

# The Hand Surgery Milestone Project

*A Joint Initiative of*

The Accreditation Council for Graduate Medical Education

The American Board of Orthopaedic Surgery

The American Board of Plastic Surgery, Inc.



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The Milestones are designed only for use in evaluation of fellows in the context of their participation in ACGME-accredited residency or fellowship programs. The Milestones provide a framework for the assessment of the development of the fellow in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

## Hand Surgery Milestones

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## Milestone Reporting

This document presents Milestones designed for programs to use in semi-annual review of fellow performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for fellow performance as a fellow moves from entry into fellowship through graduation. In the initial years of implementation, the Review Committee will examine Milestone performance data for each program's fellows as one element in the Next Accreditation System (NAS) to determine whether fellows overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe each fellow's current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert in the subspecialty. These levels do not correspond with post-graduate year of education.

Selection of a level implies that the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

**Level 1:** The fellow demonstrates milestones expected of an incoming fellow.

**Level 2:** The fellow is advancing and demonstrates additional milestones, but is not yet performing at a mid-fellowship level.

**Level 3:** The fellow continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for fellowship.

**Level 4:** The fellow has advanced so that he or she now substantially demonstrates the milestones targeted for fellowship. This level is designed as the graduation target.

**Level 5:** The fellow has advanced beyond performance targets set for fellowship and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional fellows will reach this level.

## **Additional Notes**

Level 4 is designed as the graduation *target* and *does not* represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the fellowship program director. Study of Milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data are of sufficient quality to be used for high-stakes decisions.

Examples are provided with some milestones. Please note that the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to the ACGME supervision guidelines, as well as to institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

*Answers to Frequently Asked Questions about Milestones are available on the Milestones web page:*

<http://www.acgme.org/acgme/web/Portals/0/MilestonesFAQ.pdf>.

The diagram below presents an example set of milestones for one sub-competency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow's performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that fellow's performance in relation to those milestones.

Acquired Conditions (Tumor, Dupuytren's, tenosynovitis, vascular, contractures) — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>Understands soft tissue and joint pathology of contractures</li> <li>Understands pathophysiology of circulatory disorders of the upper extremity</li> <li>Understands indications and surgical principles of routine procedures (e.g., surgery for ganglion, giant cell tumor, trigger finger, De Quervain's, amputations)</li> </ul>	<ul style="list-style-type: none"> <li>Understands principles of diagnosis and indications for treatment of bone and soft tissue neoplasms (e.g., biopsy, imaging studies, non-invasive vascular testing)</li> <li>Understands the principles of evaluation of the stiff hand</li> <li>Understands the diagnosis and evaluation of circulatory disorders of the hand including non-invasive vascular testing and angiography</li> <li>Understands the pathophysiology of other tendinopathies (e.g., lateral epicondylitis, Intersection syndrome, extensor carpi ulnaris [ECU] tendonitis, subluxation)</li> </ul>	<ul style="list-style-type: none"> <li>Describes treatment for Dupuytren's and tendinopathies (splinting, steroid injections, other modalities)</li> <li>Understands the surgical principles of complex procedures (e.g., surgery for Dupuytren's, enchondroma, sarcoma, ulnar artery thrombosis, pseudoaneurysm, stiff joint)</li> </ul>	Understands the principles of surgical and non-surgical management of complications and secondary deformities after treatment of acquired hand problems	<ul style="list-style-type: none"> <li>Publishes research findings on this topic in the literature and presents the work at national hand surgery meetings</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher level(s).

**Acquired Conditions (Tumor, Dupuytren's, tenosynovitis, vascular, contractures) — Medical Knowledge**

Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Understands soft tissue and joint pathology of contractures</li> <li>• Understands pathophysiology of circulatory disorders of the upper extremity</li> <li>• Understands indications and surgical principles of routine procedures (e.g., surgery for ganglion, giant cell tumor, trigger finger, De Quervain's, amputations)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands principles of diagnosis and indications for treatment of bone and soft tissue neoplasms (e.g., biopsy, imaging studies, non-invasive vascular testing)</li> <li>• Understands the principles of evaluation of the stiff hand</li> <li>• Understands the diagnosis and evaluation of circulatory disorders of the hand, including non-invasive vascular testing and angiography</li> <li>• Understands the pathophysiology of other tendinopathies (e.g., lateral epicondylitis, intersection syndrome, extensor carpi ulnaris [ECU] tendonitis, subluxation)</li> </ul>	<ul style="list-style-type: none"> <li>• Describes treatment for Dupuytren's and tendinopathies (splinting, steroid injections, other modalities)</li> <li>• Understands the surgical principles of complex procedures (e.g., surgery for Dupuytren's, enchondroma, sarcoma, ulnar artery thrombosis, pseudoaneurysm, stiff joint)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the principles of surgical and non-surgical management of complications and secondary deformities after treatment of acquired hand problems</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes research findings on this topic in the literature and presents the work at national hand surgery meetings</li> </ul>

                                  

**Comments:**

<b>Acquired Conditions (Tumor, Dupuytren’s, tenosynovitis, vascular, contractures) — Patient Care</b>				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Obtains focused history and performs focused physical examination on patients with acquired hand conditions</li> <li>• Orders diagnostic and imaging studies</li> <li>• Formulates a treatment plan and performs routine procedures (e.g., surgery for ganglion, giant cell tumor, palmar Dupuytren’s, trigger finger, injections)</li> <li>• Fabricates splints and initial post-surgical dressings</li> <li>• Manages routine post-operative care</li> </ul>	<ul style="list-style-type: none"> <li>• Interprets diagnostic and imaging studies</li> <li>• Formulates a treatment plan and performs complex procedures with assistance (e.g., surgery for melanoma, Dupuytren’s contracture, chronic hand ischemia, hypothenar hammer, stiff hand, swan neck)</li> <li>• Recognizes complications and enlists help</li> <li>• Prescribes post-operative rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>• Manages work-related injuries and return-to-work issues</li> <li>• Manages chronic regional pain syndromes with appropriate referral</li> </ul>	<ul style="list-style-type: none"> <li>• Independently performs complex procedures for acquired conditions (e.g., surgery for sarcoma, Dupuytren’s at proximal interphalangeal joint [PIPJ] and metacarpophalangeal joint [MCPJ], sympathectomy, contracture requiring major bone and soft tissue release and reconstruction, major vascular reconstruction, including grafting)</li> <li>• Independently manages complications</li> <li>• Independently manages secondary deformities</li> </ul>	<ul style="list-style-type: none"> <li>• Contributes to the practice of hand surgery through research and development of innovative treatments</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				



Arthritis — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Understands the pathophysiology of degenerative arthritis of the hand</li> <li>• Understands the pathophysiology of post-traumatic arthritis of the hand</li> <li>• Describes the anatomy of the small joints of the hand and wrist</li> <li>• Understands indications for diagnostic joint imaging and laboratory studies</li> <li>• Understands the biomechanical principles of joint motion</li> <li>• Understands the non-operative treatment of arthritis</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the pathophysiology and medical management of rheumatoid arthritis</li> <li>• Understands the pathophysiology and medical management of gout, pseudogout, and other inflammatory arthritides</li> <li>• Understands the pathophysiology of degenerative arthritis of the wrist</li> <li>• Understands the pathophysiology of post-traumatic arthritis of the wrist</li> </ul>	<ul style="list-style-type: none"> <li>• Understands indications and surgical treatment options for osteoarthritis</li> <li>• Understands the indications, principles, and anatomy of wrist arthroscopy</li> <li>• Understands the materials principles of synthetic implants, such as silicone, titanium, pyrocarbon</li> <li>• Understands the pathophysiology of carpal instability</li> <li>• Understands post-operative rehabilitation principles for arthritis</li> </ul>	<ul style="list-style-type: none"> <li>• Understands indications and surgical treatment options for rheumatoid arthritis</li> <li>• Understands surgical treatment options for other inflammatory arthritides</li> <li>• Understands surgical treatment options for advanced carpal instability (scapholunate advanced collapse [SLAC], scaphoid nonunion advanced collapse [SNAC])</li> <li>• Understands principles of post-operative rehabilitation for rheumatoid arthritis (RA)</li> <li>• Understands the long-term performance of implants</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes research findings on this topic in the literature</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Arthritis — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Obtains focused history and performs focused physical examination of patient with osteoarthritis of hand and/or wrist</li> <li>• Obtains focused history and performs focused physical examination of patient with post-traumatic arthritis of hand and/or wrist</li> <li>• Prescribes non-operative management of osteoarthritis and post-traumatic arthritis</li> <li>• Performs joint aspiration and injection</li> </ul>	<ul style="list-style-type: none"> <li>• Obtains focused history and performs focused physical examination of patient with rheumatoid arthritis</li> <li>• Obtains focused history and performs focused physical examination of patient with ulnar-sided wrist pain</li> <li>• Performs thumb carpometacarpal joint (CMC) arthroplasty</li> </ul>	<ul style="list-style-type: none"> <li>• Performs diagnostic wrist arthroscopy</li> <li>• Performs small joint fusions in the hand</li> <li>• Performs salvage procedures (proximal row carpectomy [PRC], total wrist fusion)</li> <li>• Performs rheumatoid synovectomies (joint and tendon)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs therapeutic wrist arthroscopy</li> <li>• Manages complications of implant arthroplasty</li> <li>• Performs limited carpal fusions (e.g., mid-carpal fusion)</li> <li>• Performs small joint arthroplasty, including implant with or without soft tissue balancing</li> </ul>	<ul style="list-style-type: none"> <li>• Performs total wrist arthroplasty</li> <li>• Performs distal radioulnar joint [DRUJ] reconstruction</li> </ul>
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<b>Comments:</b>				

Congenital — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5 - Advanced
<ul style="list-style-type: none"> <li>• Understands the embryology of the upper limb</li> <li>• Recognizes routine congenital hand differences (syndactyly, polydactyly, longitudinal deficiencies)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the classifications of upper extremity congenital differences (e.g., polydactyly, syndactyly, transverse and longitudinal deficiencies)</li> <li>• Demonstrates knowledge of associated medical conditions (thrombocytopenia absent radius, Fanconi’s anemia, vertebral anomalies, anal atresia, cardiovascular anomalies, tracheoesophageal fistula, renal and/or radial anomalies, limb defects [VACTERAL])</li> </ul>	<ul style="list-style-type: none"> <li>• Understands non-operative treatment for congenital conditions (e.g., splinting for radial longitudinal deficiency or camptodactyly)</li> <li>• Understands the principles of the surgical treatment of common congenital hand differences</li> <li>• Develops surgical treatment plan for thumb hypoplasia (e.g., first web space deepening, opponensplasty and ulnar collateral ligament [UCL] reconstruction)</li> <li>• Develops treatment plan for pollicization, including timing and post-operative management</li> </ul>	<ul style="list-style-type: none"> <li>• Understands adverse surgical sequelae following hand reconstruction (e.g., web creep, joint instability, tendon imbalance, growth arrest )</li> <li>• Demonstrates understanding of treatment for symbrachydactyly/ polysyndactyly (e.g., Poland syndrome)</li> <li>• Understands the principles of distraction lengthening</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates understanding of diagnosis and indications for treatment for complex congenital hand differences (e.g., mirror hand, microvascular toe transfer)</li> <li>• Publishes research findings on this topic in the literature</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Congenital — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Obtains history and performs basic physical examination</li> <li>• Provides basic post-operative management and splinting</li> </ul>	<ul style="list-style-type: none"> <li>• Obtains focused history and performs focused physical examination</li> <li>• Interprets imaging studies</li> <li>• Recognizes surgical indications</li> <li>• Prescribes appropriate non-operative management, splinting</li> <li>• Identifies potential post-operative complications</li> <li>• Performs congenital trigger thumb release</li> </ul>	<ul style="list-style-type: none"> <li>• Performs excision of polydactylous digit without need for joint reconstruction</li> <li>• Performs uncomplicated congenital reconstructions (e.g., simple syndactyly repair with skin flaps and grafts, constriction band release)</li> <li>• Develops treatment plans for complex syndactyly, including nail fold and osseous reconstruction</li> </ul>	<ul style="list-style-type: none"> <li>• Designs incision and performs procedures for congenital conditions (e.g., excision and reconstruction of Wassel 2-6 thumb, syndactyly release, 4 flap Z-plasty and reconstruction of ulnar collateral ligament for hypoplastic thumb, osteotomies)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs complex procedures (e.g., pollicization, macrodactyly debulking)</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Nerve — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Understands peripheral nerve anatomy</li> <li>• Understands classification of nerve injuries</li> <li>• Understands the principles of sensory and motor examination</li> <li>• Understands the physiology of nerve repair, grafting, and regeneration</li> <li>• Understands physiology of nerve compression</li> </ul>	<ul style="list-style-type: none"> <li>• Understands brachial plexus anatomy</li> <li>• Understands and can interpret electrodiagnostic evaluations</li> <li>• Understands the pathophysiology and treatment of neuromas</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the pathophysiology and treatment of chronic pain syndromes</li> <li>• Understands the pathophysiology of thoracic outlet syndrome</li> <li>• Understands the principles of sensory reeducation and desensitization</li> <li>• Understands and can interpret imaging and electrodiagnosis of brachial plexus disorders</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the principles of nerve transfer</li> <li>• Describes the treatment principles for brachial plexus injuries</li> <li>• Understands treatment options for secondary or recurrent nerve compression</li> <li>• Describes treatment options for peripheral nerve palsies and tetraplegia</li> <li>• Describes treatment options for upper extremity spasticity (e.g., due to stroke, cerebral palsy, or traumatic brain injury)</li> <li>• Understands rehabilitation after nerve and tendon transfers</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes research findings on this topic in the literature</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Nerve — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Obtains focused history and performs focused physical examination for peripheral nerve injury</li> <li>• Obtains focused history and performs focused physical examination for peripheral nerve compression</li> <li>• Performs carpal tunnel release</li> </ul>	<ul style="list-style-type: none"> <li>• Obtains focused history and performs focused physical examination for the brachial plexus</li> <li>• Performs digital nerve repair</li> <li>• Treats primary neuroma operatively and non-operatively</li> <li>• Surgically treats ulnar nerve compression at wrist and elbow</li> </ul>	<ul style="list-style-type: none"> <li>• Performs major peripheral nerve repair</li> <li>• Treats recurrent neuroma operatively and non-operatively</li> <li>• Treats recurrent or secondary nerve compression</li> </ul>	<ul style="list-style-type: none"> <li>• Performs nerve grafting</li> <li>• Performs late reconstruction of peripheral nerve injuries (e.g., tendon transfer, joint stabilization)</li> <li>• Manages complications of nerve surgery (e.g., performs neurolysis)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs brachial plexus reconstruction</li> <li>• Performs nerve transfers</li> <li>• Performs chemo denervation injections for spastic conditions</li> <li>• Performs functional muscle transfers</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Trauma: Bone, Joint — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Understands the pathomechanics of common fractures/dislocations and soft tissue injuries</li> <li>• Describes the anatomy and function of the upper extremity</li> <li>• Understands the principles of splinting and casting</li> <li>• Understands basic imaging principles and techniques</li> <li>• Understands the biology of osseous and ligamentous healing</li> <li>• Describes the effects of medical comorbidities on fracture healing (e.g., Vitamin D deficiency, osteoporosis, smoking)</li> <li>• Understands the Salter-Harris fracture classification</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the basic biomechanics of the upper extremity</li> <li>• Demonstrates knowledge of the pathologic anatomy of hand fractures, dislocations, and ligamentous injuries</li> <li>• Understands the indications for advanced imaging</li> <li>• Understands surgical approaches and fixation techniques for hand fractures/dislocations</li> <li>• Demonstrates knowledge of associated hand injury patterns (e.g., median nerve injury and/or scapholunate ligament (SL) injury with distal radius fractures)</li> <li>• Recognizes surgical indications (e.g., median nerve dysfunction, instability, articular step off/gap)</li> <li>• Understands principles of remodeling in the pediatric hand and forearm</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates knowledge of current literature regarding fracture/dislocation classifications and therapeutic alternatives</li> <li>• Understands the natural history of distal radius fractures</li> <li>• Understands the implications of forearm and elbow injuries</li> <li>• Understands the biomechanics of different implant choices</li> <li>• Understand the advantages and disadvantages of different fixation techniques</li> <li>• Understands the principles of post-operative hand therapy regimens</li> <li>• Understands the indications for autologous bone grafting and bone substitutes</li> <li>• Understands the etiology, management, and functional limitations of non-union, malunion, and chronic subluxation</li> <li>• Understands the sequelae and management of pediatric hand and forearm injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Understands, analyzes and evaluates controversies within field (e.g. fixation techniques, fracture pattern)</li> <li>• Understands the principles of prosthetics and secondary rehabilitation</li> <li>• Understands the risks and consequences of early physeal closure</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes research findings on this topic in the literature</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Trauma: Bone, Joint — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Orders and interprets basic imaging studies</li> <li>• Performs simple closed reduction and splinting of pediatric and adult fractures/dislocations</li> <li>• Provides basic post-operative management and rehabilitation</li> <li>• Obtains a focused history and performs a focused physical examination of bone and joint traumatic injuries</li> <li>• Develops a treatment plan for associated soft tissue injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Orders and interprets advanced imaging (e.g., computed tomography [CT] for comminuted articular fractures)</li> <li>• Recognizes stable/unstable fractures/dislocations (including CMC)</li> <li>• Independently formulates a treatment plan for simple fracture dislocations</li> <li>• Performs surgical fixation of simple extra-articular fractures/dislocations</li> <li>• Performs surgical exposure for fracture</li> <li>• Manages open distal phalanx physeal injuries</li> <li>• Manages simple complications (e.g., infections, acute compression neuropathy, compartment syndrome)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs surgical reduction and fixation of simple intra-articular fractures (e.g., no more than two articular fragments)</li> <li>• Independently formulates a treatment plan for patients with comorbidities and/or mangled extremity</li> <li>• Surgically treats CMC fracture dislocations</li> <li>• Performs reduction and repair of ligamentous injuries (MCP and PIP joints)</li> <li>• Performs reduction and pin fixation of pediatric phalangeal neck fractures</li> </ul>	<ul style="list-style-type: none"> <li>• Performs arthroscopic diagnosis and debridement for traumatic injuries of the wrist</li> <li>• Treats DRUJ dislocation and/or triangular fibrocartilage complex (TFCC) injury</li> <li>• Performs reduction and fixation of complex hand and wrist fractures and dislocations (e.g., comminuted intra-articular fractures, intra-articular PIP injuries, perilunate injuries, scapholunate ligament injuries)</li> <li>• Surgically treats complex complications (e.g., those requiring osteotomy, revision fixation, bone grafting, nonunion surgery surgeries, hardware replacement )</li> <li>• Performs operative reduction and fixation of displaced scaphoid fracture</li> <li>• Modifies and adjusts post-operative plan when indicated</li> <li>• Provides surgical management of physeal growth arrest (e.g., wedge osteotomy, epiphysiodesis)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs complex arthroscopic/minimally invasive fixation techniques (e.g., arthroscopic scaphoid internal fixation)</li> <li>• Performs revision surgery for complex nonunions and dislocations (e.g., displaced scaphoid with avascular necrosis [AVN])</li> <li>• Performs physeal bar excision</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				



Soft Tissue Trauma, Infections — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Manages acute and chronic infections of the hand</li> <li>• Understands biology and risk factors for primary wound healing</li> <li>• Understands indications for imaging of soft tissue conditions</li> <li>• Understands physiology and presentation of compartment syndrome</li> <li>• Understands the signs and symptoms of infections (e.g., purulent flexor tenosynovitis, deep space infections, necrotizing fasciitis)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the use of biologic and negative pressure dressings</li> <li>• Understands anatomy and physiology of grafts and flaps (e.g., random, fascial, axial, microvascular flaps)</li> <li>• Understands the physiology of thermal injury</li> <li>• Understands the presentation and natural history of septic arthritis and osteomyelitis</li> <li>• Recognizes and understands treatment of non-bacterial hand infections (e.g., fungal, mycobacterial)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the physiology of ischemic reperfusion</li> <li>• Understands indications for amputation vs. salvage of amputated parts</li> <li>• Understands options for soft tissue reconstruction of the hand, including burn care</li> <li>• Understands options for post-traumatic thumb reconstruction at different levels (interphalangeal [IP], MP, CMC)</li> <li>• Understands conditions that simulate infection (gout, synovitis, a factitious disorder)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the timing and sequencing of treatment of mutilating soft tissue injuries (crush, ischemic, burn, gunshot wound)</li> <li>• Understand the potential causes, monitoring, and treatment of the ischemic failing flap or replanted part</li> <li>• Understands indications and selection of local, regional, and distant flaps for hand reconstruction</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the physiology and indications for allotransplantation</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Soft Tissue Trauma, Infections — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Applies and manages negative pressure wound therapy</li> <li>• Completes fingertip amputations</li> <li>• Assesses level of burn injury</li> <li>• Performs debridement of traumatic and superficial burn wounds</li> <li>• Recognizes and diagnoses compartment syndrome</li> </ul>	<ul style="list-style-type: none"> <li>• Performs skin grafting</li> <li>• Manages acute infections of the hand</li> <li>• Manages purulent flexor tenosynovitis</li> <li>• Performs deep burn debridement</li> <li>• Decompresses hand and forearm compartments</li> <li>• Uses microsurgical techniques in a simulated environment</li> </ul>	<ul style="list-style-type: none"> <li>• Performs uncomplicated soft tissue coverage (e.g., cross-finger, Moberg, flag flaps)</li> <li>• Performs vascular repair (wrist level or proximal)</li> <li>• Manages chronic infections of the hand (e.g., fungal, mycobacterial, osteomyelitis)</li> <li>• Manages high-pressure injection injuries</li> <li>• Provides post-operative management of flaps, including monitoring vascularity</li> </ul>	<ul style="list-style-type: none"> <li>• Performs digital and/or hand replantation and revascularization</li> <li>• Performs complex soft tissue coverage procedures (e.g., groin, radial forearm, neurovascular island and fillet flaps, microvascular tissue transfer)</li> <li>• Manages complications of failed flap and replantation/revascularization</li> </ul>	<ul style="list-style-type: none"> <li>• Performs toe-to-hand transfer</li> <li>• Performs hand transplant</li> <li>• Performs complex reconstruction of hand burns</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Tendon — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Describes tendon anatomy, biology, principles of tendon healing and nutrition</li> <li>• Describes principles of flexor and extensor tendon repair (e.g., core and epitendinous suturing, suture location)</li> <li>• Describes tendon biomechanics (e.g., pulley system, bowstringing)</li> <li>• Understands the clinical presentation of traumatic tendon conditions and injuries (e.g., zone I-V flexor, and I-VIII extensor tendon injuries)</li> </ul>	<ul style="list-style-type: none"> <li>• Understands the presentation of closed tendon ruptures (e.g., flexor digitorum profundus [FDP] avulsions, sagittal band ruptures, extensor pollicis longus [EPL] rupture)</li> <li>• Understands principles of tenodesis</li> <li>• Describes principles of tendon transfers and tendon grafting</li> </ul>	<ul style="list-style-type: none"> <li>• Understands treatment principles for flexor tendon and extensor tendon injuries</li> <li>• Understands treatment principles for closed tendon injuries (e.g., timing and procedures for FDP avulsions and sagittal band ruptures)</li> <li>• Describes tendon transfers for radial, median, and ulnar nerve palsies</li> <li>• Describes reconstruction for combined median and ulnar nerve palsies</li> <li>• Describes reconstruction for complex tendon ruptures (e.g., rheumatoid disease with extensor or flexor tendon ruptures, tendon ruptures following open reduction and internal fixation [ORIF] of distal radius fractures, flexor tendon ruptures following hook of hamate fractures)</li> <li>• Describes rehabilitation principles (e.g., active and passive rehabilitation protocols for extensor and flexor tendon injuries, the timing of rehabilitation, work of flexion, gliding resistance)</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates understanding of secondary procedures for tendon injuries (e.g., tenolysis, staged tendon reconstruction, pulley reconstruction)</li> <li>• Demonstrates understanding of management of complications following tendon repair (e.g., rupture of repaired tendon, bowstringing)</li> <li>• Demonstrates understanding and treatment for secondary tendon imbalance (e.g., swan neck, Boutonniere deformity, mallet finger)</li> <li>• Understands treatment options for patients with systemic conditions requiring tendon reconstruction, tendon transfer, or treatment for spasticity (e.g., traumatic brain injury, cerebral palsy, stroke)</li> </ul>	<ul style="list-style-type: none"> <li>• Publishes clinical and research work in the literature</li> </ul>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Comments:</b>				

Tendon — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Obtains a focused history and performs a focused physical examination for the patient with a tendon injury</li> <li>• Constructs initial post-surgical dressings and splints</li> <li>• Provides operative and non-operative management of extensor tendon injuries</li> </ul>	<ul style="list-style-type: none"> <li>• Performs repair of flexor tendon injuries outside zone II</li> <li>• Recognizes adverse outcomes after tendon procedures (e.g., adhesions, contractures, ruptures)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs zone II flexor tendon repairs</li> <li>• Performs extensor tendon reconstruction (e.g., side to side transfers, sagittal band repair/reconstruction, reconstruction for ECU instability, EIP to EPL transfer)</li> <li>• Develops management plan for tendon procedure complications (e.g., adhesions, contractures, ruptures)</li> <li>• Prescribes rehabilitation following tendon repair or reconstruction</li> </ul>	<ul style="list-style-type: none"> <li>• Performs secondary tendon procedures (e.g., tenolysis, staged tendon reconstruction, pulley reconstruction, tendon grafting)</li> <li>• Performs tendon transfers for nerve palsies (e.g., radial, median, ulnar, or combined)</li> <li>• Performs late reconstruction for secondary tendon conditions (e.g., swan neck deformity, mallet finger)</li> <li>• Performs tendon reconstruction for complex tendon ruptures (e.g., rheumatoid, attritional ruptures)</li> </ul>	<ul style="list-style-type: none"> <li>• Performs tendon transfers for brachial plexus reconstruction (e.g., shoulder or elbow)</li> </ul>
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<p><b>Comments:</b></p>				

Patient Safety, Resource Allocation, Practice Management — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Understands the differences between medical errors, near misses, and sentinel events</li> <li>• Understands the roles of care team members</li> <li>• Understands basic health payment systems, including uninsured care</li> <li>• Understands different practice models</li> </ul>	<ul style="list-style-type: none"> <li>• Describes the common system causes for errors</li> <li>• Practices cost-effective care (e.g., stewardship of resources, awareness of costs, managing length of stay, operative efficiency)</li> <li>• Understands principles of procedure coding</li> <li>• Compares and contrasts different practice models</li> <li>• Understands principles of good documentation in all aspects of patient care</li> </ul>	<ul style="list-style-type: none"> <li>• Consistently uses tools to prevent adverse events (e.g., checklists, time-outs, hand-offs)</li> <li>• Reports problematic behaviors, processes, and devices, including errors and near misses</li> <li>• Recognizes basic elements needed to establish practice (e.g., negotiations, malpractice insurance, contracts, staffing, compliance, facility accreditation)</li> </ul>	<ul style="list-style-type: none"> <li>• Leads team by promoting input by all team members</li> <li>• Conducts quality assurance activities to improve patient safety</li> <li>• Codes diagnoses, encounters, and surgical procedures</li> <li>• Establishes timeline and identifies resources for transition to practice</li> </ul>	<ul style="list-style-type: none"> <li>• Leads curriculum design to teach teamwork and communication skills to health care professionals</li> <li>• Leads multidisciplinary teams (e.g., human factors engineers, social scientists) to address patient safety issues</li> <li>• Participates in advocacy activities for hand-related health policy</li> </ul>
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<b>Comments:</b>				

<b>The ability to investigate and evaluate the care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and lifelong learning — Practice-based Learning and Improvement</b>				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Identifies one’s own level of knowledge and expertise, and uses feedback from teachers, colleagues, and patients</li> <li>• Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning</li> <li>• Can categorize research study design by levels of evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Continually seeks and incorporates feedback to improve performance</li> <li>• Develops a learning plan and uses published review articles and guidelines</li> <li>• Ranks study designs and can distinguish relevant research outcomes (e.g., patient-oriented evidence that matters)</li> <li>• Teaches patients, families, and junior learners</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates a balanced and accurate self-assessment of competence; reviews own clinical outcomes and identifies areas for continued improvement</li> <li>• Critically appraises the existing literature</li> <li>• Teaches colleagues and other health professionals in formal and informal settings</li> <li>• Assesses and provides feedback to junior learners</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrates improvement in clinical outcomes based on continual self-assessment</li> <li>• Performs self-directed learning</li> <li>• Formulates a searchable question, describes a plan to investigate it, and executes a research project</li> <li>• Organizes educational activities at the program level</li> </ul>	<ul style="list-style-type: none"> <li>• Independently plans and executes a research program</li> <li>• Develops educational curriculum and assessment tools</li> </ul>
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Comments:				

Ethics and Values — Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Understands basic bioethical principles and is able to identify ethical issues in hand surgery</li> <li>• Demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families</li> <li>• Understands and manages the issues related to fatigue</li> <li>• Exhibits professional behavior (e.g., reliability, industry, integrity, and confidentiality)</li> </ul>	<ul style="list-style-type: none"> <li>• Recognizes ethical issues in practice and is able to discuss, analyze, and manage common ethical situations</li> <li>• Demonstrates behavior that shows insight into the impact of one’s core values and beliefs on patient care</li> <li>• Demonstrates management of personal emotional, physical, and mental health</li> <li>• Recognizes individual limits in clinical situations and asks for assistance when needed</li> </ul>	<ul style="list-style-type: none"> <li>• Analyzes and manages ethical issues in complicated and challenging situations</li> <li>• Understands the beliefs, values, and practices of diverse and vulnerable patient populations, and the potential impact of these on patient care</li> <li>• Identifies and manages situations in which maintaining personal emotional, physical, and mental health is challenged</li> <li>• Understands conflicting interests of self, family, and others, and their effects on the delivery of medical care</li> </ul>	<ul style="list-style-type: none"> <li>• Uses a systematic approach to analyzing and managing ethical issues, including advertising, billing, and conflicts of interest</li> <li>• Develops a mutually-agreeable care plan in the context of conflicting physician and patient values and beliefs</li> <li>• Recognizes signs of physician impairment, and demonstrates appropriate steps to address impairment in self and in colleagues</li> <li>• Prioritizes and balances conflicting interests of self, family, and others to optimize medical care</li> </ul>	<ul style="list-style-type: none"> <li>• Leads institutional and organizational ethics programs</li> <li>• Develops programs to ensure equality of care in diverse, vulnerable, and underserved populations</li> <li>• Develops institutional and organizational strategies to improve physician wellness</li> </ul>
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<b>Comments:</b>				

Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> <li>• Develops a positive relationship with patients and teams in uncomplicated situations, and recognizes communication conflicts</li> <li>• Understands the patient's/family's perspective while engaged in active listening</li> <li>• Utilizes interpreters as needed</li> <li>• Appreciates effective communication to prevent medical error</li> <li>• Participates in effective transitions of care</li> <li>• Safeguards patient privacy when using photographic documentation</li> </ul>	<ul style="list-style-type: none"> <li>• Negotiates and manages simple patient- and family-related, and team conflicts</li> <li>• Responds to the social and cultural context of the patient and family to ensure the patient understands and is able to participate in health care decision-making</li> <li>• Ensures that the medical record (including the electronic medical record [EMR] and photographs) is timely, accurate, and complete</li> <li>• Understands the effects of computer use on information accuracy and potential effects on the physician/patient relationship</li> </ul>	<ul style="list-style-type: none"> <li>• Sustains working relationships and manages complex and challenging situations, including transitions of care</li> <li>• Customizes the delivery of emotionally-difficult issues, including for the upset patient or family member who has concerns about the patient's care</li> <li>• Manages transitions of care and optimizes communication across systems/teams</li> <li>• Communicates controversies within the field and develops treatment plans based on patient shared decision model</li> <li>• Counsels family regarding natural history of congenital disorders</li> </ul>	<ul style="list-style-type: none"> <li>• Negotiates and manages conflict in complex and challenging situations (including vulnerable populations), and develops working relationships across specialties and systems of care</li> <li>• Organizes and facilitates family/health care team conferences</li> <li>• Uses multiple forms of communication (e.g., e-mail, patient portal, social media) ethically and with respect for patient privacy</li> <li>• Understands the use of ethical marketing practices</li> </ul>	<ul style="list-style-type: none"> <li>• Develops models/approaches to managing difficult communications, and seeks leadership opportunities within professional organizations</li> <li>• Coaches others to improve communication skills</li> </ul>
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Comments:				