# Objectives of Training in the specialty of Orthopedic Surgery

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*This document applies to those who begin training on or after July 1st, 2008.*

## DEFINITION

In translation from its Greek root the term orthopedic means "straight child." The responsibility of the Orthopedic Surgeon is to maintain and restore proper function of the musculoskeletal system, not only in children but also in patients of all ages.

## GOALS

Upon completion of training, a resident is expected to be a competent specialist in Orthopedic Surgery capable of assuming a consultant's role in the specialty. The resident must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research. The resident must also demonstrate a satisfactory knowledge of the principles common to all surgical practice.

Residents must demonstrate the requisite knowledge, skills, and attitudes for effective patient-centered care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to address issues of gender, age, culture, ethnicity and ethics in a professional manner.

## ORTHOPEDIC SURGERY COMPETENCIES

At the completion of training, the resident will have acquired the following competencies and will function effectively as a:

### Medical Expert

***Definition:***

As *Medical Experts*, Orthopedic Surgeons integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centered care. *Medical Expert* is the central physician Role in the CanMEDS framework.

***Key and Enabling Competencies: Orthopedic Surgeons are able to…***

**1. Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical and patient-centered medical and surgical care**

1.1. Perform consultation effectively, 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

1.2. Demonstrate effective use of all CanMEDS competencies relevant to Orthopedic Surgery

1.3. Identify and appropriately respond to relevant ethical issues arising in patient care

1.4. Demonstrate ability to effectively and appropriately prioritize professional duties when faced with multiple patients and problems

1.5. Demonstrate compassionate and patient-centered care

1.6. Recognize and respond to the ethical dimensions in medical decision-making

1.7. Demonstrate medical expertise in situations other than patient care, such as providing expert legal testimony or advising governments, as needed

**2. Establish and maintain clinical knowledge, skills and attitudes appropriate to Orthopedic Surgery**

2.1. Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to Orthopedic Surgery

2.1.1. Musculoskeletal Oncology

The resident will be able to describe:

2.1.1.1. Tumour classes and their behaviour:

2.1.1.1.1. Primary lesions

2.1.1.1.1.1. Benign

2.1.1.1.1.1.1. Latent

2.1.1.1.1.1.2. Active

2.1.1.1.1.1.3. Aggressive

2.1.1.1.1.2. Malignant

2.1.1.1.2. Metastatic lesions

2.1.1.2. Presentation, medical imaging characteristics and natural history of the most common primary bone tumour types:

2.1.1.2.1. Chondroid lesions

2.1.1.2.2. Osteoid lesions

2.1.1.2.3. Fibrous lesions

2.1.1.2.4. Others, including but not limited to, unicameral bone cyst, hemangioma, histiocytosis, lipoma, eosinophilic granuloma, giant cell tumour, aneurysmal bone cyst, ewings sarcoma, adamantinoma, chordoma, hemangiopericytoma, osteoid osteoma, osteoblastoma

2.1.1.3. Presentation, radiologic medical imaging characteristics and natural history of different primary soft tissue tumour types:

2.1.1.3.1. Fibrous lesions

2.1.1.3.2. Lipoid lesions

2.1.1.3.3. Muscle lesions

2.1.1.3.4. Vascular lesions

2.1.1.3.5. Nerve lesions

2.1.1.3.6. Others, including but not restricted to, myxoma, fibrosarcoma, malignant fibrous histiocytoma, pigmented villonodular synovitis, giant cell tumour of tendon sheath, myositis ossificans, tumoral calcinosis

2.1.2. Sports Medicine

The resident will be able to:

2.1.2.1. Explain the anatomy and pathophysiology of acute and chronic Soft Tissue Injury:

2.1.2.1.1. Rotator cuff and elbow tendinopathy

2.1.2.1.2. Low back pain

2.1.2.1.3. Groin injury (tendinopathy)

2.1.2.1.4. Joint instability

2.1.2.1.5. Meniscal injuries of the knee

2.1.2.1.6. Patellofemoral disorders

2.1.2.1.7. Ankle sprain

2.1.2.1.8. Achilles tendon

2.1.3. Community Orthopedics

The resident will be able to:

2.1.3.1. Discuss the spectrum and limitations of practice in a community setting based on resources and geography

2.1.3.2. Explain the structure of health care in a community setting including access to tertiary care, stabilization and investigation of patients for transfer

2.1.4. Hip and Knee

The resident will be able to:

2.1.4.1. Advise patients regarding the non-operative management of hip and knee arthritis; including indications, complications and effectiveness of such treatment

2.1.4.2. Summarize the indications, results and complications of surgery for hip and knee arthritis with respect to age, gender and activity level

2.1.4.3. Describe the principles of hip and knee reconstructive surgery for arthritis including osteotomy, arthrodesis and joint replacement

2.1.4.4. Explain the recovery and rehabilitation following hip and knee replacement

2.1.4.5. Discuss the unique medical problems of the geriatric population

2.1.4.6. Demonstrate detailed knowledge of the following areas:

2.1.4.6.1. Complicated primary joint arthroplasty (e.g. dysplastic hip, valgus knee)

2.1.4.6.2. Revision hip and knee replacement surgery

2.1.4.6.3. Selection of appropriate implants

2.1.4.6.4. The factors affecting implant survival and function, including design, biomaterials, fixation and wear properties

2.1.4.7. Describe the details of hip and knee reconstructive surgery for arthritis including osteotomy, arthrodesis and joint replacement

2.1.5. Trauma

The resident will be able to:

2.1.5.1. Prioritize injuries in patients with poly trauma

2.1.5.2. Discuss the significance of pelvic fractures

2.1.5.3. Explain the concepts of “damage control orthopedics” vs. “early total care”

2.1.5.4. Recognize and describe the principles of the management of:

2.1.5.4.1. Isolated limb trauma

2.1.5.4.2. Fractures, dislocations and fracture dislocation with appropriate splinting

2.1.5.4.3. Open fractures

2.1.5.4.4. Intraarticular fracture management

2.1.5.4.5. Associated soft tissue injury

2.1.5.4.6. Compartment syndrome

2.1.5.4.7. Dysvascular limb

2.1.5.4.8. Acute infection

2.1.5.4.9. Malunion, nonunion, late infection

2.1.5.4.10. Segmental bone loss

2.1.5.4.11. Geriatric fractures

2.1.5.5. Describe the following associated conditions:

2.1.5.5.1. Adult respiratory distress syndrome

2.1.5.5.2. DVT

2.1.5.5.3. Fat and pulmonary embolism

2.1.5.5.4. Multiple organ system failure

2.1.5.5.5. Chronic regional pain syndrome

2.1.5.5.6. Non-accidental trauma

2.1.5.5.7. Pathologic fractures

2.1.5.6. Integrate detailed information as demonstrated by an ability to formulate a comprehensive treatment plan for the trauma patient

2.1.6. Pediatric Orthopedics

The resident will be able to:

2.1.6.1. Describe normal musculoskeletal anatomy, growth, and development in the child including common angular and torsional variants

2.1.6.2. Describe the anatomy and pathologic basis of the disorders leading to a limp in a child

2.1.6.3. Explain the mechanisms, patterns, assessment, management, and potential complications related to simple and complex pediatric fractures and dislocations

2.1.6.4. Explain the mechanisms, patterns, assessment, management, and potential complications related to osteomyelitis and septic arthritis

2.1.6.5. Discuss the anatomy, pathology, assessment, and management of complex hip disorders

2.1.6.6. Assess and manage simple fractures, including appropriate analgesia/anesthesia techniques

2.1.6.7. Assess and manage complex pediatric fractures including:

2.1.6.7.1. Physeal injuries

2.1.6.7.2. Compound fractures

2.1.6.7.3. Multiple fractures in trauma

2.1.6.7.4. Compartment syndrome, and neurovascular compromise

2.1.7. Adult Spine

The resident will be able to:

2.1.7.1. Recognize the significance of injury in high-risk spinal conditions such as osteoporosis, inflammatory arthritis, DISH and ankylosing spondylitis

2.1.7.2. Develop an effective differential diagnosis based on information gathered on history and physical examination

2.1.7.3. Discuss the indications for spine surgery relative to the affecting pathophysiology

2.1.7.4. Explain the risks, complications and expected outcomes of common spine procedures

2.1.7.5. Summarize the contemporary spine literature

2.1.7.6. Describe anterior and posterior surgical approaches to the cervical, thoracic and lumbar spine

2.1.7.7. Discuss the basic principles of spine arthrodesis including an understanding of the role of spinal instrumentation and stabilization

2.1.7.8. Recognize emergency conditions (specifically acute cauda equina syndrome, acute neurological deterioration, acute traumatic spinal cord injury) with accurate prioritization

2.1.7.9. Formulate an appropriate pre-operative plan for patients scheduled for surgery

2.1.8. Upper Limb

The resident will be able to recognize and describe:

2.1.8.1. Upper limb fractures and dislocations

2.1.8.2. Degenerative, overuse and traumatic tendon injuries

2.1.8.3. Principles and indications for joint reconstruction of the upper limb

2.1.8.4. Peripheral nerve injuries, entrapments, and chronic regional pain syndromes

2.1.8.5. Infections including those specific to the hand

2.1.8.6. Compartment syndromes

2.1.8.7. Common vascular, inflammatory and congenital conditions

2.1.8.8. Benign neoplasms, including ganglions, and malignant neoplasms

2.1.8.9. Principles and indications for arthroscopy in the shoulder, elbow and wrist

2.1.8.10. Complex periarticular fractures and fracture-dislocations

2.1.8.11. DRUJ and carpal instabilities

2.1.8.12. Brachial plexus and tendon transfers

2.1.8.13. Joint contractures including Dupuytren's

The resident will be able to discuss:

2.1.8.14. Indications for arthroscopy in the shoulder, elbow and wrist

2.1.8.15. Principles of amputations and arthrodesis

2.1.8.16. Unique principles of treatment of skeletal metastases

2.1.9. Foot and Ankle

The resident will be able to:

2.1.9.1. Explain normal and abnormal gait

2.1.9.2. Identify the presence of ulcers, and feet at high risk for ulceration

2.1.9.3. Describe the non-operative management of common foot and ankle pathology

2.1.9.4. Assess and provide a differential diagnosis for, and management plan for common foot and ankle pathologies

2.2. Describe the CanMEDS framework of competencies relevant to Orthopedic Surgery

2.3. Apply lifelong learning skills of the Scholar Role to implement a personal program to keep up-to-date, and enhance areas of professional competence

2.4. Contribute to the enhancement of quality care and patient safety in Orthopedic Surgery, integrating the available best evidence and best practices

**3. Perform a complete and appropriate assessment of a patient**

3.1. Identify and explore issues to be addressed in a patient encounter effectively, including the patient's context and preferences

3.2. 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

3.3. Perform a focused physical examination that is relevant and accurate for the purposes of prevention and health promotion, diagnosis and/or management

3.3.1. Musculoskeletal Oncology

3.3.1.1. The resident will demonstrate the ability to perform a physical examination to assess the following:

3.3.1.2. Size of the tumour and its relationship to fascia

3.3.1.3. Neurovascular and articular involvement

3.3.1.4. Lymphatic involvement

3.3.1.5. Sites of metastatic potential for primary muskuloskeletal (MSK) tumours

3.3.1.6. Organs systems likely to metastasize to the MSK system

3.3.1.7. Tumour characteristics including issues specific to age and gender

3.3.2. Sports Medicine

3.3.2.1. The resident will demonstrate the ability to assess:

3.3.2.2. Articular cartilage injury

3.3.2.3. Complex/revision knee ligaments

3.3.2.4. Lower extremity malalignment

3.3.2.5. Multidirectional shoulder instability

3.3.2.6. Failed shoulder reconstruction

3.3.2.7. Chronic instability of the elbow

3.3.2.8. Chronic ankle instability

3.3.3. Hip and Knee Reconstruction

3.3.3.1. The resident will demonstrate the ability to assess:

3.3.3.2. Painful or failed hip and knee replacements, particularly with respect to infection

3.3.3.3. Complications associated with hip and knee reconstructive surgery

3.3.4. Trauma

The resident will demonstrate the ability to assess:

3.3.4.1. Isolated limb trauma

3.3.4.2. The multiply injured patient (including ATLS)

3.3.4.3. Fractures, dislocations and fracture dislocations

3.3.4.4. Intraarticular fractures

3.3.4.5. Pathological fractures

3.3.4.6. Soft tissue injury

3.3.4.7. Compartment syndrome

3.3.4.8. Dysvascular limb

3.3.4.9. Acute and late bone and soft tissue infection

3.3.4.10. Malunion, nonunion

3.3.4.11. Segmental bone loss

3.3.4.12. Adult respiratory distress syndrome

3.3.4.13. Deep Venous Thrombosis

3.3.4.14. Fat and pulmonary embolism

3.3.4.15. Multiple organ system failure

3.3.4.16. Chronic regional pain syndrome

3.3.5. Pediatric Orthopedics

The resident will demonstrate the ability to assess:

3.3.5.1. Common overuse syndromes

3.3.5.2. Non-accidental trauma

3.3.5.3. Pathologic fractures

3.3.5.4. Pediatric neoplasia

3.3.5.5. Medical imaging and other diagnostic tools specific to the pediatric population

3.3.5.6. Complex pediatric fractures and dislocations

3.3.5.7. Complex hip disorders

3.3.5.8. The limping child

3.3.5.9. Hips of infants and children including Barlow and Ortolani maneuvers

3.3.5.10. Limb length inequalities

3.3.5.11. Scoliosis

3.3.6. Adult Spine

The resident will demonstrate the ability to perform a specific and complete physical exam for the entire spinal column and associated neurological structures, with an emphasis on the assessment of deformity and dysfunction for the individual patient

3.3.6.1. Demonstrate the ability to interpret contemporary spinal imaging

3.3.7. Upper Limb

The resident will demonstrate the ability to assess:

3.3.7.1. Upper limb fractures and dislocations

3.3.7.2. Complex periarticular fractures and fracture-dislocations

3.3.7.3. Degenerative, overuse and traumatic tendon injuries

3.3.7.4. Peripheral nerve injuries, and entrapments

3.3.7.5. Complex regional pain syndromes

3.3.7.6. Bone and soft tissue infections including those specific to the hand

3.3.7.7. Compartment syndromes

3.3.7.8. Common vascular, inflammatory and congenital conditions

3.3.7.9. Ganglions and neoplasms

3.3.7.10. DRUJ and carpal instabilities

3.3.7.11. Brachial plexus injuries and tendon transfers

3.3.7.12. Joint contractures including Dupuytren's

3.3.8. Foot and Ankle

The resident will demonstrate the ability to assess:

3.3.8.1. Deformities of forefoot, midfoot, hindfoot and ankle

3.3.8.2. Normal and abnormal gait

3.3.8.3. Feet at high risk for ulceration, and the presence of ulcers

3.3.8.4. Foot and ankle fractures and dislocations

3.4. Select medically appropriate investigative methods in a resource-effective and ethical manner

3.5. 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

**4. Use preventive and therapeutic interventions effectively**

4.1. Implement an effective management plan in collaboration with a patient and their family

4.2. Demonstrate effective, appropriate, and timely application of preventive and therapeutic interventions relevant to Orthopedic Surgery

4.3. Ensure appropriate informed consent is obtained for therapies

4.4. Ensure patients receive appropriate end-of-life care

**5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic**

5.1. Demonstrate effective, appropriate, and timely performance of diagnostic procedures relevant to Orthopedic Surgery

5.2. Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to Orthopedic Surgery

5.2.1. Musculoskeletal Oncology

The resident will be able to perform:

5.2.1.1. Open biopsy of bone and/or soft-tissue lesion

5.2.1.2. Stabilization of metastatic disease

5.2.1.3. Treatment of common benign tumours

5.2.2. Sports Medicine

The resident will be able to perform:

5.2.2.1. Diagnostic and therapeutic joint injections

5.2.2.2. Diagnostic arthroscopy of the knee and shoulder

5.2.2.3. Repair of simple and complex tendon ruptures

5.2.2.4. Diagnostic and operative shoulder, knee and ankle arthroscopy

5.2.2.5. Anterior cruciate ligament reconstruction

5.2.2.6. Ankle ligament reconstruction

5.2.2.7. Patella realignment

5.2.2.8. Lower extremity realignment

5.2.2.9. Shoulder reconstruction for instability

5.2.2.10. Surgical management of rotator cuff pathology

5.2.3. Hip and Knee Reconstruction

The resident will be able to:

5.2.3.1. Perform arthrotomies and aspirations of the hip and knee

5.2.3.2. Manage common post-operative complications in hip and knee reconstruction surgery

5.2.3.3. Pre-operatively plan and perform primary and simple revision hip and knee replacements

5.2.3.4. Perform osteotomies around the hip and knee

5.2.4. Trauma

The resident will be able to:

5.2.4.1. Initially manage fractures and dislocations with appropriate reduction and splinting

5.2.4.2. Perform technical skills involved in ATLS protocol as outlined in the most current ATLS manual

5.2.4.3. Manage compartment syndrome

5.2.4.4. Manage acute infection

5.2.4.5. Perform techniques of fracture fixation and soft tissue management including open fractures

5.2.4.6. Perform intramedullary nailing of long bone fractures

5.2.4.7. Perform open reduction and internal fixation of diaphyseal, metaphyseal and articular fractures and dislocations

5.2.4.8. Perform techniques of external fixation for certain injuries, including intra-articular fractures with poor or compromised soft-tissues (knee and ankle joints), pelvic fractures, distal radius fractures, knee dislocations

5.2.4.9. Plan and surgically manage malunion, nonunion and chronic infection of bones

5.2.5. Pediatric Orthopedics

The resident will be able to:

5.2.5.1. Perform percutaneous pinning of fractures

5.2.5.2. Apply skin and skeletal traction

5.2.5.3. Apply a Pavlik harness

5.2.5.4. Biopsy for suspected pediatric neoplasia

5.2.5.5. Apply pediatric casts, including a hip spica cast

5.2.5.6. Develop a non operative treatment of children's clubfoot

5.2.5.7. Operatively manage:

5.2.5.7.1. Septic arthritis including arthrogram and arthrotomy

5.2.5.7.2. Osteomyelitis

5.2.5.7.3. Slipped capital femoral epiphysis

5.2.5.8. Manage simple and complex pediatric fractures including:

5.2.5.8.1. Physeal injuries

5.2.5.8.2. Compound fractures

5.2.5.8.3. Multiple trauma

5.2.5.8.4. Compartment syndrome, and neurovascular compromise

5.2.6. Adult Spine

The resident will be able to demonstrate proficiency in:

5.2.6.1. Patient positioning, prepping, and draping for anterior and posterior spine surgery

5.2.6.2. Application of external fixation devices (tongs, halos)

5.2.6.3. Bone graft harvesting techniques

5.2.6.4. Posterior spinal approaches

5.2.6.5. Management of common post-operative complications

5.2.6.6. Performing a primary lumbar discectomy for relief of radicular symptoms/signs

5.2.6.7. Performing a primary cervical, thoracic, lumbar laminectomy either for urgent or elective decompression of central or peripheral neurologic structures

5.2.6.8. Performing a primary posterior instrumented lumbar fusion

5.2.6.9. Closed reduction techniques

5.2.7. Upper Limb

The resident will be able to demonstrate proficiency in:

5.2.7.1. Splinting

5.2.7.2. Diagnostic and therapeutic injections of the upper limb

5.2.7.3. Closed and open reduction techniques for common upper limb fractures and dislocations

5.2.7.4. Management of intra-articular and periprosthetic fractures of the upper limb

5.2.7.5. Management of scaphoid non-union

5.2.7.6. Corrective osteotomy of the distal radius

5.2.7.7. Arthroplasty

5.2.7.7.1. Primary shoulder hemiarthroplasty

5.2.7.7.2. Radial head

5.2.7.7.3. Interpositional arthroplasty – CMC, distal radioulnar joint

5.2.7.8. Removal of an infected prosthesis

5.2.7.9. Arthroscopy of the upper limb

5.2.7.10. Loose body removal

5.2.7.11. Amputations – traumatic and elective

5.2.7.12. Treatment of joint contractures

5.2.7.12.1. Adhesive capsulitis

5.2.7.12.2. Elbow

5.2.7.12.3. Dupuytren's disease

5.2.7.13. Arthrodeses

5.2.7.13.1. Wrist

5.2.7.13.2. Digits

5.2.7.14. Joint stabilization

5.2.7.14.1. Open/Arthroscopic Shoulder Stabilization

5.2.7.14.2. Acromioclavicular Instability – acute and chronic

5.2.7.14.3. Elbow or carpal dissociations

5.2.7.15. Tendon rupture repair and reconstruction

5.2.7.15.1. Rotator cuff

5.2.7.15.2. Distal biceps

5.2.7.15.3. Extensor Pollicis Longus

5.2.7.16. Common surgical exposures to the upper limb

5.2.7.17. Surgical management of:

5.2.7.17.1. Compartment syndromes

5.2.7.17.2. Nerve entrapment syndromes

5.2.7.17.3. Ganglions

5.2.7.17.4. Infections

5.2.8. Foot and Ankle

The resident will be able to demonstrate proficiency in:

5.2.8.1. Local anesthetic blocks

5.2.8.2. Surgical approaches for hindfoot, midfoot, forefoot and ankle

5.2.8.3. Diagnostic and therapeutic injections of foot and ankle joints

5.2.8.4. Management of diabetic/Charcot foot

5.2.8.5. Management of ischemic/gangrenous foot

5.2.8.6. Forefoot reconstruction

5.2.8.7. Management of foot and ankle fractures

5.2.8.8. Treatment of arthritis involving ankle, subtalar, midfoot and forefoot joints

5.2.8.9. Treatment and management of foot and ankle tendinopathies

5.2.8.10. Management of complications of foot and ankle surgery

5.3. Ensure informed consent is obtained for procedures

5.4. Document and disseminate information related to procedures performed and their outcomes

5.5. Ensure adequate follow-up is arranged for procedures performed

## 6. Seek appropriate consultation from other health professionals, recognizing the limits of their expertise

6.1. Demonstrate insight into their own limitations of expertise

6.2. Demonstrate effective, appropriate, and timely consultation of another health professional as needed for optimal patient care

6.3. Arrange appropriate follow-up care services for a patient and their family

6.3.1. Describe the limitations of practice in a community setting based on resources and geography

6.3.2. Demonstrate appropriate transfer of care of a patient from community to tertiary care

## Communicator

### *Definition:*

As *Communicators*, Orthopedic Surgeons effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

### *Key and Enabling Competencies: Orthopedic Surgeons are able to…*

**1. Develop rapport, trust, and ethical therapeutic relationships with patients and families**

1.1. Recognize that being a good communicator is a core clinical skill for physicians, and that effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence and improved clinical outcomes

1.2. Establish positive therapeutic relationships with patients and their families that are characterized by understanding, trust, respect, honesty and empathy

1.3. Respect patient confidentiality, privacy and autonomy

1.4. Listen effectively

1.5. Be aware and responsive to nonverbal cues

1.6. Facilitate a structured clinical encounter effectively

**2. Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals**

2.1. Gather information about a disease, but also about a patient's beliefs, concerns, expectations and illness experience

2.2. Recognize the emotional stress for patients and families faced with orthopedic conditions and their associated surgical management, particularly in the treatment of children

2.3. 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**

3.1. 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

3.2. Demonstrate effective, age-appropriate communication of treatment plans to pediatric patients

3.3. Demonstrate cooperation and communication between health professionals involved in the care of individual patients such that consistent messages are delivered to patients and their families

**4. Develop a common understanding on issues, problems and plans with patients, families, and other professionals to develop a shared plan of care**

4.1. Identify and explore problems to be addressed from a patient encounter effectively, including the patient's context, responses, concerns, and preferences

4.2. Respect diversity and difference, including but not limited to the impact of gender, religion and cultural beliefs on decision-making

4.3. Encourage discussion, questions, and interaction in the encounter

4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care

4.5. Address challenging communication issues effectively, such as obtaining informed consent, delivering bad news, and addressing anger, confusion and misunderstanding

4.5.1. Obtain informed consent for surgical procedures, appreciating alternative means of achieving consent if the patient is unable to provide consent, on the grounds of age, mental status or other disqualifiers

4.6. Discuss advanced directives and end-of-life issues with patients and families

**5. Convey effective oral and written information about a medical encounter**

5.1. Maintain clear, concise, accurate and appropriate records (e.g., written or electronic) of clinical encounters and plans

5.1.1. Write well-organized and legible orders and progress notes

5.1.2. Complete concise hospital discharge summaries promptly

5.1.3. Write well-organized letters, providing clear direction to the referring physician, other health professionals, and third party agents (e.g. insurance boards) where indicated

5.2. Present verbal reports of clinical encounters and plans effectively

5.3. Present medical information effectively to the public or media about a medical issue

## Collaborator

### *Definition:*

As *Collaborators*, Orthopedic Surgeons effectively work within a healthcare team to achieve optimal patient care.

***Key and Enabling Competencies: Orthopedic Surgeons are able to…***

**1. Participate effectively and appropriately in an interprofessional healthcare team**

1.1. Describe the specialist's roles and responsibilities to other professionals

1.2. Describe the roles and responsibilities of other professionals within the health care team

1.2.1. Describe community support groups which can assist the orthopedic patient and their families (e.g. orthopedic tumours)

1.3. Recognize and respect the diversity of roles, responsibilities and competences of other professionals in relation to their own

1.3.1. Recognize the limitations of their professional competence

1.4. Work with others to assess, plan, provide and integrate care for individual patients (or groups of patients)

1.4.1. Work effectively as a team member when not in a team leadership role

1.5. Work with others to assess, plan, provide and review other tasks, such as research problems, educational work, program review or administrative responsibilities

1.5.1. Participate in morbidity and mortality reviews

1.6. Participate effectively in interprofessional team meetings

1.7. Enter into interdependent relationships with other professions for the provision of quality care

1.8. Describe the principles of team dynamics

1.9. Respect team ethics, including confidentiality, resource allocation and professionalism

1.10. Demonstrate leadership in a healthcare team

**2. Work effectively with other health professionals to prevent, negotiate, and resolve interprofessional conflict**

2.1. Demonstrate a respectful attitude towards other colleagues and members of an interprofessional team

2.2. Work with other professionals to prevent conflicts

2.3. Employ collaborative negotiation to resolve conflicts

2.4. Respect differences and address misunderstandings and limitations in other professionals

2.5. Recognize one's own differences, misunderstanding and limitations that may contribute to interprofessional tension

2.6. Reflect on interprofessional team function

## Manager

***Definition:***

As *Managers*, Orthopedic Surgeons are integral participants in healthcare organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the healthcare system.

***Key and Enabling Competencies: Orthopedic Surgeons are able to…***

**1. Participate in activities that contribute to the effectiveness of their healthcare organizations and systems**

- 1.1. Work collaboratively with others in their organizations
- 1.2. Participate in systemic quality process evaluation and improvement, such as patient safety initiatives
- 1.3. Describe the structure and function of the healthcare system as it relates to Orthopedic Surgery, including the roles of physicians
  - 1.3.1. Explain population-based approaches to health care services and their implication for medical practice
  - 1.3.2. Describe provincial trauma care
- 1.4. Describe principles of healthcare financing, including physician remuneration, budgeting and organizational funding

**2. Manage their practice and career effectively**

- 2.1. Set priorities and manage time to balance patient care, practice requirements, outside activities and personal life
  - 2.1.1. Manage patients' length of stay efficiently
  - 2.1.2. Manage surgical waiting lists efficiently
- 2.2. Manage a practice including finances and human resources
  - 2.2.1. Explain the principles of practice management including group practice versus solo practice
  - 2.2.2. Describe basic negotiation skills
  - 2.2.3. Describe basic principles of providing / receiving references
- 2.3. Implement processes to ensure personal practice improvement
  - 2.3.1. Demonstrate an ability to access and apply a broad base of information to the care of patients in ambulatory care, hospitals and other health care settings

2.4. Employ information technology appropriately for patient care

**3. Allocate finite healthcare resources appropriately**

3.1. Recognize the importance of just allocation of healthcare resources, balancing effectiveness, efficiency and access with optimal patient care

3.2. Apply evidence and management processes for cost-appropriate care

**4. Serve in administration and leadership roles**

4.1. Chair or participate effectively in committees and meetings

4.2. Lead or implement change in health care

4.3. Plan relevant elements of health care delivery (e.g., work schedules)

## Health Advocate

***Definition:***

As *Health Advocates*, Orthopedic Surgeons responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.

***Key and Enabling Competencies: Orthopedic Surgeons are able to…***

**1. Respond to individual patient health needs and issues as part of patient care**

1.1. Identify the health needs of an individual patient

1.1.1. Identify determinants of health particular to an individual patient

1.1.2. Adapt patient assessment and management according to particular determinants of health

1.1.3. Determine a patient's ability to access various services in the health and social systems

1.2. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care

1.2.1. Promote injury prevention with respect to recreational activities

1.2.2. Identify risk factors that can lead to nonunion, ulceration, amputation, Charcot joints, and malignancy, and advise patients on lifestyle modifications to improve outcomes

1.2.3. Advise athletes on the risks and side effects of performance enhancing drugs and substance abuse

**2. Respond to the health needs of the communities that they serve**

2.1. Describe the practice communities that they serve

2.2. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately

2.2.1. Identify workplace and farming factors that lead to an increased risk of trauma

2.2.2. Identify sport/recreational factors that lead to an increased risk of trauma

2.3. Appreciate the possibility of competing interests between the communities served and other populations

**3. Identify the determinants of health for the populations that they serve**

3.1. Identify the psychological, social and physical determinants of health of the populations that they serve, including barriers to access to care and resources

3.1.1. Identify "at risk" populations within a given orthopedic practice in conjunction with Orthopedic Surgery specialty societies and other associations

3.2. Identify vulnerable or marginalized groups within the population served and respond appropriately

3.2.1. Apply available knowledge regarding prevention to "at risk" groups

3.2.2. Contribute to the generation of population-based data for improved understanding of orthopedic problems within “at risk” populations

**4. Promote the health of individual patients, communities, and populations**

4.1. Describe an approach to implementing a change in a determinant of health of the populations they serve

4.1.1. Explain the need to advocate to decrease the burden of illness (at a community or societal level) of a condition or problem relevant to orthopedics through a relevant orthopedic society, community-based advocacy group, other public education bodies, or private organizations

4.2. Describe how public policy impacts on the health of the populations served

4.3. Identify points of influence in the healthcare system and its structure

4.3.1. Discuss key issues regarding the Canadian health care system, indicating how these changes might affect societal health outcomes

4.4. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism

4.5. Appreciate the possibility of conflict inherent in their role as a health advocate for a patient or community with that of manager or gatekeeper

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

## Scholar

***Definition:***

As *Scholars*, Orthopedic Surgeons demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

***Key and Enabling Competencies: Orthopedic Surgeons are able to…***

**1. Maintain and enhance professional activities through ongoing learning**

1.1. Describe the principles of maintenance of competence

1.1.1. Explain the Maintenance of Competence requirements of the Royal College of Physicians and Surgeons

1.1.2. Explain the principles of Continuing Professional Development

1.1.3. Formulate relevant personal learning projects

1.2. Describe the principles and strategies for implementing a personal knowledge management system

1.3. Recognize and reflect learning issues in practice

1.4. Conduct a personal practice audit

1.5. Pose an appropriate learning question

1.6. Access and interpret the relevant evidence

1.7. Integrate new learning into practice

1.7.1. Recognize and correct deficits in knowledge and technical skills through targeted learning

1.8. Evaluate the impact of any change in practice

1.9. Document the learning process

**2. Evaluate medical information and its sources critically, and apply this appropriately to practice decisions**

2.1. Describe the principles of critical appraisal

2.2. Critically appraise retrieved evidence in order to address a clinical question

2.3. Integrate critical appraisal conclusions into clinical care

**3. Facilitate the learning of patients, families, students, residents, other health professionals, the public and others**

3.1. Describe principles of learning relevant to medical education

3.1.1. Describe the principles of adult learning

3.1.2. Discuss teaching models for patient and colleague education

3.2. Identify collaboratively the learning needs and desired learning outcomes of others

3.3. Select effective teaching strategies and content to facilitate others' learning

3.4. Contribute to the creation, dissemination, application, and translation of new medical knowledge and practices

3.5. Demonstrate an effective lecture or presentation

3.6. Assess and reflect on a teaching encounter

3.7. Provide effective feedback

3.7.1. Assess the competence of junior learners working on the orthopedic team

3.8. Describe the principles of ethics with respect to teaching

**4. Contribute to the development, dissemination, and translation of new knowledge and practices**

4.1. Describe the principles of research and scholarly inquiry

4.2. Describe the principles of research ethics

4.3. Pose a scholarly question

4.4. Conduct a systematic search for evidence

4.5. Select and apply appropriate methods to address the question

4.6. Disseminate the findings of a study

## Professional

### *Definition:*

As *Professionals*, Orthopedic Surgeons are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour.

***Key and Enabling Competencies: Orthopedic Surgeons are able to…***

**1. Demonstrate a commitment to their patients, profession, and society through ethical practice**

1.1. Exhibit appropriate professional behaviors in practice, including honesty, integrity, commitment, compassion, respect and altruism

1.2. Demonstrate a commitment to delivering the highest quality care and maintenance of competence

1.3. Recognize and appropriately respond to ethical issues encountered in practice

1.3.1. Pose an ethical question related to research and discuss the resolution of that question

1.3.2. Describe the principles of ethics in sports, including substance abuse and performance enhancing drugs

1.3.3. Explain the legal, ethical and professional codes governing a physician's relationship with industry

1.4. Manage conflicts of interest appropriately

1.5. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law

1.6. Maintain appropriate relations with patients

**2. Demonstrate a commitment to their patients, profession and society through participation in profession-led regulation**

2.1. Appreciate the professional, legal and ethical codes of practice

2.2. Fulfill the regulatory and legal obligations required of current practice

2.2.1. Describe the medicolegal obligations associated with non-accidental trauma in children

2.3. Demonstrate accountability to professional regulatory bodies

2.4. Recognize and respond to others' unprofessional behaviours in practice

2.5. Participate in peer review

**3. Demonstrate a commitment to physician health and sustainable practice**

3.1. Balance personal and professional priorities to ensure personal health and a sustainable practice

3.2. Strive to heighten personal and professional awareness and insight

3.3. Recognize other professionals in need and respond appropriately

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