HAND AND WRIST

CanMEDS roles and responsibilities

GENERAL OBJECTIVES

Upon completion of a rotation on the Hand and Wrist Service, the learner must demonstrate knowledge of the etiology of disease and injury of the Hand and Wrist, and be able to formulate a differential diagnosis. A knowledge base must exist to formulate a plan to effectively and efficiently order investigations to arrive at a diagnosis and formulate a treatment plan. The learner should be able to communicate the diagnosis/treatment plan to the patient/family, especially as it relates to establishing a sympathetic and effective professional relationship. These objectives apply both in the acute setting of trauma in the Emergency Department and in chronic conditions most commonly seen in the outpatient department.

SPECIFIC OBJECTIVES

At the completion of the rotation, the learner will have acquired the following competencies and will function effectively as:

I. MEDICAL EXPERT/CLINICAL DECISION MAKER

While working on the Hand and Wrist service, a learner must become proficient in the following areas:

1. Obtain appropriate history and perform physical examination and be competent in assessing the following:
   a. Rudimentary abnormalities of grasp (e.g. paralytic hand).
   b. Recognize and describe hand and wrist deformities.
   c. Differentiate between normal and abnormal joint arc of motion.
   d. Soft tissue contractures of the flexor and extensor tendons, distal radioulnar joint (DRUJ) complex and palm (Dupuytren's).
   e. Grade of strength of the extrinsic and intrinsic hand and forearm muscles.
   f. Neurovascular status of the hand.
   g. Instability of the carpus and DRUJ.
   h. Chronic pain syndromes including reflex sympathetic dystrophy.
   i. Rheumatoid hand.
   j. Intrinsic and extrinsic tendon function.
2. Describe, order and interpret the plain radiographs for hand and wrist conditions and be knowledgeable in the following:
   a. Radiographic characteristics of hand and wrist deformities.
   b. Classification of DRUJ, carpal, carpometacarpal, metacarpophalangeal, and interphalangeal arthritis.
   c. Classification of fractures of distal radius, carpals, metacarpals, and phalanges.
   d. Classification of carpal instability
   e. Specialized views for common pathologies (e.g. scaphoid fractures, CMC arthritis, stress views for instability, etc).
   f. Appropriate use of further diagnostic imaging (Arthrography, CT scan, MRI, bone scan, and gallium scans).
3. Establish a differential diagnosis based on knowledge of the hand and wrist anatomy, biomechanics and physiology.
4. Describe the appropriate role of further investigations, such as EMG, CT scan, MRI, bone scans, and local anesthetic blocks.

5. Describe a non-operative treatment program, i.e. the role of regular and custom-made orthotics and write prescriptions for splints and orthotics.
6. Understand basic concepts of ergonomics and work related injury.
7. Describe the surgical approaches for reconstruction and trauma.
8. Describe a management plan (investigations, non-operative and operative) for the following pathology:
    a. Hand and wrist degenerative arthritis
        i. DRUJ
        ii. Radiocarpal and mid carpal
        iii. Carpometacarpal especially thumb
        iv. MCP joints
        v. AVN esp. Kienbock's and Preiser's disease
    b. Hand and wrist trauma
        i. Distal radius/ulna fractures and dislocations
        ii. Scaphoid fractures
        iii. Other carpal fractures
        iv. TFCC injuries
        v. Metacarpal fractures
        vi. Phalangeal fractures and dislocations
        vii. Carpal instability
        viii. Tendon/nerve lacerations
    c. Deformity
        i. Congenital anomalies
        ii. Malunions
        iii. Paralytic hand
        iv. Dupuytren's disease
    d. Tendon and ligament pathology
        i. Acute/delayed tendon ruptures
        ii. Stenosing tenosynovitis
        iii. Peroneal tendonitis
        iv. Dequervain's disease
        v. Chronic carpal instability
        vi. Calcific tendonitis
    e. Rheumatoid arthritis
        i. Wrist including caput ulnae syndrome
        ii. Ulnar drift
        iii. finger deformities including boutonniere and swan neck
        iv. thumb deformities
        v. tenosynovitis and tendon rupture
        vi. nerve compression syndromes
    f. Other Inflammatory arthritides
        i. Psoriatic arthritis
        ii. SLE
        iii. Crystal arthropathies
    g. Nerve disorders
        i. Reflex sympathetic dystrophy/complex regional pain syndrome
        ii. Carpal tunnel syndrome
        iii. Neuromas

iv. Paralytic hand eg post CVA, CP, peripheral nerve injury
v. Peripheral neuropathy

h. Tumours
i. Approach to malignant tumors
ii. Approach to benign tumours

i. Infections
i. Fingertip
ii. Palmar space
iii. Septic joints
iv. Osteomyelitis
v. Tendon sheath

9. Describe surgical indications, obtain preoperative imaging, obtain informed consent, describe patient positioning, surgical approach, surgical anatomy, fixation techniques (if applicable), intra-operative imaging, wound closure, and postoperative management for the following procedures:

a. Wrist procedures
i. Wrist arthroscopy (diagnostic and therapeutic including TFCC, carpal instability, osteochondral injuries)
ii. Distal radius osteotomies
iii. Wrist arthrodesis, partial and total
iv. Wrist ligament reconstruction
v. Tendon lengthening/releases
vi. Repair/reconstruction of tendon ruptures
vii. Extensor tendonitis debridement and reconstruction
viii. Carpal tunnel release and Guyon's canal
ix. Reconstruction scaphoid nonunion
x. Distal ulnar resection and stabilization procedures
xi. Proximal row carpectomy
xii. Synovectomy

b. Carpometacarpal procedures
i. Corrective osteotomy (malunion)
ii. CMC arthrodesis especially thumb
iii. CMC arthroplasty (LRTI, prostheses)

c. Metacarpophalangeal procedures
i. Arthroplasty
ii. Tendon realignment
iii. Synovectomy

d. Finger procedures
i. Release of trigger finger
ii. Rheumatoid arthritis swan neck and boutonniere deformity
iii. Palmar fasciectomy
iv. Flexor and extensor tendon repair
v. PIP and DIP joint arthrodesis
vi. Tenolysis
vii. Excision of benign tumors
viii. Amputation

e. Fracture fixation (internal and external)
i. Distal radius and ulna
ii. Carpal fractures and dislocations

iii. Metacarpals
iv. Phalanges

f. Tendon transfers
i. Reconstruction for rupture
ii. Post nerve injury

10. Diagnose, investigate, and treat the following postoperative complications:
a. Wound necrosis
b. Wound infection
c. Nonunion of an arthrodesis or fracture
d. Malunion of an arthrodesis or fracture
e. Reflex sympathetic dystrophy
f. Nerve injury
g. Dysvascular foot after foot and ankle reconstruction
h. Painful hardware
i. Compartment syndrome
j. Postoperative pain

II. COMMUNICATOR

General Requirements

1. Establish therapeutic relationships with patients/families
2. Obtain and synthesize relevant history from patients/families/communities
3. Listen effectively
4. Discuss appropriate information with patients/families and the health care team

Specific Requirements

1. Effectively communicate with patients/families and members of the team
2. Effectively communicate important aspects of patient care to the multidisciplinary team and clearly/concisely summarize the patient care plan
3. Understand and empathize with the emotion surrounding orthopedic disease and injury
4. Appreciate the dynamics of a traumatized family
5. Address patients' concerns with empathy
6. Understand the concerns that patients have with loss of control, self worth and personal dignity
7. Explain details of medical condition and therapy in understandable terms
8. Appreciate the fact that interpreters may be required for ethnic groups

III. COLLABORATOR

General Requirements

1. Consult effectively with other physicians and health care professionals
2. Contribute effectively to other interdisciplinary team activities

Specific Requirements

1. Understand the roles of other health care professionals
2. Seek the advice of other members of the health care team
3. Organize/lead team meetings to discuss problems in investigation/therapy (multidisciplinary conference)

4. Consult regularly and reasonably with other physicians and members of the health care team
5. Share knowledge effectively to formulate a health care plan

IV. LEADER

General Requirements

1. Utilize resources effectively to balance patient care, learning needs and outside activities
2. Allocate finite health care resources wisely
3. Work effectively and efficiently in a health care organization
4. Utilize information technology to optimize patient care, life-long learning and other activities

Specific Requirements

1. Participate effectively in resource planning for the orthopedic patient
2. Participate in discharge planning

V. HEALTH ADVOCATE

General Requirements

1. Identify the important determinants of health affecting patients
2. Contribute effectively to improve the health of patients, their families and communities
3. Recognize and respond to those issues where advocacy is appropriate

Specific Requirements

1. Demonstrate knowledge of the epidemiology of orthopedic disease and injury
2. Advise patients/families of the role of environmental factors in orthopedic disease and injury
3. Promote prevention of orthopedic disease and injury
4. Outline community resources available to patients/families dealing with orthopedic disease and injury:
   a. Social work
   b. Physiotherapy
   c. occupational therapy
   d. dietary/nutritional services
   e. prosthetic support services
   f. pain and symptom management
   g. palliative care
5. Identify the possibility of non-accidental injury (physical abuse) and make the appropriate referrals to prevent further harm

VI. SCHOLAR

General Requirements

1. Develop, implement and monitor a personal continuing education strategy
2. Critically appraise sources of medical information
3. Facilitate learning of patients, housestaff and other health professionals
4. Contribute to development of new knowledge

Specific Requirements

1. Question current practice
2. Develop a teaching contract that reflects the multidisciplinary approach to orthopedic surgery
3. Critically assess the orthopedic literature as it pertains to diagnosis, investigation, treatment and follow-up:
   a. outline types of trial design
   b. define the relevance of statistical significance and how it is determined
4. Define type I and type II errors and their relevance
5. Disseminate relevant knowledge to other health care providers

VII. PROFESSIONAL

General Requirements

1. Deliver the highest quality care with integrity, honesty and compassion
2. Exhibit appropriate personal and interpersonal professional behavior
3. Practice medicine ethically consistent with the obligations of a physician

Specific Requirements

1. Understand that professionalism requires ongoing CME
2. Maintain a professional attitude consistent with a practicing orthopedic surgeon
3. Sympathize with the needs of the patient even when they conflict with medical advice
4. Recognize the requirement of patient confidentiality
5. Understand ethical responsibilities as they relate to the orthopedic patient
6. Practice in an ethical, honest and forthright manner
7. Respond to conflict constructively and with compassion