

# Hand and Wrist Surgery

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الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties




In The Name of Allah

# PREFACE

- This document's primary goal is to enrich the training experience of postgraduate trainees by outlining the learning objectives and competencies necessary to become independent and competent future practitioners.
- This curriculum may contain sections outlining training regulations; however, such regulations must be sought from the "General Bylaws of Training in Postgraduate Programs" and "Executive Policies" published by the Saudi Commission for Health Specialties (SCFHS), which can be accessed online through the official SCFHS website. In case of discrepancies in regulatory statements, the provisions in the most up-to-date bylaws and executive policies must be followed.
- Readers will find in this curriculum the necessary information regarding the Hand and Wrist Fellowship, whether the reader is a candidate for the fellowship as a fellow, a trainer, or an examiner.
- As this curriculum is subject to periodic refinement, please refer to the electronic version posted online for the most up-to-date edition at www.scfhs.org.sa.

# I. CONTRIBUTORS

Table 1

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# II. COPYRIGHT AND AI DISCLOSURE

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We also acknowledge that the CanMEDS framework is the copyright of the Royal College of Physicians and Surgeons of Canada and that many of the competencies described have been acquired from their resources. Please refer to: Frank, J. R., Snell, L., Sherbino, J., & Boucher, A. (2015). CanMEDS 2015 Physician Competency Framework Series I. Ottawa: Royal College of Physicians and Surgeons of Canada.

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# IV. INTRODUCTION

## 1. Context of Practice

Saudi Arabia is experiencing sustained population growth accompanied by demographic and lifestyle changes, including increased participation in sports, expansion of industrial and occupational activities, and rising traffic exposure. These factors have contributed to a growing incidence and complexity of hand and wrist injuries, which carry a disproportionate functional and socioeconomic impact due to the essential role of hand function in daily activities and employment.

Concurrently, increased life expectancy has led to a higher prevalence of degenerative and inflammatory conditions affecting the hand and wrist, such as osteoarthritis, rheumatoid arthritis, tendon degeneration, nerve compression syndromes, and complex wrist arthritis. Management of these conditions often requires advanced reconstructive planning, microsurgical expertise, and multidisciplinary care, exceeding the scope of general orthopedic or plastic surgery training.

Hand and wrist surgery is a highly specialized discipline due to the intricate anatomy and the time-sensitive nature of many injuries, including tendon and nerve injuries, complex fractures, infections, soft-tissue loss, and replantation or revascularization cases. Delayed or nonspecialist first management is associated with increased complications and the need for complex secondary reconstruction, underscoring the importance of specialized hand surgeons in delivering definitive care.

Internationally, hand and wrist surgery is recognized as a distinct subspecialty, with fellowship training considered essential for independent practice. Workforce analyses from mature healthcare systems report specialist hand and wrist surgeon densities of approximately 0.6–0.8 per 100,000 population. Applying these benchmarks to the Saudi population (35.3 million) suggests a national requirement of approximately 212–282 specialist hand surgeons to ensure adequate service coverage. [12]

This fellowship is therefore designed to address a national healthcare need by preparing board-certified plastic and orthopedic surgeons for advanced, independent practice in hand and wrist surgery within Saudi Arabia. The

program follows a Competency-Based Education (CBE) model aligned with SCFHS policies and the CanMEDS framework, integrating structured clinical training, microsurgical skills development, scholarly activity, and workplace-based assessment to ensure graduates meet national and international standards of hand surgery practice.


1. Rios-Diaz AJ, Metcalfe D, Singh M, et al. “The Distribution of Specialist Hand Surgeons Across the United States”. Presented at the 2016 American Association for Hand Surgery (AASH) Annual Meeting, Brigham and Women’s Hospital, Harvard Medical School.
2. Bakhach JY, Doghman JH, Beaineh PT, Makkawi KW. “Hand Surgery in Lebanon 2024: Excellence Despite Existing Gaps”. Plastic and Reconstructive Surgery – Global Open. 2025;13(2):e65.


## 2. Goals and Responsibilities of Curriculum Implementation

This curriculum ultimately aims to guide trainees to become *competent and fit for practice* in their respective specialties. Achieving this goal requires significant effort and coordination from all stakeholders involved in postgraduate training. As *"adult learners,"* trainees must be proactive, fully engaged, and exhibit the following: a careful understanding of learning objectives, self-directed learning, problem-solving, an eagerness to apply learning through reflective practice based on feedback and formative assessment, a growth mindset, self-awareness, and a willingness to seek support when needed. Program directors, trainers, accreditors, and other training stakeholders play vital roles in ensuring the successful implementation of this curriculum. Moreover, training committee members, particularly program administrators and chief residents, significantly influence program implementation. Trainees should also be called upon to share responsibility for curriculum implementation.

The strategic direction of the Saudi Commission for Health Specialties (SCFHS) applies a recognized competency model of training governance to achieve the highest training quality. Furthermore, postgraduate programs are required to cover research and evidence-based practice in their curriculum. Additionally, academic affairs in training centers and regional supervisory training committees play key roles in training supervision and implementation. The Specialty Scientific Plastic Surgery Committee guarantees that this curriculum's content is regularly updated to align with the highest standards in the postgraduate education of each trainee's specialty.

# V. ABBREVIATIONS USED IN THIS DOCUMENT

Table 2

| Abbreviation | Description |
|---|---|
| NCS | Nerve Conduction Studies |
| CT | Computed Tomography |
| ORIF | Open Reduction and Internal Fixation |
| SCFHS | Saudi Commission for Health Specialties |
| F(1) | (First) Year of Fellowship |
| F(2) | (Second) Year of Fellowship |
| PT | Progress Test |
| OSCE | Objective Structured Clinical Examination |
| Mini-CEX | Mini-Clinical Experience Report |
| CBD | Case-Based Discussion Report |
| ITER | In-Training Evaluation Report |
| FTC | Fellowship Training Committee |

# VI. PROGRAM ENTRY REQUIREMENTS

Please refer to the executive policy of the SCFHS on admission and registration.

# VII. LEARNING AND COMPETENCIES

## 1. Introduction to Competency-Based Education

Training should be guided by well-defined "enabling competencies" that are developed based on a particular program's *competencies* to serve specific specialty needs. Enabling competencies should reflect the professional *competencies* and tasks that trainees are expected to be *entrusted* with upon graduation. This ensures that graduates fulfill the expected demands of the healthcare system and patient care within their particular specialties. *Competency-based education* (CBE) is an *adult-learning* approach grounded in achieving *predefined, fine-grained, and well-paced* sub-competencies derived from complex professional competencies.

Professional competencies in healthcare are typically complex, encompassing multiple learning domains (knowledge, skills, and professional behavior). CBE is expected to transform the traditional approach to postgraduate education. For example, while time in training is a valuable resource, it should not be considered a proxy for *competence* (e.g., the duration of a rotation in certain hospital areas is not the primary indicator of competence achievement). Furthermore, CBE emphasizes the critical role of informed judgment in assessing a trainee's competency progress. This assessment is based on their staged and progressive performance, utilizing data collected from multiple educational and assessment encounters, methods, and workplace-based observations.

Several CBE models have been developed for postgraduate education in healthcare, including CanMEDS by the Royal College of Physicians and Surgeons of Canada (RCPSC), the CBME-Competency model by the Accreditation Council for Graduate Medical Education (ACGME), Tomorrow's Doctor in the UK, and others. The core concepts associated with CBE are as follows:

a. **Competency:** Competency refers to a healthcare professional's observable ability, encompassing knowledge, skills, values, and attitudes/professional behavior. It reflects the potential to perform efficiently in a given situation based on the standards of the profession and involves practically applying these components in real-world settings. Professional roles (e.g., medical experts, health advocates, communicators, leaders, scholars, collaborators, and professionals) are utilized to define competency roles to make them malleable for learning and assessment.

b. **Milestones**: Milestones represent the stages of the developmental journey along the competency continuum. Throughout their learning journey, trainees from junior through senior levels are assisted in transforming from novice/supervised to master/unsupervised practitioners. This should not undermine the role of supervisory/regulatory bodies in addressing the malpractice of independent practitioners. Milestones are expected to enhance the learning process by pacing training/assessment to match the trainees' developmental levels (junior versus senior).

c. **Learning Domains:** The categories or dimensions of learning that encompass the development of a learner's abilities and attributes. These domains are commonly divided into the following three key areas: K = Knowledge, S = Skills, and A = Attitude (also known as professional behavior).

## Principles of Competency-Based Medical Education (CBME)

These include the following:

1. **Focused Outcomes:** CBME emphasizes defining and achieving clear outcomes based on societal needs and ensuring that graduates fulfill these standards.
2. **Competencies as a Framework:** The curriculum is developed around clearly defined abilities or competencies that integrate knowledge, skills, and attitudes/behaviors.
3. **Learner-Centered Approach:** It promotes individualized learning by allowing trainees to progress at their own pace, according to their ability to demonstrate competencies.
4. **Integrated Assessment**: It utilizes multiple assessment methods to evaluate competencies comprehensively and continuously.
5. **Flexibility in Learning Pathways**: It encourages adaptable learning experiences tailored to individual needs while fulfilling established competency standards.
6. **Focus on Real-World Application**: It emphasizes the ability to apply knowledge and skills in practical real-world contexts.
7. **Supervision and Feedback**: It incorporates close supervision and regular feedback to promote continuous improvement and ensure safety in practice.
8. **Emphasis on Lifelong Learning**: It prepares learners for ongoing self-directed learning and adaptation in a rapidly evolving healthcare environment.
9. **Accountability**: It ensures that training aligns with societal needs and the preparation of competent professionals.

The SCFHS endorses the CanMEDS to articulate professional competencies. This curriculum applies the principles of CBME. CanMEDS/ACGME/OTHER represents a globally accepted framework that outlines competency roles. The “CanMEDS 2015/ACGME 2018 framework” has been adopted in this section.

## 2. Program Duration

2 years.

# 3. Program Rotations

**Table 3**

| Stage | Training Year | Mandatory core rotations* | | | Elective rotations** | | |
|---|---|---|---|---|---|---|---|
| | | Rotation name | Duration (each block is equal to 4 weeks). | Setting | Rotation name | Duration | Setting |
| Junior | F1 | Hand-Plastic Surgery | 6 blocks | Plastic Surgery/ Hospital OR-OPD-ED. | None | None | None |
| | F1 | Hand-Plastic Surgery | 6 blocks | Plastic Surgery/ Hospital OR-OPD-ED. | None | None | None |
| Senior | F2 | Wrist-Orthopedic Surgery | 6 blocks | Orthopedic Surgery/ Hospital OR-OPD-ED. | None | None | None |
| | F2 | None | | | Six elective rotations: can be chosen from the following; each is 1 one block, which is equal to four weeks: Pediatric hand; brachial plexus; advanced micro; nerve transfer; plastic surgery; orthopedic | 6 blocks | SCFHS approved centers |

**Table 3 (continued)**

| Stage | Training Year | Mandatory core rotations* | | | Elective rotations** | | |
|---|---|---|---|---|---|---|---|
| | | Rotation name | Duration (each block is equal to 4 weeks). | Setting | Rotation name | Duration | Setting |
| | | | | | upper limb surgery ; rehabilitation pathways; or research skills<br>N.B. rehabilitation pathways and research skills rotations can be done only once each. The trainee can do one block in each of these two electives, and cannot repeat them them unlike the other elective rotations (pediatric hand, brachial plexus, advanced microsurgery nerve transfer; plastic surgery; orthopedic upper limb surgery ; where the trainee can do all 6 blocks in one of them | | |

*(***Mandatory core rotation**: Set of rotations representing the program's core component that are mandatory to complete.*

*****Elective rotation**: A set of rotations associated with the specialty, as determined by the Scientific Council/Committee, from which trainees are required to complete a specified number.*

*There will be no dedicated research rotation, as research will be incorporated as a longitudinal experience throughout the program.*

### Leave

**Leave is taken as one block of four weeks)**, subject to the rules and regulations of the SCFHS

### Elective Planning

- Fellows may structure the 6-month elective period as: (a) three 2-month blocks or (b) two 3-month blocks—subject to Scientific Committee/Training Committee approval and site availability.

## 4. Mapping of Competencies, Roles, Assessment, and Educational Activities to Program Rotations

### Rotation Descriptions

This section aims to match each rotation's competencies and objectives. Trainees and trainers should collaborate to achieve these objectives during teaching and learning events, educational activities, and formative assessments. Expectations should evolve as the training level progresses (e.g., training stage, level, milestones).

**Table 4**

| Rotation | Selected Enabling Competencies | How Taught | How Assessed (Formative) |
|---|---|---|---|
| Plastic (F1) | Microsurgical anastomosis; tendon zones I–V repair; peripheral nerve repair; flap planning; burn hand care, fracture fixation metacarpals, phalanges | OR supervision; academic half-day; journal club; ER cases | Mini-CEX (monthly); DOPS; CBD; evaluation end-of-rotation; logbook review; ITER (see details under the formative assessment section. |
| Orthopedic (F2) | Fracture fixation (distal radius, scaphoid,); ligament injuries; wrist arthroscopy basics | OR supervision; fracture clinic; trauma call; imaging conferences | |
| Electives (F2) | Pediatric hand; brachial plexus; advanced micro; nerve transfer; rehabilitation pathways; or research skills | Elective center activities; targeted reading; case conferences; supervised clinics/OR; research workshops | |

**Table 5**

| Role | Key Competencies (Graduation-level) |
|---|---|
| Medical Expert | **Definition:** As **Medical Experts, hand and wrist** surgeons integrate all CanMEDS Roles, applying medical knowledge, clinical skills, and professional attitudes to provide patient-centered careThe Medical Expert is the central physician role in the CanMEDS framework<br>They diagnose and manage acute and chronic surgical conditions of the hand and wrist, provide patient-centered care for conditions and procedures such as fracture fixation, tendon and nerve repair, flap coverage, replantation, and arthroscopy, and lead perioperative care and rehabilitation planning<br>**Key and Enabling Competencies: hand and wrist fellows** (surgeons) can:<br>• Function effectively as consultants, integrating all of the CanMEDS roles to provide optimal, ethical, and patient-centered medical care<br>• Perform a consultation effectively, including the presentation of well-documented assessments and recommendations in written and verbal form in response to a request from another healthcare professional, including recognition, diagnosis, management, and appropriate counselling<br>• Demonstrate effective use of all CanMEDS competencies relevant to hand and wrist surgery<br>• Apply knowledge of acute and chronic wounds and reconstructive defects in all areas of the hand- and wrist-related injuries<br>• Respond appropriately to emergencies |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Manage the perioperative and postoperative care of a patient<br>• Manage a patient's progress through the complexities of the healthcare system<br>• Identify and appropriately respond to relevant ethical issues arising in patient care<br>• Prioritize professional duties when faced with multiple patients and problems<br>• Demonstrate compassionate and patient-centered care<br>• Recognize and respond to the ethical dimensions of medical decision-making<br>• Demonstrate medical expertise in situations other than patient care, including but not limited to providing expert legal testimony or advising governments as needed<br>• Establish and maintain clinical knowledge, skills, and attitudes appropriate to their practice<br>• Demonstrate the clinical, socio-behavioral, and fundamental biomedical sciences relevant to hand and wrist surgery<br>**Principles of Hand and Wrist Surgery**<br>• Advanced principles of wound healing<br>• Advanced principles of wound care<br>• Advanced principles of wound closure<br>• Skin grafting<br>• Tissue grafting, including but not limited to cartilage, bone, fat, tendon, nerve, fascia, and blood vessels<br>• Skin flaps<br>• Fasciocutaneous, muscle, musculocutaneous, osseous, osteocutaneous, and composite flaps<br>• Transplant biology<br>• Microsurgery, including transplantation<br>• Energy sources used in hand and wrist surgery, including but not limited to:<br>– Electrocautery<br>– Lasers<br>– Ultrasound |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | – Radiofrequency systems<br>– Standard power equipment, including but not limited to drills, saws, and dermatomes<br>• Endoscopy and other techniques specific to hand surgery procedures<br>• Biomaterials, including but not limited to:<br>– Human blood products<br>– Tissue allografts<br>– Tissue xenografts<br>**Emergency, Perioperative, and Postoperative Care**<br>Including the principles of:<br>• Advanced Trauma Life Support (ATLS)<br>• Aseptic technique and routine precautions<br>• Local anesthesia<br>• Conscious sedation<br>• Early postoperative patient care, both medical and surgical<br>• Establishing priorities in the care of patients with multisystem trauma<br>• Providing appropriate medical support and investigations for traumatized patients requiring emergency surgery<br>• Conducting appropriate preoperative investigations and collaborating with other consultants before proceeding with any surgery, whether emergent or elective<br>• Developing treatment plans, including surgical and nonsurgical therapies, that recognize the potential psychosocial impact of the condition and its management on the patient and family<br>• Obtain appropriate informed consent from patients and guardians before any medical or surgical treatment, whether emergent or elective<br>• Identify postsurgical complications, both local and systemic, conduct appropriate investigations, and involve consultants as needed to promptly develop and implement treatment plans<br>**Anatomy, Physiology, Diagnosis, and Management**<br>• Anatomy and physiological function of the hand and wrist, including the vascular, musculoskeletal, nervous, and cutaneous systems<br>• Diagnosis and management of the following conditions: |

**Table 5 (continued)**

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | - Common developmental abnormalities of the hand and wrist and their systemic associations<br>- Dupuytren's disease<br>- Vascular disorders of the hand and wrist<br>- Arthritis of the hand and wrist<br>- Benign and malignant soft tissue and bone tumors of the hand and wrist<br>- Hand and wrist infections<br>- Simple and complex trauma, including but not limited to:<br>  ○ Soft tissue injury and loss<br>  ○ Tendon injury<br>  ○ Nerve injury, including brachial plexus injury<br>  ○ Fractures, ligament injuries, and joint dislocations<br>  ○ Vascular compromise<br>  ○ Amputations<br>- Burns and frostbite of the hand and upper extremity, including burns of all etiologies:<br>  ○ Chemical<br>  ○ Electrical<br>  ○ Radiation<br>  ○ Friction<br>**Principles of Late Reconstruction of Upper Limb Deformities**<br>Including but not limited to:<br>• Tendon transfers of the hand and wrist<br>• Thumb reconstruction<br>• Bone grafting<br>• Reconstruction of scar and soft tissue defects<br>• Nerve compression syndromes, including principles of tendon transfers, nerve grafting, and management of complex regional pain syndromes<br>**Objective Testing and Rehabilitation**<br>• Objective testing methods applicable to hand and wrist pathology and trauma, including diagnostic imaging, electrophysiological testing, |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | ultrasound and laser Doppler assessment, and measurement of muscle compartment pressures<br>• Principles of splinting and rehabilitation of the hand and wrist and the role of multidisciplinary clinics in hand and wrist surgery<br>• Interpretation of imaging modalities, including radiographs, fluoroscopy, CT scans, magnetic resonance imaging, radionuclide scans, ultrasound, Doppler scans, and angiograms, as applicable to hand and wrist surgery<br>• Measurement of upper extremity compartment pressures<br>• Interpretation of electrophysiological studies applicable to hand and wrist surgery<br>**Reconstructive and Operative Techniques**<br>• Basic reconstructive surgical techniques applied to soft tissue defects of the hand and wrist, including skin grafts, composite grafts, skin flaps (local, regional, and distant), and free flaps of all types<br>• Management of hand and wrist fractures, including closed reduction methods, splinting, external fixation, open reduction, and internal fixation using appropriate available methods<br>• Repair of hand and wrist ligament disruptions, dislocations, and fracture-dislocations using closed reduction methods, splinting, external fixation, open reduction, and internal fixation using appropriate available methods<br>- Ligament reconstruction<br>- Joint reconstruction<br>• Treatment of nonunions, Kienbock's disease, and other chronic conditions using appropriate available techniques<br>- Bone grafting<br>• Tendon repair in acute and chronic settings, including direct suture repair, delayed tendon repair, tendon grafting, and tendon transfers<br>- Tendon sheath release<br>- Tenolysis<br>• Revascularization techniques and techniques involved in hand and wrist replantation<br>• Escharotomy and fasciotomy<br>• Peripheral nerve laceration repair |

**Table 5 (continued)**

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Release of compression neuropathies<br>• Resection and repair of nerve tumors<br>• Nerve grafting<br>• Fasciotomy and palmar fasciectomy techniques for Dupuytren's disease<br>• Joint replacement techniques<br>• Incision and drainage techniques for hand and wrist infections, including fingertip and nail infections and deep-space infections of the hand<br>• Thumb reconstruction<br>• Intraoperative use of appropriate imaging techniques and power equipment for fracture fixation |
| Communicator | **Definition:** As **Communicators, hand and wrist** surgeons effectively facilitate the in-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.<br>They elicit focused histories, communicate risks and benefits, obtain informed consent, deliver difficult news, and produce clear operative notes and discharge summaries.<br>**Key and Enabling Competencies: Hand and Wrist Surgeons can:**<br>**1) Develop rapport, trust, and ethical therapeutic relationships with patients and families.**<br>• Recognize that being a good communicator is a core clinical skill for physicians and understand that effective physician-patient communication can foster patient satisfaction, physician satisfaction, treatment adherence, and improved clinical outcomes.<br>• Establish positive therapeutic relationships with patients and their families that are characterized by understanding, trust, respect, honesty, and empathy.<br>• Demonstrate the ability to effectively communicate with and support patients and families affected by disease, injury, or congenital disabilities.<br>• Provide emotional support to trauma patients, including appropriate communication during emergency assessment, operative management, postoperative care, and long-term recovery. |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Demonstrate compassionate understanding of patients' emotional investment when presenting for elective reconstructive surgery for bodily defects caused by congenital, infectious, traumatic, or malignant etiologies.<br>• Provide family support when children have congenital or acquired conditions requiring surgical correction.<br>• Respect patient confidentiality, privacy, and autonomy.<br>• Listen effectively, recognize and respond to nonverbal cues.<br>• Facilitate structured clinical encounters effectively.<br>**2) Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals.**<br>• Gather information about the disease or condition and about a patient's beliefs, concerns, expectations, and illness experience.<br>• Seek out and synthesize relevant information from other sources, such as the patient's family, caregivers, and other professionals.<br>**3) Convey relevant information and explanations accurately to patients and families, colleagues, and other professionals.**<br>• Deliver information to patients and families, colleagues, and other professionals in a humane and understandable manner that encourages discussion and participation in decision-making.<br>• Communicate effectively with patients, families, peers, and health care team members.<br>• Communicate appropriately with individuals who are indirectly involved in the delivery of health care, including students, volunteers, and support staff.<br>**4) Develop a shared understanding of issues, problems, and plans with patients, families, and other professionals to develop a shared plan of care.**<br>• Identify and explore problems arising during a patient encounter, including the patient's context, responses, concerns, and preferences.<br>• Respect diversity and differences, including but not limited to the impact of gender, religion, and cultural beliefs on decision-making.<br>• Encourage discussion, questions, and interaction during the encounter. |

**Table 5 (continued)**

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care.<br>• Address challenging communication issues effectively, such as obtaining informed consent, delivering difficult news, and addressing anger, confusion, and misunderstanding.<br>**5) Effectively convey oral and written information about a medical encounter.**<br>• Maintain clear, accurate, and appropriate records of clinical encounters and plans.<br>• Document and disseminate information related to procedures performed and their outcomes appropriately.<br>• Present verbal reports of clinical encounters and plans effectively.<br>• Present medical information to the public or media about a medical issue.<br>• Demonstrate an understanding of the methods and constraints of communication when dealing with organizations, including but not limited to the media, government, and other regulatory agencies. |
| Collaborator | **Definition: As Collaborators, hand and wrist** surgeons work effectively within a health care team to achieve optimal patient care.<br>They work effectively with anesthesiologists, radiologists, physical therapists (PTs), occupational therapists (OTs), and nursing staff and coordinate multidisciplinary care and transitions.<br>**Key and Enabling Competencies: Hand and Wrist Surgeons can:**<br>**1) Participate effectively and appropriately in an interprofessional health care team.**<br>• Describe the hand and wrist surgeon's roles and responsibilities to other professionals.<br>• Describe the roles and responsibilities of other professionals within the health care team.<br>• Recognize and respect the diversity of roles, responsibilities, and competencies of other professionals.<br>• Work with others to assess, plan, provide, and integrate care for individual patients or groups of patients. |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Demonstrate the ability to collaborate with a wide range of medical and surgical professionals whose areas of expertise overlap with or complement those of hand and wrist surgery.<br>• Collaborate with anesthesiologists and other practitioners during the perioperative period.<br>• Work with others to assess, plan, provide, and review other activities, such as research, educational work, program review, or administrative responsibilities.<br>• Interact effectively and professionally with:<br>  ○ Administrators and health authorities<br>  ○ Charitable and volunteer organizations<br>  ○ Educators and universities<br>  ○ Medical and legal experts<br>  ○ Multidisciplinary and interprofessional clinics and services<br>  ○ Professional organizations and regulatory authorities<br>• Participate in multidisciplinary rounds.<br>• Participate effectively in interprofessional team meetings.<br>• Establish cooperative relationships with other professions to provide quality care.<br>• Work collaboratively with hand therapists in the care of patients with hand conditions and integrate them appropriately into hand surgery clinics, where possible.<br>• Work collaboratively with intensivists and nutritionists in the care of trauma and burn patients.<br>• Work collaboratively with other surgical specialties to coordinate the reconstruction of congenital, traumatic, and neoplastic defects.<br>• Work and teach collaboratively with nursing staff in all areas of the hospital to improve the care of hand and wrist surgery patients.<br>• Describe the principles of team dynamics.<br>• Respect team ethics, including confidentiality, resource allocation, and professionalism. |

**Table 5 (continued)**

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Demonstrate leadership within a health care team.<br>**2) Work effectively with other health professionals to prevent, negotiate, and resolve interprofessional conflict.**<br>• Demonstrate a respectful attitude toward colleagues and other members of the interprofessional team.<br>• Work with other professionals to prevent conflicts.<br>• Employ collaborative negotiation to resolve conflicts.<br>• Respect differences and address misunderstandings and limitations among other professionals.<br>• Recognize one's own differences, misunderstandings, and limitations that may contribute to interprofessional tension.<br>• Reflect on interprofessional team functioning. |
| Leader | **Definition:** As Leaders, hand and wrist surgeons are integral participants in health care organizations, organizing sustainable practices, making decisions about resource allocation, and contributing to the effectiveness of the health care system.<br>They prioritize operating room lists, steward resources, manage trauma call efficiently, and contribute to quality improvement and patient safety initiatives.<br>**Key and Enabling Competencies: Hand and Wrist Surgeons can:**<br>**1) Participate in activities that contribute to the effectiveness of their health care organizations and systems.**<br>• Work collaboratively with others in their organizations.<br>• Participate in systematic quality-process evaluation and improvement, such as patient safety initiatives.<br>• Describe the structure and function of the health care system as it relates to hand and wrist surgery, including the roles of physicians.<br>• Describe principles of health care financing, including physician remuneration, budgeting, and organizational funding at the hospital, regional, provincial, and national levels.<br>**2) Manage their practice and career effectively.**<br>• Set priorities and manage time to balance patient care, practice requirements, outside activities, and personal life.<br>• Apply principles and develop skills to improve time management. |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Manage a hand surgery center, including finances, human resources, an office, outpatient clinics, and specialty care units.<br>• Implement processes to ensure personal practice improvement.<br>• Employ information technology appropriately for patient care.<br>**3) Allocate finite health care resources appropriately.**<br>• Recognize the importance of the just allocation of health care resources.<br>• Balance effectiveness, efficiency, and access to provide optimal patient care.<br>• Manage patient flow effectively, including admissions, investigations, treatments, surgery, and discharge planning.<br>• Apply evidence and management processes for cost-appropriate care.<br>**4) Serve in administrative and leadership roles as appropriate.**<br>• Chair or participate effectively in committees and meetings.<br>• Participate in resident, university, or hospital committees.<br>• Lead or implement changes in health care.<br>• Plan relevant elements of health care delivery, including operating room call schedules. |
| Health Advocate | **Definition:** As Health Advocates, hand and wrist surgeons responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.<br>They promote injury prevention, ergonomic education, and early rehabilitation and advocate for timely access to microsurgical and diagnostic services.<br>**Key and Enabling Competencies: Hand and Wrist Surgeons can:**<br>**1) Respond to individual patients' health needs and issues as part of patient care.**<br>• Identify the health needs of individual patients, including but not limited to:<br>• Patients with anticipated injuries, such as sports injuries:<br>• Provide appropriate hand exercises to help prevent repetitive injuries or compression-related conditions, such as carpal tunnel syndrome.<br>• Provide counselling regarding positioning and range of motion.<br>• Provide or promote hand exercises and lifestyle counselling for the prevention of sports injuries. |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Provide psychological screening for patients with unrealistic expectations or those who have experienced a life-changing event.<br>• Patients requiring hand and wrist surgery, such as those with carpal tunnel syndrome, trigger finger, ganglion cysts, or fractures requiring fixation:<br>• Encourage regular self-examination.<br>• Promote awareness of strategies to prevent hand contractures following burn injuries.<br>• Provide primary health care for patients with hand burns.<br>• Pediatric patients:<br>• Identify and respond appropriately to suspected cases of congenital hand anomalies.<br>• Promote awareness of methods to reduce the occurrence of accidental injuries.<br>• Promote initiatives to prevent dog-bite injuries.<br>• Promote awareness of measures to prevent hand deformity after injury.<br>**2) Respond to the health needs of the communities they serve.**<br>• Describe the practice communities they serve.<br>• Identify opportunities for advocacy, health promotion, and disease prevention in the communities they serve and respond appropriately.<br>• Possible approaches include, but are not limited to:<br>• Teach occupational therapists about appropriate range-of-motion requirements.<br>• Provide information regarding excessive sun exposure and the use of appropriate clothing and sunscreen.<br>• Promote the placement of educational posters addressing burn prevention at campgrounds, lawn mower safety in community centers, and dog-bite prevention in veterinary offices and community centers.<br>• Recognize the possibility of competing interests between the communities served and other populations.<br>**3) Identify the determinants of health for the populations they serve.**<br>• Identify determinants of health within the populations served, including barriers to access to care and resources.<br>• Identify vulnerable or marginalized populations within the populations served and respond appropriately. |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Recognize populations that may be at increased risk, including:<br>  • Populations with low socioeconomic status who may be at increased risk of burn injury and child abuse.<br>  • Newborns at risk of deformational hand and wrist anomalies.<br>  • Individuals with a family history of skin cancer or tumors.<br>**4) Promote the health of individual patients, communities, and populations.**<br>• Describe an approach to implementing changes in determinants of health affecting the populations they serve.<br>• Describe how public policy affects the health of the populations served.<br>• Identify points of influence within the health care system and its structure.<br>• Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity, and idealism.<br>• Recognize the possibility of conflict inherent in the role of a health advocate for a patient or community, similar to the potential conflict associated with the role of a manager or gatekeeper.<br>• Describe the role of the medical profession in collectively advocating for health and patient safety. |
| Scholar | **Definition:** As Scholars, hand and wrist surgeons demonstrate a lifelong commitment to reflective learning and to the creation, dissemination, application, and translation of medical knowledge.<br>They practice evidence-based care, critically appraise the literature, design and complete research projects, and teach peers and junior trainees.<br>**Key and Enabling Competencies: Hand and Wrist Surgeons can:**<br>• Maintain and enhance professional activities through ongoing learning.<br>• Describe the principles of maintaining competence.<br>• Describe the principles and strategies for implementing a personal knowledge management system.<br>• Recognize and reflect on learning issues in practice.<br>• Conduct a personal practice audit.<br>• Pose an appropriate learning question.<br>• Access and interpret relevant evidence.<br>• Integrate new learning into practice.<br>• Evaluate the impact of any changes in practice. |

**Table 5 (continued)**

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Document the learning process.<br>• Evaluate medical information and its sources critically and apply the information appropriately to practice decisions.<br>• Describe the principles of critical appraisal.<br>• Critically appraise retrieved evidence to address a clinical question.<br>• Integrate essential conclusions from the appraisal into clinical care.<br>• Facilitate the education of patients, families, students, residents, other health professionals, the public, and others as appropriate.<br>• Describe principles of learning relevant to medical education.<br>• Identify collaboratively the educational needs and desired educational outcomes of others.<br>• Select effective teaching strategies and content to facilitate others' education.<br>• Deliver an effective lecture or presentation.<br>• Assess and reflect on a teaching encounter.<br>• Provide effective feedback.<br>• Describe the principles of ethics concerning teaching.<br>• Contribute to the development, dissemination, and translation of new knowledge and practices.<br>• Describe the principles of research and scholarly inquiry.<br>• Describe the principles of research ethics.<br>• Pose a scholarly question.<br>• Conduct a systematic search for evidence.<br>• Select and apply appropriate methods to address the question.<br>• Disseminate the findings of a study appropriately. |
| Professional | **Definition: Hand and wrist surgeons** are professionals committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behavior. They demonstrate ethics, punctuality, accountability, cultural competence, and adherence to patient safety and SCFHS standards.<br>**Key and Enabling Competencies: Hand and wrist surgeons can:** |

**Table 5 (continued)**

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | 1) Demonstrate commitment to their patients, profession, and society through ethical practices:<br>• Exhibit appropriate professional behaviors in practice, including honesty, integrity, commitment, compassion, respect, and altruism.<br>• Identify the three facets of professionalism: the importance of patient welfare, self-regulation, and physician autonomy.<br>• Describe the nature of the social contract that medicine has with both the patient and society.<br>• Define what is meant by patient autonomy and how it is reflected in the practice of hand and wrist surgery.<br>• Demonstrate a commitment to delivering the highest quality care and maintenance of competence.<br>• Recognize and appropriately respond to ethical issues encountered in practice.<br>• Manage conflicts of interest appropriately.<br>• Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law.<br>• Maintain appropriate boundaries with patients.<br>2) Demonstrate commitment to their patients, profession, and society through participation in profession-led regulation.<br>• Demonstrate knowledge and an understanding of the professional, legal, and ethical codes of practice.<br>• Assess and reflect on the importance of physician autonomy and the high professional standard of behavior expected.<br>• Outline the nature of self-regulation and the mechanism by which the issues of professionalism are addressed.<br>• Understand and fulfill the regulatory and legal obligations required of current practice.<br>• Report suspected cases of child maltreatment appropriately.<br>• Demonstrate accountability to professional regulatory bodies.<br>• Recognize and respond to others' unprofessional behaviors in practice.<br>• Participate in peer review.<br>3) Demonstrate a commitment to physician health and sustainable practice. |

Table 5 (continued)

| Role | Key Competencies (Graduation-Level) |
|---|---|
| | • Balance personal and professional priorities to ensure personal health and sustainable practice.<br>• Strive to heighten personal and professional awareness and insight. |

The following reference exemplifies a general outline of:

1. The CanMEDS competency (Frank, J. R., Snell, L., Sherbino, J., & Boucher, A. (2015). *CanMEDS 2015 Physician Competency Framework Series I*. Ottawa: Royal College of Physicians and Surgeons of Canada)

# Research Longitudinal Experience Description

The following is for illustrative purposes only. Additional details relating to frequency, levels, and years must be clearly outlined and aligned with the curriculum mapping.

## 2.2.6 RESEARCH Longitudinal Experience Description

Table 6

| Number of rotation months | First year | Second year | Total |
|---|---|---|---|
| | 0 | 1 | 1 |

## MEDICAL EXPERT

### Goals:

- To demonstrate an understanding of the basic principles of research design, methodology, data analysis, and clinical epidemiology. Additionally, these principles have both advantages and disadvantages from the perspective of hand and wrist surgery.
- To familiarize themselves with the ethical requirements of research and demonstrate an understanding of the responsible use of informed consent.
- To practice appropriate methods for writing research proposals, manuscripts, data collection, and result analysis and discussion.
- To demonstrate awareness of current research topics in hand and wrist surgery using available medical informatics systems.
- To skillfully present scientific presentations and participate in public discussions.

## Training Methods

- Specify the period appropriately dedicated to research.
- Attendance in dedicated courses or workshops that enhance research skills may be required.
- The fellow must select a supervisor to help access essential resources that will allow appropriate utilization of research skills and periodically discuss progress.
- The fellow must finish the research proposal by the end of the first six months of the second year, which must then be accepted by the institutional review board.
- The research project is expected to be finished within the fellowship training period. The oral abstract of the study results should be presented at a specified time point (e.g., end of the final year before entering the final exam).
- It is highly desirable for trainees to present research results at national and/or international meetings and aim to publish their work in indexed journals.

## Evaluation

1. Attendance at designated courses/lectures/workshops will be monitored and incorporated into the annual evaluation score.

Table 7

| Timeline | Milestone |
|---|---|
| F1 (Q1–Q2) | Identify the research question; conduct a literature review; finalize the proposal; submit to the IRB, if required. |
| F1 (Q3–Q4) | Begin data collection; present the proposal and/or early data during an academic day. |
| F2 (Q1–Q2) | Complete data collection and analysis; draft the manuscript. |
| F2 (Q3) | Submit an abstract to a national or international meeting; revise the manuscript. |
| F2 (Q4) | Submit the manuscript; deliver the capstone presentation. |

## COMMUNICATOR

- Demonstrate skills in conveying and discussing scientific research with scientific communities through posters, abstracts, teaching slides, manuscripts, or other scientific communication modalities.
- Communicate and collaborate effectively with the research supervisor to conduct the research.

## COLLABORATOR

- Identify, consult, and collaborate with appropriate experts, research institutions, and/or organizational bodies to conduct the research.

## LEADER

- Identify an area of research interest and find a research supervisor to engage in the scholarship of scientific inquiry and dissemination.
- Utilize available resources and regularly meet with an identified research mentor.
- Set realistic priorities and use time effectively to optimize professional performance.
- Utilize healthcare resources cost-effectively.

## HEALTH ADVOCATE

- Recognize the contributions of scientific research in improving patient and community health.

## SCHOLAR

- Pose appropriate research questions, recognize and identify gaps in knowledge and expertise pertaining to these questions, and formulate an appropriate study design to answer them.
- Conduct the research as outlined in the proposal.
- Collect and analyze data utilizing appropriate methods.
- Prepare abstracts and manuscripts suitable for publication in peer-reviewed journals and/or international scientific meetings.
- Identify research limitations and areas for further research.

## PROFESSIONAL

2. Uphold ethical and professional research expectations consistent with institutional review board guidelines, including maintaining meticulous data and conducting ethical research.
3. Demonstrate personal responsibility for establishing research goals and working with the supervisor to set and achieve research timeline objectives.
4. Appropriately attribute authorship and contributions when publishing research.
5. Disclose potential financial conflicts of interest (including speaker fees and consultative relationships), as appropriate, when engaging in and disseminating research results.

# VIII. CONTINUUM OF LEARNING

This includes learning that should occur at each key stage of progression within the specialty. Trainees are reminded of lifelong Continuous Professional Development (CPD). Trainees should remember the necessity of CPD for every healthcare provider to fulfill the evolving demands of their vital professions. The following table elucidates how each role is progressively expected to develop throughout the journey of the fellowship program.

**Table 8**

| Domain | Undergraduate | R 1-3 (Junior Level) | R 4-6 (Senior Level) | Fellowship | Consultant |
|---|---|---|---|---|---|
| **Level of Practice** | Nonpracticing | Dependent/supervised practice | Semi-dependent/supervised practice | Independent/dependent practice/provide supervision | Independent practice/provide supervision |
| **Knowledge** | Obtain basic health science and foundational knowledge relevant to the core discipline | Obtain fundamental knowledge related to the specialty's core clinical problems | Apply knowledge to provide appropriate clinical care related to the specialty's core clinical problems | Acquire advanced and up-to-date knowledge related to complex clinical problems | Integrate and synthesize cutting-edge knowledge and contribute to specialty advancement |
| **Clinical Skills** | Internship and orientation to discipline practice | Apply clinical/practical skills such as physical examination and practical procedures related to the core presenting problems and procedures of the specialty | Analyze and interpret the findings from clinical skills to develop appropriate differential diagnoses and a management plan for the patient | Compare, prioritize, and manage challenging or atypical presentations, with expanded differential diagnoses and a management plan | Manage complex cases, develop guidelines, and provide consultation and supervision |
| **Professionalism and Patient Safety** | Apply basic ethical and safety principles | Demonstrate professionalism, ethical behavior, and safety within supervised settings | Apply principles of professionalism and patient safety in independent scenarios with oversight | Lead by example, manage complex ethical/safety situations, and support team culture | Behave as a role model for professionalism, quality assurance, and patient safety leadership |

**Table 8 (continued)**

| Domain | Undergraduate | R 1-3 (Junior Level) | R 4-6 (Senior Level) | Fellowship | Consultant |
|---|---|---|---|---|---|
| **Decision-Making** | Observe the decision-making process | Contribute to clinical decisions under supervision | Make clinical decisions with oversight for complex scenarios | Make independent clinical judgments and teach decision-making to others | Lead interdisciplinary decision-making and strategic clinical planning |
| **Supervision/Teaching Role** | Not applicable | Learn from supervision and accept feedback | Begin peer teaching and provide feedback under supervision | Supervise juniors and contribute to curriculum and training | Offer formal supervision, mentorship, and system-level educational input |

# IX. EDUCATIONAL ACTIVITIES (TEACHING AND LEARNING STRATEGIES AND METHODS)

## Teaching and Learning

### Clinical, Academic, and Scholarly Content of the Program-Specific Learning Activities:

The training program features a competency-based curriculum that employs diverse strategies to facilitate the acquisition of various knowledge and skills. It also incorporates different methods to enhance teaching and learning in diverse settings, thereby guiding both trainers and trainees. The program addresses essential elements for the practical preparation, implementation, and facilitation of teaching and learning, with a focus on achieving mastery.

Furthermore, it identifies opportunities for teaching and enabling learning in daily clinical practice. It also instructs students on how to apply established learning and teaching theories from higher education and healthcare contexts to their teaching practice, how to utilize a comprehensive range of teaching methods, and how to develop a reflective approach to teaching and learning for continuous professional development. Teaching and learning are achieved through educational activities across various settings and encounters, including clinics, inpatient wards, emergency rooms, simulation labs, and academic activities during rotations or weekly academic days. Other practices, such as implementing mentorship programs and reflective practice in the postgraduate curriculum, may also enhance trainee learning and professional development. The choice of educational methods should:

- Align with objectives and competencies.
- Utilize multiple approaches.
- Be feasible given available resources.

## Educational Activities:

Educational Activities (EA) are integral to fellows' training programs, encompassing teaching and learning opportunities designed to impart specialty competencies. EA aim to convey knowledge, skills, attitudes, and professional behaviors. Therefore, they should focus on holistic development, practical skills, problem-solving abilities, and personal growth. This can be achieved through a broad scope of activities that foster learning and growth across multiple cognitive, social, emotional, and physical domains. Examples include experiential learning, group projects, skill-building exercises, and mentorship programs, which can occur in both formal and informal educational settings.

The educational framework for residency, fellowship, and diploma training programs in Hand and Wrist Surgery is grounded in the principles of adult learning theory. Trainees are expected to recognize the significance of their learning journey and actively participate in both the content and process of their education. Training programs implement the adult learning concept across most EAs, placing the responsibility for learning requirements on the trainees themselves.

Through various EA, the Hand and Wrist Surgery program aims to fulfill the competencies outlined in its curriculum. The program is designed to develop both cognitive and technical skills while fostering an understanding of their application within the context of Hand and Wrist Surgery. Furthermore, the training encompasses practical procedures and interpretative techniques delivered in a sequential and integrated manner through lectures, tutorials, seminars, and hands-on apprenticeships.

EAs play a vital role in health training programs by equipping health professionals with essential knowledge, values, and skills. Additionally, EA facilitate the dissemination of knowledge, encourage healthy practices, and enhance health professionals' competencies, ultimately contributing to improved overall well-being and safety.

Program administration should actively support EA by ensuring that protected time is allocated for trainees to attend and participate. Trainees should be encouraged to meaningfully engage in these educational and scholarly activities as part of their professional development. The program's EA will encompass the following themes:

1. Academic Activity: F1 and F2 trainees are required to attend the weekly academic half-day (40 academic half-day activities) during the academic year, as specified in the curriculum.
2. Practical-Based Learning: OR, clinics, ER/trauma call, ward rounds with case-based learning.
3. Professional and Personal Development: mentorship, reflective practice, patient safety/quality workshops.
4. Scholarly Projects: Fellows are expected to attend research methods workshops, abstract/manuscript writing workshops, and conference presentations. Refer to the research longitudinal experience description. The following educational activity map outlines the main themes, sub-themes, and educational methods.

For each selected theme and sub-theme, a description is provided in the resource document “Educational Activities,” which outlines these activities’ definitions and context. Additionally, a comprehensive overview of the methodologies selected for each rotation should be included in this document, detailing their frequency, setting, and anticipated contributions from trainees.

## Simulation:

As a national supervising body, the SCFHS initiated a move toward integrating simulations into fellowship training programs.

Medical simulations involve creating artificial clinical scenarios through which fellows can learn. This process offers several educational advantages. It allows fellows to learn and practice how to deal with rare and/or high-risk clinical scenarios and procedures in a controlled, standardized environment. Immediate and effective feedback significantly impacts knowledge, skills, and attitude. (1,2,3,4)

For the simulation to be effective, the scenarios must closely replicate real clinical situations, including team members, equipment, and environment, followed by timely and effective feedback. According to McGaghie et al.,

effective feedback has three key components: planning, pre-briefing, and feedback provision. (5)

The use of simulations in postgraduate training programs is currently essential, especially within competency-based curricula. Current programs aim to graduate skilled, competent, and independent physicians while maintaining a focus on quality and patient safety. Practically, significant variability may exist in how simulations are used to implement competency-based curricula, and the nature of the specialty is likely to further increase this variability. Establishing standardized needs assessment methods for simulation may pose a challenge for any national organizational body dealing with various ongoing postgraduate training programs.

**Table 9**

| Theme | Learners | Objectives | Modality |
|---|---|---|---|
| Microsurgery Basics | F1 | Set-up, vessel preparation, end-to-end anastomosis, and patency testing | Bench micro stations / validated models |
| Flexor and Extensor Tendon Repair | F1–F2 | Zone-specific core/suture techniques; rehab principles | Wet lab / synthetic models |
| Fracture | F1–F2 | Surgical approaches, reduction, fixation, and splinting. | Wet lab / synthetic models |
| Replantation Protocol | F2 | Team roles, ischemia time, and sequence of repair | Scenario-based simulation with debrief |

# XI. ASSESSMENT AND EVALUATION

## 1. Purpose of Assessment

Assessment plays a vital role in the success of postgraduate training. It guides trainees and trainers toward achieving defined standards, learning outcomes, and competencies. Simultaneously, assessment provides feedback to learners and faculty regarding curriculum development and implementation, teaching methods, and the quality of the learning environment. Reliable and valid assessment is essential for examining curriculum alignment with its objectives, learning methods, and assessment tools. Finally, assessment assures patients and the public that health professionals are safe and competent to practice.

Assessment serves the following purposes:

a. **Assessment for learning**: Also known as formative assessment, trainers utilize information from trainees' performances to diagnose their learning needs and tailor instructions for improvement. This enables faculty and educators to use information regarding trainees' knowledge, understanding, and skills to deliver timely, specific, and constructive feedback. Additionally, it fosters the development of trainees' metacognitive and practical skills, encourages reflection and self-regulated learning, and ultimately helps them become lifelong learners.

b. **Assessment of learning:** Also referred to as summative assessment, this approach is designed to evaluate whether trainees have achieved their intended learning outcomes. It is typically scored and contributes to high-stakes decisions, including progression, certification, or completion of training.

c. **System of assessment:** Also known as Program of Assessment, it represents the relationship among multiple assessment methods collated together, where formative and summative assessments are integrated, complementary, and aligned throughout the specialty training program. It is blueprinted (mapped) against the curriculum roles, competencies, and outcomes. This overall system blueprint, which differs from the exam blueprint, articulates how diverse assessment tools collectively provide evidence of competence. It may include varying levels of detail according to its purpose and is also known as "assessment mapping." This mapping outlines the competencies to be assessed by all types of assessment methods to build a comprehensive, balanced, and fit-for-purpose assessment strategy and helps identify areas wherein assessment is lacking or needs strengthening.

d. **Feedback and evaluation** as assessment outcomes will represent quality metrics that enhance the learning experience. Moreover, it can be utilized for training progression and determining the suitability of undertaking different levels of summative assessment. High-quality feedback should be specific, actionable, and longitudinal and should promote self-assessment. Narrative and meaningful feedback on trainees' performance in work-based assessment and evaluation forms should inform structured action plans, support deliberate practice, and facilitate trainee improvement and progression.

For the sake of organization, assessment will be further classified into two main categories: *Formative* and *Summative*.

# 2. Formative Assessment

## 2.1 General Principles

Formative assessment should be integrated into the curriculum design, grounded in best practices and evidence-based approaches, and aligned with the stated competencies and appropriate tools.

## Purpose of formative assessment:

Formative assessment aims to actively support fellows' growth by guiding learning, verifying progression, and ensuring that they acquire the competencies essential for high-quality professional practice across all health disciplines.

- Enhance learning by offering trainees opportunities to practice, receive immediate feedback, measure their performance, and identify areas for further development and improvement.
- Drive learning and optimize the training process by clarifying expectations for trainees and motivating them to actively pursue suitable training and experiences.
- Provide robust and comprehensive evidence that trainees are progressing toward fulfilling curriculum standards throughout the training program.
- Ensure that trainees are acquiring the required competencies across all domains of effective healthcare practice.
- Verify that trainees possess the essential foundational knowledge, skills, and professional attitudes required for their specialty.
- Confirm that trainees are advancing appropriately in their performance relative to their training stage.

Trainees, as adult learners, should actively seek and utilize feedback to enhance their performance throughout their journey from "novice" to "mastery" levels of competence. Formative assessment, also known as continuous or ongoing assessment, is a key component intentionally integrated throughout the academic year. Its purpose is to provide trainees with timely, meaningful, and actionable feedback that promotes learning and improvement.

Dedicated time should be allocated for trainees to meet with their program director or an equivalent to review performance reports and logs (e.g., ITER, logbook, workplace-based assessment tools). Trainees are expected to take ownership of their development through self-directed learning. The cumulative input from these formative assessment tools is integrated at the end of the year to inform decisions regarding a trainee's advancement to the next training level. Formative assessment instruments will be periodically reviewed and updated as necessary to ensure alignment with SCFHS guidelines and standards. Consistent with the best practices in health professions education, formative assessment will have the following features, tailored to the targeted competencies:

a. Multisource: Select all appropriate tools, including relevant workplace-based assessments, according to competency, training level, and rotation.
b. Comprehensive: covering all learning domains (i.e., knowledge, skills, and attitude—professional behavior).
c. Relevant: focused on workplace-based observations for performance in authentic practice settings.
d. Milestone-oriented competency: reflecting the trainee's expected competencies that match their developmental level.

## 2.2 Formative Assessment Tools

### 2.2.1 Work-based assessment:

Work-based assessment (WBA) is occasionally used interchangeably with workplace-based assessment (WPBA), which refers to the direct observational assessment of a trainee in a real work environment. Recently, it has also been referred to as a supervised learning event (SLE). WBA is among the most recognized and widely utilized approaches for enhancing learning through formative assessment and feedback.

Numerous WBA tools assess a range of competencies, including communication and consultation skills, clinical decision-making and reasoning, and management of patients in contexts wherein diagnostic uncertainty, resource constraints, and public health considerations may exist. Moreover, WBA tools facilitate the assessment of more complex domains, including professionalism, procedural skills, and ethical and legal aspects inherent to clinical practice, which may not be adequately evaluated using traditional assessment methods.

### 2.2.2 Educational Activity (Non-WBA assessment)

EA are part of the trainees' training program, which involves teaching and learning activities to acquire specialty competencies. Examples of contributions to EA can be, but are not limited to, presenting in journal clubs, lectures, morbidity and mortality rounds, grand rounds, and research and scholarly activities.

All formative assessment tools used for formative assessment purposes MUST abide by the **Scoring Categories and Scaling Definitions** in the SCFHS policies.

Table 10

| Doesn't Meet Expectation | Borderline | Meets Expectation | Exceeds Expectation |
|---|---|---|---|
| <50% | 50-69.99% | 70-89.99% | >90% |

To attain the optimum training level outcome, the candidate must complete the compulsory requisition of all selected formative assessment tools.

This is a summary table of the formative assessment tool that trainees must complete:

Table 11

| Subspecialty | Level | Knowledge | | | | | Skill | | | | | | | Attitude |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SOE | EYPT-n't | Academic Activity | CBD | EYPT-Local | OSCE/OSPE | Research | DOPS | Logbook | Volunteering | Other | Mini-CEX | ITER |
| Hand and Wrist Surgery | F1 | | | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | ✓ |
| | F2 | | | ✓ | ✓ | | | ✓ | ✓ | ✓ | | | ✓ | ✓ |

**SOE**: Structured Oral Exam **EYPT-n't**: International Exam EYPT-Local: Progress Test

**DOPS**: Direct observation of procedural Skills **OSCE**: Objective Structured Clinical Examination **CBD**: Case-based Discussion

**OSPE**: Objective Structured Practical Examination **Mini-CEX:** Mini-Clinical Evaluation Exercise **ITER**: In-Training Evaluation Report

**Table 12**

Table of Formative Assessment Tools

| Learning Domains | Assessment/Educational Activity Tool | Requirements (Important details, description, and total frequency of the tool/ academic year) |
|---|---|---|
| Knowledge | Academic Activities | • Includes lectures, journal clubs, and M&M presentations.<br>• F1 and F2 trainees are required to attend the weekly academic half-day (40 academic half-day activities) during the academic year.<br>• Each fellow is expected to complete 4 or more case presentations per year and 4 or more journal club presentations per year as part of the academic activity.<br>• Trainees must attend the academic activities as scheduled. Any excused absence must be approved by the program director. |
| | CBD | • F1 and F2 fellows are required to complete a minimum of 22 CBDs per academic year (at least twice per month), with at least seven satisfactory assessments. |

Table 12 (continued)

<table>
<tr><th>Learning Domains</th><th>Assessment/Educational Activity Tool</th><th>Requirements (Important details, description, and total frequency of the tool/ academic year)</th></tr>
<tr><td rowspan="3">Skills</td><td>Research</td><td>
<ul>
<li>F1 and F2 fellows are required to conduct one research project during their training. The research project is conducted over the two years of training as follows:</li>
</ul>
<table>
<tr><td>F1 (Q1–Q2)</td><td>Identify the research question; conduct a literature review; finalize the proposal; submit to the IRB, if required.</td></tr>
<tr><td>F1 (Q3–Q4)</td><td>Begin data collection; present the proposal and/or early data during an academic day.</td></tr>
<tr><td>F2 (Q1–Q2)</td><td>Complete data collection and analysis; draft the manuscript.</td></tr>
<tr><td>F2 (Q3)</td><td>Submit an abstract to a national or international meeting; revise the manuscript.</td></tr>
<tr><td>F2 (Q4)</td><td>Submit the manuscript; deliver the capstone presentation.</td></tr>
</table>
</td></tr>
<tr><td>DOPS</td><td>
<ul>
<li>F1 and F2 fellows are required to complete a minimum of 11 DOPS per academic year (at least one per month), with assessments rated at least satisfactory.</li>
</ul>
</td></tr>
<tr><td>Logbook</td><td>
<ul>
<li>F1 and F2 fellows are required to complete a logbook during the training program.</li>
<li>In addition to the numerical requirement, logbooks will be evaluated for overall case diversity, case complexity, and the distribution of diagnoses across different aspects of hand and wrist surgery. The logbook should be discussed with the program director every six months.</li>
</ul>
</td></tr>
</table>

Table 13

**Table 12 (continued)**

| Learning Domains | Assessment/Educational Activity Tool | Requirements (Important details, description, and total frequency of the tool/ academic year) |
|---|---|---|
| | | • Fellows are required to complete all logbook requirements in the electronic system. |
| | Mini-CEX | • F1 and F2 fellows are required to complete a minimum of 11 Mini-CEX assessments per academic year (at least one per month), with assessments rated at least satisfactory. |
| Attitude | ITER | • For both F1 and F2, all ITERs must be completed. ITERs are used as end-of-rotation evaluations in accordance with SCFHS policies and criteria. |

Table 14: Logbook requirements

| Category | Target (2 years) |
|---|---|
| Fracture fixation (distal radius, scaphoid, metacarpal/phalanges) | ≥70 |
| Soft tissue coverage (skin grafts, local/regional flaps) | ≥10 |
| Tendon repairs (flexor/extensor across zones) | ≥50 |
| Peripheral nerve procedures (neurorrhaphy, grafting, and decompression, including carpal and cubital tunnel procedures | ≥50 |
| Arthroscopy/wrist procedures | ≥15 |
| Pediatric hand and congenital procedures | ≥10 |
| Others (tumors, infections, compartment syndrome, fasciotomy) | ≥20 |

## Evaluation:

Fellows should actively seek feedback throughout their training, and trainers are expected to provide timely formative assessments. The SCFHS will provide an electronic system to facilitate the communication and analysis of data from formative assessments. Both trainers and trainees are expected to adhere to the requirements related to the use of assessments and EA, including specified forms, frequencies, distributions, and deadlines for implementing the evaluation processes. To achieve optimal training outcomes, trainees must complete all training requirements.

Fellows will be evaluated based on their program's specific requirements, which include EA and assessment tools such as formative assessments and WBAs. Each assessment will be documented using standardized forms and reflected in evaluation reports that capture feedback, track improvements, and demonstrate progression. Fellows are expected to fully comply with their program's requirements and activities; failure to do so may result in disciplinary action.

## 2.3. Promotion of the trainee:

Fellows' promotion from one level to the next will be determined in accordance with SCFHS regulations and applicable bylaws. This is generally based on the successful completion of the curriculum's required assessments, EA, evaluation forms, and specialty-specific requirements, as well as satisfactory overall performance and fulfillment of any remediation or action plans, if applicable. Noncompliance with these requirements may result in disciplinary actions under SCFHS regulations, which may include repeating the entire academic year or a portion thereof.

## 2.4. Final In-Training Evaluation Report (FITER)

The FITER is a comprehensive final evaluation required at the end of training to determine the fellow's readiness for independent practice. Its format and content are governed by SCFHS regulations and may evolve over time. Submission of the FITER is part of the process for certification eligibility, in accordance with SCFHS requirements.

# 3. Summative Assessment

## 3.1 General Principles

*Summative assessment* is the component primarily designed to facilitate informed decisions regarding trainees' competence and readiness to progress or enter independent practice. Unlike formative assessment, its main purpose is not to provide constructive feedback but rather to judge whether the required standards have been fulfilled. For additional details, please refer to the General Bylaws and Executive Policy of Assessment (available online at www.scfhs.org).

To be eligible for final examinations, trainees will receive a "Certification of Training Completion" upon successfully completing all training rotations in accordance with SCFHS regulations.

Table 15

| Learning Domain | Summative Assessment Tools | Exam Format |
|---|---|---|
| **Knowledge** | - Final Written Examination | 80–120 MCQs |

**Table 15 (continued)**

| | | |
|---|---|---|
| **Skills** | SOE | 3–7 stations |

## 3.2 Certification of Training Completion

The Certification of Training Completion and fellows' eligibility for final examinations are governed by SCFHS regulations and policies. Trainees must fulfill all the requirements outlined by the SCFHS and their training program, including the successful completion of rotations, assessments, and any additional mandated components (please refer to www.scfhs.org). This certification will be issued and approved by the supervisory committee or its equivalent, according to SCFHS policies.

## 3.3 Final Specialty *Examinations*

The Final Specialty Examination serves as a summative assessment component that grants trainees specialty certifications. It comprises the following two elements:

**Final Written Examination:** The exam will consist of 80–120 multiple-choice questions. Eligibility for this exam requires trainees to obtain a "Certification of Training Completion."

**Blueprint Outlines:** The content of the following table is provided for demonstration purposes. Please refer to the most up-to-date version published on the SCFHS website.

**Table 16**

These topics are for both oral and written examinations.

| No. | Sections | Percentage |
|---|---|---|
| 1 | Congenital hand anomalies | 10% |
| 2 | Amputations and replantation | 10% |
| 3 | Hand arthritis | 10% |
| 4 | Hand fractures and wrist fractures | 10% |
| 5 | Soft tissue injuries | 10% |
| 6 | Hand and wrist masses | 10% |
| 7 | Soft tissue contractures | 10% |
| 8 | Hand and wrist infections | 10% |
| 9 | Soft tissue coverage | 10% |
| 10 | Wrist arthritis | 10% |
| **Total** | | **100%** |

Notes:

- Blueprint distributions of the examination may differ by up to +/-5% in each section.
- Percentages and content are subject to change at any time. See the SCFHS website for the most up-to-date information.
- Research, Ethics, Professionalism, and Patient Safety are incorporated within various domains.

BB) Final Oral Exam: The exam, in the form of a Structured Oral Examination (SOE) with 3-7 stations, follows the written exam. The content of Table 16 is for demonstration purposes only; please refer to the most recently updated version published on the SCFHS website.

The blueprints of the final written, clinical, and practical examinations are presented in Table 16.

Table 17

| General Information | |
|---|---|
| **Exam Format** | - The final clinical/practical examination shall consist of five graded stations, each with a **12-minute** encounter.<br>- You will encounter **1–2** examiners at each station. |
| **Conduct of Evaluation** | |
| **Station Information** | - The 3–7 stations consist of Structured Oral Exam (SOE) stations.<br>- All stations shall be designed to assess integrated clinical/practical encounters.<br>- Domains and sections may overlap, and more than one category may be evaluated within a station.<br>- Each station may address one or more cases or scenarios.<br>- SOE stations are designed with preset questions and ideal answers.<br>- A scoring rubric for post-encounter questions is also established in advance, if applicable. |
| **Time Management** | - The examiner is aware of how much material needs to be covered in each station, and it is their responsibility to manage the time accordingly.<br>- The examiner will give you every opportunity to address all questions within the station.<br>- The examiner may indicate that, “In the interest of time, you will need to move to the next question.” This type of comment has no bearing on your performance. It is simply an effort to ensure that you complete the station. If you are unclear about something during the station, ask the examiner to clarify.<br>- - Some stations may finish early; if this occurs, the examiner will end the encounter. |
| **Examiner Professionalism** | - The examiners have been instructed to interact with you professionally; do not be put off if they are not as warm and friendly toward you as usual.<br>- We recognize that this is a stressful situation, and the examiner is aware that you may be nervous. If you need a moment to collect your thoughts before responding, indicate this to the examiner. |

Table 17 (continued)

| General Information | |
|---|---|
| | - The nomination of examiners is based on the principle that candidates are assessed by qualified examiners selected and appointed by the SCFHS. Examiners are not obligated to share their personal information or professional details with candidates. |
| **Conflicts** | - The examiners come from across the country. You will likely recognize some of them and may have worked with some of them in a clinical or academic capacity at your center. This is acceptable to the SCFHS and is not considered a conflict unless you or the examiner perceive it as such (e.g., if the examiner contributed substantially to your training or evaluation or if you have another personal relationship with the examiner).<br>- Identify any conflict at the time of introduction; examiners have been instructed to do the same. Examiners will alert SCFHS staff, and every attempt will be made to find a suitable replacement for the station. |
| **Confidentiality** | - Electronic devices are not permitted.<br>- Communication with other candidates during the evaluation is prohibited. |

For additional details on the final examinations, please refer to the General Bylaws of Training in Postgraduate Programs and General Assessment Bylaws (available online: www.scfhs.org)

# XI. PROGRAM AND COURSE EVALUATION

The SCFHS will apply various measures to evaluate this curriculum's implementation. The training outcomes of this program will be reviewed using the quality assurance framework endorsed by the Central Training Committee of the SCFHS. The trainee assessment results (both formative and summative) will be analyzed and mapped against the curriculum content. Additional indicators incorporated into the evaluation process include:

- Annual fellows' satisfaction survey reports.
- Reports from fellows' evaluations of faculty members.
- Reports from fellows' evaluations of training rotations.
- Annual survey data from program directors.
- Data obtained through program accreditation and accreditation review reports.
- Reports gathered from direct field communications with fellows and trainers.
- Quality reports and metrics from Standards and Quality Departments (e.g., Scientific Council reports, training center reports, Code Blue data and reports, and related surveys).

Goal-Based Evaluation: The achievement of the intended outcomes or competencies will be evaluated at the end of each stage to assess the curriculum delivery's effectiveness. Any deficiencies will be addressed in the subsequent stage by utilizing the time allocated to fellow-selected topics and professional sessions.

In addition to expert subject-matter input and best practices drawn from benchmarked international programs, the SCFHS will apply a robust approach to ensure that this curriculum incorporates all the relevant data available at the time of future revisions.

*Note: Numeric targets are illustrative; final numbers are set by the Scientific Council and aligned with SCFHS standards.*

# XII. POLICIES AND PROCEDURES

This curriculum outlines the means, materials, and learning objectives that trainees and trainers will use to achieve the identified educational outcomes. The SCFHS maintains a comprehensive set of "General Bylaws of Training in Postgraduate Programs" and "Executive Policies," published on its official website, which govern all training-related processes. These include, but are not limited to, general bylaws of training, assessment, and accreditation, as well as executive policies on admission, registration, formative assessment and promotion, examination, trainee representation and support, duty hours, and leave. All trainees, trainers, and supervisors are required to adhere to the most current versions of these online bylaws and policies, which are accessible via the official SCFHS website.

# XII. APPENDICES

## Appendix A: Academic Half-Day (Illustrative 20-Week Cycle)

**Table 18**

| Week | Theme | Session Types |
|---|---|---|
| 1 | Orientation and Core Hand Anatomy | Introduction, lecture, and imaging review |
| 2 | Flexor Tendon Injuries | Case-based session and journal club |
| 3 | Peripheral Nerve Injuries | Lecture and CBD workshop |
| 4 | Distal Radius and Carpal Injuries | Case conference and skills session |
| 5 | Micro Flaps and Coverage | Lecture and simulation |
| 6 | Wrist Arthroscopy Basics | Lecture and video session |
| 7 | Congenital Hand | Lecture and case-based session |
| 8 | Infections | Morbidity and mortality conference and case-based session |
| 9 | Burn Hand and Contractures | Lecture and rehabilitation panel |
| 10 | Replantation and Ischemia Protocols | Simulation and debriefing |
| 11 | Rehabilitation and Splinting | Workshop with OT/PT |
| 12 | Research Methods and EBM | Journal club and introduction to statistics |

**Table 18 (continued)**

| Week | Theme | Session Types |
|---|---|---|
| 13 | Arthritis | Lecture |
| 14 | Hand Examination | Video session |
| 15 | Wrist Examination | Video session |
| 16 | Dupuytren's Disease | Lecture |
| 17 | Compartment Syndrome | Lecture |
| 18 | Extensor Tendon Injuries | Case-based session and journal club |
| 19 | Hand Masses and Tumors | Case-based session and journal club |
| 20 | Nail Bed Injuries | Case-based session and journal club |

# XIII. REFERENCES


1. King Saud University Hospital Hand Fellowship Manual
2. ACGME Program Requirements for Graduate Medical Education in Hand Surgery
3. ASSH Hand.e Modules. American Society for Surgery of the Hand



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