

The Adult Reconstructive Surgery Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

and

The American Board of Orthopaedic Surgery



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The Milestones are designed only for use in evaluation of the fellow 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.

Adult Reconstructive 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 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/acmeweb/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.

| Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health — Professionalism | | | | |
|--|--|--|---|---|
| Level1 | Level2 | Level3 | Level4 | Level5 |
| <ul style="list-style-type: none"> Understands when assistance is needed and willing to ask for help 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 Aware of the basic principles and aspects of the general maintenance of emotional, physical, and mental health, and issues related to fatigue/sleep deprivation | <ul style="list-style-type: none"> Recognizes limits of knowledge in common clinical situations and asks for assistance Recognizes value of humility and respect towards patients and associate staff Demonstrates adequate management of personal, emotional, physical, and mental health, and fatigue | <ul style="list-style-type: none"> Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health | <ul style="list-style-type: none"> Mentors and models personal and professional responsibility to colleagues Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues Practices medicine consistent with published professional standards (e.g., American Academy of Orthopaedic Surgeons and American Association of Hip and Knee Surgeons) including appropriate relationships with industry partners | <ul style="list-style-type: none"> Develops organizational policies and education to support the application of these principles in the practice of medicine and surgery |
| <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).

| Knee Arthritis – Patient Care | | | | |
|---|--|--|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Obtains and documents basic history, and performs and documents basic knee exam Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs, including hip-to-ankle radiographs when indicated) Provides and manages non-operative treatment Completes pre-operative planning with basic instrumentation and implants Performs one basic surgical approach to the knee Performs primary total knee replacement (TKR) with attending assistance Provides post-operative medical and surgical management and rehabilitation (e.g., venous thromboembolism [VTE] prophylaxis, antibiotic management, drain management, obtain appropriate medical consultation when indicated) Treats post-operative complications | <ul style="list-style-type: none"> Obtains and documents focused history, and performs focused exam (e.g., able to differentiate spine vs. hip vs. knee pathology) Orders and interprets advanced imaging studies based on differential diagnosis (e.g., magnetic resonance imaging [MRI], computed tomography [CT], nuclear medicine) Completes pre-operative templating with basic instrumentation and implants Performs alternative surgical approaches to the knee arthritis (e.g., midvastus, subvastus) Performs routine primary TKR independently Modifies and adjusts post-operative treatment plan as needed Recognizes intra-operative complication | <ul style="list-style-type: none"> Performs and documents advanced physical exam (e.g., alignment, ligamentous integrity, foot and ankle disorders, neuromuscular [NM] disorders, multiple skin incisions, soft-tissue envelope) Completes comprehensive pre-operative planning/templating with advanced alternatives (e.g., broken hardware removal set, revision implants) Competently performs two or more approaches to the knee Performs complex primary TKR with attending assistance (e.g., severe varus/valgus mal-alignment, stiffness, previously operated post-traumatic, removal of hardware, previous high tibial osteotomy) Develops unique, complex post-operative management plans Surgically treats simple complications (e.g., wound complications, early post-operative arthrofibrosis) | <ul style="list-style-type: none"> Performs complex approaches to the knee (e.g., quad-snip, V-Y turndown, tibial tubercle osteotomy [TTO]) Performs complex primary TKR independently (e.g., severe varus/valgus mal-alignment, stiffness, previously operated post-traumatic, removal of hardware, previous high tibial osteotomy) Effectively manages and educates patient expectations to obtain realistic outcomes, including potential intra- and post-operative complications Surgically treats complex complications (e.g., femoral and tibial periprosthetic fractures, extensor mechanism disruption, periprosthetic infection) | <ul style="list-style-type: none"> Completes fusion takedown Performs primary hinge, distal femoral replacement, femoral or tibial augmentation independently |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Knee Revisions – Patient Care | | | | |
|---|--|--|--|--|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Obtains and documents history and performs and documents knee exam (e.g., previous incisions, previous surgeries, previous wound complications and/or infections, co-morbidities) Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs, including hip-to-ankle radiographs when indicated) Completes pre-operative checklist with appropriate revision instrumentation and implants (e.g., old operative notes, implant records) Provides post-operative medical and surgical management and rehabilitation (e.g., VTE prophylaxis, antibiotic management, drain management), and obtains appropriate medical consultation when indicated Treats post-operative complications non-operatively (e.g., post-operative nerve palsy after valgus TKR) | <ul style="list-style-type: none"> Obtains and documents focused history and performs focused exam (e.g., able to differentiate spine vs. hip vs. knee pathology) Appropriately orders and interprets advanced imaging studies based on differential diagnosis (e.g., MRI, CT, nuclear medicine, advanced radiographic imaging) Completes pre-revision templating with instrumentation and implants, taking bone loss and soft-tissue envelope into consideration Modifies and adjusts post-operative treatment plan as needed Capable of recognizing intra-operative complications (e.g., medial collateral ligament [MCL] avulsion, condylar or plateau fracture, patellar maltracking) | <ul style="list-style-type: none"> Performs and documents advanced physical exam (e.g., alignment, ligamentous integrity, foot and ankle disorders, NM disorders, multiple skin incisions, soft-tissue envelope, neurovascular exam) Provides and manages appropriate non-operative treatment when clear indications for revision TKR are not present Completes comprehensive pre-revision planning/templating with advanced alternatives (e.g., broken hardware removal set, revision implants, trephines, ultrasound cement removal, handheld cement removal instruments, augments) Performs exposure of revision TKR with parapatellar arthrotomy (e.g., appropriate skin incision, management of gutters, mobilization of extensor mechanism) Performs simple revision TKR with attending assistance (e.g., polyethylene exchange, revision of femoral and/or tibial components—loose or well-fixed without bone or soft-tissue compromise) | <ul style="list-style-type: none"> Manages the extensor mechanism in revision TKRs (e.g., quad-snip, V-Y turndown, TTO) Performs complex revision TKR with attending assistance (e.g., significant bone and/or soft-tissue compromise) Effectively manages and educates patient expectations to obtain realistic outcomes, including discussions of potential intra- and post-operative complications Capable of surgically treating complex complications (e.g., femoral and tibial periprosthetic fractures, extensor mechanism disruption, periprosthetic infections) | <ul style="list-style-type: none"> Independently able to manage the extensor mechanism in revision TKRs (e.g., quad-snip, V-Y turndown, TTO) Performs simple or complex revision TKR independently |

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|--------------------------|--------------------------|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | <ul style="list-style-type: none"> • Develops patient-specific post-operative management plans • Surgically treats simple complications (e.g., wound complications, early post-operative arthrofibrosis, MCL avulsion, condylar or plateau fracture, patellar maltracking) | | | | | | | | | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | | | | | | | | | | | |

| Hip Arthritis – Patient Care | | | | |
|---|--|--|---|--|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Obtains basic history and performs basic hip exam Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs) Completes pre-operative planning with basic instrumentation and implants Performs one basic surgical approach to the hip Performs primary total hip replacement (THR) with attending assistance Provides post-operative medical and surgical management and rehabilitation Treats post-operative complications Provides prophylaxis and manages thromboembolic disease | <ul style="list-style-type: none"> Obtains focused history and performs focused exam (e.g., able to differentiate spine vs. hip vs. knee pathology) Orders and interprets advanced imaging studies based on differential diagnosis (e.g., MRI, CT, nuclear medicine, advanced radiographic imaging) Provides and manages non-operative treatment Completes pre-operative templating with basic instrumentation and implants Performs alternative surgical approaches to hip arthritis Performs routine primary THR independently, including use of acetabular screw fixation Modifies and adjusts post-operative treatment plan as needed Recognizes intra-operative complications | <ul style="list-style-type: none"> Performs advanced physical exam (e.g., limb-lengthening discrepancies, pelvic tilt, NM disorders, heterotopic ossification, multiple skin incisions, soft-tissue envelope) Completes comprehensive pre-operative planning/templating with advanced alternatives (e.g., broken hardware removal set, revision implants in primary setting) Performs two or more approaches to the hip Performs complex primary THR with attending assistance (e.g., dysplasia, previously operated post-traumatic, removal of hardware) Develops patient-specific post-operative management plans Surgically treats simple complications (e.g., limb-length discrepancies, instability, acetabular wall fracture, calcar fracture) | <ul style="list-style-type: none"> Performs complex approaches to the hip (e.g., in-situ neck cut, trochanteric osteotomy, direct anterior THR) Performs complex primary THR independently (e.g., dysplasia, previously operated post-traumatic, removal of hardware) Informs patients of potential intra- and post-operative complications that may arise Surgically treats complex complications (e.g., acetabular column fracture, diaphyseal fracture, periprosthetic infections) Effectively manages and educates patient expectations to obtain realistic outcomes | <ul style="list-style-type: none"> Performs extended trochanteric osteotomy, subtrochanteric osteotomy, hip fusion takedown independently |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Hip Revision – Patient Care | | | | |
|---|--|---|--|--|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Obtains and documents history and performs and documents hip exam (e.g., previous incisions, previous surgeries, previous wound complications and/or infections, previous episodes of instability, limb-length discrepancies, limp, co-morbidities) Completes pre-operative checklist with appropriate revision instrumentation and implants (e.g., old operative notes, implant records) Provides post-operative medical and surgical management and rehabilitation (e.g., VTE prophylaxis, antibiotic management, drain management), and obtains appropriate medical consultation when indicated Treats post-operative complications non-operatively (e.g., closed reduction of dislocation) | <ul style="list-style-type: none"> Obtains and documents focused history and performs focused exam (e.g., able to differentiate spine vs. knee vs. hip pathology) Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs, including Judet views) Completes pre-revision templating with instrumentation and implants, taking bone loss and soft-tissue envelope into consideration Modifies and adjusts post-operative treatment plan as needed Recognizes intra-operative complications (e.g., intra-operative fractures, instability, and bleeding) | <ul style="list-style-type: none"> Performs and documents advanced physical exam (e.g., alignment, ligamentous integrity, foot and ankle disorders, NM disorders, multiple skin incisions, soft-tissue envelope, neurovascular exam) Orders and interprets advanced imaging studies based on differential diagnosis (e.g., MRI, CT, nuclear medicine, and advanced radiographic imaging) Provides and manages appropriate non-operative treatment when clear indications for revision THR are not present Completes comprehensive pre-revision planning/templating with advanced alternatives (e.g., broken hardware removal set, revision implants, trephines, ultrasound cement removal, handheld cement removal instruments, augments, cages, explant) Performs exposure of revision THR (e.g., appropriate skin incision, protecting neurovascular structures, safe dislocation of prostheses) Performs simple revision THR with attending assistance (e.g., polyethylene exchange, revision of femoral and/or acetabular components [loose or well-fixed]) | <ul style="list-style-type: none"> Utilizes extensile exposures to the acetabulum and femur in revision THRs (e.g., anterolateral [AL] approach, posterolateral [PL] approach, extended trochanteric osteotomy [ETO]) Performs complex revision THR with attending assistance (e.g., significant bone and/or soft tissue compromise, periprosthetic fracture acetabular wedges/augments/cages/triflange/custom components, implant failure) Effectively manages and educates patient expectations to obtain realistic outcomes, including potential intra- and post-operative complications Surgically treats complex complications (e.g., instability, periprosthetic fractures, periprosthetic infections) | <ul style="list-style-type: none"> Independently able to safely utilize extensile exposures to the acetabulum and femur in revision THRs (e.g., AL approach, PL approach, ETO) Performs simple or complex revision THR independently |

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| | | without bone loss, supplemental screw fixation) <ul style="list-style-type: none"> • Develops patient-specific post-operative management plans • Surgically treats simple complications (e.g., wound complications, including hematoma) | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Shoulder Arthritis – Patient Care | | | | |
|--|--|---|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Obtains and documents basic history, and performs and documents basic shoulder exam • Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs, MRI, CT scans when indicated) • Provides and manages non-operative treatment • Completes pre-operative planning with basic instrumentation and implants • Performs one basic surgical approach to the shoulder • Performs primary total shoulder replacement (TSR) with attending assistance • Provides post-operative medical and surgical management (e.g., antibiotic management, drain management, obtaining appropriate medical consultation when indicated) • Provides and directs post-operative immobilization and rehabilitation • Treats post-operative complications (e.g., dislocation, stiffness) | <ul style="list-style-type: none"> • Obtains and documents focused history, and performs focused exam (e.g., able to differentiate cervical spine vs. shoulder vs. elbow pathology) • Orders and interprets advanced imaging studies based on differential diagnosis (e.g., magnetic resonance imaging [MRI], computed tomography [CT], nuclear medicine) • Completes pre-operative templating with basic instrumentation and implants • Performs alternative surgical approaches to the shoulder arthritis (e.g., deltopectoral, superior) • Performs routine primary TSR independently • Modifies and adjusts post-operative treatment plan as needed • Recognizes intra-operative complications (e.g., glenoid penetration, instability) | <ul style="list-style-type: none"> • Performs and documents advanced physical exam (e.g., stability, rotator cuff and deltoid integrity, shoulder and elbow disorders, neurologic evaluation, multiple skin incisions) • Completes comprehensive pre-operative planning/templating with advanced alternatives (e.g., broken hardware removal set, cement removal, revision implants) • Competently performs two or more approaches to the shoulder • Performs complex primary TSR with attending assistance (e.g., severe malunion, stiffness, previously operated post-traumatic, removal of hardware, previous instability repair, bone grafting) • Develops unique, complex, post-operative management plans • Surgically treats simple complications (e.g., wound complications, post-operative stiffness, dislocation) | <ul style="list-style-type: none"> • Performs complex approaches to the shoulder (e.g., posterior, superior, lesser/greater tuberosity osteotomy, subscapularis lengthening) • Performs complex primary TSR independently (e.g., severe malunion s/p fracture, stiffness, previously operated post-traumatic, removal of hardware, previous instability repair, bone grafting) • Effectively manages and educates patient expectations to obtain realistic outcomes, including potential intra- and post-operative complications • Surgically treats complex complications (e.g., periprosthetic fractures, subscapularis rupture, periprosthetic infection) | <ul style="list-style-type: none"> • Completes fusion takedown with replacement • Shoulder arthrodesis after failed shoulder arthroplasty secondary to axillary nerve injury • Revision Reverse total shoulder for glenoid failure secondary to osteolysis |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Shoulder Revisions – Patient Care | | | | |
|---|---|--|--|--|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Obtains and documents history, and performs and documents shoulder exam (e.g., previous incisions, previous surgeries, previous wound complications and/or infections, co-morbidities) Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs, including CT scans and MRI when indicated) Completes pre-operative checklist with appropriate revision instrumentation and implants (e.g., old operative notes, implant records) Provides post-operative medical and surgical management and rehabilitation (e.g., guides and supervises post-operative rehab/range of motion vs. immobilization, antibiotic management, drain management), and obtains appropriate medical consultation when indicated Treats post-operative complications non-operatively (e.g., | <ul style="list-style-type: none"> Obtains and documents focused history and performs focused exam (e.g., able to differentiate cervical spine vs. shoulder vs. elbow pathology) Appropriately orders and interprets advanced imaging studies based on differential diagnosis (e.g., MRI, CT, nuclear medicine, advanced radiographic imaging) Completes pre-revision templating with instrumentation and implants, taking bone loss and soft-tissue envelope into consideration Modifies and adjusts post-operative treatment plan as needed Capable of recognizing intra-operative complications (e.g., glenoid penetration, humerus/greater tuberosity fracture, instability) | <ul style="list-style-type: none"> Performs and documents advanced physical exam (e.g., instability, stiffness, deltoid and rotator cuff integrity, multiple skin incisions, soft-tissue envelope, neurovascular exam) Provides and manages appropriate non-operative treatment when clear indications for revision TSR are not present Completes comprehensive pre-revision planning/templating with advanced alternatives (e.g., broken hardware removal set, revision implants, ultrasound cement removal) Performs exposure of revision TSR with attending supervision (e.g., appropriate skin incision, management and mobilization of deltoid, subscapularis takedown vs. lesser tuberosity takedown or lengthening, protecting neurovascular structures, safe dislocation of prosthesis) Performs simple revision TSR with attending assistance (e.g., modular head exchange, revision of humeral or glenoid components—loose without bone loss, | <ul style="list-style-type: none"> Manages the subscapularis and deltoid in revision TSRs independently (e.g., subscapularis takedown vs. LT osteotomy, lengthening with medial reattachment or step cut, deltoid elevation/mobilization) Performs complex revision TSR with attending assistance (e.g., significant bone loss, scarring with stiffness, humeral osteotomy for fixed component removal, obtain adequate glenoid exposure) Effectively manages and educates patient expectations to obtain realistic outcomes, including discussions of potential intra- and post-operative complications Capable of surgically treating complex complications (e.g., humeral periprosthetic fractures, instability, periprosthetic infections) | <ul style="list-style-type: none"> Independently able to safely obtain adequate glenoid exposure in revision TSRs (e.g., capsular releases) Independently performs simple or complex revision TSR/reverse Independently performs humeral osteotomy for fixed component removal and bone grafting for defects with replacement |

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|---|--------------------------|---|--------------------------|--------------------------|
| continued immobilization for instability, wound management, closed reduction for dislocation, post-operative nerve palsy) | | rotator cuff repair) <ul style="list-style-type: none"> • Develops patient-specific post-operative management plans • Surgically treats simple complications (e.g., wound complications, post-operative stiffness, instability) | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Elbow Arthritis – Patient Care | | | | |
|--|---|---|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Obtains and documents basic history, and performs and documents basic elbow exam Orders and interprets basic imaging studies based on differential diagnosis (e.g., plain radiographs, including elbow antero-posterior, oblique, and lateral radiographs when indicated) Provides and manages non-operative treatment Performs posterior approach to the elbow, including incision and superficial dissection and identification of the ulnar nerve Identifies superficial landmarks for elbow arthroscopy portals Provides post-operative medical and surgical management and rehabilitation (e.g., venous thromboembolism [VTE] prophylaxis, antibiotic management, drain management, obtaining appropriate medical consultation when indicated) | <ul style="list-style-type: none"> Obtains and documents focused history, and performs focused exam (e.g., able to differentiate shoulder vs. elbow vs. neurologic pathology) Orders and interprets advanced imaging studies based on differential diagnosis (e.g., MRI, CT, nuclear medicine) Indicates appropriate surgical procedure for elbow arthritis: arthroscopic debridement, open debridement, arthroplasty Performs complete surgical posterior approach to the elbow, including ulnar nerve transposition Modifies and adjusts post-operative treatment plan as needed Recognizes intra-operative complications | <ul style="list-style-type: none"> Performs and documents advanced physical exam (e.g., alignment, ligamentous integrity, neuromuscular [NM] disorders, prior ulnar nerve management, multiple skin incisions, soft-tissue envelope) Completes comprehensive pre-operative planning/templating with advanced alternatives (interposition arthroplasty, unconstrained vs. semiconstrained total elbow arthroplasty) Competently option approaches to the elbow: lateral column, triceps-on, triceps reflecting, olecranon osteotomy, medial approach Removes loose bodies or performs simple debridement of all compartments of the elbow arthroscopically Develops unique, complex, post-operative management plans Surgically treats simple complications (e.g., wound complications, stiffness) | <ul style="list-style-type: none"> Performs primary total elbow arthroplasty Performs more complex elbow arthroscopy, including extensive debridement, contracture release Develops appropriate plan for complex posttraumatic conditions, including malunion, bone loss, nonunion, contracture, instability, etc. Effectively manages and educates patient expectations to obtain realistic outcomes and post-operative restrictions, including potential intra- and post-operative complications Surgically treats complex complications (e.g., heterotopic ossification, severe contracture, ulnar nerve palsy, periprosthetic fracture, triceps failure) | <ul style="list-style-type: none"> Performs revision total elbow arthroplasty or interposition arthroplasty Performs advanced elbow arthroscopy, including osteocapsular arthroplasty, and synovectomy Identifies and effectively manages the etiologies of implant failure in total elbow arthroplasty, including infection, aseptic loosening, mal-alignment, bushing wear, osteolysis, etc. |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Knee Arthritis – Medical Knowledge | | | | |
|--|---|--|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Classifies disease stage/severity and recognizes implications of disease processes (e.g., osteo arthritis [OA], inflammatory arthritis, osteonecrosis [ON], metabolic bone disease, neoplasms) Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., plain radiographs) Demonstrates knowledge of the natural history of knee arthritis Demonstrates knowledge of knee anatomy Understands basic pre-surgical planning and templating Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications Understands basic implant choices Understands the importance of post-operative complications that may arise from TKR (e.g., wound healing complications, infection, VTE, instability, neovascularization [NV] injury, stiffness) | <ul style="list-style-type: none"> Demonstrates knowledge of pathophysiology related to knee arthritis and current literature and alternative treatments Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., MRI, CT, nuclear medicine) Understands the effects of intervention on the natural history of knee arthritis Demonstrates knowledge of knee arthritis anatomy, basic surgical approaches, and peri-operative pain management Understands principles of knee biomechanics and failure mechanism of TKR (e.g., alignment, balancing, knee disease) Understands alternative implant choices/biomaterials Understands the importance of intra-operative decision making that may lead to complications (e.g., patellofemoral complications, tibio-femoral instability, femoral and tibial orientation, soft-tissue balancing) | <ul style="list-style-type: none"> Acknowledges controversies within the field (e.g., unicompartmental arthroplasty, patellofemoral arthroplasty, cemented vs. uncemented components, alternative bearings, component geometry including posterior cruciate ligament [PCL]-retaining vs. PCL-substituting, blood management trends, deep vein thrombosis [DVT] prophylaxis, IN/computer-assisted surgery [CAS]/Robotics, approaches) Applies understanding of the natural history to clinical decision making Understands alternative surgical approaches (e.g., non-arthroplasty joint-preservation, such as femoral or tibial osteotomy) Understands implant geometry/design, biomaterials, biologic responses, soft-tissue management, and osseointegration Able to recognize deviations from expected post-operative recovery | <ul style="list-style-type: none"> Understands and educates others on controversies within the field (e.g., unicompartmental arthroplasty, patellofemoral arthroplasty, cemented vs. uncemented components, high flex option, antibiotics in bone cement, alternative bearings, component geometry including PCL-retaining vs. PCL-substituting, blood management trends, DVT prophylaxis, IN/CAS/Robotics, approaches) Understands unrealistic patient expectations to post-operative recovery | <ul style="list-style-type: none"> Primary presenter/author of original work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Knee Revision – Medical Knowledge | | | | |
|---|---|--|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Classifies TKR failure modes and implications on revision (e.g., infection, aseptic loosening, osteolysis, instability, arthrofibrosis, extensor mechanism dysfunction, periprosthetic fracture) Correlates clinical presentation to basic imaging studies (e.g., alignment, joint line restoration, patellar position, loosening) Understands the workup and differential diagnosis of a painful/infected TKR (e.g., complete blood count [CBC], erythrocyte sedimentation rate [ESR], C-reactive protein [CRP], aspiration, frozen section) Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications Understands the importance of post-operative complications that may arise from revision TKR (e.g., wound healing complications, infection, VTE, instability, NV injury, stiffness) | <ul style="list-style-type: none"> Demonstrates knowledge of pathophysiology related to TKR failure modes Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., component rotation on axial imaging) Understands the diagnostic guidelines for periprosthetic knee infection Understands basic pre-surgical planning and templating of revision TKR (e.g., location and classification of bone loss) Understands the importance of intra-operative decision making that may lead to complications of revision TKR (patellofemoral [PF] complications, tibio-femoral instability, femoral and tibial orientation, soft-tissue balancing) | <ul style="list-style-type: none"> Acknowledges controversies within the field of revision TKR (e.g., articulating vs. static spacers, cemented vs. uncemented stems, metal augmentation vs. allograft, level of constraint) Understands the available treatment options for acute, subacute, and chronic periprosthetic infections Recognizes that non-operative treatment may be appropriate when clear indications for revision TKR are not present Understands alternative implant choices/biomaterials Recognizes deviations from expected post-operative recovery | <ul style="list-style-type: none"> Understands and educates others on controversies within the field of revision TKR (e.g., articulating vs. static spacers, cemented vs. uncemented stems, metal augmentation vs. allograft, level of constraint) Understands and educates others on implant geometry, biomaterials, biologic responses, soft-tissue management, osseointegration Understands unrealistic patient expectations for post-operative recovery | <ul style="list-style-type: none"> Primary presenter/author of original work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Hip Arthritis – Medical Knowledge | | | | |
|--|---|--|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Classifies disease stage/severity and recognizes implications of disease processes (e.g., OA, rheumatoid arthritis [RA], ON, femoroacetabular impingement [FAI], metabolic bone disease, neoplasms) Correlates anatomic knowledge to imaging findings on basic imaging studies (plain radiographs) Demonstrates knowledge of the natural history of hip arthritis Demonstrates knowledge of hip anatomy Understands basic pre-surgical planning and templating Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications Understands basic implant choices Understands the importance of post-operative complications that may arise from THR (e.g., VTE, infection, dislocation, NV injury) | <ul style="list-style-type: none"> Demonstrates knowledge of pathophysiology related to hip arthritis and current literature and alternative treatments Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., MRI, CT, nuclear medicine) Understands the effects of intervention on the natural history of hip arthritis Demonstrates knowledge of hip arthritis anatomy and basic surgical approaches Understands principles of hip biomechanics and failure mechanism of THR (e.g., limb lengths, offset, acetabular component position, spine disease) Understands alternative implant choices/biomaterials Understands the importance of intra-operative decision making that may lead to complications (e.g., limb-length discrepancies, instability, cup orientation, femoral offset) | <ul style="list-style-type: none"> Acknowledges controversies within the field (e.g., cemented vs. uncemented femoral component, alternative bearings, femoral component geometry/design, blood management trends, DVT prophylaxis, IN/CAS/Robotics, approaches) Applies understanding of the natural history to clinical decision-making Understands alternative surgical approaches (non-arthroplasty joint-preservation, such as femoral and pelvic osteotomy) Understands implant geometry/design, biomaterials, biologic responses, osteointegration Recognizes deviations from expected post-operative recovery | <ul style="list-style-type: none"> Understands controversies within the field (e.g., cemented vs. uncemented femoral component, alternative bearings, femoral component geometry/design, blood management trends, DVT prophylaxis, IN/CAS/Robotics, approaches) Understands unrealistic expectations about post-operative recovery | <ul style="list-style-type: none"> Primary presenter/author of original work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Hip Revision – Medical Knowledge | | | | |
|--|---|--|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Classifies THR failure modes and implications on revision (e.g., infection, aseptic loosening, osteolysis, instability, heterotopic ossification, abductor deficiency, periprosthetic fracture) Understands the workup and differential diagnosis of a painful/infected THR (e.g., CBC, ESR, CRP, aspiration, frozen section) Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications Understands the importance of post-operative complications that may arise from revision THR (e.g., wound healing complications, infection, VTE, instability, NV injury, stiffness) | <ul style="list-style-type: none"> Demonstrates knowledge of pathophysiology related to THR failure modes Correlates clinical presentation to basic imaging studies (e.g., cup orientation, center of rotation, offset, limb lengths, femoral component position, extent of bone loss, loosening) Understands the diagnostic guidelines for periprosthetic joint infection Understands basic pre-surgical planning and templating of revision THR (e.g., location and classification of bone loss) Understands the importance of intra-operative decision making that may lead to complications of revision THR (component position and sizing and soft-tissue tensioning) | <ul style="list-style-type: none"> Understands controversies within the field of revision THR (e.g., articulating spacers, stem choice, metal augmentation vs. allograft, level of constraint, cages vs. triflange, head-neck ratio, use of modularity) Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., anteversion, adverse soft-tissue reaction) Understands the available treatment options for acute, subacute, and chronic periprosthetic infections Recognizes that non-operative treatment may be appropriate when clear indications for revision THR are not present Understands available implant choices/biomaterials and alternative plans and options (e.g., metaphyseal fracture requiring distal fixation, use of structural allografts when indicated) Recognizes deviations from expected post-operative recovery | <ul style="list-style-type: none"> Understands and educates others on controversies within the field of revision THR (e.g., articulating spacers, stem choice, metal augmentation vs. allograft, level of constraint, cages vs. triflange, head-neck ratio, use of modularity) Understands and educates others on implant design, biomaterials, biologic responses, soft-tissue management, osseointegration Understands unrealistic and/or conflicting patient expectations to obtain realistic outcomes (e.g., lengthening of limb for stability, abductor weakness resulting in limp, post-operative activity level) | <ul style="list-style-type: none"> Primary presenter/author of original work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Shoulder Arthritis – Medical Knowledge | | | | |
|--|--|---|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Classifies disease stage/severity and recognizes implications of disease processes (e.g., osteoarthritis [OA], inflammatory arthritis, avascular necrosis, metabolic bone disease, neoplasms) Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., plain radiographs) Demonstrates knowledge of the natural history of shoulder arthritis Demonstrates knowledge of shoulder anatomy Understands basic pre-surgical planning and templating Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications Understands basic implant choices Understands the importance of post-operative complications that may arise from TSR (e.g., infection, instability, neurovascular injury, stiffness) Understands indications for | <ul style="list-style-type: none"> Demonstrates knowledge of pathophysiology related to glenohumeral arthritis and current literature and alternative treatments Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., MRI, CT, nuclear medicine) Understands the effects of intervention on the natural history of glenohumeral arthritis Demonstrates knowledge of arthritis anatomy, basic surgical approaches, and peri-operative pain management Understands principles of glenohumeral biomechanics and failure mechanism of TSR (e.g., version, height, soft tissue balancing, rotator cuff disease) Understands alternative implant choices/biomaterials (e.g. surface replacement, interpositional arthroplasty options-achilles tendon/meniscal allografts) Understands the importance of intra- | <ul style="list-style-type: none"> Acknowledges controversies within the field (e.g., hemiarthroplasty vs. TSR for osteoarthritis, biologic glenoid resurfacing, treatment of arthritis in the young patient, peg vs. keel glenoid, design vs. outcome, lateralization in reverse TSR and component geometry, computer-assisted surgery, navigated base-plate screw fixation, use of modularity, head-neck ratio) Applies understanding of the natural history to clinical decision making Understands alternative surgical approaches (e.g., non-arthroplasty joint-preservation, arthroscopic debridement/release, surface replacement) Understands implant geometry/design, biomaterials, biologic responses, soft-tissue management, and osseointegration Able to recognize deviations from expected post-operative recovery | <ul style="list-style-type: none"> Understands and educates others on controversies within the field (e.g., hemiarthroplasty vs. TSR for osteoarthritis, biologic glenoid resurfacing, treatment of arthritis in the young patient, peg vs. keel glenoid, design vs. outcome, lateralization in reverse TSR and component geometry, computer-assisted surgery, navigated base-plate screw fixation, use of modularity and head-neck ratio) Understands unrealistic patient expectations to post-operative recovery | <ul style="list-style-type: none"> Primary presenter/author of original work |

| | | | | |
|--------------------------------------|--|--------------------------|--------------------------|--------------------------|
| TSR vs. hemiarthroplasty vs. reverse | operative decision making that may lead to complications (e.g., stiffness, instability, humeral version and glenoid orientation, soft-tissue balancing, cement technique, adequate glenoid bone support) | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Shoulder Revision – Medical Knowledge | | | | |
|---|--|--|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Classifies TSR failure modes and implications on revision (e.g., infection, aseptic loosening, osteolysis, instability, stiffness, rotator cuff failure, periprosthetic fracture) • Correlates clinical presentation to basic imaging studies (e.g., humeral height, glenoid and humeral version, loosening) • Understands the workup and differential diagnosis of a painful/infected TSR (e.g., complete blood count [CBC], erythrocyte sedimentation rate [ESR], C-reactive protein [CRP], aspiration, frozen section) • Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications • Understands the importance of post-operative complications that may arise from revision TSR (e.g., subscapularis and cuff integrity, infection, instability, NV injury, stiffness) | <ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to TSR failure modes • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., component version on axial imaging) • Understands the diagnostic guidelines for periprosthetic shoulder infection • Understands basic pre-surgical planning and templating of revision TSR (e.g., location and classification of bone loss) • Understands the importance of intra-operative decision making that may lead to complications of revision TSR (soft-tissue balancing) | <ul style="list-style-type: none"> • Acknowledges controversies within the field of revision TSR (e.g., indications for reverse, cemented vs. uncemented components, prosthetic augmentation vs. allograft, management of bicep and subscapularis) • Understands the available treatment options for acute, subacute, and chronic periprosthetic infections • Recognizes that non-operative treatment may be appropriate when clear indications for revision TSR are not present • Understands alternative implant choices/biomaterials • Recognizes deviations from expected post-operative recovery | <ul style="list-style-type: none"> • Understands and educates others on controversies within the field of revision TSR (e.g., indications for reverse, cemented vs. uncemented components, prosthetic augmentation vs. allograft, management of bicep and subscapularis) • Understands and educates others on implant geometry, biomaterials, biologic responses, soft-tissue management, osseointegration • Understands unrealistic patient expectations for post-operative recovery (e.g., post-operative elevation, activity level, strength) | <ul style="list-style-type: none"> • Primary presenter/author of original work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Elbow Arthritis – Medical Knowledge | | | | |
|---|--|--|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Classifies disease stage/severity and recognizes implications of disease processes (e.g., osteoarthritis [OA], inflammatory arthritis, osteonecrosis [ON], metabolic bone disease, neoplasms) • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., plain radiographs) • Demonstrates knowledge of the natural history of elbow arthritis • Demonstrates knowledge of elbow anatomy • Understands basic pre-surgical planning and templating • Demonstrates knowledge of non-operative treatment options and surgical indications and contraindications • Understands the importance of post-operative complications that may arise from elbow surgery (e.g., wound healing complications, infection, stiffness, heterotopic ossification, instability, nerve injury) | <ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to elbow arthritis and current literature and alternative treatments • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., MRI, CT, nuclear medicine) • Understands the effects of intervention on the natural history of elbow arthritis • Demonstrates knowledge of elbow arthritis anatomy, basic surgical approaches, and peri-operative pain management • Understands basic implant choices (unconstrained vs. semiconstrained) • Understands principles of elbow biomechanics and total elbow arthroplasty (TEA) kinematics • Understands the importance of intra-operative decision making that may lead to complications (nerve injury, triceps-failure, fracture, instability) | <ul style="list-style-type: none"> • Understands appropriate surgical indications based on severity of disease and patient physiology (age, activity level, prior treatment, etc.): arthroscopic debridement, interposition arthroplasty, primary total elbow arthroplasty • Applies understanding of the natural history to clinical decision making • Understands alternative surgical approaches (triceps on, triceps reflecting, impact of prior ulnar nerve surgery, limitations and complications of arthroscopic treatment) • Understands implant specific design features: anterior flange, humeral shortening, bushing design, revision implants, radial head components • Recognizes deviations from expected post-operative recovery | <ul style="list-style-type: none"> • Understands and educates others on complex or controversial topics within the field (open vs. arthroscopic debridement, complex revision of failed primary TEA, reconstructive techniques for bone loss, osteolysis and peri-prosthetic fracture, implant instability) • Understands unrealistic patient expectations to post-operative recovery | <ul style="list-style-type: none"> • Primary presenter/author of original work |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Systems thinking, including cost-effective practice – Systems-based Practice | | | | |
|--|---|---|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Describes basic levels of systems of care (e.g., self-management to societal) • Understands the economic challenges of patient care in the health care system | <ul style="list-style-type: none"> • 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) | <ul style="list-style-type: none"> • Orders and schedules tests in appropriate systems for individual patients, balancing expenses and quality • Successfully navigates the economic differences of the health care system • Demonstrates knowledge of current procedural terminology (CPT) and diagnostic codes and how to appropriately utilize them • Participates in the safe transfer of care from surgery to inpatient, inpatient to home, or outpatient care | <ul style="list-style-type: none"> • Effectively manages clinic team and schedules for patient and workflow efficiency • Uses evidence-based guidelines for cost-effective care | <ul style="list-style-type: none"> • Leads systems change at micro and macro levels (e.g., manages operating room [OR] team and patient flow in a multi-case OR day) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Works in interprofessional teams to enhance patient safety and quality care – Systems-based Practice | | | | |
|---|--|--|--|--|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Recognizes importance of complete and timely documentation in appropriate indications, teamwork, and patient safety | <ul style="list-style-type: none"> Uses checklists and briefings to prevent adverse events in health care | <ul style="list-style-type: none"> Participates in quality improvement or patient safety program and/or project | <ul style="list-style-type: none"> Maintains team situational awareness and promotes “speaking up” with concerns Incorporates clinical quality improvement and patient safety into clinical practice | <ul style="list-style-type: none"> Develops and publishes quality improvement project results Leads local, regional, or national quality improvement project |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Use technology to accomplish safe health care delivery – Systems-based Practice | | | | |
|--|---|---|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Explains the role of the Electronic Health Record (EHR) and Computerized Physician Order Entry (CPOE) in prevention of medical errors Appropriately and accurately enters patient data in EHR | <ul style="list-style-type: none"> Effectively uses electronic medical records in patient care Effectively uses electronic imaging, implant records, and templating to improve patient care | <ul style="list-style-type: none"> Reconciles conflicting data in the medical record | <ul style="list-style-type: none"> Contributes to reduction of risks of automation and computerized systems by reporting system problems | <ul style="list-style-type: none"> Recommends systems re-design for faculty computerized processes |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| 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 one’s 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 | | | | |
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback from teachers and colleagues • Demonstrates computer literacy and basic computer skills in clinical practice | <ul style="list-style-type: none"> • Continually assesses performance by evaluating feedback and assessments • Develops a learning plan based on feedback with some external assistance • Demonstrates use of published review articles or guidelines to review common topics in practice • Uses patient care experiences to direct learning | <ul style="list-style-type: none"> • Accurately assesses areas of competence and deficiencies and modifies learning plan • Demonstrates the ability to select an appropriate evidence-based information tool to answer specific questions while providing care | <ul style="list-style-type: none"> • Performs self-directed learning without external guidance • Critically evaluates and uses patient outcomes to improve patient care • Actively engages in research projects that are of peer-review quality • Has a comprehensive understanding of health care market and delivery costs (e.g., cost of various implants) | <ul style="list-style-type: none"> • Incorporates practice change based upon new evidence |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Locate, appraise, and assimilate evidence from scientific studies to improve patient care – Practice-based Learning and Improvement | | | | |
|--|---|--|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning • Categorizes the design of a research study | <ul style="list-style-type: none"> • Ranks study designs by their level of evidence • Identifies bias affecting study validity • Formulates a searchable question from a clinical question | <ul style="list-style-type: none"> • 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 • Critically evaluates information from others, including colleagues, experts, industry representatives, and patients | <ul style="list-style-type: none"> • Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery • Cites evidence supporting several common practices | <ul style="list-style-type: none"> • Independently teaches and assesses evidence-based medicine and information mastery techniques |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| <p>Compassion, integrity, and respect for others, as well as sensitivity and responsiveness to diverse patient populations, including 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</p> | | | | |
|--|---|---|--|--|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Consistently demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families • Recognizes the diversity of patient populations with respect to gender, age, culture, race, religion, disabilities, sexual orientation, and socioeconomic status • 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 | <ul style="list-style-type: none"> • Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness while exhibiting these attitudes consistently in common and uncomplicated situations • Consistently recognizes ethical issues in practice; discusses, analyzes, and manages these in common and frequent clinical situations, including socioeconomic variances in patient care | <ul style="list-style-type: none"> • Exhibits these attitudes consistently in complex and complicated situations • Recognizes how own personal beliefs and values impact medical care • Knowledgeable about the beliefs, values, and practices of diverse patient populations, and their potential impact on patient care • Recognizes ethical violations in professional and patient aspects of medical practice | <ul style="list-style-type: none"> • Develops and uses an integrated and coherent approach to understanding, and effectively works with others to provide good medical care that integrates personal standards with standards of medicine • Consistently considers and manages ethical issues in practice • Consistently practices medicine as related to specialty care in a manner that upholds values and beliefs of self and medicine | <ul style="list-style-type: none"> • Demonstrates leadership and mentoring regarding these principles of bioethics • Manages ethical misconduct in patient management and practice |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p>Comments:</p> | | | | |

| Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health – Professionalism | | | | |
|---|--|--|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> • Understands when assistance is needed and is willing to ask for help • 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 • Aware of the basic principles and aspects of the general maintenance of emotional, physical, and mental health, and issues related to fatigue/sleep deprivation | <ul style="list-style-type: none"> • Recognizes limits of knowledge in common clinical situations and asks for assistance • Recognizes value of humility and respect towards patients and associate staff members • Demonstrates adequate management of personal, emotional, physical, and mental health, and fatigue | <ul style="list-style-type: none"> • Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care • Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine • Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health | <ul style="list-style-type: none"> • Mentors and models personal and professional responsibility to colleagues • Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues • Practices medicine consistent with published professional standards (e.g., American Academy of Orthopaedic Surgeons and American Association of Hip and Knee Surgeons), including appropriate relationships with industry partners | <ul style="list-style-type: none"> • Develops organizational policies and education to support the application of these principles in the practice of medicine and surgery |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Communication – Interpersonal and Communication Skills | | | | |
|--|--|---|---|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> 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) | <ul style="list-style-type: none"> Communicates competently within systems and with other care providers, and provides detailed information about patient care (e.g., demonstrates sensitivity to patient- and family-related information gathering/sharing to social cultural context; begins to engage patient in patient-based decision making based on the patient’s understanding and ability to carry out the proposed plan; demonstrates empathic response to patient’s and family’s needs; actively seeks information from multiple sources, including consultations; avoids being a source of conflict; able to obtain informed consent [risks, benefits, alternatives, and expectations]) | <ul style="list-style-type: none"> Communicates competently in difficult patient circumstances (e.g., able to customize emotionally difficult information, such as limb-length discrepancy, unsatisfied/angry patients; supports patient and family; engages in patient-based decision making, incorporating patient and family/cultural values and preferences) | <ul style="list-style-type: none"> Communicates competently in complex/adversarial situations (e.g., understands a patient’s secondary motivations in the treatment of his or her care—drug seeking, disability issues, and legal cases) Sustains working relationships during complex and challenging situations, including transitions of care (e.g., treatment of un-reconstructible limb that may potentially require amputation) Manages conflict with peers, subordinates, and superiors | <ul style="list-style-type: none"> Demonstrates leadership in communication activities (e.g., coaches others to improve communication skills; engages in self-reflection on how to improve communication skills) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |

| Teamwork (e.g., physicians, nursing and allied health care providers, administrative and research members) – Interpersonal and Communication skills | | | | |
|--|---|--|--|---|
| Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |
| <ul style="list-style-type: none"> Recognizes and communicates critical patient information in a timely and accurate manner to other members of the treatment team Recognizes and communicates role as a team member to patients and staff members Responds to requests for information <p><i>Examples:</i> Lab results, accurate and timely progress notes, answers pages in a timely manner</p> | <ul style="list-style-type: none"> Supports and respects decisions made by team Actively participates in team-based care; supports activities of other team members, and communicates their roll to the patient and family <p><i>Examples:</i> Hand-offs, transitions of care, communicates with other health care providers, and staff members</p> | <ul style="list-style-type: none"> Able to facilitate, direct, and delegate team-based patient care activities Understands the OR team leadership role and obligations <p><i>Examples:</i> Leads daily rounds, communicates plan of action with OR personnel</p> | <ul style="list-style-type: none"> Leads team-based care activities and communications Able to identify and rectify problems with team communication <p><i>Examples:</i> Organizes and verifies hand-off rounds, coverage issues</p> | <ul style="list-style-type: none"> Seeks leadership opportunities within professional organizations Able to lead/facilitate meetings within organization/system |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Comments: | | | | |