioner. The location of the locum assignment may vary depending on departmental scheduling needs, but in general the fellow will only be assigned at their educational sites (FMC, PLC, and SHC). If a fellow is interested in locum opportunities at other Calgary hospitals this can be explored. Locum assignments will vary and may include OR and non-OR locations (like MRI suite and L&D). The room assignments will be appropriate for any FRCPC trained anesthesiologist to competently manage.

The assignment of call may differ between sites. This includes the possibility of being the in-house and/or overnight coverage for the main OR. The complete call expectations at each site will be clearly defined for the fellow by the Site Coordinator. The fellow will not be asked to do any in-house/overnight call until the Fellowship Program and the fellow themselves feel it is appropriate.

The fellows will be assigned approximately 60 weekday assignments per year and 8 weekend assignments per year. The locum shifts will be distributed in a fashion that will 1) minimize impact on fellowship education and 2) provide additional OR coverage during time periods where the schedulers are traditionally short-staffed.

Ideally the locum assignments will be evenly spread out over the block, however depending on need/availability fellows may be asked to provide locum coverage concentrated within periods of their block (ex: 3 assignments in one week followed by 2 weeks with no assignments). Fellows will need to be available for room assignments (though may not actually be booked) for 2 of the 4 high demand vacation periods: Thanksgiving, Christmas, New Year and Spring Break. At the start of the fellowship year the fellows are expected to choose which 2 periods they will be available for potential scheduling. If you are scheduled on a STAT you may choose any other day to have as an "in-lieu". The choice of in-lieu day can be made by 1) emailing the program secretary and director (same as vacation requests) as well as 2) booking them on Physician Scheduler as an "Academic Day" with a note to the schedulers.

Billing

Fellows are responsible to obtain billing codes from the surgeon they are working with as well as entering appropriate modifiers. Billing slips will be submitted for 3rd party billing (provided by MediCom) to be submitted to Alberta Health & Wellness. Billing will be paid by AH&W into an account reserved exclusively for anesthesia fellows. Fellows will then be paid out of this account on a monthly basis. Billings and the fellowship accounts are maintained by our program. Individual fellow billing summaries and statements can be made available upon request.

Billing slips are submitted to MediCom by placing a sealed envelope in the mail slot marked "CAS" in the FMC 2nd floor anesthesia mail room. Slips are picked up Thursday morning. If possible, please try submit all billings for each rotation on the last Wednesday prior to the start of the next rotation.

Any WBC payments will come to the account directly. In the rare event that you bill an international patient that payment will be sent directly to you from MediCom and will not be counted in your annual salary or quarterly bonuses from AHS (IE if and when you get paid it will be "bonus" money).

For any "split-cases", where the case has been split between a fellow and another attending, the following procedure will need to be followed.

- Scenario 1: You are billing the "split-case". You need to write down on the billing slip that it is a split case, the name of the other anesthesiologist, and the times each person was involved in the case. This is in addition to the regular billing info. Submit this slip. The other anesthesiologist will be paid their portion directly from the Fellowship Program.

- Scenario 2: The other anesthesiologist is billing the "split-case." You must still fill in a complete billing slip as described above. The difference will be **to note clearly that it is the other anesthesiologist submitting to AH&W**. The billing anesthesiologist should write a cheque for your portion to Fellowship Program. Cheques should be made out to: **Anesthesia Department Fellowship Fund**.

- Please do not arrange to have any billings paid to you directly from another attending, for a split-case or otherwise. Doing so will be considered an unprofessional action, and may result in loss of the end-of-year bonus.

Fellowship Salary

<u>NOTE</u>: No tax will be withheld by AHS so please plan to set aside an appropriate amount of your salary and bonus payments to account for income tax payment. In addition, any professional membership/registration fees, CMPA dues, and supplemental health care insurance is NOT provided by the Fellowship Program.

Fellows will be paid a yearly salary of $95 000.00. This salary will be paid out monthly at the end of each month. Fellows' billings will be reviewed quarterly: June 30, September 30, December 31, and March 31. A 50% proportion of billings above a calculated rate of $95 000/year will be paid to the Fellows as a bonus after the completion of their fellowship year. It takes several weeks to ensure all billings have been received and the accounting is complete. Therefore, fellows can expect to receive their bonus 2-3 months after completion of their fellowship.

The remaining 50% of the billing income will be transferred to a University of Calgary Research Account. The purpose of this account will be to enhance the academic experience for the fellows. Expenditures from the Research Account will be decided by a committee and approved by the Program Director. There will be fellow representation on this committee.

The mandate of the Research Account is to spend funds only on requests which are directly related to Fellowship Academics. This includes, but is not limited to the following:

1. equipment/statistical assistance/administrative help for research projects
2. equipment used for fellowship education
3. reimbursement of ravel for conference presentations
4. honorariums for selected visiting speakers

Extra Locum Assignments

Fellows may elect to request additional locum assignments during their vacation time. All billings during this time will still be subjected to the arrangement specified above (IE 50% retention above $95 000.00). Fellows may also elect to use vacation time to work at a hospital outside of Alberta. The specifics of such an arrangement (privileges, CMPA, etc.) is to be set-up by the fellow and that particular hospital. Any income generated outside of Alberta would not go through the AHS Fellowship Account and would not be subjected to any retention of funds.

ABSENCE FROM CLINICAL WORK

Early Termination the Fellowship Program

Requests for early termination of the fellowship program should be made to the Program Supervisor as soon as possible to facilitate the required paperwork and scheduling changes.

The fellow will be excused from all educational activities immediately. Attempts will be made to cover any locum shifts that have already been assigned. If no coverage is possible, the fellow will be asked to complete the assignment so that patient care is not negatively affected.

If there has been insufficient locum work to cover the fellow's monthly salary payments, the fellow will be required to reimburse the Fellowship Program for the difference.

Early departure will result in forfeiture of the fellows' 50% split of any overage billings accumulated up to the point of fellowship termination.

Vacation

Fellows are allotted up to 4 weeks (including weekends) of vacation time during the fellowship year. Fellows are encouraged to minimize vacation requests during non-CV OR blocks to limit the loss of educational activities during these short periods.

Vacation requests can be submitted to the Fellowship Director for CV OR blocks. Any requests during non-CV OR blocks should be directed to the director of that rotation, in addition to informing the Fellowship Director.

Conferences

Fellows are encouraged to attend relevant conferences/educational meetings. Attendance to these events will be allowed without requiring the use of vacation time for up to 5 weekdays or 3 events. Additional time off will be possible should the fellow be presenting a poster or speaking at a conference. These additional conference requests will be assessed on a case-by-case basis.

Leaves of Absence (LOA)

The PGME LOA policy can be found at: http://wcm.ucalgary.ca/pgme/current-trainees/residency-training-policies under the tab 'Leaves of Absence'. Special leave will be granted by the Fellowship Director in accordance with PGME/AHS/RCPSC policies. The general rule is that any LOA over 2 weeks duration (accumulative) will require extension of training.

FELLOWSHIP PROGRAM SUPERVISOR

The Fellowship Director (PS) is responsible for the overall conduct of the fellowship program and is accountable to the participating sites, the Head of the Department of Anesthesia, the Associate Dean for PGME, and the RCPSC.

Specific duties include:

1. The development and operation of the program to meet general and specific standards of accreditation.
2. Selection of candidates for admission to the program, including the organization and conduct of interviews.
3. Evaluation in accordance with appropriate policies and stated educational objectives.
4. Maintenance of an appeal mechanism.
5. Facilitation of career planning.
6. Counseling fellows as required and dealing with professional and personal problems.
7. Ongoing program review to include:
8. The educational experience (including the curriculum as it relates to goals and objectives).
9. Optimal use of available resources and facilities.
10. Opinions of the fellows.
11. Teaching and teachers.

The PS will ensure that the formal teaching in the program is organized, relevant, and continually updated. Assistance and resources will be provided to faculty involved in educational programs. The PS acts as a liaison between the fellows and faculty, frequently in the role of fellow advocate. Fellows' specific needs and requests are to be dealt with compassionately and rationally. With the assistance of faculty, the PS is required to have an ongoing awareness of fellow's performance. Performance (or other) concerns will be addressed with the fellow, members of the Fellowship Training Committee, and Department of Anesthesia in a timely and appropriate fashion.

The PS will ensure that program documents are current and widely available. The current PS is Dr. Alexander Gregory.

FELLOWSHIP TRAINING COMMITTEE

The Perioperative Ultrasound Fellowship is complex in that it covers multiple training sites and ultrasound techniques. To provide the best possible education and evaluation, there is a Perioperative Ultrasound Fellowship Training Committee. This committee is made up of: the Program Supervisor, FMC site coordinator, PLC site coordinator, SHC site coordinator, Physics of Ultrasound course coordinator, and preceptors from each site. The exact

membership changes from year-to-year and the exact list of committee members can be provided to the fellow on request.

The Perioperative Ultrasound Fellowship Training Committee is tasked with designing, implementing, evaluating, and modifying the fellowship educational curriculum. This includes setting standards for EPAs, optimizing learning opportunities, setting the rotation schedule, and identifying the core ultrasound skills that are required in order to complete the fellowship. The committee also plays a significant role in evaluation of the fellows. The EPAs and ITERS are reviewed. If any deficiencies are identified, modifications in the fellow's training will be applied in order to achieve completion of the program (including altering rotation schedule).

FELLOWSHIP SELECTION PROCESS

Applications for fellowship training in perioperative ultrasound will be submitted directly to the Fellowship Director. All applicants must have received FRCPC designation and qualify for licensing from the College of Physicians and Surgeons of Alberta. A complete application includes: cover letter, current CV and 3 letters of reference.

Candidate files are reviewed, and selected candidates are invited for an interview. The date for Calgary interviews is determined based on availability of Faculty for interviews as well as the schedule of the fellowship applicant. If the applicant is unable to travel for an in-person interview, then a series of phone interviews will be arranged. This will not be harmful to the success of an applicant in securing a fellowship position.

During the selection process, consideration is given to academic record, clinical performance record, suitability for training in perioperative ultrasound, letters of reference, cover letter, and the interviews. The interview is conducted in a multiple mini-interview format. The application decisions are final.

RESOURCES FOR FELLOWS

Agencies

The AMA offers a variety of services (https://www.albertadoctors.org/), including emergency support. The AMA Physician and Family Support Program (https://www.albertadoctors.org/services/physicians/pfsp) manages a hotline at 1-877-SOS-4MDS (767-4637) (https://www.albertadoctors.org/services/physicians/pfsp/i- need-help-now). Up to six one-hour counseling sessions per family member per year are available free of charge.

AHS also has an Employee and Family Assistance Program that can be reached at 1-877- 273-3134 or http://insite.albertahealthservices.ca/Files/hr-whs-fact-sheet-shepellfgi- online-access.pdf.

The main campus of the U of C offers a variety of services, including a bookstore, recreational facilities, The Chaplains' Association, Student Rights Advisor, and Academic Counseling.

Dictation information

At various times during the year the fellow may be required to dictate a consultation. To dictate a note the following information is needed:

Phone number: 1-855-648-3117
Speaker Code: Should be your CPSA number
Facility code: FMC= 192, PLC= 193 , SHC= 175
Work type: PAC = 11, Inpatient= 10

To review/sign online
Address: link from AHS Insite- search DST transcription to get in correct page
User: Should be your CPSA number
Password: you will need to call HelpDesk to get this

Additional information can be found on the AHS Insite website.

HelpDesk: 1-844-944-3099

Personal Health Care

No health care benefits are provided by the fellowship program. All fellows are strongly encouraged to purchase their own health care benefit coverage for services not covered by Alberta Health Care for the duration of their fellowship. If the fellow is from out of province they should obtain an Alberta Health Care Card upon moving to Alberta. If the fellow is from out of country they will need to arrange for their own health care insurance. All fellows are urged to have a Family Physician throughout their training. Self- medication, prescription writing without formal consultation, and removal of pharmaceuticals from the OR are not supported. While it is reasonable to keep a limited number of labeled syringes/vials to be taken to patient care areas while on call, keeping narcotic boxes in the on-call room is absolutely prohibited.

CMPA

Payment of CMPA dues are the responsibility of the fellow. If you think you might be, or are faced with, a serious complaint or a threat of a lawsuit, then you should notify the CMPA by telephone 1-800-267-6522 at once. Send complete, concise information. Do not contact the CMPA by e-mail. Wait for a reply from the CMPA before taking any further steps or making any statements. Be sure your clinical records are secure. Do not consult a lawyer without instructions from the CMPA. The CMPA does not accept responsibility for the payment of legal expenses incurred without its prior approval. Do not answer any letters of complaint from patients, lawyers or others without first receiving the CMPA's advice.

FELLOW WELLBEING

Fellow well-being is given a high priority in our program. For health, personal, and career concerns, fellows are encouraged to seek assistance early. In addition to the resources available within the department, excellent support is available through the University Health Services at the U of C (https://www.ucalgary.ca/wellnesscentre/services/health/medical) and the Physician and Family Support Program (PFSP) of the Alberta Medical Association (AMA) (https://www.albertadoctors.org/services/physicians/pfsp).

Personal and Professional Responsibilities

Be aware of escalating health problems, sleep deprivation, stress, worries and doubts, and promptly discuss these issues with the Fellowship Director or other Faculty Member.
Be aware of signs of drug misuse in your colleagues and seek advice if you have concerns.

Harassment and Bullying, Ombudsman

Any fellow who feels that they are being harassed or bullied should notify either: a Faculty member or the Fellowship Director. All allegations of harassment and bulling are taken seriously and will be investigated and addressed as needed.
In the event that the fellow is not comfortable addressing the matter with any member of the Department of Anesthesia, they should contact the program's ombudsman, Dr. John Graham (john.graham@ahs.ca) to have the matter addressed.

Fellow Safety Policy

All fellows should be aware of the PGME policy on resident safety. This can be found at http://wcm.ucalgary.ca/pgme/current-trainees/residency-training-policies under 'Resident Safety'. These same policies apply to fellows. The CV Anesthesia Fellowship Program wishes to act promptly to address identified safety concerns and incidents, and to be proactive in providing a safe learning environment.

Ombudsman

The role of the ombudsman is to assist fellows who perceive that they have been offended or treated unfairly and feel that they are not being adequately supported within their own program. The ombudsman for the anesthesia residency training program is Dr. John Graham from the division of General Surgery at the Rockyview General Hospital.