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**IPM Fellowship
University of Calgary**

1. Clinical Focus and educational purpose of the fellowship:

The IPM clinical fellowship at the University of Calgary has been highly successful since its inception. Graduates from this program have found employment at academic centers across the country including the University of Calgary, University of British Columbia, University of Alberta, McMaster University, Laval, University of Sherbrooke. The clinical focus and educational purpose of the Interventional Pulmonary Medicine (IPM) fellowship program is to facilitate the mastery of the diagnosis and management of thoracic malignancy as well as complex central airways and pleural diseases and to become competent in the use of highly advanced bronchoscopic and pleural procedural techniques. Candidates for this fellowship (PGY6) are those that have completed their 2-year Respiriology fellowship training. These techniques are beyond those procedures that a fellow would have learned in their Respiriology fellowship. Fellows who have successfully completed this program will have mastered the following highly advanced and specialized procedures. Bronchoscopic techniques including: Rigid bronchoscopy, Metal and silicone airway stent placement, Malignant airway obstruction de-bulking procedures with techniques including electrocautery; cryotherapy; argon plasma coagulation and micro-debrider therapy, Linear Endobronchial ultrasound (EBUS) for mediastinal lung cancer staging and diagnosis, Peripheral EBUS for the diagnosis of peripheral lung lesions, Electromagnetic navigational bronchoscopy, Cryotherapy bronchoscopy including biopsies of peripheral lung lesions, Autofluorescence bronchoscopy and Narrow band imaging bronchoscopy. Pleural techniques including: Closed pleural biopsy, Pleural ultrasound including the assessment of fluid, pneumothorax and lung pathology, Placement of image guided chest tubes, and Placement of tunneled pleural catheters.

2. Breakdown of time dedicated to education versus research versus clinical service provision during the fellowship:

As this is a clinical fellowship the majority of the time the fellow spends will be on clinical service gaining the skills required to master the knowledge and procedural aspects of their training. Individual one on one teaching and feedback from an IPM physician is highly integrated and key component to clinical service. Clinical service includes 2 half day clinics per week supervised by an IPM Faculty member; a weekly pleural malignancy clinic supervised by the IPM Faculty on call; FMC hospital IPM consults and daily bronchoscopic or pleural procedures performed on weekdays by any of the IPM consultants. In addition, the fellow participates in at home on call duties on the FMC



UNIVERSITY OF CALGARY

Respiratory service. On call duties include Wednesday evenings (5pm to 8 am) weekly and one Friday (5 pm to 8 am) and Sunday (8 am to 8am) per month. During their on call duties the fellow, a Royal College certified General Internist and Respirologist (after their exams in October) will submit fee for service billings. Fellows are remunerated based on these fee-for-service billings as well as specialist on call stipends at a level above a PGY8 on the PARA pay scale. The on call duties of the fellow are an important aspect of their clinical training as it helps the fellow transition from residency training to consultancy work in a supportive environment. Fellows further develop their medical expert, manager, health advocate, communication, scholar and professional skills during their on call experiences. Fellows are encouraged to take their post call days off as per PARA guidelines.

There is also a great deal of time set aside for additional educational pursuits during their training. These include weekly Foothill's Medical Centre (FMC) Respiratory medicine journal club (Tuesday at noon); weekly IPM rounds where IPM topics are presented by faculty, visiting speakers and the IPM fellow (once per month on average for the fellow); weekly lung cancer rounds at the Tom Baker Cancer Centre multidisciplinary rounds; weekly X-ray and CT scan interpretation rounds; weekly academic respiratory rounds and weekly thoracic surgery radiology and case rounds. Fellows are expected and encouraged to attend all of these educational activities and the attending IPM physician covers clinical activities to facilitate this. In addition, during the first few months of their fellowship the fellows attend monthly advanced bronchoscopy training sessions in the animal lab using anesthetized pigs. Fellows also participate in advanced inanimate model and hi fidelity computer simulation bronchoscopy training.

The IPM fellow also has the opportunity to improve their teaching skills in a number of ways. Pulmonary fellows rotate through the IPM service and the IPM fellow has the opportunity to teach some of the advanced procedural skills they are learning (EBUS, pleural U/S and pleural procedures) to these residents. In addition, we encourage the IPM fellow to participate in teaching pulmonary related small group sessions for the undergraduate medical students. The IPM fellow furthers their teaching ability by presenting IPM rounds to the IPM and pulmonary group on a regular basis.

We encourage all of our fellows to become involved in research and academic pursuits during their fellowship. Our group is a highly academic group with robust research productivity. Fellows can participate in any of the research projects that are currently underway. Most of our fellows have been able to publish at least one article in peer-reviewed journals during their fellowship.



In general the breakdown of clinical, teaching and research activities for the IPM fellow are roughly 70, 20 and 10 percent respectively.

3. Specific evaluation processes that will be used to ensure completeness:

In person, verbal feedback is provided by faculty members to the fellow on a daily basis after the completion of a procedure. In addition, a written formal evaluation is provided on a quarterly basis to the fellow. This evaluation is reviewed in person with the fellow by the program director. The evaluation incorporates the input from all IPM faculty and uses the Can-Meds framework. Verbal feedback is also provided during their animal lab and simulation sessions.

Fellowship Goals and Objectives – CanMEDS Roles

Medical Expert:

IPM Physicians are able to.....

- 1) Function effectively as a consultant, integrating all of the CanMEDS roles to provide optimal, ethical and patient-centered medical care including:
 1. Performing a consultation, including the presentation of well documented assessments and recommendations in written and/or verbal form in response to a request from another health care professional
 2. Demonstrate use of all CanMEDS competencies relevant to IPM
 3. Identify and appropriately respond to relevant ethical issues arising in patient care
 4. Demonstrate compassionate and patient-centered care
 5. Recognize and respond to the ethical dimensions in medical decision-making particularly related to issues surrounding end of life care and malignancy

- 2) Establish and maintain clinical knowledge, skills and attitudes appropriate to IPM including:
 1. Basic Sciences
 - a. An understanding of thoracic tumour biology including immunohistochemical markers
 - b. An understanding of the molecular basis for targeted lung cancer chemotherapies
 - c. An understanding of the planning and effects of radiation for the treatment of lung malignancies
 2. Clinical Sciences
 - a. Pathophysiology, clinical manifestations, differential diagnosis, approach to prevention, diagnosis and management, natural history and prognosis of the following:



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- i. Lung cancer
 - ii. Thoracic complications of lung cancer
 - iii. Thoracic complications of other malignancies
 - iv. Benign tracheal stenosis
 - v. Bronchopulmonary fistulae
 - vi. Pleural space infections including empyema, parapneumonic effusions and complicated parapneumonic effusions
 - vii. Pleural effusions including malignant and benign
 - viii. Pneumothorax
 - ix. Malignant airway obstruction
 - x. Chronic obstructive lung disease and the use of bronchoscopic management techniques
 - xi. Chylothorax
 - xii. Pleural malignancies (primary and secondary) including mesothelioma
 - b. The IPM physician will have expert knowledge in the process of assessing a patient's suitability for thoracic surgery. Competency in the interpretation of pulmonary function tests and an understanding of the results of quantitative ventilation perfusion scanning, physiological testing including cardiopulmonary exercise testing, shuttle walk testing and exercise capacity is crucial
3. Perform a complete and appropriate assessment of a patient with a thoracic malignancy with emphasis on the manifestations and complications of malignancy
 - a. Identify and explore issues to be addressed in a patient encounter effectively, including the patient's context and preferences
 - b. Elicit a history that is relevant, concise and accurate to context and preferences for the purposes of prevention and health promotion, diagnosis and/or management
 - c. Perform a focused physical examination that is relevant and accurate for the purposes of prevention and health promotion, diagnosis and/or management with particular emphasis on thoracic malignancy and its complications
 - d. Select medically appropriate investigative methods in a resource-effective and ethical manner
 - e. Demonstrate effective clinical problem solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnoses and management plans
 - f. Demonstrate proficiency in interpretation of chest radiographs
 - g. Demonstrate proficiency in interpretation of chest computerized axial tomography (CT) scan of the chest with particular emphasis on airway anatomy as it pertains to the planning of advanced bronchoscopic techniques
 - h. Demonstrate proficiency in interpretation of pleural fluid analysis



**UNIVERSITY OF
CALGARY**

4. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic
 - a. Perform indications, contraindications, technical aspects and quality assurance issues, informed consent, potential complications and document and disseminate information related to procedures performed and their outcomes of the following:
 - i. Rigid bronchoscopy to manage benign tracheal stenosis, massive hemoptysis, malignant airway obstruction, foreign body removal
 - ii. Airway stent placement including silicone and metal airway stents
 - iii. Airway recanalization techniques including electrocautery, argon plasma coagulation, cryotherapy, micro-debridement and rigid bronchoscopy coring techniques
 - iv. Linear endobronchial ultrasound (EBUS) bronchoscopy
 - v. Peripheral EBUS bronchoscopy with guide sheath biopsies including cryobiopsy
 - vi. Electromagnetic navigational bronchoscopy
 - vii. Foreign body removal with flexible bronchoscopy
 - viii. Autofluorescence bronchoscopy
 - ix. Narrow band imaging bronchoscopy
 - x. Thoracentesis
 - xi. Pleural ultrasound including assessment of lung, pleura, pleural fluid and signs of pneumothorax
 - xii. Ultrasound guided tunneled pleural catheter placement
 - xiii. Ultrasound guided placement of chest tubes
 - xiv. Placement of surgical chest tubes
 - xv. Closed pleural biopsy
5. Seek appropriate consultation from other health professionals, recognizing the limits of their expertise
 - a. Demonstrate insight into their own limits of expertise
 - b. Demonstrate effective, appropriate, and timely consultation of another health professional as needed for optimal patient care
 - c. Arrange appropriate follow-up care services for a patient and their family

Communicator:

IPM Physicians are able to.....

1. Develop rapport, trust, and ethical therapeutic relationships with patients and families
 - a. Recognize that being a good communicator is a core clinical skill for IPM Physicians, and that effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence and improved clinical outcomes



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CALGARY**

- b. Establish positive therapeutic relationships with patients and their families that are characterized by understanding, trust, respect, honesty and empathy
 - c. Respect patient confidentiality, privacy and autonomy
 - d. Listen effectively
 - e. Be aware of and responsive to nonverbal cues
 - f. Facilitate a structured clinical encounter effectively
2. Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals
 - a. Gather information about a disease and about a patient's beliefs, concerns, expectations and illness experience
 - b. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers and other professionals
3. Convey relevant information and explanations accurately to patients and families, colleagues and other professionals
 - a. Deliver information to a patient and family, colleagues and other professionals in a humane manner and in such a way that it is understandable, encourages discussion and participation in decision-making
4. Develop a common understanding on issues, problems and plans with patients, families, and other professionals to develop a shared plan of care
 - a. Identify and explore problems to be addressed from a patient encounter effectively, including the patient's context, responses, concerns, and preferences
 - b. Respect diversity and difference, including but not limited to the impact of gender, sexual orientation, religion and cultural beliefs on decision-making
 - c. Encourage discussion, questions, and interaction in the encounter
 - d. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care
 - e. Discuss with the patient/family diagnostic uncertainty and the use of controversial or toxic therapy
 - f. Address challenging communication issues effectively, such as obtaining informed consent, delivering bad news, reviewing and setting goals of care and addressing anger, confusion and misunderstanding
 - g. Describe and apply the bioethical principles in obtaining informed consent (including: for bronchoscopy, chest tubes, thoracentesis, pleural biopsies, exercise testing)
 - h. Communicate bad news (including new diagnosis of lung cancer) in an empathetic manner. The fellow will understand and apply the bioethical principle of truth telling and appreciate cultural differences with respect to death and the communication of bad news
5. Convey effective oral and written information about a medical encounter



**UNIVERSITY OF
CALGARY**

- a. Maintain clear, accurate, and appropriate records (written or electronic) of clinical encounters and plans
- b. Communicate opinions clearly in the form of consultation letters/handwritten notes, telephone calls to the family doctor, specialists, and allied health professionals
- c. Present verbal reports of clinical encounters and plans

Collaborator:

IPM Physicians are able too...

1. Participate effectively and appropriately in an interprofessional health care team
 - a. Describe the roles and responsibilities of a IPM Physician to other professionals
 - b. Describe the roles and responsibilities of other professionals within the health care team including thoracic surgeons, medical oncologists, radiation oncologists and cancer related allied health professionals
 - c. Recognize and respect the diversity of roles, responsibilities and competences of other professionals in relation to their own
 - d. Work with others to assess, plan, provide and integrate care for individual patients (or groups of patients)
 - e. Develop a care plan for the patient in collaboration with members of the interprofessional team
 - f. Work with others to assess, plan, provide and review other tasks, such as research problems, educational work, program review or administrative responsibilities
 - g. Participate in interprofessional team meetings, demonstrating the ability to accept, consider and respect the opinion of other team members while contributing specific expertise
 - h. Enter into interdependent relationships with other professions for the provision of quality care
 - i. Describe the principles of team dynamics
 - j. Respect team ethics, including confidentiality, resource allocation and professionalism
 - k. Demonstrate leadership in a health care team, as appropriate
2. Work with other health professionals effectively to prevent, negotiate, and resolve interprofessional conflict
 - a. Demonstrate a respectful attitude towards other colleagues and members of an interprofessional team
 - b. Work with other professionals to prevent conflicts
 - c. Employ collaborative negotiation to resolve conflicts



- d. Respect differences and address misunderstandings and limitations in other professionals
- e. Recognize one's own differences, misunderstanding and limitations that may contribute to interprofessional tension
- f. Reflect on interprofessional team function

Leader:

IPM Physicians are able to.....

1. Participate in activities that contribute to the effectiveness of their health care organizations and systems
 - a. Work collaboratively with others in their organizations
 - b. Participate in systemic quality process evaluation and improvement, such as patient safety initiative
 - c. Demonstrate knowledge of available outcome measures for a quality assurance program
 - d. Demonstrate the ability to identify a problem in need of improvement
 - e. Demonstrate the ability to develop standards of care
 - f. Describe the structure and function of the health care system as it relates to IPM, including the roles of physicians
 - g. Describe principles of health care financing, including physician remuneration, budgeting and organizational funding
 - h. Administrative organization of health care delivery
 - i. Negligence and medical fault
 - j. Worker's compensation and assessment of impairment, disability and insurability
2. Allocate finite health care resources appropriately
 - a. Recognize the importance of just allocation of health care resources, balancing effectiveness, efficiency and access with optimal patient care
 - b. Approximate costs of common investigations and treatment modalities in IPM
 - c. Apply evidence and management processes for cost-appropriate care
3. Serve in administration and leadership roles, as appropriate
 - a. Chair or participate effectively in committees and meetings
 - b. Lead or implement change in health care
 - c. Plan relevant elements of health care delivery (e.g. work schedules)

Health Advocate:

IPM Physicians are able to....



**UNIVERSITY OF
CALGARY**

1. Respond to individual patient health needs and issues as part of patient care
 - a. Identify the health needs of an individual patient
 - b. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care
 - c. Demonstrate the ability to assess the stages of change in smoking cessation and give stage-matched advice and prescribe aids to smoking cessation as appropriate
 - d. Appreciate the possibility of competing interests between individual advocacy issues and the community at large
2. Respond to the health needs of the communities that they serve
 - a. Describe the practice communities that they serve
 - b. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately
 - c. Demonstrate the ability to recognize the impact of air quality and other environmental exposures both at home and at the workplace
 - d. Demonstrate the ability to describe the impact of smoking on the health of all patients and its impact on society
 - e. Demonstrate awareness of regional, national, and international initiatives for a smoke free society
 - f. Demonstrate awareness of the advocacy groups relevant to lung cancer and how to access their services for the improvement of lung health of their patients and the community
 - g. Appreciate the possibility of competing interests between the communities served and other populations
3. Promote the health of individual patients, communities, and populations
 - a. Describe an approach to implementing a change in a determinant of health of the populations they serve
 - b. Describe how public policy impacts on the health of the populations served
 - c. Identify points of influence in the health care system and its structure
 - d. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism
 - e. Appreciate the possibility of conflict inherent in their role as a health advocate for a patient or community with that of manager or gatekeeper

Describe the role of the medical profession in advocating collectively for health and patient safety

Scholar:

IPM physicians are able to....



**UNIVERSITY OF
CALGARY**

- 1) Maintain and enhance professional activities and procedural competence through ongoing learning
 - a. Describe the principles of maintenance of competence
 - b. Describe the principles and strategies for implementing a personal knowledge management system
 - c. Recognize and reflect on learning issues in practice
 - d. Conduct a personal practice audit
 - e. Pose an appropriate learning question
 - f. Access and interpret the relevant evidence
 - g. Integrate new learning into practice
 - h. Evaluate the impact of any change in practice
 - i. Document the learning process
- 2) Critically evaluate medical information related to IPM, and its sources, and apply this appropriately to practice decisions
 - a. Describe the principles of critical appraisal
 - b. Critically appraise retrieved evidence in order to address a clinical question
 - c. Integrate critical appraisal conclusions into clinical care
- 3) Facilitate the learning of patients, families, students, residents, other health professionals, the public and others, as appropriate
 - a. Describe principles of learning relevant to medical education
 - b. Demonstrate an understanding of and the ability to apply the principles of adult learning
 - c. Identify collaboratively the learning needs and desired learning outcomes of others
 - d. Select effective teaching strategies and content to facilitate others' learning
 - e. Demonstrate an understanding of preferred learning methods in dealing with students, residents and colleagues
 - f. Demonstrate an effective lecture or presentation
 - g. Assess and reflect on a teaching encounter
 - h. Provide effective feedback
 - i. Describe the principles of ethics with respect to teaching
- 4) Contribute to the development, dissemination, and translation of new knowledge and practices
 - a. Describe the principles of research and scholarly inquiry
 - b. Describe the principles of research ethics
 - c. Pose a scholarly question
 - d. Conduct a systematic search for evidence
 - e. Select and apply appropriate methods to address the question
 - f. Disseminate the findings of a study

Professional:



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IPM Physicians are able to...

- 1) Demonstrate a commitment to their patients, profession, and society through ethical practice
 - a. Exhibit appropriate professional behaviors in practice, including honesty, integrity, commitment, compassion, respect and altruism
 - b. Demonstrate a commitment to delivering the highest quality care and maintenance of competence
 - c. Recognize and appropriately respond to ethical issues encountered in practice
 - d. Manage conflicts of interest
 - e. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law
 - f. Maintain appropriate relations with patients
- 2) Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation
 - a. Demonstrate knowledge and an awareness of the professional, legal and ethical codes of practice
 - b. Fulfill the regulatory and legal obligations required of current practice
 - c. Demonstrate accountability to professional regulatory bodies
 - d. Be aware of the role played by each of the following professional bodies within medical practice: provincial colleges, the Royal College, Canadian Medical Protective Association, hospital boards, Ministries of Health, Health Canada, Canadian Medical Association, provincial medical associations
 - e. Recognize and respond to others' unprofessional behaviours in practice
 - f. Participate in peer review
- 3) Demonstrate a commitment to physician health and sustainable practice
 - a. Balance personal and professional priorities to ensure personal health and a sustainable practice
 - b. Strive to heighten personal and professional awareness and insight
 - c. Recognize other professionals in need and respond appropriately