The Ohio State University
Department of Orthopaedics

Residency Curriculum

Hand/Upper Extremity
About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
  
  o At the beginning of the rotation
  o At the conclusion of the rotation

- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation
Hand and Upper Extremity Resident Rotation Information

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Schedule:
The resident will spend time with all physicians during the two month rotation. The resident schedule will be set to allow for continuity of patient care in the clinic setting and the operating room.

In addition to clinic and surgery assignments the resident will attend scheduled didactic lectures on Friday morning. The resident will attend hand clinic on some Thursdays at CMC.

There is a mandatory weekly hand didactic conference Monday 6:30am at the Hand Center conference room. This conference is lead by an attending hand surgeon and will review all relevant topics of hand and upper extremity over a 40 week period (see
attached schedule). The resident should be familiar with the topic to be presented and will be expected to participate in the discussion.

There is a mandatory weekly hand conference Tuesday 4pm at the Hand Center. The conference is structured specifically for resident education. Weekly topics are published in advance on the monthly schedule. It is expected the resident will be familiar with the subject. The conference will also include case presentations presented by attendings, residents and mid-level providers. Please be familiar with at least two cases that can be presented for discussion. Once monthly the Tuesday conference will be a resident presentation of a topic of interest. Please discuss the topic in advance with Dr. Ruff or Awan for approval.

These two conferences are provided for the express benefit of the residents and fellows, have priority over other duties and are protected time. If there is any question about this expectation please speak with Dr. Ruff.

Vacation and time off policy: Due to limited staffing in the hand center and advance planning of clinical assignments resident vacation during the two month hand rotation will be limited and must be approved in advance by Dr. Ruff and follow the resident procedure for time off. If you do not know the procedure, please contact Julia Panzo.

The physician clinic and surgery schedule is attached. It is your responsibility to check your schedule, it is subject to change.

<table>
<thead>
<tr>
<th>OSU Hand and Upper Extremity Center</th>
<th>Monthly Rotation Schedule</th>
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</thead>
<tbody>
<tr>
<td><strong>Monday</strong></td>
<td>Tuesday</td>
</tr>
<tr>
<td>Dr. Ruff</td>
<td>Clinic am Gowdy</td>
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<td>Dr. Awan</td>
<td>Clinic Gowdy</td>
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<tr>
<td>Dr. Goyal</td>
<td>OR East, 3rd, 5th</td>
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<tr>
<td>Dr. Barlow</td>
<td>OR Gowdy</td>
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</tbody>
</table>
Goals and Objectives
Hand Surgery Rotation – PGY1

I. Core Competency Areas

By the end of the PGY1 rotation in Hand and Upper Extremity Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

I. Core Competency

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families.
2. Procurement of thorough, logical, and concise patient histories with emphasis on the musculoskeletal system.
3. Responsiveness to the individual needs of patients and their families.
4. Understand and be able to perform a basic examination of the upper extremity. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis.
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health.
10. Understanding of and performance of the medical procedures related to treatment plan.
11. Ability to work well with an entire team of health care professionals and be involved in the care of the patient.

Medical Knowledge

1. Exhibit a fund of medical knowledge that is up-to-date
2. Investigation of topics as needed for clinical assignments.
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of one’s own patient management skills
2. Integration of evidence from scientific studies in the care of patient's problems.
3. Usage of available information technology to obtain and manage information. Familiarity with and ability to record information into the electronic medical record.

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families.
2. Ability to listen to patients and include them in treatment decisions.
3. Ability to listen to information provided by other members of the health care team.

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent.
2. Demonstration of an ethically sound practice of medicine.
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients.

Systems-Based Practice

1. Knowledge of how to provide cost effective care.
2. Willingness to advocate for patients within the healthcare system.
3. Referral of patient to appropriate practitioners and agencies within the healthcare system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

1. Understand the anatomy and evaluation of vascular disorders of the hand such as tumors, thrombosis, aneurysms vascular injuries etc.
2. Understand the anatomy and pathophysiology of the intrinsic muscles, digital extensor mechanism, and flexor mechanism of the hand and digit: Extrinsic extensor mechanism, intersosseus muscles, lumbrical muscles, thenar muscle, hypothenar muscle.
3. Understand hand anesthesia for operative procedures including the following: anatomy and equipment needed to perform: local anesthesia and digital block anesthesia
4. Understand compression neuropathies of the upper extremity.
5. Understand the presentation and treatment of specific hand infections such as pulp abscess (felon), cellulitis, paronychia, pyogenic arthritis, web space abscess, acute suppurative flexor tenosynovitis, herpetic whitlow.
6. Understand the fracture anatomy, fracture description, pertinent classification systems, and treatment options for fractures of the hand and wrist.
7. Understand the principles and indications for replantation surgery.
8. Understand the treatment of fractures of the wrist and ligament injuries of the wrist including fractures of the scaphoid, lunate dislocation, perilunate dislocation, Kienbock’s disease, carpal instability.
9. Understand the characteristics, pathogenesis, diagnostic features, and management of osteoarthritis of the hand and wrist.
10. Understand the anatomy, goals, treatment principles, in treatment methods for skin coverage of fingertip injuries.
11. Understand the types of nail and nailbed injuries the importance of the nail in principles of treatment of these injuries.
12. Understand etiology, diagnosis, and treatment of tenosynovitis of the hand and forearm (epicondylitis, DeQuervain’s tendonitis, intersection syndrome, etc.)
13. Understand the reasons for splinting, splinting principles, types of splinting, and indications for splinting.
14. Recognized the different types of benign tumors of the hand and wrist such as ganglion, lipoma, benign giant cell tumor, epidermal cyst, etc.
15. Understand the presentation, pathophysiology, and treatment of complex regional pain syndrome.

III. Specialty Specific Psychomotor Skills

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform amputation of digit.
5. Perform open and closed treatment of intra-and extra-articular fractures of the finger and wrist and forearm.
6. Understand the concept of and perform Z-plasty closure.
7. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
8. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.
Hand Surgery Rotation – PGY3

I. Core Competency Areas

By the end of the PGY2 rotation in Hand Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

1. Core Competency

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families.
2. Procurement of thorough, logical, and concise patient histories with emphasis on the musculoskeletal system.
3. Responsiveness to the individual needs of patients and their families.
4. Performance of a physical examination that is accurate, comprehensive, and directed to patient problems. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis.
7. Formulation and implementation of a complete and effective treatment plan.
8. Counsel of both patient and family in treatment procedure, options, and potential outcomes.
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health.
10. Understanding of and performance of the medical procedures related to treatment plan.
11. Ability to work well with an entire team of health care professionals and be involved in the care of the patient.

Medical Knowledge

1. Exhibit a fund of medical knowledge that is up-to-date and the ability to site literature appropriately.
2. Investigation of topics as needed for clinical assignments.
3. Understanding and use of basic science principles as related to medical practice.

Practice- Based Learning

1. Assessment of one’s own patient management skills and ability to make appropriate changes in practice.
2. Integration of evidence from scientific studies in the care of patient's problems.
3. Demonstration of knowledge of the study designs and statistical methods in order to evaluate scientific studies.
4. Usage of available information technology to obtain and manage information. Familiarity with and ability to record information into the electronic medical record.
5. Willingness to take time to educate students and other health care professionals.

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families.
2. Ability to listen to patients and include them in treatment decisions.
3. Ability to listen to information provided by other members of the health care team.

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent.
2. Demonstration of an ethically sound practice of medicine.
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients.

Systems-Based Practice
1. Knowledge of how to provide cost effective care.
2. Willingness to advocate for patients within the healthcare system.
3. Referral of patient to appropriate practitioners and agencies within the healthcare system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

1. Understand the anatomy and evaluation of vascular disorders of the hand such as tumors, thrombosis, aneurysms vascular injuries etc.
2. Understand the anatomy and pathophysiology of the intrinsic muscles, digital extensor mechanism, and flexor mechanism of the hand and digit: Extrinsic extensor mechanism, interosseous muscles, lumbrical muscles, thenar muscle, hypothenar muscle.
3. Understand hand anesthesia for operative procedures including the following: anatomy and equipment needed to perform: metacarpal block, digital block, wrist block of the median, ulnar and radial nerves, regional anesthesia, brachial plexus block, supraclavicular block, and axillary block.
4. Understand compression neuropathies of the upper extremities including the following: median nerve compression including the pathogenesis, history and physical findings of carpal tunnel syndrome, pronator syndrome, anterior interosseous syndrome; ulnar nerve compression including the pathogenesis, history and physical findings of ulnar tunnel syndrome, cubital tunnel syndrome; radial nerve compression including the pathogenesis, history and physical findings of radial tunnel syndrome, posterior interosseous syndrome; thoracic outlet syndrome, cervical root compression and cervical radiculopathy.
5. Understand the presentation and treatment of specific hand infections such as pulp abscess (felon), cellulitis, paronychia, pyogenic arthritis, web space abscess, acute suppurative flexor tenosynovitis, herpetic whitlow.
6. Understand the fracture anatomy, fracture description, pertinent classification systems, and treatment options for fractures of the hand and wrist.
7. Understand the principles of replantation surgery including definitions, instrumentation, preparation of amputated part, indications for replantation, surgical technique, vessel repair, postoperative care, failing replant, contraindications of replantation.
8. Understand the anatomy of the wrist and wrist mechanics including both static and dynamic instability patterns of the carpus.
9. Understand the treatment of fractures of the wrist and ligament injuries of the wrist including fractures of the scaphoid, lunate dislocation, perilunate dislocation, Kienbock’s disease, carpal instability.
10. Understand the characteristics, pathogenesis, diagnostic features, and management of osteoarthritis of the hand and wrist.
11. Understand etiology, pathophysiology, anatomy, treatment, surgical techniques, and diagnoses of compartment syndromes.
12. Understand the history, features, etiology, anatomy, pathology, treatment, and long-term results of the Dupuytren’s disease.
13. Understand the anatomy, goals, treatment principles, in treatment methods for skin coverage of fingertip injuries.
14. Understand the types of nail and nailbed injuries the importance of the nail in principles of treatment of these injuries.
15. Understand the anatomy, physiology, classification, and nerve regeneration and repair of peripheral
16. Understand the principles, definition, indications, and prerequisites of tendon transfers of the hand.
17. Understand etiology, diagnosis, and treatment of tenosynovitis of the hand and forearm (epicondylitis, DeQuervain’s tendonitis, intersection syndrome, etc.)
18. Understand the characteristics, history, pathogenesis, management, and indications for surgery of rheumatoid arthritis.
19. Understand the reasons for splinting, splinting principles, types of splinting, and indications for splinting.
20. Recognized the different types of benign tumors of the hand and wrist such as ganglion, lipoma, benign giant cell tumor, epidermal cyst, etc.
21. Understand the presentation, pathophysiology, and treatment of complex regional pain syndrome.
III. Specialty Specific Psychomotor Skills

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform nerve decompression of the wrist, forearm and elbow (carpal tunnel release, Guyon canal release, cubital tunnel release).
5. Perform split thickness skin grafting.
6. Perform amputation of digit. Understand principles of amputation of the forearm elbow, arm, and shoulder level.
8. Perform decompression and tenosynovectomy of the flexor tendon due to stenosing tenosynovitis or rheumatoid tenosynovitis.
10. Perform partial or radical fasciectomy.
11. Understand the concept of and perform Z-plasty closure.
12. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
13. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.
Goals and Objectives
Hand Surgery Rotation: PGY5

I. Core Competency Areas

By the end of the PGY5 rotation in Hand Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient’s problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient’s problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients
Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY5 rotation in Hand surgery and building upon the experiences from the PGY2 rotation, the resident should:

1. Refine the knowledge base from the PGY2 and PGY3 rotations (See PGY2 and PGY3 Goals and Objectives)

III. Specialty Specific Psychomotor Skills

By the end of the PGY5 rotation in hand surgery and building upon the experiences from the PGY2 rotation, the resident should:

1. Refine the skills acquired in PGY3 rotations (See PGY3 Goals and Objectives)
ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians 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 resident physician 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.

Milestones were designed for programs to use in semi-annual review of resident 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 resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program’s residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

**Level 1:** The resident demonstrates milestones expected of an incoming resident.  
**Level 2:** The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.  
**Level 3:** The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.  
**Level 4:** The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.  
**Level 5:** The resident has advanced beyond performance targets set for residency 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 residents will reach this level.

Note that Level 4 is designed as the graduation target but does not represent a graduation requirement. Making decisions about readiness for graduation is the purview of the residency program director.

**The milestones which will be evaluated on the Hand and Upper Extremity rotation are as listed on the following pages:**
## Carpal Tunnel – Medical Knowledge

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
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<tbody>
<tr>
<td>• Understands the anatomy of carpal tunnel/median nerve</td>
<td>• Demonstrates knowledge of the differential diagnosis of neuropathic surgery (e.g., pronator syndrome, cubital tunnel, thoracic outlet, cervical radiculopathy, peripheral neuropathy)</td>
<td>• Demonstrates knowledge of current literature and alternatives to surgery</td>
<td>• Understands controversies within field (e.g., endoscopic versus open, use of electrodiagnostics)</td>
<td>• Primary author/presenter of original work within the field</td>
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<tr>
<td>• Understands the normal physiology of the median nerve</td>
<td>• Understands risk factors associated with Carpal Tunnel Syndrome (CTS) (e.g., diabetes, inflammatory arthritis, pregnancy, hypothyroidism)</td>
<td>• Understands the capabilities and limitations of electrodiagnostic studies</td>
<td>• Understands influence of comorbidities</td>
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<tr>
<td>• Demonstrates knowledge of median nerve motor/sensory distribution, thumb abduction, thenar numbness, anterior interosseous nerve (AIN) weakness, cervical radiculopathy</td>
<td>• Demonstrates knowledge of complications of surgical management (e.g., location of median nerve [MN] with respect to superficial arch, recurrent motor branch, palmar cutaneous branch, Guyon's canal)</td>
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<td>• Understands natural history of CTS</td>
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<tr>
<td>• Understands the pathophysiology of nerve compression (e.g., increased carpal tunnel pressure, nerve ischemia)</td>
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<tr>
<td>• Understands surgical options (e.g., open, endoscopic)</td>
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### Comments:

Not yet rotated ☐
### Carpal Tunnel – Patient Care

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<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Obtains basic history and performs basic physical exam&lt;br&gt;• Lists potential surgical complications (e.g., infection, scar sensitivity, neurovascular injury) &lt;br&gt;• Performs median nerve motor/sensory evaluation (e.g., MN numbness, thumb abduction) &lt;br&gt;• Performs provocative maneuvers (e.g., Tinel, Phalen, MN compression test) &lt;br&gt;• Appropriately considers electrodiagnostic test &lt;br&gt;• Prescribes non-operative treatments (e.g., night splints, steroid injection when appropriate) &lt;br&gt;• Capable of diagnosing surgical complications (e.g., injury to the median nerve or its branches and vascular injury) &lt;br&gt;• Provides simple post-operative management and rehabilitation</td>
<td>• Obtains focused history, including identifying night pain, paresthesias &lt;br&gt;• Performs median nerve motor/sensory evaluation (e.g., MN numbness, thumb abduction) &lt;br&gt;• Performs provocative maneuvers (e.g., Tinel, Phalen, MN compression test) &lt;br&gt;• Appropriately considers electrodiagnostic test &lt;br&gt;• Prescribes non-operative treatments (e.g., night splints, steroid injection when appropriate)</td>
<td>• Evaluates other sites of MN compression (e.g., pronator syndrome, cervical radiculopathy) &lt;br&gt;• Interprets electrodiagnostic tests</td>
<td>• Performs Carpal Tunnel Release (CTR) (e.g., open or endoscopic) &lt;br&gt;• Capable of treating simple complications (e.g., infection, wound healing) &lt;br&gt;• Capable of performing complex postoperative management (e.g., worsening numbness, worsening pain, additional radiating symptoms)</td>
<td>• Capable of surgical management of major complications (e.g., injury to superficial arch, ulnar artery, branches of median nerve, or median nerve) &lt;br&gt;• Capable of opposition transfer (e.g., palmaris longus, extensor indicis pollicis [EIP], or flexor digitorum superficialis [FDS]) &lt;br&gt;• Capable of performing revision carpal tunnel surgery</td>
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**Comments:**

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### Distal Radius Fracture (DRF) – Medical Knowledge

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
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</table>
| • Demonstrates knowledge of anatomy  
• Understands basic imaging | • Demonstrates knowledge of fracture description and soft tissue injury: angulation, displacement, shortening, comminution, shear pattern, articular parts  
• Understands mechanism of injury  
• Understands biology of fracture healing  
• Understands advanced imaging  
• Understands surgical approaches and fixation tech: percutaneous pinning, volar plating, external fixation, dorsal plating, fragment specific, combinations | • Demonstrates knowledge of current literature, fracture classifications and therapeutic alternatives  
• Demonstrates knowledge of associated injuries: median nerve injury, scaphoid fracture; scapholunate (SL) ligament injury, triangular fibrocartilage complex (TFCC) injury, elbow injuries  
• Understands natural history of distal radius fracture  
• Understands biomechanics and implant choices: understand the advantage and disadvantages of different fixation techniques | • Understands controversies within field: fixation techniques and fracture pattern, correlation between radiographic and functional outcomes in elderly patient | • Participates in research in the field with publication |

Comments: Not yet rotated
## Distal Radius Fracture (DRF) – Patient Care

<table>
<thead>
<tr>
<th>Level 1</th>
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<th>Level 4</th>
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<tbody>
<tr>
<td>• Obtains history and performs basic physical exam</td>
<td>• Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, median nerve dysfunction, distal radioulnar joint [DRUJ] instability)</td>
<td>• Performs pre-operative planning with appropriate instrumentation and implants</td>
<td>• Capable of surgical reduction and fixation of a full range of fractures and dislocations (e.g., comminuted or very distal articular fractures, dorsal and volar metaphyseal fractures, greater arc perilunate injuries, scapholunate ligament injuries)</td>
<td>• Capable of surgical reduction and fixation of a full range of fractures and dislocations (e.g., comminuted or very distal articular fractures, dorsal and volar metaphyseal fractures, greater arc perilunate injuries, scapholunate ligament injuries)</td>
</tr>
<tr>
<td>• Orders/interprets basic imaging studies</td>
<td>• Orders/interprets advanced imaging (e.g., CT for comminuted articular fractures)</td>
<td>• Capable of surgical reduction and fixation of extraarticular fracture</td>
<td>• Capable of surgically treating complex complications (e.g., osteotomies, revision fixation)</td>
<td>• Capable of surgical reduction and fixation of a full range of fractures and dislocations (e.g., comminuted or very distal articular fractures, dorsal and volar metaphyseal fractures, greater arc perilunate injuries, scapholunate ligament injuries)</td>
</tr>
<tr>
<td>• Splints fracture appropriately</td>
<td>• Recognizes stable/unstable fractures (e.g., metaphyseal comminution, volar/dorsal Barton’s, die-punch pattern; multiple articular parts)</td>
<td>• Interprets diagnostic studies for fragility fractures with appropriate management and/or referral</td>
<td>• Capable of surgically treating simple complications (e.g., infections, open carpal tunnel release)</td>
<td>• Capable of surgical reduction and fixation of simple intraarticular fractures (e.g., no more than two articular fragments)</td>
</tr>
<tr>
<td>• Provides basic post-operative management and rehab</td>
<td>• Able to perform a closed reduction and splint appropriately</td>
<td>• Recognizes surgical indications (e.g., median nerve dysfunction, instability, articular step off/gap, dorsal angulation, radius shortening)</td>
<td>• Performs surgical exposure</td>
<td>• Performs surgical exposure</td>
</tr>
<tr>
<td>• Lists potential complications (e.g., infections, hardware failure tendon injury, complex regional pain syndrome [CRPS], carpal tunnel syndrome, malreduction)</td>
<td>• Performs surgical exposure</td>
<td>• Modifies and adjusts post-operative plan when indicated</td>
<td>• Modifies and adjusts post-operative plan when indicated</td>
<td>• Performs surgical exposure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recognizes/evaluates fragility fractures (e.g., orders appropriate work-up and/or consult)</td>
<td>• Recognizes/evaluates fragility fractures (e.g., orders appropriate work-up and/or consult)</td>
<td>• Recognizes/evaluates fragility fractures (e.g., orders appropriate work-up and/or consult)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Diagnoses and provides early management of complications</td>
<td>• Diagnoses and provides early management of complications</td>
<td>• Diagnoses and provides early management of complications</td>
</tr>
</tbody>
</table>

**Comments:**

Not yet rotated
Compassion, integrity, and respect for others as well as sensitivity and responsiveness to diverse patient populations, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. Knowledge about respect for and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice – Professionalism

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Consistently demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families</td>
<td>• Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness while exhibiting these attitudes consistently in common and uncomplicated situations</td>
<td>• Exhibits these attitudes consistently in complex and complicated situations</td>
<td>• Develops and uses an integrated and coherent approach to understanding and effectively working with others to provide good medical care that integrates personal standards with standards of medicine</td>
<td>• Demonstrates leadership and mentoring regarding these principles of bioethics</td>
</tr>
<tr>
<td>• Recognizes the diversity of patient populations with respect to gender, age, culture, race, religion, disabilities, sexual orientation, and socioeconomic status</td>
<td>• Consistently recognizes ethical issues in practice; discusses, analyzes, and manages in common and frequent clinical situations including socioeconomic variances in patient care</td>
<td>• Recognizes how own personal beliefs and values impact medical care</td>
<td>• Consistently considers and manages ethical issues in practice</td>
<td>• Manages ethical misconduct in patient management and practice</td>
</tr>
<tr>
<td>• Recognizes the importance and priority of patient care, with an emphasis on the care that the patient wants and needs; demonstrates a commitment to this value</td>
<td>• Knowledgeable about the beliefs, values, and practices of diverse patient populations and the potential impact on patient care</td>
<td>• Recognizes ethical violations in professional and patient aspects of medical practice</td>
<td>• Consistently practises medicine as related to specialty care in a manner that upholds values and beliefs of self and medicine</td>
<td></td>
</tr>
</tbody>
</table>

Comments: Not yet achieved Level 1 □
### Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health – Professionalism

<table>
<thead>
<tr>
<th>Level 1</th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Understands when assistance is needed and willing to ask for help</td>
<td>• Recognizes limits of knowledge in common clinical situations and asks for assistance</td>
<td>• Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care</td>
<td>• Mentors and models personal and professional responsibility to colleagues</td>
<td>• Develops organizational policies and education to support the application of these principles in the practice of medicine</td>
</tr>
<tr>
<td>• Exhibits basic professional responsibilities, such as timely reporting for duty, being rested and ready to work, displaying appropriate attire and grooming, and delivering patient care as a functional physician</td>
<td>• Recognizes value of humility and respect towards patients and associate staff</td>
<td>• Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine</td>
<td>• Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues</td>
<td>• Practices consistent with the American Academy of Orthopaedic Surgeons (AAOS) Standards of Professionalism</td>
</tr>
<tr>
<td>• Aware of the basic principles and aspects of the general maintenance of emotional, physical, mental health, and issues related to fatigue/sleep deprivation</td>
<td>• Demonstrates adequate management of personal, emotional, physical, mental health, and fatigue</td>
<td>• Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health</td>
<td></td>
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</tr>
</tbody>
</table>

**Comments:**

Not yet achieved Level 1 □
## Self-Directed Learning – Practice-based Learning and Improvement

1. Identify strengths, deficiencies, and limits in one’s knowledge and expertise.
2. Assess patient outcomes and complications in your own practice.
3. Set learning and improvement goals.
4. Identify and perform appropriate learning activities.
5. Use information technology to optimize learning and improve patient outcomes.

<table>
<thead>
<tr>
<th>Level 1</th>
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<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback from teachers and colleagues</td>
<td>- Continually assesses performance by evaluating feedback and assessments</td>
<td>- Accurately assesses areas of competence and deficiencies and modifies learning plan</td>
<td>- Performs self-directed learning without external guidance</td>
<td>- Incorporates practice change based upon new evidence</td>
</tr>
<tr>
<td>- Demonstrates computer literacy and basic computer skills in clinical practice</td>
<td>- Develops a learning plan based on feedback with some external assistance</td>
<td>- Demonstrates the ability to select an appropriate evidence-based information tool to answer specific questions while providing care</td>
<td>- Critically evaluates and uses patient outcomes to improve patient care</td>
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<tr>
<td>- Uses patient care experiences to direct learning</td>
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</table>

### Comments:

- Not yet achieved Level 1
## Locate, appraise, and assimilate evidence from scientific studies to improve patient care – Practice-based Learning and Improvement

<table>
<thead>
<tr>
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<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning</td>
<td>• Ranks study designs by their level of evidence</td>
<td>• Applies a set of critical appraisal criteria to different types of research, including synopses of original research findings, systematic reviews and meta-analyses, and clinical practice guidelines</td>
<td>• Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery</td>
<td>• Independently teaches and assesses evidence-based medicine and information mastery techniques</td>
</tr>
<tr>
<td>• Categorizes the study design of a research study</td>
<td>• Identifies bias affecting study validity</td>
<td>• Critically evaluates information from others: colleagues, experts, industry representatives, and patient-delivered information</td>
<td>• Cites evidence supporting several common practices</td>
<td></td>
</tr>
</tbody>
</table>

### Comments:

Not yet achieved Level 1 □
## Systems thinking, including cost-effective practice – Systems-based Practice

<table>
<thead>
<tr>
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<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Describes basic levels of systems of care (e.g., self-management to societal)</td>
<td>• Gives examples of cost and value implications of care he or she provides (e.g., gives examples of alternate sites of care resulting in different costs for individual patients)</td>
<td>• Orders and schedules tests in appropriate systems for individual patients balancing expenses and quality</td>
<td>• Effectively manages clinic team and schedules for patient and workflow efficiency</td>
<td>• Leads systems change at micro and macro level (e.g., manages operating room [OR] team and patient flow in a multi-case OR day)</td>
</tr>
</tbody>
</table>

**Comments:**

Not yet achieved Level 1
Resident will work in interprofessional teams to enhance patient safety and quality care – Systems-based Practice

<table>
<thead>
<tr>
<th>Level 1</th>
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<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recognizes importance of complete and timely documentation in teamwork and patient safety</td>
<td>• Uses checklists and briefings to prevent adverse events in health care</td>
<td>• Participates in quality improvement or patient safety program and/or project</td>
<td>• Maintains team situational awareness and promote “speaking up” with concerns</td>
<td>• Develops and publishes quality improvement project results</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Incorporates clinical quality improvement and patient safety into clinical practice</td>
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</tbody>
</table>

Comments:

Not yet achieved Level 1

Uses technology to accomplish safe health care delivery – Systems-based Practice

<table>
<thead>
<tr>
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<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Explains the role of the Electronic Health Record (EHR) and Computerized Physician Order Entry (CPOE) in prevention of medical errors</td>
<td>• Appropriately and accurately enters patient data in EHR</td>
<td>• Reconciles conflicting data in the medical record</td>
<td>• Contributes to reduction of risks of automation and computerized systems by reporting system problems</td>
<td>• Recommends systems re-design for faculty computerized processes</td>
</tr>
<tr>
<td>• Effectively uses electronic medical records in patient care</td>
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</tbody>
</table>

Comments:

Not yet achieved Level 1
<table>
<thead>
<tr>
<th>Communication – Interpersonal and Communication Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong></td>
</tr>
<tr>
<td>- Communicates with patients about routine care (e.g., actively seeks and understands the patient’s/family’s perspective; able to focus in on the patient’s chief complaint and ask pertinent questions related to that complaint)</td>
</tr>
</tbody>
</table>

Comments: Not yet achieved Level 1
| Teamwork (e.g., physician, nursing and allied health care providers, administrative and research staff) – Interpersonal and Communication Skills |
|---|---|---|---|---|---|
| **Level 1** | **Level 2** | **Level 3** | **Level 4** | **Level 5** |
| • Recognizes and communicates critical patient information in a timely and accurate manner to other members of the treatment team | • Supports and respects decisions made by team | • Able to facilitate, direct, and delegate team-based patient care activities | • Leads team-based care activities and communications | • Seeks leadership opportunities within professional organizations |
| • Recognizes and communicates role as a team member to patients and staff | • Actively participates in team-based care; Supports activities of other team members, communicates their role to the patient and family | • Understands the Operating Room team leadership role and obligations | • Able to identify and rectify problems with team communication | • Able to lead/facilitate meetings within organization/system |
| • Responds to requests for information | **Examples:** Hand-offs, transitions of care, communicates with other health care providers and staff members | **Examples:** Leads daily rounds, communicates plan of action with OR personnel | **Example:** Organizes and verifies hand-off rounds, coverage issues | |
| **Examples:** Lab results, accurate and timely progress notes, answers pages in a timely manner | | | | |
| | | | | |
| | | | | |

**Comments:**

Not yet achieved Level 1
The Hand and Upper Extremity Service

BASIC CLINICAL EXAMINATION

Hand and Wrist:
☐ Complete normal physical examination of the hand and wrist, including:
  ☐ Inspection:
    ☐ Resting posture of the hand
    ☐ Position of the fingers: Swan neck, Boutonniere, Dupuytren’s
    ☐ Skin, hair, nail changes
    ☐ Swelling – Heberden’s and Bouchard’s nodes, fusiform swelling, ganglions
    ☐ Muscle atrophy – thenar / hypothenar eminence
  ☐ Palpation
  ☐ Range of motion:
    ☐ Forearm rotation
    ☐ Wrist – flexion/extension, radial/ulnar deviation
    ☐ Finger – MCP, DIP, PIP joints
    ☐ Thumb – CMC, MCP, IP:
      ☐ Radial abduction
      ☐ Palmar abduction
      ☐ Opposition
  ☐ Neurovascular:
    ☐ Sensory – radial, median, and ulnar nerves
    ☐ Motor – radial/PIN, median/AIN, motor recurrent branch, ulnar nerve

Special Tests:
☐ Carpal tunnel: Tinel’s test, Phalen’s test, median nerve compression test
☐ Stability testing of IP, MCP, thumb CMC joints:
  - Assessment of gamekeeper’s thumb (ulnar collateral ligament strain)
  - Shuck test for basilar joint instability
☐ CMC grind
☐ FDP/FDS flexion tests
☐ Watson’s scaphoid shift test
☐ DRUJ: piano key test, DRUJ compression test
☐ TFCC compression test
☐ Murphy’s sign for lunate dislocation
☐ Finkelstein test
☐ Screen for intersection syndrome
☐ Froment’s sign
☐ Bunnel-Littler test for intrinsic tightness
☐ Lumbrical + finger
☐ Kanavel’s signs of flexor tenosynovitis
☐ Allen’s test

**Elbow:**
☐ Complete normal examination of the elbow, including:
  ☐ Inspection:
    o Gross deformity, swelling, bursitis
    o Carrying angle: cubitus valgus, cubitus varus
  ☐ Palpation:
    o Biceps tendon/ “hook test”
    o Olecranon and olecranon fossa
    o Medial epicondyle
    o Lateral epicondyle
    o Radial head
    o Ulnar nerve
  ☐ Range of Motion:
    o Flexion / extension
    o Pronation / supination
  ☐ Neurovascular testing

**Special Tests:**
☐ Varus stress test
☐ Valgus stress test
☐ Pivot shift test for lateral ulnar collateral instability/Push off Test/Posterio-lateral drawer
☐ Ulnar nerve testing:
  o Tinel’s sign
  o Elbow flexion test
  o Ulnar nerve compression test
  o Ulnar nerve subluxation

☐ Lateral epicondylitis:
  o Resisted wrist extension
  o Passive flexion of the fingers and wrist with the elbow fully extended
  o Long finger extension test

  * location of pain to differentiate from radial tunnel syndrome
Radial deviation with wrist extension – PIN entrapment

Medial epicondylitis:
  o Resisted wrist flexion
  o Resisted forearm pronation

Screen for pronator syndrome

“OK” sign for anterior interosseous nerve syndrome

Hand of benediction
The Ohio State University  
Department of Orthopaedics  
Orthopaedic Residency Program

**Surgical Competencies**  
**Hand & Upper Extremity: PGY3**

**By the end of the PGY3 rotation in Hand and Upper Extremity, the resident should be able to:**

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform nerve decompression of the wrist, forearm and elbow (carpal tunnel release, Guyon canal release, cubital tunnel release).
5. Perform split thickness skin grafting.
6. Perform amputation of digit. Understand principles of amputation of the forearm, elbow, arm, and shoulder level.
8. Perform decompression and tenosynovectomy of the flexor tendon due to stenosing tenosynovitis or rheumatoid tenosynovitis.
10. Perform partial or radical fasciectomy.
11. Understand the concept of and perform Z-plasty closure.
12. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
13. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.


Hand & Upper Extremity Reading Lists – PGY3

Residents will use Green’s Operative Hand Surgery Text as the main resource for reading for the rotation.

Each week they are expected to read the corresponding chapter in Green’s to be prepared.
### Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

<table>
<thead>
<tr>
<th>Category</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee arthroscopy</td>
<td>30</td>
</tr>
<tr>
<td>Shoulder arthroscopy</td>
<td>20</td>
</tr>
<tr>
<td>ACL reconstruction</td>
<td>10</td>
</tr>
<tr>
<td>THA</td>
<td>30</td>
</tr>
<tr>
<td>TKA</td>
<td>30</td>
</tr>
<tr>
<td>Hip fractures</td>
<td>30</td>
</tr>
<tr>
<td>Carpal tunnel release</td>
<td>10</td>
</tr>
<tr>
<td>Spine decompression/posterior spine fusion</td>
<td>15</td>
</tr>
<tr>
<td>Ankle fracture fixation</td>
<td>15</td>
</tr>
<tr>
<td>Closed reduction forearm/wrist</td>
<td>20</td>
</tr>
<tr>
<td>Ankle &amp; hind &amp; mid-foot arthro</td>
<td>5</td>
</tr>
<tr>
<td>Supracondylar humerus perc</td>
<td>5</td>
</tr>
<tr>
<td>Femur and tibia intramedullary fixation</td>
<td>25</td>
</tr>
<tr>
<td>All pediatric procedures</td>
<td>200</td>
</tr>
<tr>
<td>All oncology procedures</td>
<td>10</td>
</tr>
</tbody>
</table>

### CPT Codes in Each Category

- **Knee arthroscopy** (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)
- **Shoulder arthroscopy** (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)
- **ACL reconstruction** (29888)
- **THA** (27130, 27132, 27134, 27137, 27138)
- **TKA** (27442, 27443, 27445, 27446, 27447, 27487)
- **Hip fractures** (27235, 27236, 27244, 27245)
- **Carpal tunnel release** (64721)
- **Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar** (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)
- **Ankle fracture fixation** (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)
- **Closed reduction forearm and wrist fractures** (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)
- **Ankle and hind and mid-foot arthrodeses** (27870, 28705, 28715, 28725, 28730, 28735, 28737)
- **Supracondylar humerus percutaneous treatment** (24538, 24566, 24582)
- **Femur and tibia intramedullary fixation** (27506, 27759)

Please note: manipulations must be recorded with procedures in the Case Log System.