

## McGill Pediatric Orthopaedic Spine and Scoliosis Fellowship

Institution: McGill University Health Centre, Montreal, Quebec, Canada

Department: Integrated Program  
Division of Orthopaedics / Department of General Surgery /  
Division of Neurosurgery / Department of Pediatric Surgery  
Montreal General Hospital & Montreal Neurological Institute  
1650 Cedar Avenue, T8-200  
Montreal, QC, H3G 1A4

Program: McGill Pediatric Orthopaedic Spine and Scoliosis Fellowship

Subspecialty Fellowship Director: **Dr Neil Saran, MD, FRCSC**

Part of McGill Intergrated Spine Fellowship under the Co-Directorship of :  
**Jean A. Ouellet, MD, FRCSC**  
**Carlo Santaguida, MD, FRCSC**

Site directors: MCH – Dr Neil Saran  
MGH – Dr Peter Jarzem  
MNH – Dr Carlo Santiguida  
JGH – Dr Jeff Golan

For all questions regarding the fellowship program, please e-mail your inquiries to [pgf-lows.med@mcgill.ca](mailto:pgf-lows.med@mcgill.ca)

**Teaching Faculty - Principle:**

**Jean A. Ouellet, MD, FRCSC**

Orthopaedic Spine Surgeon / Specialization – Scoliosis

**Neil Saran, MD, MHSc (Clin. Epi.), FRCSC**

Pediatric Orthopaedic Surgeon / Specialization – Pediatric Spine, Adolescent Hip Preservation

**Teaching Faculty - Associate:**

**Peter Jarzem, MD, FRCSC**

Orthopedic Spine Surgeon / Specialization – Spinal Degeneration

**Rudy Reindl, MD, FRCSC**

Orthopedic Spine Surgeon / Specialization – Spinal Trauma

**Michael Weber, PhD, MD, FRCSC**

Orthopedic Spine Surgeon / Specialization – Adult Spinal Deformity

**Jeff Golan, MD, FRCSC**

Neurosurgeon / Specialization - Minimally Invasive Spine Surgery

**Carlo Santaguida, MD, FRCSC**

Neurosurgeon / Specialization - Deformity & Minimally Invasive Spine Surgery

**Dr Benoit Goulet, MD, FRCSC**

Neurosurgeon / Specialization - Cervical and Lumbar Decompression

**Institution & Sites:** McGill University Health Centre / Montreal, Quebec, Canada

- Montreal General Hospital
- Montreal neurological Institute
- Jewish General Hospital
- Montreal Children Hospital
- Shriners Hospital Montreal

Overview of Program Information:

The McGill Pediatric Orthopaedic Spine and Scoliosis Fellowship is a one-year fellowship covering all aspect of pediatric spine surgery including:

- Adolescent Scoliosis (Idiopathic, Congenital, Neuromuscular, Syndromic)
- Early Onset Scoliosis (Mehta Casting, Growing Rods)
- Spinal Growth Modulation (Anterior Vertebral Body Tethering)
- Kyphosis (Idiopathic, Congenital, Neuromuscular, Syndromic)
- Spondylolysis/Spondylolisthesis
- Lumbar Disc Disease
- Cervical/Thoracic/Lumbar Fractures

The candidates will spend approximately 10 periods a year training with the pediatric spine surgeons and 3 period training with the adult spine surgeons across the Integrated spine service at McGill. Fellows will meet before the beginning of the fellowship with the fellowship director and tailor their spinal fellowship based on their expectation and needs.

Training distribution for the one-year fellowship is expected to be divided and carried out as listed below:

Montreal Children Hospital (MCH) / Shriners Hospital:	75%
Montreal General Hospital (MGH):	20%
Montreal Neurological Institute / Jewish General Hospital	5 %

Research activities:

Spine research activities are composed of fundamental basic science research and clinical research. Every fellow is expected to complete and publish one research project. Fellow is also expected to present at the AOSpine North America Fellows Forum, if the fellowship receives extramural funding.

Research & Clinical affiliations:

Mark Driskol, PhD, Biomechanic Engineer  
 Lisbet Haglund, PhD, Cell & Molecular Biologist  
 Catherine Ferland, PhD, Anesthesia & Neurophysiology  
 Mohan Radhakrishna, MD, Physiatrist  
 Jeff Chankowsky, MD, Neuroradiologist  
 Fackson Mwale, PhD, Biochemist  
 John Antoniou, MD, FRCSC  
 Richard Preuss, PT, PhD  
 Jake Barralet, PhD, Biomedical Materials Engineer  
 Dr Ed Harvey, PhD, Regenerative Medicine and Mineralized Tissues

### Fellowship Mission

The Spine Fellowship will ensure that the trainees will master, in an incremental fashion over a 13 period, the fundamental sciences and the clinical and therapeutic knowledge required to treat patients with varying pediatric orthopaedic spine disorders.

The intension of the Spine Fellowship is to enhance residency training. One of the primary roles of the fellow will be to enhance the teaching of residents, both from a didactic point of view and from hands on teaching approach in the OR and in a clinical setting. Fellows are responsible for Indications & Outcomes rounds, as well as, monthly journal clubs. They will also supplement surgical skills education via daily clinical activities and daily surgery.

The secondary role of the trainees is not only to supplement education, but to advance research endeavors at the McGill Scoliosis and Spine Centre. We expect the trainees to complete a clinical research project or a basic science research project in our spine lab. This research must result in a publication.

The fellowship has adopted a tolerance zero to intimidation in all its different ways of presenting itself. Fellows that feel they are intimidated must contact the Fellowship Director and or the Orthopaedic program director immediately to address the issue. NB. Coercion of fellows to attend ones OR or clinic is not acceptable.

### Activities Schedule and Academic Pursuit Resources

Activities are scheduled as follows:

*OR Days:*

Mondays	MCH, MGH, MNI (BG)
Tuesdays	SHC, MGH, MNI (ortho)
Wednesdays	MCH / SHC, MNI (BG)
Thursdays	SHC , MGH, MNI (CS)
Fridays	SHC, MGH, JGH, MNI (CS)

*Clinics:*

Monday	SHC, MGH
Tuesday	SHC, MNI (BG, CS)
Wednesday	SHC, MGH (multidisciplinary spine)
Thursday	SHC, MNI (BG)
Fridays	SHC, JGH

We performed 2225 Spine cases over the last 3 yrs averaging 15 cases per week providing great clinical experience and exposure to both fellows and residents.

The elective pediatric component typically consists of 3 ORs / week and 1-2 clinic days/week.

*Pediatric Orthopaedic Indication Rounds*  
Mondays 16:00-17:30

*Adult Spine Indications & Outcomes Rounds*  
Wednesdays 7:00 - 8:30

*Orthopaedic Grand Rounds*  
Thursdays 7:00 - 8:30

*Academic Half Day Teaching*  
4 Thursdays/yr 9:00 – 12:00

Cadaveric Spine Course focused on  
surgical spine skills i.e. instrumentation

*Basic Science / Clinical Research Meeting*  
Wednesday 4:00 - 6:00  
Fridays 7:00 – 9:00

Adult meeting  
Peds meeting

*Journal Club*  
Wednesday 4:00 - 6:00

Once a month

#### *Library Access*

Fellows will have full access to the MUHC and McGill University Libraries' journals and online resources.

#### *Skills Lab*

Once a year, our local faculty provides a 3-day cadaveric spinal seminar affording fellows a venue for acquisition of new technology in a safe and controlled educational fashion at the McGill University Simulation Centre.

## **Duties and Responsibilities of the Fellow**

### *Outpatient Clinic Responsibilities*

Fellows are responsible to attend clinic in order to gain new knowledge as well as to share their knowledge and experience with staff and residents who are sharing clinical activities.

### *OR Responsibility of the Fellow*

Fellows are responsible to attend OR in order to gain new knowledge as well as to share their knowledge and experience with staff and residents who are sharing OR activities.

### *On Call Responsibilities to Cover Spine Service*

Fellows are responsible to take call according to Quebec's recommended call 1 out of 4 days. This is specifically spine call covering the entire Integrated Spine Unit and not pediatric orthopaedic call. The fellows will be responsible with the respective residents on either service to ensure that daily notes and orders are covered.

### *Supervisory Responsibilities*

The fellow will function in a dual role. The fellow will act as junior staff, but will also act as a senior resident responsible for the management of emergency cases, emergency consults, and management of supervised first line screening clinics.

### *Meeting Attendance*

All fellows must attend the annual Fellows Forum where they must present their research project to the balance of the AO Spine Faculty. Fellows are also expected to attend an AO Spine Cadaveric course of their choice.

Additional meetings that fellows are encouraged to attend are the Scoliosis Research Society (SRS) Annual Meeting, the North American Spine Society (NASS) and the Canadian Spine Society (CSS).

### *Research Productivity and Publications*

As stated earlier, all fellows are expected to take part in a research study which results in a publication by the end of their fellowship.

### Objectives of the McGill Scoliosis and Spine Fellowship

Trainees should master, in an incremental fashion over a 13 periods, the fundamentals sciences and the clinical and therapeutic knowledge required to treat patients with varying pediatric spinal disorders.

By spinal disorders we specifically expect the trainees to be able to initiate conservative management, assess if treatment is successful, and if not proceed, to surgical management for all the following pathologies:

1. Spinal deformities: Idiopathic, Congenital, Neuromuscular and Syndromic Scoliosis and Kyphosis
2. Spondylolysis and Spondylolisthesis
3. Fractures: Occipital cervical, cervical, thoracic, lumbar, and sacral fracture with or without dislocation
4. Degenerative disc disease: Cervical, thoracic, lumbar disc herniations, cervical or lumbar spinal stenosis
5. Spinal infections
6. Spinal tumors

The second role of the trainees is to supplement educational and research endeavors at McGill. This includes teaching the residents basic science and clinical knowledge as well as surgical skills via daily clinical activities, daily OR, weekly spine rounds, and formal quarterly didactic talks. Trainees are expected to complete a research project, either clinical or basic science in our spine lab, which must lead to a publication.

*Basic scientific knowledge to be acquired:*

1. Detailed knowledge of anatomy, embryology and physiology of the spine
2. Congenital, developmental and acquired non-traumatic conditions of the spinal column
3. Musculo-skeletal anatomy of cervical, thoracic and lumbar spine, osseous ligamentous and neural elements including intervertebral disc morphology
4. Biomechanical and functional anatomy of the spine
5. Natural degeneration of the spine
6. Systemic inflammatory illness affecting the spine

*Basic clinical knowledge:*

1. Appreciation of classification (discal, degenerative disorders, mechanical instabilities, spinal deformities)
2. Display knowledge of appropriate investigative techniques
3. Interpretation of advanced investigative techniques:
  - Computerized axial tomography
  - Magnetic resonance imaging
4. Display a detailed knowledge of operative approaches to the spinal column

**Evaluation**

The above factors are judged using a standardized rating system as described below.

A satisfactory rating indicates that the trainee has a good knowledge of clinical sciences and is adept in problem-solving and other aspects of patient care. A low rating indicates that the trainee lacks adequate knowledge of clinical sciences, problem-solving skills and is unable to apply their knowledge sufficiently.

Consideration of the trainee's knowledge on current scientific literature and their application of this knowledge to case presentation and daily patient management will also be taken into account.

*History & physical examination:*

1. Display clinical competence in the evaluation of spinal disorders:
  - Relevant history taking to all spinal disorders

- Relevant physical exam assessing for spinal deformity and spinal instability
- Relevant neurological exam

This factor judges whether or not a trainee takes a complete medical history and performs an adequate physical examination to permit a valid formulation of the patient's problem. The factor should also judge whether or not the information elicited and observed is recorded in an organized and sequential manner which permits a clear definition of the problem and a rational approach to differential diagnosis and management.

*Interpretation and utilization of information:*

The trainee must master:

1. The role of physiotherapy and occupational therapy in the management of spinal disorders - acute and chronic.
2. Display competence in operative and non-operative management of spinal disorders in respect to indications, contraindications and complications related to surgical intervention.

These factors judge whether or not the trainee is able to correctly interpret the information gathered and shows discrimination in identifying the important and less important information that will allow the identification of the problems affecting the health of the patient. The trainee's concern for the cost of unnecessary investigation and sensitivity to the patient's inconvenience and discomfort should also be considered.

*Clinical judgment & decision making:*

1. Display competence in the non-operative management of spinal disorders
2. Display adequate knowledge in advanced non-operative management of spinal disorders, bracing techniques and physiotherapy
3. Appreciate indications for surgery for spinal disorders
4. Understand the principles of fusion levels in spinal deformity with their implication regarding complications and natural history
5. Recognize and manage postoperative complications
6. Recognize and evaluate vertebral sepsis: Osteomyelitis, discitis

These factors judge the trainee's ability to effectively and efficiently establish a program of investigation and management adapted to the patient's condition, all the while recognizing the limits of his/her ability, the hazards of drugs and other therapy and the need to modify therapy when indicated. The trainee should also demonstrate his/her appreciation for the total needs of the patient, recognizing factors that may limit compliance with prescribed therapy, as well as the non-medical (socio-economic and other) factors that may affect the patient's health.

*Technical skills required in the specialty:*





1. Display surgical competence in the following areas:  
Laminectomy; lumbar fusion techniques - anterior versus posterior; discectomy - cervical, thoracic and lumbar; foraminotomy; spinal tumor debulking
2. Display surgical competence in complex spinal instrumentation:  
Transpedicular vertebral fixation; application of spinal hooks;  
Anterior and posterior vertebral instrumentation for the cervical, thoracic and lumbar spine (either with plates, screws, or rods); different pelvic fixations; interbody spacers, as well as vertebral body replacements
3. Display a detailed knowledge of the principles of internal fixation with regards to:
  - Indications
  - Complications
  - Contraindications
  - Limitations

These factors judge if the trainee can carry out professional techniques correctly and efficiently.

### **Evaluation of Communication Skills**

#### *Inter-professional relationships with physicians:*

This factor judges if the trainee can work effectively with other physicians in the healthcare team. It demonstrates if there is consideration respect and tact for junior members of the team.

#### *Communications with other allied health professionals:*

This factor judges the trainee's ability to communicate and work effectively with the other members of the healthcare team.

#### *Communications with patients:*

This factor judges if the trainee is able to communicate easily with patients. It also demonstrates whether he/she shows respect for his/her patients and they can gain their patient's cooperation and confidence.

#### *Communications with families:*

This factor judges if the trainee is able to communicate easily with patient's families. It also demonstrates if he/she shows respect for his/her patient's families and if they can gain the family's cooperation and confidence.

#### *Written communication and documentation:*

This factor demonstrates if history, physical, diagnostic formulation, progress notes, plans, discharge summaries and consultation reports are complete and accurate with satisfactory organization and assessment.

### **Evaluation of Collaboration & Delegation Skills**

*Collaboration skills:*

This factor demonstrates if the trainee interacts and consults effectively with all health professionals by recognizing and acknowledging their roles and expertise.

*Delegation Abilities:*

This factor judges that the trainee delegates effectively to other members of the healthcare team.

### **Evaluation of Management Skills**

*Understands and uses information technology:*

This factor judges if the trainee is able to use current information technology in the course of their professional life.

*Uses health care resources cost-effectively:*

This factor judges that the trainee has concern for the cost of unnecessary investigation and is sensitive to patient inconvenience and discomfort in the course of their professional duties.

*Organization of work and time management:*

This factor judges whether or not the trainee effectively organizes his/her work in such a way that priorities are established and that coordination occurs with the other members of the team ensuring total, acute, and continuing care of his/her patients.

### **Health advocate**

*Advocates for the patient:*

This factor judges the trainee's ability to advocate for the patient.

*Advocates for the community:*

This factor judges the trainee's ability to advocate for society and the community.

### **Scholar**

*Motivation to read and learn:*

This factor judges the trainee's knowledge of current scientific literature and his//her application of this knowledge of case presentation and daily patient management.

*Critically appraises medical literature:*

This factor judges the trainee's ability to critically appraise research methodology and medical literature.

*Teaching skills:*

This factor judges whether the trainee takes the initiative and develops the ability to teach other health care professionals and/or patients about specific relevant health care issues.

*Completion of research/project:*

This factor judges that the trainee is able to organize and complete successfully a research study or a project.

## **Professionalism**

### *Integrity & honesty:*

This factor judges whether the trainee is dependable, reliable, honest and forthright in all information and facts.

### *Sensitivity & respect for diversity:*

This factor judges that the trainee is able to understand and be sensitive to issues related to age, gender, culture and ethnicity.

### *Responsible and self-disciplined:*

This factor judges whether the trainee adequately accepts professional responsibilities, placing the needs of the patients before the trainee's own, ensuring that the trainee or his/her replacement are at all times available to the patients, recognizing the limits of competence, and seeking and giving assistance when necessary. The trainee is punctual, and respects local regulations relating to the performance of his/her duties.

### *Communicates with patients with compassion and empathy:*

This factor judges whether the trainee is compassionate and empathetic towards the patient and their family.

### *Recognition of own limitations and seeks advice when needed:*

This factor judges that the trainee is aware of his/her limits of competence, and is able to seek and give assistance when necessary.

### *Understands principles of ethics and applies them to clinical situations:*

This factor judges the trainee's ability to understand the principles and practice of biomedical ethics as it relates to the specific specialty or subspecialty, and to practice medicine in an ethically responsible manner.

## **Global evaluation of competence and progress**

As per the McGill Faculty of Medicine's guidelines, the Fellows must receive a formal [i.e. written] evaluation after 12 weeks (3 blocks) on a rotation .

### **Explanation of Ratings:**

The trainees' assessment considers their overall clinical competence using the following ratings:

Superior: Far exceeds reasonable expectations.

Satisfactory: Meets reasonable expectations.

Borderline: Often falls short of reasonable expectations.

Unsatisfactory: Falls far short of reasonable expectations.

"Reasonable expectations": should be appropriate to the level of training of the candidate.

"Could not judge": in the global evaluation of competence and progress: This means that the trainee did not complete the rotation.