

The Orthopaedic 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 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.

Orthopaedic Surgery Milestones

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Milestone Reporting

This document presents milestones 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. In the initial years of implementation, the Review Committee 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.

For each period, review and reporting will involve selecting milestone levels that best describe each resident'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. 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.

Additional Notes

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. 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 institutional and program policies. For example, a resident 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/acqmeweb/Portals/0/MilestonesFAQ.pdf>.

The diagram below presents an example set of milestones for one sub-competency in the same format as the milestone report worksheet. For each reporting period, a resident’s performance on the milestones for each sub-competency will be indicated by:

- Selecting the level of milestones that best describes that resident’s performance in relation to the milestones
- OR
- For Patient Care and Medical Knowledge milestones, selecting the option that says the resident has “Not yet rotated”
- OR
- For Interpersonal and Communication Skills, Practice-based Learning and Improvement, Professionalism, and Systems-based Practice, selecting the option that says the resident has “Not yet achieved Level 1”

Milestone Description: Pediatric Septic Hip – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of common presentation of hip septic arthritis • Demonstrates knowledge of basic hip anatomy • Demonstrates knowledge of basic imaging studies • Demonstrates knowledge of appropriate laboratory studies 	<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology of joint damage related to septic arthritis • Demonstrates knowledge of basic surgical approach • Demonstrates knowledge of the differential diagnosis of the irritable hip • Understands natural history and the effects of intervention • Demonstrates knowledge of advanced imaging studies 	<ul style="list-style-type: none"> • Demonstrates knowledge of the vascular supply in the skeletally immature hip • Demonstrates knowledge of microbiology and antibiotic choices • Demonstrates knowledge of potential complications • Demonstrates knowledge of clinical and laboratory data relevant to differential diagnosis 	<ul style="list-style-type: none"> • Demonstrates knowledge of options and anatomy for surgical approaches • Demonstrates knowledge of atypical infecting organisms and management options 	<ul style="list-style-type: none"> • Author/presenter in published work
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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).

Anterior Cruciate Ligament (ACL) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> Obtains history and performs basic physical exam (e.g., age, gender, history of present illness [HPI], past medical history [PMHx], social history, range of motion, effusion, neurovascular status) Appropriately orders basic imaging studies (e.g., knee radiographs) Prescribes non-operative treatments (e.g., range of motion [ROM], weight-bearing [WB] status) Provides basic peri-operative management (e.g., neurovascular status, brace, WB status) Lists potential complications (e.g., infection, loss of motion, graft failure, neurovascular compromise) 	<ul style="list-style-type: none"> Obtains focused history and performs focused exam (e.g., mechanism of injury, past knee history, past treatments, Lachman, anterior drawer, pivot shift, meniscal pain) Appropriately interprets basic imaging studies (e.g., alignment, joint space, patella alignment) Prescribes and manages non-operative treatment (e.g., closed chain quad strengthening) Completes pre-operative planning with instrumentation, graft selection and implants Examines injury under anesthesia (e.g., complete ligament examination) Provides post-operative management and rehabilitation (e.g., WB status, brace, ROM, quad strength) Capable of diagnosis and early management of complications (e.g., graft failure, tunnel placement) 	<ul style="list-style-type: none"> Recognizes concomitant associated injuries (e.g., lateral collateral ligament [LCL], multi ligament, osteochondritis dissecans [OCD], posterior cruciate ligament (PCL), collateral ligaments, posterolateral corner instability, reverse pivot shift) Appropriately orders and interprets advanced imaging studies (e.g., standing views, magnetic resonance imaging [MRI], Segond fracture, bone bruising) Provides complex non-operative treatment (e.g., WB status, bracing as appropriate, vascular studies) Completes comprehensive pre-operative planning with alternatives Performs diagnostic arthroscopy, notchplasty, and/or graft harvest Modifies and adjusts post-operative treatment plan as needed (e.g., loss of knee motion treatment, sport specific drills, return to sport) 	<ul style="list-style-type: none"> Performs graft passage and fixation Capable of treating complications both intraoperatively and post-operatively (e.g., graft harvest failure, tunnel malposition, chondral injury) 	<ul style="list-style-type: none"> Performs revision/transphyseal ACL reconstruction (e.g., hardware removal, outside in drilling techniques) Develops unique, complex post-operative management plans Surgically treats complex complications
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Anterior Cruciate Ligament – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to ACL injury (e.g., mechanisms of injury) • Correlates anatomic knowledge to imaging findings on basic imaging studies • Has knowledge of natural history of ACL injury • Demonstrates knowledge of ACL injury anatomy and basic surgical approaches (e.g., ACL bundles) 	<ul style="list-style-type: none"> • Understands pathophysiology of concomitant injuries (e.g., secondary restraints of knee [posterior lateral corner {PCL}]) • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Ability to grade instability (e.g., translations grade and end point) • Understands the effects of intervention on natural history of ACL injury • Understands alternative surgical approaches (e.g., miniopen, 2 incision) • Understands basic pre-surgical planning and templating • Understands advantages and disadvantages of graft types 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Understands rehabilitation mechanics (e.g., phases of rehabilitation, closed versus open chain exercises) • Understands biomechanics of the knee and biomechanics of implant choices 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., graft type, brace treatment, surgical technique and fixation, surgical techniques to include skeletally immature knee) • Applies understanding of natural history to clinical decision-making • Understands how to prevent/avoid potential complications 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
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Ankle Arthritis – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies (e.g., three weight-bearing views) • Prescribes non-operative treatments • Provides basic peri-operative management (e.g., pre- and post-operative orders, labs, consults) • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam and gait analysis • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment (e.g., non-steroidal anti-inflammatory drugs [NSAIDs], steroid injections, brace, rocker bottom shoes) • Completes pre-operative planning with instrumentation and implants • Performs one basic surgical approach to the ankle/mid-foot/hind-foot arthritis (e.g., anterior or lateral transfibular) • Provides post-operative management and rehabilitation (e.g., prothrombin time [PT] orders with goals and restrictions) • Capable of diagnosis and early management of complications (e.g., wound healing problems, infection, deep vein thrombosis [DVT]) 	<ul style="list-style-type: none"> • Appropriately orders and interprets advanced imaging studies/lab studies • Completes comprehensive pre-operative planning with alternatives • Modifies and adjusts post-operative treatment plan as needed 	<ul style="list-style-type: none"> • Provides patient specific non-operative treatment (e.g., diagnostic injections) • Capable of performing straight forward ankle/mid-foot/hind-foot reconstruction such as Tarsometatarsal joint arthrodesis, tarsal joint arthrodesis, triple, talonavicular or subtalar joint arthrodesis and ankle fusion (e.g., with minimal deformity or bone defect) • Capable of surgically treating simple complications (e.g., incision and drainage [I&D]) 	<ul style="list-style-type: none"> • Performs complex surgical approaches and reconstruction to the ankle/mid-foot/hind-foot arthritis (e.g., posterior, posterolateral, posteromedial) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., nonunion, malunion)
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Ankle Arthritis – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to ankle/mid-foot/hind-foot arthritis • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., osteophyte formation, joint narrowing, subchondral cysts and sclerosis) • Demonstrates basic knowledge of natural history of ankle/mid-foot/hind-foot arthritis • Demonstrates knowledge of gait mechanics (e.g., phases of gait) and normal limb alignment • Demonstrates knowledge of ankle/mid-foot/hind-foot arthritis anatomy and basic surgical approaches (e.g., anterior, lateral-transfibular) • Demonstrates knowledge of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., bone loss, articular deformity, subluxation) • Understands the effects of intervention on natural history of ankle/mid-foot/hind-foot arthritis (e.g., effects of NSAIDs, steroid injections, brace, rocker bottom shoes) • Demonstrates knowledge of abnormal gait mechanics of ankle/mid-foot/hind-foot arthritis (e.g., antalgic gait, circumduction, decreased stance) and abnormal limb alignment and adjacent joint function • Understands alternative surgical approaches (e.g., posterior, posterolateral, posteromedial) • Understands basic pre-surgical planning and templating • Understands non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments (e.g., non-operative, cheilectomy, fusion, replacement, distraction) • Understands abnormal gait mechanics of ankle/mid-foot/hind-foot arthritis (e.g., identifies abnormal gait patterns in patient) • Applies general understanding of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Understands controversies within the field • Applies understanding of natural history to clinical decision-making (e.g., considers patient-specific characteristics of disease to select most appropriate treatment) • Applies biomechanics to implant and procedure selection 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
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Ankle Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments • Splints fracture appropriately • Provides basic peri-operative management • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam; recognizes implications of soft tissue injury • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Performs a closed reduction • Completes pre-operative planning with instrumentation and implants • Performs surgical exposure of the lateral malleolus • Provides post-operative management and rehabilitation • Capable of diagnosis and early management of complications 	<ul style="list-style-type: none"> • Appropriately orders and interprets advanced imaging studies (e.g., stress views, computed tomography [CT] scan) • Provides a comprehensive assessment of most fractures on imaging studies • Completes comprehensive pre-operative planning with alternatives • Performs surgical reduction and fixation of a simple fracture (e.g., lateral or bimalleolar ankle fracture) • Modifies and adjusts post-operative treatment plan as needed • Capable of treating complications both intra-operatively and post-operatively (e.g., wound breakdown following malleolar fixation) 	<ul style="list-style-type: none"> • Provides comprehensive assessment of complex fracture patterns on imaging studies (e.g., pilon fracture) • Recognizes indications for and provides non-operative treatment of an unstable fracture (e.g., diabetes, medical comorbidities, non-compliance) • Performs surgical reduction and fixation of a moderately complex fracture (e.g., open reduction internal fixation [ORIF] trimalleolar ankle fracture or simple pilon fracture) 	<ul style="list-style-type: none"> • Performs surgical reduction and fixation of a full range of fractures and dislocations (e.g., ORIF complex pilon fracture) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., revision fixation after failed ORIF)
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Ankle Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to ankle fractures • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Demonstrates ability to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates basic knowledge of natural history of ankle fractures • Demonstrates knowledge of ankle fractures anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Understands implication of open fractures and soft tissue injury 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Understands the effects of intervention on natural history of ankle fractures • Understands alternative surgical approaches 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., syndesmotomic fixation, indications and options) • Applies understanding of natural history to clinical decision-making • Understanding of biomechanics and implant choices 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
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Carpal Tunnel – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains basic history and performs basic physical exam • Lists potential surgical complications (e.g., infection, scar sensitivity, neurovascular injury) 	<ul style="list-style-type: none"> • Obtains focused history, including identifying night pain, paresthasias • Performs median nerve motor/ sensory evaluation (e.g., median nerve [MN] numbness, thumb abduction) • Performs provocative maneuvers (e.g., Tinel, Phalen, MN compression test) • Appropriately considers electrodiagnostic test • Prescribes non-operative treatments (e.g., night splints, steroid injection when appropriate) • Capable of diagnosing surgical complications (e.g., injury to the median nerve or its branches and vascular injury) • Provides simple post-operative management and rehabilitation 	<ul style="list-style-type: none"> • Evaluates other sites of MN compression (e.g., pronator syndrome, cervical radiculopathy) • Interprets electrodiagnostic tests 	<ul style="list-style-type: none"> • Performs Carpal Tunnel Release (CTR) (e.g., open or endoscopic) • Capable of treating simple complications (e.g., infection, wound healing) • Capable of performing complex postoperative management (e.g., worsening numbness, worsening pain, additional radiating symptoms) 	<ul style="list-style-type: none"> • Capable of surgical management of major complications (e.g., injury to superficial arch, ulnar artery, branches of median nerve, or median nerve) • Capable of opposition transfer (e.g., palmaris longus, extensor indicis pollicis [EIP], or flexor digitorum superficialis [FDS]) • Capable of performing revision carpal tunnel surgery
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Carpal Tunnel – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the anatomy of carpal tunnel/median nerve • Understands the normal physiology of the median nerve 	<ul style="list-style-type: none"> • Demonstrates knowledge of the differential diagnosis of neuropathic surgery (e.g., pronator syndrome, cubital tunnel, thoracic outlet, cervical radiculopathy, peripheral neuropathy) • Understands risk factors associated with Carpal Tunnel Syndrome (CTS) (e.g., diabetes, inflammatory arthritis, pregnancy, hypothyroidism) • Demonstrates knowledge of median nerve motor/sensory distribution, thumb abduction, thenar numbness, anterior interosseous nerve (AIN) weakness, cervical radiculopathy • Understands natural history of CTS • Understands the pathophysiology of nerve compression (e.g., increased carpal tunnel pressure, nerve ischemia) • Understands surgical options (e.g., open, endoscopic) 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternatives to surgery • Understands the capabilities and limitations of electrodiagnostic studies • Understands influence of comorbidities • Demonstrates knowledge of complications of surgical management (e.g., location of MN with respect to superficial arch, recurrent motor branch, palmar cutaneous branch, Guyon's canal) 	<ul style="list-style-type: none"> • Understands controversies within field (e.g., endoscopic versus open, use of electrodiagnostics) 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
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Degenerative Spinal Conditions – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments: NSAIDs, rehabilitation, initiates basic care • Recognizes indications for and initiates immediate additional work-up ("Red Flags") or urgent surgical care (progressive deficit, cauda equina syndrome) • Provides basic/general peri-operative management • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam; appropriately interprets neurological exam • Appropriately interprets basic imaging studies • Assists in exposure for anterior and posterior cervical spine, posterior lumbar spine, performs closure • Provides procedure and patient specific post-operative management and rehabilitation • Capable of diagnosis and early management of complications 	<ul style="list-style-type: none"> • Extends examination to non-spinal differential diagnostic possibilities (vascular claudication, hip arthritis, etc.) • Appropriately orders and interprets advanced imaging studies (magnetic resonance imaging [MRI], myelogram, CT); correlates clinical and imaging findings to form clinical diagnosis • Prescribes and manages non-operative treatment: injections, referrals to other professionals • Recommends appropriate surgical procedures considering indications and contraindications, risks and benefits for simple cases (e.g., single-level HNP with radiculopathy) • Completes comprehensive pre-operative planning with alternatives and criteria for acceptable intraoperative result for straightforward cases (single-level herniated nucleus pulposus [HNP]) • Capable of performing anterior and posterior cervical, posterior lumbar 	<ul style="list-style-type: none"> • Provides complex non-operative treatment (e.g., individualized care, shared decision making, comprehensive informed consent) • Recommends appropriate surgical procedures considering indications and contraindications, risks and benefits for complex cases (e.g., multi-level stenosis with deformity) • Completes comprehensive pre-operative planning with alternatives and criteria for acceptable intraoperative result for complex cases (e.g., multi-level stenosis with deformity) • Capable of decorticating for posterolateral fusion, placing grafts • Capable of surgically treating simple complications (e.g., drainage of hematoma, debridement of infection) 	<ul style="list-style-type: none"> • Completes comprehensive pre-operative planning with alternatives and criteria for acceptable intra-operative result for highly complex cases (e.g., revision surgery) • Capable of performing decompression, posterior lumbar interbody fusion (PLIF), transforaminal lumbar interbody fusion (TLIF), places complex implants (e.g., fusion cages, pedicle screws) • Develops unique complex post-operative management plans when indicated • Capable of surgical treatment of complex complications (e.g., revise displaced hardware or graft, durotomy repair)

		<p>surgical exposure, assisting with implant placement</p> <ul style="list-style-type: none"> • Modifies and adjusts post-operative treatment plan according to clinical situation (e.g., modifies for comorbid conditions or complications) • Capable of treating simple complications both intra- and post-operatively (e.g., medical complications, hemostasis) 											
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Degenerative Spinal Conditions – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to lumbar and cervical degenerative conditions • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., cervical or lumbar radiographs) • Demonstrates knowledge of physical exam of cervical and lumbar spine and related neurologic and provocative signs • Demonstrates knowledge of general peri-operative patient care 	<ul style="list-style-type: none"> • Describes specific clinical syndromes of lumbar and cervical degenerative conditions (e.g., radiculopathy from HNP vs. stenosis vs. spondylolisthesis, back pain, cervical radiculopathy, or myelopathy) • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., MRI, Myelogram/CT) • Demonstrates knowledge of biological theories of pain generation • Demonstrates knowledge of natural history of lumbar and cervical degenerative conditions • Demonstrates knowledge of anatomic changes resulting from lumbar and cervical degenerative disorders and basic surgical approaches (e.g., anterior cervical, posterior cervical or lumbar) • Demonstrates knowledge of basic pre-surgical planning and criteria for acceptable intra-operative 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Demonstrates knowledge of biology of fusion healing • Demonstrates knowledge of the effects of intervention on natural history of lumbar and cervical degenerative conditions • Demonstrates knowledge of alternative surgical approaches, complications of approaches • Demonstrates knowledge of presurgical planning and criteria for acceptable intra-operative result for cases of moderate complexity (e.g., spondylolisthesis, multi-level decompression and fusion) • Demonstrates knowledge of surgical indications • Demonstrates knowledge of basic implant choices 	<ul style="list-style-type: none"> • Demonstrates knowledge of controversies within the field (e.g., epidural blocks, arthroplasty vs. fusion, and fusion techniques) • Demonstrates knowledge of cervical and lumbar biomechanics and alterations by decompression or implants • Demonstrates knowledge of influence of natural history and comorbidity on clinical decision-making • Demonstrates knowledge of alternative implant choices/biomaterials 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field

	result for simple primary cases (e.g., laminotomy for HNP, single-level anterior cervical discotomy and fusion [ACDF]) <ul style="list-style-type: none"> • Demonstrates knowledge of non-operative treatment options 							
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Diabetic Foot – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies (e.g., three or four weight-bearing views of the foot) • Provides basic peri-operative management (e.g., pre- and post-operative orders, labs, consults) • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment (e.g., wound care, antibiotics, off-loading, immobilization, depth shoes, accommodative orthotics) • Completes pre-operative planning including vascular assessment and the potential for wound healing (e.g., ankle-brachial indicis [ABIs] endovascular consultation) • Performs one basic surgical approach to the Diabetic foot (e.g., medial or lateral) • Provides post-operative management and rehabilitation (PT orders with goals and restrictions) • Capable of diagnosis and early management of complications (e.g., wound healing problems, infection, DVT) 	<ul style="list-style-type: none"> • Appropriately orders and interprets advanced imaging studies (e.g., CT and MRI with or without contrast) • Completes comprehensive pre-operative planning with alternatives for limb salvage (e.g., revascularization combined with reconstruction) • Modifies and adjusts post-operative treatment plan as needed 	<ul style="list-style-type: none"> • Provides complex non-operative treatment (e.g., multiple co-morbidities, non-compliant, etc.) • Capable of performing alternative surgical approaches to the Diabetic foot (e.g., multiple or plantar approaches) • Capable of treating complications, both intra- and post-operatively 	<ul style="list-style-type: none"> • Develops unique, complex post-operative management plans • Surgically treats complex complications
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Diabetic Foot – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to Diabetes mellitus (e.g., neuropathy, retinopathy, renal disease, peripheral vascular disease) • Knowledge of medical management of Diabetes mellitus (e.g., glycemic control, diabetic diet) • Demonstrates some knowledge of natural history of Diabetes mellitus • Demonstrates knowledge of foot anatomy 	<ul style="list-style-type: none"> • Understands diabetic foot conditions and staging systems (e.g., infection vs. Charcot, Eichenholz classification) • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., x-ray signs of osteomyelitis, Charcot changes) • Demonstrates some knowledge of diabetic foot conditions (neuropathic ulcer risk factors) and the effects of intervention (e.g., offloading and immobilization for Charcot, debridement and antibiotics for infection) • Demonstrates some knowledge of gait mechanics (e.g., phases of gait and normal limb alignment) • Demonstrates knowledge of basic surgical approaches (e.g., dorsomedial and dorsolateral approaches, amputations of the foot) • Understands basic pre-surgical planning • Demonstrates knowledge of non-operative treatment options and surgical indications • Understands basic science of wound healing 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments (e.g., debridement, off-loading, immobilization) • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., CT and MRI signs of osteomyelitis) • Demonstrates some knowledge of abnormal gait mechanics and limb alignment and adjacent joint function, diabetic shoe wear and orthotics (e.g., propulsive gait, antalgic gait, loss of proprioception and balance) 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., non-operative vs. operative management of osteomyelitis) • Applies understanding of natural history to patient-specific clinical decision-making • Understands alternative surgical approaches (e.g., Plantar approach, complex amputations of the foot) 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
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Diaphyseal Femur and Tibia Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Splints fracture appropriately • Provides basic peri-operative management • Assesses for limb perfusion and compartment syndrome • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Performs a closed reduction • Completes pre-operative planning with instrumentation and implants • Performs basic surgical approaches • Performs patient positioning for operative fixation (e.g., use of fracture table) • Provides post-operative management and rehabilitation • Performs basic open wound management and debridement • Initiates management of limb reperfusion and compartment syndrome • Recognizes the needs of the polytrauma patient • Capable of diagnosis and early management of complications 	<ul style="list-style-type: none"> • Appropriately orders and interprets advanced imaging studies • Provides complex non-operative treatment • Completes comprehensive pre-operative planning with alternatives • Performs surgical repair to a simple fracture • Effectively uses intraoperative imaging • Modifies and adjusts post-operative treatment plan as needed • Capable of performing compartment release 	<ul style="list-style-type: none"> • Performs surgical repair to a moderately complex fracture (e.g., able to perform intramedullary nailing of segmental femur fracture) • Performs alternative surgical approaches for femur and tibia fractures (e.g., open reduction techniques) • Performs complex wound management and debridement (e.g., understands need for consultation for flap coverage) • Prioritizes the needs of the polytrauma patient (e.g., timing of long bone fixation, works with consulting teams) • Capable of treating complications both intraoperatively and post-operatively (e.g., manages post-operative infection) 	<ul style="list-style-type: none"> • Performs surgical repair to a complex fracture (e.g., able to perform intramedullary nail nailing of distal tibia fracture with intraarticular extension) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., treats femoral neck fracture identified after femoral nailing)
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Diaphyseal Femur and Tibia Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to diaphyseal femur and tibia fractures • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of medical and surgical comorbidities 	<ul style="list-style-type: none"> • Able to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates knowledge of associated injuries and impact on surgical care (e.g., femoral neck fracture, associated skeletal injuries) • Understands implication of open fractures and soft tissue injury • Demonstrates knowledge of bone biology, osteoporosis and bone health management • Demonstrates knowledge of natural history of diaphyseal femur and tibia fractures • Demonstrates knowledge of diaphyseal femur and tibia fractures anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Demonstrates knowledge of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Demonstrates knowledge of impact on polytrauma on management of diaphyseal femur and tibia fractures • Understands biomechanics and implant choices • Understands the effects of intervention on natural history of diaphyseal femur and tibia fractures • Understands alternative surgical approaches • Recognizes surgical indications in complex fractures and the polytrauma patient 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., initial management of femur fracture in the polytrauma patient) • Applies understanding of natural history to clinical decision-making 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field

	<ul style="list-style-type: none"> • Demonstrates knowledge of surgical and non-operative complications (e.g., compartment syndrome, fat emboli, infection) 						
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Distal Radius Fracture (DRF) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Orders/interprets basic imaging studies • Splints fracture appropriately • Provides basic post-operative management and rehab • Lists potential complications (e.g., infections, hardware failure tendon injury, Complex Regional Pain Syndrome [CRPS], carpal tunnel syndrome, malreduction) 	<ul style="list-style-type: none"> • Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, median nerve dysfunction, distal radioulnar joint [DRUJ] instability) • Orders/interprets advanced imaging (e.g., CT for comminuted articular fractures) • Recognizes stable/unstable fractures (e.g., metaphyseal comminution, volar/dorsal Barton's, die-punch pattern; multiple articular parts) • Able to perform a closed reduction and splint appropriately • Recognizes surgical indications (e.g., median nerve dysfunction, instability, articular step off/gap, dorsal angulation, radius shortening) • Performs surgical exposure • Modifies and adjusts post-operative plan when indicated • Recognizes/evaluates 	<ul style="list-style-type: none"> • Performs pre-operative planning with appropriate instrumentation and implants • Capable of surgical reduction and fixation of extraarticular fracture • Interprets diagnostic studies for fragility fractures with appropriate management and/or referral 	<ul style="list-style-type: none"> • Capable of surgical reduction and fixation of simple intraarticular fractures (e.g., no more than two articular fragments) • Capable of surgically treating simple complications (e.g., infections, open carpal tunnel release) 	<ul style="list-style-type: none"> • 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) • Capable of surgically treating complex complications (e.g., osteotomies, revision fixation)

	fragility fractures (e.g., orders appropriate work-up and/or consult) <ul style="list-style-type: none"> • Diagnoses and provides early management of complications 							
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Distal Radius Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of anatomy • Understands basic imaging 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Understands controversies within field: fixation techniques and fracture pattern, correlation between radiographic and functional outcomes in elderly patient 	<ul style="list-style-type: none"> • Participates in research in the field with publication
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Adult Elbow Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> Obtains history and basic physical (e.g., age, gender, mechanism of injury, deformity, skin integrity, open/closed injury) Splints fracture appropriately Provides basic peri-operative management (e.g., post-operative orders, ice, elevation, compression) Lists potential complications (e.g., infection, hardware failure, stiffness, reflex sympathetic dystrophy [RSD], neurovascular injury, posttraumatic arthritis) 	<ul style="list-style-type: none"> Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, compartment syndrome, ligamentous injury) Able to order appropriate imaging studies (e.g., radiographs, CT scan/3D reconstruction) Performs basic surgical approach to elbow fractures Reduces fracture if necessary (e.g., provisional fixation, fluoroscopic checks) Recognizes surgical indications (e.g., fracture displacement, elbow instability, transolecranon injury) Provides post-operative management and rehabilitation (e.g., splinting and ROM therapy) Capable of diagnosis and early management of complications (e.g., diagnosis from peri-operative x-rays, recognize infection, recognize fracture displacement/dislocation) 	<ul style="list-style-type: none"> Performs pre-operative planning with instrumentation and implants (e.g., patient positioning, plates/screws, fluoroscopy) Capable of surgical reduction and fixation of a simple fracture (e.g., olecranon fracture) Provides post-operative management and rehabilitation (e.g., increase ROM as healing progresses, adequate/proper post-operative x-rays) 	<ul style="list-style-type: none"> Performs comprehensive pre-operative planning/alternatives (e.g., use of external fixation, radial head replacement, elbow arthroplasty) Capable of surgical reduction and fixation of moderately complex fractures (extraarticular and simple intraarticular distal humerus fracture) Modifies and adjusts post-operative plan as needed (e.g., dynamic/static stretch splinting, revise therapy) Treat simple complications both intra- and post-operatively (e.g., revise hardware placement, recognize improper hardware position) 	<ul style="list-style-type: none"> Capable of surgical reduction and fixation of a full range of fractures and dislocations Understands how to avoid/prevent potential complications Surgically treats complex complications (e.g., elbow release for stiffness, ID infection, revision hardware failure, nonunion treatment)
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Adult Elbow Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of fractures (e.g., olecranon, radial head, coronoid fracture, terrible triad fracture, distal humerus fracture, fracture dislocation) • Demonstrates knowledge of anatomy (e.g., elbow joint, radial head, coronoid, olecranon, distal humerus, elbow ligaments) • Understands basic imaging studies 	<ul style="list-style-type: none"> • Understands mechanism of injury and knowledge of fracture classification and soft tissue injury (e.g., olecranon, radial head, coronoid fracture, terrible triad fracture, distal humerus fracture, fracture dislocation) • Demonstrates knowledge of imaging studies/lab studies (e.g., radiographs anteroposterior [AP]/lateral/oblique/axial) • Understands surgical approaches (e.g., soft tissue envelope, cutaneous nerves, ulnar nerve treatment) • Understands biology of fracture healing • Understands advanced imaging studies (e.g., post-operative x-rays, CT scans for fracture healing) 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternatives (e.g., fracture repair vs. replacement, post-operative stiffness concepts) • Understands rehabilitation mechanics (e.g., range of motion therapy, dynamic/static stretch splinting) • Understands biomechanics and implant choices (e.g., radial head replacement, compression headless screws, elbow replacement types) 	<ul style="list-style-type: none"> • Understands controversies within field (e.g., tension band vs. plating olecranon fractures, elbow replacement for elderly distal humerus fractures; radial head repair vs. replacement) • Understands how to avoid/prevent potential complications • Demonstrates knowledge of pathophysiology of elbow stiffness (e.g., intrinsic, extrinsic, hardware placement) • Understands post-operative imaging studies/implant positioning 	<ul style="list-style-type: none"> • Participates in research in the field with publication
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Hip and Knee Osteo Arthritis (OA) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments (e.g., NSAIDs, physical therapy, assistive devices) • Provides basic peri-operative management (e.g., pre- and post-operative assessment) • Lists potential complications (e.g., infections, dislocations, thromboembolic disease, peri-prosthetic fracture, neurovascular compromise) 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Manages non-operative treatment (e.g., NSAIDs, physical therapy, assistive devices, injections) • Completes pre-operative planning with instrumentation and implants (e.g., implant templating, instruments needed) • Capable of performing one basic surgical approach to the hip and knee • Provides post-operative management and rehabilitation (e.g., orders appropriate peri-operative medications and mobilization) • Capable of diagnosis and early management of complications (e.g., infections, dislocations) • Assesses for risk of thromboembolic disease 	<ul style="list-style-type: none"> • Appropriately orders and interprets advanced imaging studies (e.g., MRI, CT, nuclear medicine imaging, and advanced radiographs views) • Appropriately recommends surgical intervention • Completes comprehensive pre-operative planning with alternatives • Modifies and adjusts post-operative treatment plan as needed • Capable of surgically treating simple complications (e.g., closed reduction, irrigation, and debridement) • Provides prophylaxis and manages thromboembolic disease 	<ul style="list-style-type: none"> • Capable of performing alternative surgical approaches to the hip and knee arthritis • Capable of performing primary total hip replacement (THR) and total knee replacement (TKR) • Capable of treating complications both intra- and post-operatively (e.g., peri-prosthetic fractures, infections, instability) 	<ul style="list-style-type: none"> • Competently performs two or more approaches to the hip and knee • Capable of performing complex primary and simple revision THR and TKR (e.g., hip dysplasia, hip protrusio, valgus knee, loose components, uniarthroplasty) • Develops unique, complex post-operative management plans (e.g., infections, dislocations, neurovascular compromise) • Surgically treats complex complications (e.g., peri-prosthetic fractures, knee instability)
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Hip and Knee Osteo Arthritis – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to hip and knee arthritis • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates some knowledge of natural history of hip and knee arthritis • Demonstrates knowledge of hip and knee arthritis anatomy and basic surgical approaches • Demonstrates knowledge of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Able to classify disease stage/severity and recognizes implications of disease processes (OA, Femoroacetabular impingement [FAI], inflammatory arthritis, osteonecrosis) • Understands the importance of comorbidities, thromboembolic prophylaxis, infection prevention and diagnosis • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Understands the effects of intervention on natural history of hip and knee arthritis • Understands basic pre-surgical planning and templating • Understands basic implant choices (e.g., cement and uncemented fixation, levels of constraint) 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Understands biomechanics • Understands alternative surgical approaches (e.g., non-arthroplasty: arthroscopy, osteotomy) • Understands alternative implant choices/biomaterials (e.g., alternative bearings, unicompartamental approaches) 	<ul style="list-style-type: none"> • Understands controversies within the field • Applies understanding of natural history to clinical decision-making • Understands principles of failure mechanism of THR and TKR (e.g., loosening, fracture, infection, osteolysis, instability) • Understands basic principles of revision THR and TKR 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field • Understands revision THR and TKR implants (e.g., metaphyseal vs. diaphyseal fixation, tapered vs. fully-porous implants)
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Hip Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments • Provides basic peri-operative management • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Recognizes and evaluates fragility fractures (e.g., orders appropriate workup and/or consult) • Interacts with consultants regarding optimal patient management (e.g., timing of surgery, medical management) • Completes pre-operative planning with instrumentation and implants • Capable of performing a basic surgical approach to the hip fracture • Provides post-operative management and rehabilitation • Capable of diagnosis and early management of complications • Assesses risk for thromboembolic disease 	<ul style="list-style-type: none"> • Completes comprehensive assessment of fracture patterns on imaging studies- recognizes reverse obliquity fractures • Interprets diagnostic studies for fragility fractures with appropriate management and/or referral • Arranges for long-term management of geriatric patients (e.g., management of bone health, discharge planning to long-term care) • Completes comprehensive pre-operative planning with alternatives • Capable of surgical repairs to a simple fracture (e.g., stable intertrochanteric femur fracture, minimally displaced femoral neck fracture) • Modifies and adjusts post-operative treatment plan as needed • Provides prophylaxis and manages thromboembolic disease 	<ul style="list-style-type: none"> • Capable of surgical repair to moderately complex fractures (e.g., unstable intertrochanteric femur fracture) • Capable of treating complications both intra- and post-operatively (e.g., manages a post-operative infection) 	<ul style="list-style-type: none"> • Capable of surgical repair of complex fractures (e.g., open reduction internal fixation of femoral neck fracture) • Capable of surgical treatment of complex complications (e.g., revision fixation after failed ORIF, intertrochanteric osteotomy)
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Hip Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to hip fracture • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Able to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates knowledge of bone biology, osteoporosis and bone health management • Demonstrates knowledge of natural history of hip fracture • Demonstrates knowledge of hip fracture anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Understands comorbidities and impact on fracture treatment 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Understands the effects of intervention on natural history of hip fracture • Understands alternative surgical approaches 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., hemiarthroplasty vs. total hip for displaced femoral neck fracture) • Applies understanding of natural history to clinical decision making • Understands biomechanics and implant choices 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
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Metastatic Bone Lesion – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> Obtains history and performs basic physical exam (e.g., pain, function, past medical/surgical/social/family history, review of systems, heart, lungs, extremity exam, including range of motion, strength, sensation, skin changes, tenderness) Appropriately orders basic imaging studies (e.g., plain radiographs, including AP/lateral of the lesion joint above and below the lesion) Prescribes non-operative treatments (e.g., including protected weight-bearing bracing, no intervention) Provides basic peri-operative management (e.g., intravenous [IV] antibiotics, IV fluids, DVT prophylaxis, pain control, nutrition) Lists potential complications (e.g., including Infection, wound complications, neurovascular compromise, tumor progression, prosthetic 	<ul style="list-style-type: none"> Obtains focused history and performs focused exam (e.g., history: specific questions re: past history of cancer or radiation, prior treatments, pre-existing pain, smoking or chemical exposure, constitutional symptoms such as fever; physical exam: notes lymph node involvement, lumps/nodules) Appropriately interprets basic imaging studies (e.g., able to describe the radiographic appearance [osteolytic, osteoblastic, etc.]) Prescribes and manages non-operative treatment (e.g., understands when to have the patient back to clinic for follow-up; understands when to order new radiographic imaging studies) Completes pre-operative planning with instrumentation and implants Performs one basic surgical approach to the destructive bone lesion Provides post-operative management and 	<ul style="list-style-type: none"> Appropriately orders and interprets advanced imaging studies/lab studies (e.g., 3D radiographic studies to include CT and MRI, lab studies including role of serum protein electrophoresis [SPEP]/urine protein electrophoresis [UPEP], prostate specific antigen [PSA], other tumor markers) Recommends complex non-operative treatment (radiofrequency ablation [RFA] or cryoablation, bisphosphonates kyphoplasty or vertebroplasty) Completes comprehensive pre-operative planning with alternatives Completes pre-operative preparation and consultation (e.g., oncology, radiation oncology, counseling) Modifies and adjusts post-operative treatment plan as needed Capable of treating post-operative complications 	<ul style="list-style-type: none"> Recommends appropriate biopsy, including biopsy alternatives and appropriate techniques (e.g., understands role of open biopsy vs. needle biopsy) Capable of performing prophylactic fixation based on diagnosis and risk (e.g., able to perform prophylactic intramedullary stabilization of femur, prophylactic bipolar hemiarthroplasty of the hip) Capable of performing internal fixation on impending or actual pathologic fractures (e.g., able to perform intramedullary stabilization of pathologic femoral or humeral fracture, bipolar hip hemiarthroplasty for pathologic femoral neck fracture) Capable of performing alternative surgical approaches to the destructive bone lesion (e.g., understands approaches to the hip for 	<ul style="list-style-type: none"> Discusses prognosis and end-of-life care with patients and family Independently performs open biopsy Performs endoprosthetic reconstruction for periarticular lesions (options include: megaprosthesis of proximal humerus, proximal femur, distal femur, proximal tibia) Develops unique, complex post-operative management plans Surgically treats complex complications (e.g., surgical treatment of hardware failure, periprosthetic fracture, progression of disease)

<p>hip dislocation, DVT/ pulmonary embolism [PE], pneumonia)</p>	<p>rehabilitation (e.g., understands weight- bearing issues and role of physical/occupational therapy [PT/OT])</p> <ul style="list-style-type: none"> • Capable of diagnosis and early management of complications (e.g., able to diagnose: infection, DVT/PE, wound breakdown, neurovascular compromise, hardware failure) 	<p>(e.g., non-operative treatment of: infection, wound breakdown, DVT/PE)</p>	<p>prosthetic reconstruction; understands approaches for resection of proximal humerus, distal femur and proximal tibia)</p> <ul style="list-style-type: none"> • Capable of surgical treatment of infection or wound breakdown 					
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Metastatic Bone Lesion – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of normal bone development • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., plain radiographs) • Demonstrates knowledge of most common sites of metastatic disease and primary sites of disease (e.g., primary sites breast, prostate, lung, kidney, thyroid) 	<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to destructive bone lesion (e.g., understands the function of receptor activator of nuclear factor kappa-B ligand [RANKL], osteoprotegerin [OPG] and osteoclasts in the bone turnover in skeletal metastasis) • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., CT scan of chest/abdomen/pelvis, MRI of spine) • Demonstrates some knowledge of natural history of destructive bone lesion (e.g., understands behavior of various histologies [i.e., lung vs. breast cancer]; understands the different behavior of primary bone sarcoma vs. bone metastasis) • Demonstrates knowledge of destructive bone lesion anatomy and basic surgical approaches (e.g., understands the location of neurovascular structures in upper/lower extremities) 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments (e.g., alternative treatments, including external beam radiation, radiofrequency ablation, cryoablation, bisphosphonate use) • Understands indications for prophylactic fixation (e.g., be aware of at least one scoring system [Mirels, Beals] as well as more nuanced factors [histology, response to treatment, etc.]) • Understands the effects of intervention on natural history of destructive bone lesion • Understands alternative surgical approaches (e.g., understands the role of resection/prosthetic replacement vs. intramedullary stabilization depending on location of lesion) • Understands role of radiation or medical therapy (vs. surgical options; their use post-operatively; specific role of chemotherapy, hormonal 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., resection/prosthetic reconstruction vs. intramedullary fixation; short vs. long stem hip reconstruction; bipolar vs. total hip arthroplasty (THA) for hip lesions; resection of solitary bone metastasis) • Formulates differential diagnosis based on imaging studies • Able to perform risk assessment of operative vs. non-operative care (e.g., understands concepts of nutritional status, current function/ activity, medical comorbidities/American Society of Anesthesiologists [ASA] level) • Applies understanding of natural history to clinical decision making (e.g., understands balance of expected lifespan to planned intervention [i.e., complex acetabular reconstruction for patient with widespread lung metastasis and six weeks to live]; develop shared-decision making skills for patient 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field

	<p>and pelvis; understand basic surgical approach to humeral and femoral nails)</p> <ul style="list-style-type: none"> • Understands basic pre-surgical planning and templating • Demonstrates knowledge of non-operative treatment options and surgical indications (e.g., understands non-operative options, including protected weight-bearing/radiation of lower extremity lesions, as well as bracing of upper extremity lesion) 	<p>therapy, bisphosphonates for common primary cancers that spread to bone)</p> <ul style="list-style-type: none"> • Demonstrates knowledge of alternatives for primary sarcoma of bone (e.g., understand role of resection vs. palliative care; understands role of limb salvage vs. amputation) 	<p>discussions/interactions)</p> <ul style="list-style-type: none"> • Understands biomechanics and implant choices (e.g., understands concepts of failure in compression vs. tension; understands the benefit of supplemental methylmethacrylate; understands the pros/cons of plate vs. rod fixation) 					
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Meniscal Tear – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> Obtains history and performs basic physical exam (e.g., age, gender, HPI, PMHx, social history, ROM, joint tenderness, effusion, neurovascular status) Appropriately orders basic imaging studies (e.g., plain film radiographs) Prescribes non-operative treatments Provides basic peri-operative management (e.g., neurovascular status, ROM, brace) Lists potential complications (e.g., pain, infection, neurovascular injury, loss of motion, degenerative joint disease [DJD]) 	<ul style="list-style-type: none"> Obtains focused history and performs focused exam (e.g., McMurray, Steinmann, applies compression) Appropriately interprets basic imaging studies (e.g., standing radiographs as needed, Fairbank changes) Prescribes and manages non-operative treatment (e.g., quad strength closed chain) Injects/aspirates knee Examines knee under anesthesia Provides post-operative management and rehabilitation (e.g., ROM, quad strength closed chain, WB status) Capable of diagnosis and early management of complications 	<ul style="list-style-type: none"> Appropriately orders and interprets advanced imaging studies (e.g., MRI findings) Provides complex non-operative treatment (e.g., concomitant injuries—ligament, fractures) Capable of performing diagnostic arthroscopy and meniscal debridement Modifies and adjusts post-operative treatment plan as needed (e.g., knee arthrofibrosis, continued pain) 	<ul style="list-style-type: none"> Capable of performing meniscal repair—all techniques open and arthroscopic Capable of performing alternative surgical approaches to a meniscal tear Capable of treating complications both intra- and post-operatively 	<ul style="list-style-type: none"> Capable of performing revision of meniscal repair or meniscal transplant Capable of treating complex complications
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Meniscal Tear – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to meniscal tear • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., joint space height, Fairbank changes) • Understands mechanism of injury • Demonstrates some knowledge of natural history of meniscal tear 	<ul style="list-style-type: none"> • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., tear personality, chondral injury/changes) • Understands biology of meniscal healing • Understands the effects of intervention on natural history of meniscal tear • Demonstrates knowledge of meniscal anatomy and basic surgical approaches • Demonstrates knowledge of non-operative treatment options and surgical indications 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments • Understands rehabilitation mechanics (e.g., quad strength closed vs. open chain) • Understands biomechanics and implant choices • Understands alternative surgical approaches (e.g., repair vs. debridement) 	<ul style="list-style-type: none"> • Understands controversies within the field (e.g., repair techniques) • Understands how to prevent/avoid potential complications • Applies understanding of natural history to clinical decision-making 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Pediatric Septic Hip – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam • Orders appropriate initial imaging and laboratory studies • Provides initial management • Lists potential complications 	<ul style="list-style-type: none"> • Obtains focused history and physical, recognizes findings commonly associated with hip septic arthritis • Orders appropriate advanced imaging studies (e.g., MRI, ultrasound) • Interprets basic imaging and laboratory studies • Selects appropriate antibiotics • Diagnoses complications (e.g., drug reactions) 	<ul style="list-style-type: none"> • Recognizes factors that could predict complications or poor outcome • Appropriately orders and capable of performing hip aspiration • Interprets advanced imaging studies and results of hip aspiration • Able to develop a basic pre-operative plan 	<ul style="list-style-type: none"> • Assimilates all diagnostic testing and make a decision about the need for surgical drainage • Capable of performing hip arthrotomy and drainage • Modifies post-operative plan based on response to treatment (e.g., patient fails to improve post-operatively) • Capable of treating simple complications; repeat incision for persistent wound drainage, drug reaction 	<ul style="list-style-type: none"> • Able to develop a comprehensive pre-operative plan that includes options based on intra-operative findings (e.g., managing dislocated hip) • Manages complex complications; late hip dislocation, fracture, osteomyelitis, chondrolysis, avascular necrosis
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Pediatric Septic Hip – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of common presentation of hip septic arthritis • Demonstrates knowledge of basic hip anatomy • Demonstrates knowledge of basic imaging studies • Demonstrates knowledge of appropriate laboratory studies 	<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology of joint damage related to septic arthritis • Demonstrates knowledge of basic surgical approach • Demonstrates knowledge of the differential diagnosis of the irritable hip • Understands natural history and the effects of intervention • Demonstrates knowledge of advanced imaging studies 	<ul style="list-style-type: none"> • Demonstrates knowledge of the vascular supply in the skeletally immature hip • Demonstrates knowledge of microbiology and antibiotic choices • Demonstrates knowledge of potential complications • Demonstrates knowledge of clinical and laboratory data relevant to differential diagnosis 	<ul style="list-style-type: none"> • Demonstrates knowledge of options and anatomy for surgical approaches • Demonstrates knowledge of atypical infecting organisms and management options 	<ul style="list-style-type: none"> • Participates in research in the field with publication
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Rotator Cuff Injury – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical examination (e.g., age, gender, smoker, trauma, night pain, weakness, inspection for atrophy, ROM) • Lists surgical complications (e.g., infection, stiffness, RSD, re-tear) 	<ul style="list-style-type: none"> • Obtains focused history and performs physical examination (e.g., provocative tests, Neer/Hawkins, O'Briens, lag signs, pseudoparalysis, lift-off, belly press, scapular dyskinesia) • Orders basic imaging studies • Performs basic surgical approaches and portal placement (e.g., anterior, subacromial, posterior, accessory posterior) • Performs simple shoulder procedures (e.g., subacromial injection) • Prescribes non-operative treatment • Provides basic post-operative management (e.g., phases of cuff repair rehab, Phase 1-3) • Diagnoses surgical complications 	<ul style="list-style-type: none"> • Interprets basic imaging studies (e.g., rotator cuff tear on MRI, muscle atrophy on MRI, proximal humeral migration on x-ray) • Completes pre-operative planning with instrumentation and implants (e.g., patient positioning, arthroscopic equipment, anchors) • Capable of performing diagnostic arthroscopy, subacromial decompression, distal clavicle resection, biceps tenotomy 	<ul style="list-style-type: none"> • Able to order and interpret advanced imaging studies (e.g., tear size, muscle atrophy, labral tears, arthritis, subscapularis tears) • Completes comprehensive pre-operative planning and alternatives • Capable of performing rotator cuff repair • Appropriately interprets post-operative imaging studies/implant positioning • Modifies and adjusts post-operative rehabilitation plan as needed (e.g., modify for massive cuff repairs, post-operative stiffness) • Treats complications both intra- and post-operatively (e.g., irrigation/debridement for infections, proper infection treatment protocol, infectious disease consultation) 	<ul style="list-style-type: none"> • Capable of performing complex arthroscopic rotator cuff repairs, revision rotator cuff repair, tendon transfers • Surgically treats complex complications (e.g., revision rotator cuff repair with tendon transfer, reverse shoulder replacement for anterosuperior escape)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Rotator Cuff Injury – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands surgical anatomy (e.g., rotator cuff muscles/tendons, deltoid, axillary nerve position, acromion, biceps, labrum) • Demonstrates knowledge of basic imaging studies: radiographs (e.g., true AP, axillary, supraspinatus outlet) 	<ul style="list-style-type: none"> • Demonstrates knowledge of surgical indications (e.g., non-operative management, therapy, injections, rotator cuff repair, subacromial decompression) • Demonstrates knowledge of basic surgical approaches and portal placement (e.g., anterior, subacromial, posterior, accessory posterior) • Understands pathophysiology related to rotator cuff injury (e.g., impingement, partial thickness cuff tears, extrinsic versus intrinsic theory of cuff tearing) • Understands biology of soft tissue tendon healing • Demonstrates knowledge of advanced imaging studies/lab studies (e.g., MRI, ultrasound, CT arthrogram) 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternatives • Understands pathophysiology of concomitant injuries (e.g., biceps tendinitis, acromioclavicular joint disease, labral pathology, arthritis) • Understands rehabilitation mechanics (e.g., Neer Phase 1-3) • Understands biomechanics and implant choices • Understands natural history of rotator cuff disease (e.g., symptomatic vs. asymptomatic cuff tears, impingement, intrinsic versus extrinsic mechanisms) 	<ul style="list-style-type: none"> • Understands controversies within field. Examples: single vs. double row repairs, partial repair of massive tears, suprascapular nerve dysfunction • Understands end stage rotator cuff tear arthropathy and treatment options • Understands tear pattern, appropriate repair, biceps tenodesis (e.g., L-shaped, concentric, U-shaped, tissue quality, biceps subluxation) • Understands pathophysiology of failed rotator cuff repair (e.g., biology, implant failure, stiffness, infection, smoking, tendon quality, vascularity) 	<ul style="list-style-type: none"> • Participates in research in the field with publication cites/teaches junior residents appropriate outcomes studies • Understands treatment for massive/irreparable tears • Understands treatments of intra-operative complications (e.g., misalignment of suture anchor, poor exposure, hemostatis, tuberosity fracture, and anchor breakage)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet rotated <input type="checkbox"/>

Pediatric Supracondylar Humerus Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains history and performs basic physical exam (e.g., injury mechanism, radial and ulnar pulse assessment) • Appropriately orders basic imaging studies (e.g., AP and lateral elbow radiographs, oblique views if concern for condylar component) • Prescribes non-operative treatments • Provides basic peri-operative management • Lists potential complications 	<ul style="list-style-type: none"> • Recognizes vascular, nerve or other associated injuries; assess median, radial and ulnar nerves, role of Doppler arterial assessment and perfusion assessment, differentiates anterior interosseous nerve vs. complete median nerve palsy • Appropriately interprets basic imaging studies and recognizes fracture patterns • Splints or casts fracture appropriately (e.g., flexion less than 90 degrees, accommodates for swelling potential) • Completes pre-operative planning with instrumentation and implants • Performs basic management of supracondylar humerus fracture; uncomplicated closed reduction • Provides post-operative management and rehabilitation (e.g., cast or splint care, manage swelling, monitor 	<ul style="list-style-type: none"> • Recognizes factors that could predict difficult reduction and post-operative complication risk (e.g., abnormal vascular examination, neurological deficits, brachialis sign or severe soft tissue swelling, associated forearm fracture) • Appropriately orders and interprets advanced imaging studies • Completes comprehensive pre-operative planning with alternatives; recognizes fracture patterns that may preclude lateral entry only pinning or necessitate ORIF • Modifies and adjusts post-operative treatment plan as needed (e.g., recognizes deviations from typical post-operative course) 	<ul style="list-style-type: none"> • Capable of performing a closed reduction and pinning • Capable of removing obstacles to reduction through closed or open methods (e.g., milking maneuver, open reduction) • Capable of performing alternative surgical approaches to the supracondylar humerus fracture (e.g., milking maneuver, open approaches) • Capable of surgically treating simple complications (e.g., compartment release, wound problems) 	<ul style="list-style-type: none"> • Manages open fractures and fractures with neurological and vascular complications; open approaches and dissect out vascular and neurological structures, appropriate exposure and debridement for open fractures • Develops unique, complex post-operative management plans • Capable of surgically treating complex complications; revision fixation, malunion (e.g., osteotomy for severe cubitus varus)

	neurological and vascular status, office pin removal) • Capable of diagnosis and early management of complications, including compartment syndrome, pin tract sepsis, cast problems						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Pediatric Supracondylar Humerus Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of pathophysiology related to supracondylar humerus fracture (e.g., fall on outstretched hand, extension mechanism most common; fracture occurs initially on tension side with disruption of periosteum and soft tissues on convexity) • Demonstrates knowledge of elbow anatomy (e.g., ossification centers in growing elbow, bone anatomy, soft tissue anatomy) • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., location of fracture, involvement of articular surface or not) • Demonstrates knowledge of non-operative treatment options and surgical indications (e.g., safe casting/splinting principles to minimize 	<ul style="list-style-type: none"> • Understands the biology of fracture healing (e.g., hematoma formation, inflammation, early soft callus, hard callus, remodeling) and the importance of periosteum and periosteal bone formation in pediatric fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., rare need for arthrogram/MRI to assess articular surface) • Understands mechanism of injury and fracture classification (e.g., extension vs. flexion types, Gartland classification, elbow hyperextension common in 4-7-year old children) • Demonstrates knowledge of natural history of supracondylar humerus fracture (e.g., high incidence malunion in displaced fractures treated closed, vast majority of nondisplaced fractures and displaced 	<ul style="list-style-type: none"> • Demonstrates knowledge of current literature and alternative treatments (e.g., immobilization for non-displaced fractures; closed reduction and pinning for displaced fractures; alternatives rarely used—olecranon traction for severe swelling) • Demonstrates knowledge of nerve anatomy relative to pin fixation (e.g., location of ulnar nerve and changes with elbow position; locations of median and radial nerves) • Understands rehabilitation protocol (e.g., regaining motion over six weeks-to-six months) • Understands the effects of intervention on natural history of supracondylar humerus fracture; avoid malunion, Volkmann's ischemic contracture • Understands biomechanics and implant choices (e.g., 	<ul style="list-style-type: none"> • Understands controversies within the field; indications for reduction of mildly angulated type II fractures, indications/criteria for open reduction in closed fractures; management of perfused pulseless supracondylar fracture • Understands how to avoid/prevent potential complications (e.g., malunion, nerve injury, vascular complications, ischemic contracture, compartment syndrome, pin tract infections) • Applies understanding of natural history to clinical decision making (e.g., intervention to improve outcome, prevent complications) • Understands alternative surgical approaches (e.g., anterior, anteromedial, anterolateral, medial, posterior approaches) 	<ul style="list-style-type: none"> • Primary author/presenter of original work within the field

<p>risk of compartment syndrome/vascular insufficiency)</p>	<p>fractures treated with closed reduction and percutaneous pinning [CRPP] function well, and possible vascular injury</p> <ul style="list-style-type: none"> • Demonstrates knowledge of supracondylar humerus fracture anatomy and basic surgical approaches (e.g., direction of displacement and neurological/vascular structures at risk affects choice of approach) • Understands basic pre-surgical planning; anticipates obstacles to reduction, understands reduction maneuvers 	<p>impact of pin size, pin placement [spread at fracture], fracture pattern/comminution)</p>						
<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"/>
<p>Comments: Not yet rotated <input type="checkbox"/></p>								

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 	<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 level (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:				Not yet achieved Level 1 <input type="checkbox"/>

Resident will work 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 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 promote “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 or regional quality improvement project
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

Uses 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 	<ul style="list-style-type: none"> Appropriately and accurately enters patient data in EHR Effectively uses electronic medical records in 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:				Not yet achieved Level 1 <input type="checkbox"/>

Self-Directed Learning – Practice-based Learning and Improvement				
<ol style="list-style-type: none"> 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. 				
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 	<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:				Not yet achieved Level 1 <input type="checkbox"/>

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 study 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: colleagues, experts, industry representatives, and patient-delivered information 	<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:				Not yet achieved Level 1 <input type="checkbox"/>

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				
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 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 the 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 working 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"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

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 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, 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, 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 	<ul style="list-style-type: none"> • Develops organizational policies and education to support the application of these principles in the practice of medicine • Practices consistent with the American Academy of Orthopaedic Surgeons (AAOS) Standards of Professionalism
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				Not yet achieved Level 1 <input type="checkbox"/>

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 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 end-of-life or loss-of-limb discussions; 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., understand a patient’s secondary motivations in the treatment of his or her care—drug seeking, disability issues, and legal cases; able to sustain working relationships during complex and challenging situations, including transitions of care—treatment of a metastatic pathologic fracture; able to manage 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:				Not yet achieved Level 1 <input type="checkbox"/>

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
<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 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, 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 Operating Room 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>Example:</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:				Not yet achieved Level 1 <input type="checkbox"/>