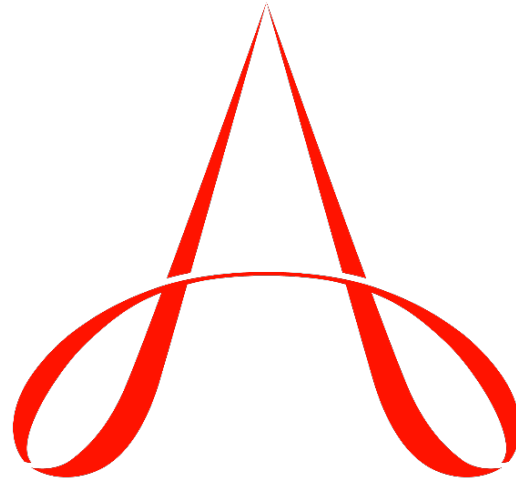




Supplemental Guide: Plastic Surgery



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Milestones Supplemental Guide

This document provides additional guidance and examples for the Plastic Surgery Milestones. This is not designed to indicate any specific requirements for each level, but to provide insight into the thinking of the Milestone Work Group.

Included in this document is the intent of each Milestone and examples of what a Clinical Competency Committee (CCC) might expect to be observed/assessed at each level. Also included are suggested assessment models and tools for each subcompetency, references, and other useful information.

Review this guide with the CCC and faculty members. As the program develops a shared mental model of the Milestones, consider creating an individualized guide (Supplemental Guide Template available) with institution/program-specific examples, assessment tools used by the program, and curricular components.

Additional tools and references, including the Milestones Guidebook, Clinical Competency Committee Guidebook, and Milestones Guidebook for Residents and Fellows, are available on the [Resources](#) page of the Milestones section of the ACGME website.

Patient Care 1: Fracture

Overall Intent: To develop an understanding of fracture biology and management

Milestones	Examples
<p>Level 1 <i>Develops a treatment plan for a simple fracture, with assistance</i></p> <p><i>Performs simple fracture care, with assistance</i></p> <p><i>Identifies patients with an abnormal post-operative course</i></p>	<ul style="list-style-type: none"> ● Develops operative and non-operative diagnoses and treatments ● Distinguishes a single, non-operative bone fracture ● Diagnoses problems and makes initial recommendations of care, such as soft diet, no nose blowing, no lifting with hand for minimally or non-displaced fracture (e.g., Boxer’s fracture; nasal fracture; small orbital floor; maxillary sinus fracture; metacarpal fracture) ● Identifies abnormal course, e.g., infection; repeat injury; splint fracture/ineffective splint; non-compliant patient
<p>Level 2 <i>Develops a treatment plan for a simple fracture</i></p> <p><i>Performs simple fracture care</i></p> <p><i>Manages simple complications</i></p>	<ul style="list-style-type: none"> ● Reduces Boxer’s fracture by themselves and splints ● Reduces and splints distal radius fracture in emergency room ● Performs nasal fracture reduction, reduces nose in closed fashion accurately and applies splint; performs a zygomatic arch reduction using the Gillies open reduction approach; places arch bars and wire jaw together in mandibulomaxillary fixation ● Manages infections, repeat injuries, and splint fractures/ineffective splints
<p>Level 3 <i>Develops a treatment plan for a moderately complex fracture</i></p> <p><i>Performs critical aspects of moderately complex fracture care</i></p> <p><i>Identifies and formulates a plan for complications requiring surgical management</i></p>	<ul style="list-style-type: none"> ● Develops a treatment plan for mandible open reduction internal fixation/mandibulomaxillary fixation ● Exposes, reduces, assesses if properly reduced, and fixates fractures including mandible open reduction internal fixation/mandibulomaxillary fixation, Le Fort I maxilla, and anterior table frontal sinus ● Diagnoses, designs incisions, and properly releases fascia in compartment syndrome ● Exposes, reduces, and fixates distal radius, proximal/middle phalanx, and/or open reduction internal fixation metacarpal fractures ● Diagnoses presence and causative factors of malocclusion, nonunion fracture, and scissor digit
<p>Level 4 <i>Develops a treatment plan for complex fractures</i></p>	<ul style="list-style-type: none"> ● Develops a treatment plan for an intra-articular fracture and for an open joint fracture

<p><i>Performs critical aspects of complex fracture care</i></p> <p><i>Performs surgical management for routine complications</i></p>	<ul style="list-style-type: none"> ● Plans, exposes, reduces, and fixates in proper sequence for the following fractures: zygomaticomaxillary complex fracture with floor, naso-orbital ethmoid fracture; Le Fort II and III; frontal sinus involving both tables; panfacial ● Manages carpal fractures with ligamentous injury including planning, exposing, reducing, and fixating in proper sequence ● Diagnoses upper extremity fracture with acute carpal tunnel and treats acutely ● Identifies causative factors and next steps of nonunion fracture of above
<p>Level 5 <i>Develops a treatment plan for complex revision surgery</i></p> <p><i>Performs complex revision surgery</i></p> <p><i>Performs surgical management for complex complications</i></p>	<ul style="list-style-type: none"> ● Plans for transradial carpal fracture, proximal row carpectomy, and facial bone grafting or osteotomy for revision of facial trauma (e.g., orbital dystopia, orthognathic surgery for malocclusion) ● Plans, exposes, reduces, confirms reduction, fixates in proper sequence any fracture with accompanying soft tissue loss ● Performs revision facial bone grafting ● Performs medial femoral condyle flap for scaphoid nonunion ● Identifies causative factors and next steps of enophthalmos, telecanthus, chronic wrist pain/instability, and tendon attrition
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● American Council of Academic Plastic Surgeons (ACAPS) Surgical Skills Evaluation ● Direct observation ● Skills lab
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Chung, KC. <i>Operative Technique in Hand and Wrist Surgery</i>. 4th ed. Elsevier; 2021. ● Taub P, Patel P, Buchman S, Cohen M. <i>Ferraro's Fundamentals of Maxillofacial Surgery</i>. New York: Springer; 2015. https://doi.org/10.1007/978-1-4614-8341-0. ● Wolfe, S, Pederson, W, Kozin, S, Cohen, M. <i>Green's Operative Hand Surgery</i>. 8th ed. Elsevier; 2021.

Patient Care 2: Microsurgery	
Overall Intent: To develop an understanding of the indications for, and planning and execution of, microsurgical care of the upper and lower extremity	
Milestones	Examples
<p>Level 1 <i>Identifies the need for microsurgery and develops a treatment plan for a simple microsurgical case, with assistance</i></p> <p><i>Manages care of a straightforward microsurgical patient, with assistance</i></p> <p><i>Identifies post-operative concerns, including the need for surgical intervention, with assistance</i></p>	<ul style="list-style-type: none"> ● Develops, with assistance, come up with a reconstructive plan for upper or lower extremity trauma, with significant soft tissue defect, no local coverage options, and exposed hardware or vital structures or open fracture ● Enters post-operative orders for a free flap for upper or lower extremity coverage, understands need for hourly evaluation and multiple evaluations by surgical team after surgery ● Identifies problems with the post-operative dressing, such as compression, post-operative bleeding, or arterial or venous signal changes
<p>Level 2 <i>Develops a treatment plan for a simple microsurgical case</i></p> <p><i>Performs critical aspects of simple microsurgery</i></p> <p><i>Manages routine post-operative complications</i></p>	<ul style="list-style-type: none"> ● Develops a reconstructive plan for upper or lower extremity trauma, with significant soft tissue defect, no local coverage options, and exposed hardware or vital structures or open fracture ● Performs critical aspects of preparation of the recipient vein or artery, using end-to-end technique for upper and lower extremity flap reconstruction ● Evaluates flap for issues such as signal changes or post-operative bleeding, addressing issue at bedside if possible
<p>Level 3 <i>Develops a treatment plan for a microsurgical case of moderate complexity</i></p> <p><i>Performs critical aspects of moderately complex microsurgery</i></p> <p><i>Identifies and formulates a plan for complications requiring surgical management</i></p>	<ul style="list-style-type: none"> ● Develops a treatment plan for moderately complex free tissue reconstruction, including breast or scalp lesions, or defects requiring composite free tissue, including bone and soft tissue chimeric flaps ● Performs critical aspects of preparation of the recipient vein or artery, using end-to-end technique for breast or scalp lesions ● Identifies surgically significant post-operative bleeding or issues with the vessels requiring urgent attention in the operating room
<p>Level 4 <i>Develops a treatment plan for a complex microsurgical case</i></p>	<ul style="list-style-type: none"> ● Develops treatment plan for complex micro cases such as head and neck reconstruction, esophageal reconstruction, pediatric free flaps, toe to hand, free vascularized bone, functional muscle transfer, vascularized lymph node, or free phalloplasty

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<p><i>Performs critical aspects of complex microsurgery</i></p> <p><i>Performs critical aspects of surgical management for routine complications</i></p>	<ul style="list-style-type: none"> • Performs critical aspects of the vessel anastomosis and dissection in cases such as head and neck reconstruction, esophageal reconstruction, pediatric free flaps, toe to hand, free vascularized bone, functional muscle transfer, vascularized lymph node, or free phalloplasty • Performs critical aspects of the takeback of surgically significant post-operative bleeding or issues with the vessels requiring urgent attention in the operating room; anticipates potential need for vein graft and prepares for vein graft source
<p>Level 5 <i>Develops a treatment plan for complex revision microsurgery</i></p> <p><i>Performs critical aspects of complex revision microsurgery</i></p> <p><i>Performs critical aspects of the surgical management for complex microsurgical complications</i></p>	<ul style="list-style-type: none"> • Develops a treatment plan for revision microsurgery such as revision head and neck or breast reconstruction • Performs critical aspects of complex revision surgery, including vein grafting for additional length of vessels or creation of an arteriovenous (AV) loop • Performs critical aspects of surgical management of complications of complex revision surgery, including revision of AV loop or vein grafts, or creation of a supercharged flap
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Skills lab
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • American Society of Plastic Surgeons (ASPS). ASPS Education Network (ASPS EdNet) Catalog. https://www.plasticsurgery.org/for-medical-professionals/education/asps-education-network. • Neligan, PC. <i>Plastic Surgery: 6-Volume Set</i>. 4th ed. Elsevier; 2018.

Patient Care 3: Flaps and Grafts	
Overall Intent: To understand options for wound coverage using local/regional flaps and grafts	
Milestones	Examples
<p>Level 1 <i>Discusses the reconstructive ladder</i></p> <p><i>Harvests skin graft, with assistance</i></p> <p><i>Identifies abnormal skin graft healing and manages complications, with assistance</i></p>	<ul style="list-style-type: none"> ● Lists the different options for wound coverage as it relates to the reconstructive ladder such as skin graft, local flap, pedicled flap, or free flap ● Measures appropriate dimensions of graft to be harvested ● Identifies partial and complete graft loss and communicates with the team wound care recommendations
<p>Level 2 <i>Develops a treatment plan that includes local flap closures</i></p> <p><i>Performs local flaps or bone/tendon grafts, with assistance</i></p> <p><i>Manages routine post-operative complications of local flaps</i></p>	<ul style="list-style-type: none"> ● Identifies options for local flap closure small skin cancer deficits such as rhomboid, keystone, or V to Y ● Performs local flaps/grafts including Iliac crest bone graft or scalp rotation flap ● Manages donor site dehiscence and partial flap loss with local wound care
<p>Level 3 <i>Develops a treatment plan that includes regional and pedicled flaps</i></p> <p><i>Performs regional and pedicled flaps, with assistance; harvests complex tissue grafts</i></p> <p><i>Formulates a plan for complications, including flap delay; identifies and initiates treatment for complications</i></p>	<ul style="list-style-type: none"> ● Discusses various options for chest wall reconstruction including pectoralis flaps, omental flap, and vertical rectus abdominis musculocutaneous (VRAM) ● Raises a forehead flap, gastrocnemius flap, and reverse sural flap, with assistance; harvests conchal ear graft and corticocancellous iliac crest, with assistance ● Anticipates issues with flap healing in a smoker and plans for first-stage delay of pedicled flap; identifies secondary flap options for failed initial reconstruction
<p>Level 4 <i>Develops a treatment plan involving a complex flap closure [e.g., posterior interosseous artery (PIA) flap]</i></p> <p><i>Performs a regional and pedicled flap closure</i></p> <p><i>Performs surgical management for routine complications</i></p>	<ul style="list-style-type: none"> ● Discusses options for dorsal hand defect with segmental tendon loss such as reverse radial forearm, posterior interosseous artery, or ulnar artery flap and discusses plans for staged tendon reconstruction ● Performs reverse radial forearm flap, VRAM, and/or gastrocnemius flap ● Surgically manages flap loss and performs secondary flap reconstruction

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<p>Level 5 <i>Develops a treatment plan for complex composite tissue flaps or revisional surgery</i></p> <p><i>Performs complex composite tissue flaps or revisional surgery</i></p> <p><i>Performs surgical management for complex tissue or revisional surgery complications</i></p>	<ul style="list-style-type: none"> ● Describes options for composite tissue defects including medial femoral condyle flap or osteocutaneous radial forearm flap ● Harvests medial femoral condyle flap, osteocutaneous radial forearm flap, or composite anterolateral thigh flap ● Manages difficult complications such as radius fracture after osteocutaneous radial forearm
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Cadaver lab ● Direct observation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Complications may be real or potential ● Neligan, PC. <i>Plastic Surgery: 6-Volume Set</i>. 4th ed. Elsevier; 2018.

Patient Care 4: Aesthetic Surgery	
Overall Intent: To perform aesthetic procedures, with assistance	
Milestones	Examples
<p>Level 1 <i>Identifies the normal anatomy of the breast and trunk and changes associated with aging</i></p> <p><i>Obtains consent for a patient undergoing aesthetic surgery, cognizant of the risks, benefits, and alternatives</i></p>	<ul style="list-style-type: none"> ● Understands the blood supply of the breast and ptosis that results from aging ● Discusses the nature, benefits, and risks with a patient undergoing aesthetic surgery, including skin issues and nerve complications
<p>Level 2 <i>Identifies the normal anatomy of the head and neck and changes associated with aging</i></p> <p><i>Analyzes a patient desiring aesthetic surgery of the breast and trunk</i></p>	<ul style="list-style-type: none"> ● Identifies the normal anatomy of the head and neck and changes associated with aging ● Analyzes a patient desiring aesthetic breast surgery, including nipple/areola size and position, inframammary level and symmetry, and base width, among others
<p>Level 3 <i>Analyzes a patient desiring aesthetic surgery of the head and neck and develops a treatment plan, including surgical and non-surgical interventions</i></p> <p><i>Performs a straightforward aesthetic procedure with minimal direction (e.g., upper blepharoplasty, breast augmentation, abdominoplasty)</i></p>	<ul style="list-style-type: none"> ● Analyzes a patient with periorbital aging, including upper and lower eyelid skin redundancy and fat malposition, as well as lower lid malposition and laxity ● Analyzes a patient with facial aging, including malar hollowing, malar descent, prominent jowls, and hairline concerns ● Marks, excises skin and fat, and closes an upper blepharoplasty ● Marks, dissects a pocket, and place either a saline or silicone breast implant ● Marks, dissects, and resects abdominal tissue in an abdominoplasty
<p>Level 4 <i>Performs a more complex aesthetic procedure with minimal direction (e.g., rhytidectomy, lower blepharoplasty, augmentation/mastopexy)</i></p> <p><i>Manages one or more complications following an aesthetic surgery procedure</i></p>	<ul style="list-style-type: none"> ● Marks, dissects, and re-drapes a facelift, both as a superficial musculo-aponeurotic system (SMAS) plication or a SMAS elevation ● Identifies critical structures for a rhinoplasty, either open or closed, and performs appropriate manipulations desired by the patient ● Manages complications, including lid malposition, wound dehiscence, and skin necrosis, among others
<p>Level 5 <i>Analyzes and manages a complicated patient desiring secondary aesthetic surgery</i></p>	<ul style="list-style-type: none"> ● Analyzes a patient who previously underwent one or more aesthetic surgery procedures and now desires revision
Assessment Models or Tools	<ul style="list-style-type: none"> ● Conference participation ● Direct observation

	<ul style="list-style-type: none"> • In-training examination
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Marten T, Elyassnia D. Neck lift: defining anatomic problems and choosing appropriate treatment strategies. <i>Clin Plast Surg.</i> 2018 Oct;45(4):455-484. doi: 10.1016/j.cps.2018.06.002. PMID: 30268238 • Rohrich RJ, Durand PD, Dayan E. The lift-and-fill facelift: superficial musculoaponeurotic system manipulation with fat compartment augmentation. <i>Clin Plast Surg.</i> 2019 Oct;46(4):515-522. doi: 10.1016/j.cps.2019.06.001. Epub 2019 Jul 15. PMID: 31514804 • Rohrich RJ, Mahedia M, Hidalgo D, Shah N. The evolving role of blending of the lid-cheek junction in lower blepharoplasty. <i>Plast Reconstr Surg.</i> 2018 Aug;142(2):377-382. doi: 10.1097/PRS.0000000000004593. PMID: 29787515 • Xue Y, Pu LLQ. Contemporary breast augmentation practice in the United States. <i>Ann Plast Surg.</i> 2021 Mar 1;86(3S Suppl 2):S177-S183. doi: 10.1097/SAP.0000000000002646. PMID: 33346541

Patient Care 5: Consultant

Overall Intent: To identify the specific question asked to and of the consultant and provide treatment to the patient in the context of their overall disease/health state

Milestones	Examples
<p>Level 1 <i>Identifies specific consult question and generates a preliminary differential diagnosis</i></p> <p><i>Effectively communicates the consult question and patient findings to the chief resident/attending physicians</i></p> <p><i>Identifies changes in patient status and communicates pending issues</i></p>	<ul style="list-style-type: none"> ● Generates an appropriate initial differential diagnosis and obtains further information as needed ● Follows up on ordered studies and interventions and performs a thorough sign-out ● Tells the plastic surgery chief resident what question the service requesting consultation would like the plastic surgery team to answer ● Observes and reports to the plastic surgery team as the patient is improving or failing to improve after initial treatment steps have been started
<p>Level 2 <i>Develops an appropriate differential diagnosis and treatment plan for routine problems and orders/recommends appropriate tests</i></p> <p><i>Responds to patient acuity (e.g., emergency department, operating room, admit, intensive care unit), and provides appropriate bedside surgical care</i></p> <p><i>Verifies that prior signed-out tasks have been completed</i></p>	<ul style="list-style-type: none"> ● Recognizes a swollen hand as likely septic wrist or crystal disease, and orders x-rays, C reactive protein, sedimentation rate, and uric acid levels ● Performs arthrocentesis for cell count, Gram stain, culture, and microscopy for crystals ● Verifies that the lab has received the specimen and that the morning team knows to follow up on results
<p>Level 3 <i>Develops an appropriate differential diagnosis and treatment plan for complex problems</i></p> <p><i>Ensures appropriate transitions of care are completed</i></p> <p><i>Adapts the treatment plan based on patient status, including necessary communication and emergency procedures</i></p>	<ul style="list-style-type: none"> ● Evaluates a patient with a complex problem (e.g., a cold hand or a facial polytrauma) and prioritizes next steps in testing and timing of intervention to repair ● Anticipates a surgical patient who will need intensive care unit (ICU) for flap monitoring; reviews flap monitoring protocols and status with the ICU team and on call team during transitions of care ● Identifies a patient with a post-operative hematoma needing return to the operating room and mobilizes resources appropriately

<p>Level 4 <i>Resolves conflicting consultant recommendations</i></p> <p><i>Coordinates timing of multiple interventions across services</i></p> <p><i>Manages a consult service, supervising junior learners and/or advanced practice practitioners, and follows up on results</i></p>	<ul style="list-style-type: none"> ● Communicates directly with leaders of all services caring for patients to ensure that all parties have shared priorities and understanding of care decisions ● For a panfacial fracture patient, identifies the need for airway management and cervical spine stabilization prior to facial fracture fixation; prioritizes timing of treatments in polytrauma (e.g., abdominal injuries, orthopedic injuries, flap coverage, debridement) ● Identifies the next steps in treatment and monitoring needed for each patient followed by the consult service, delegates appropriately to members of the team, and follows up to ensure completion of tasks
<p>Level 5 <i>Actively contributes to multidisciplinary activities (e.g., tumor board, family/team conferences)</i></p> <p><i>Teaches other services how to effectively make use of a plastic surgery consult</i></p> <p><i>Recognizes consult patterns and implications for systems-based practice</i></p>	<ul style="list-style-type: none"> ● Provides specialty-specific counsel in breast tumor board, and can run a tumor board by asking appropriate questions of other services ● Gives grand rounds to the emergency department to teach what trauma issues can be managed by the emergency department and sent home (e.g., closed metacarpal or nasal bone fracture) and what require in-person evaluation (e.g., peri-lunate dislocation, Le Fort III fracture) and at what level of urgency ● Identifies that a series of sternal wound consult requests may mean there is a system issue with initial chest wall closure (e.g., materials used, sterility of instruments, patient nutritional support, etc.) and mobilizes system resources to address these
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● American Medical Association (AMA). Code of Medical Ethics Opinion 1.2.3. https://www.ama-assn.org/delivering-care/ethics/consultation-referral-second-opinions ● Cohn, SL. The role of the medical consultant. <i>Medical Clinics of North America</i> 2003;87(1):1-6. ISSN 0025-7125. https://doi.org/10.1016/S0025-7125(02)00148-7 . <ul style="list-style-type: none"> ● The ideal medical consultant will “render a report that informs without patronizing, educates without lecturing, directs without ordering, and solves the problem without making the referring physician appear to be stupid”

Patient Care 6: Surgical Maturity/Surgical Care	
Overall Intent: To lead a surgical team	
Milestones	Examples
<p>Level 1 <i>Prepares a patient for the operating room, with assistance</i></p> <p><i>Responds to surgical instructions</i></p> <p><i>Prepares post-operative orders for simple cases</i></p>	<ul style="list-style-type: none"> ● Makes patients “nothing by mouth (NPO),” orders intravenous (IV) fluids, obtains consent, and pays attention and follows directions intra-operatively ● Responds to nursing and pharmacy requests for clarification appropriately ● Completes discharge orders for ambulatory patients
<p>Level 2 <i>Prepares a patient for the operating room</i></p> <p><i>Demonstrates surgical cadence and process in a simple case</i></p> <p><i>Prepares post-operative orders for complex cases</i></p>	<ul style="list-style-type: none"> ● Reorders cases, responding to unexpected delays and cancellations ● Positions patient safely ● Handles broad categories of tissue appropriately (muscle versus nerve versus skin) ● Orders medications and specialized instrumentation for free flaps
<p>Level 3 <i>Completes the pre-operative work-up and requests consultants as needed, with oversight</i></p> <p><i>Demonstrates surgical cadence and process in a complex case and directs the surgical cadence and process for a simple case</i></p> <p><i>Prepares post-operative orders for multidisciplinary cases</i></p>	<ul style="list-style-type: none"> ● Plans and anticipates routine supplies such as instruments and suture materials; optimizes scrubbed personnel and equipment positioning to optimize case performance ● Positions patient optimally for procedure (prone versus supine, turns table) ● Coordinates timing of anticoagulation in neurological surgery combination case
<p>Level 4 <i>Completes the pre-operative work-up and requests consultants as needed</i></p> <p><i>Directs surgical cadence and process in a complex case and adapts to unforeseen circumstances</i></p> <p><i>Directs post-operative patients to appropriate care levels</i></p>	<ul style="list-style-type: none"> ● Enters room early and establishes self as leader of room and assesses available equipment and supplies ● Coordinates the surgical cadence of transgender bottom surgery with urology ● Leads a time-out discussion with full operating room team at the start of the procedure; leads a debriefing discussion with the full operating room team at the end of the procedure

<p>Level 5 <i>Plans and coordinates equipment and supplies for atypical or infrequent cases</i></p> <p><i>Directs surgical cadence and process in a complex case with multiple services</i></p> <p><i>Develops and directs institutional multidisciplinary case care pathways</i></p>	<ul style="list-style-type: none"> ● Appropriately orders implants, schedules representatives to be present, and accurately predicts timing for cases ● Identifies inefficiencies in an operation and proposes and executes superior strategies ● Leads operating room subcommittee seeking to improve operating room processes such as turnover or surgical site infection prevention
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Cadence: the natural flow of steps in a procedure, completing each in anticipation of the next, requesting supplies ahead of time ● Giddings AEB, Williamson C. The leadership and management of surgical teams. <i>The Royal College of Surgeons of England</i>. June 2007. https://www.rcseng.ac.uk/-/media/files/rcs/library-and-publications/non-journal-publications/leadership--management.pdf ● Henrickson Parker S, Flin R, McKinley A, Yule S. The surgeons' leadership inventory (SLI): a taxonomy and rating system for surgeons' intraoperative leadership skills. <i>Am J Surg</i>. 2013;205(6):745-51. doi: 10.1016/j.amjsurg.2012.02.020. Epub 2012 Aug 4. PMID: 22867725.

Patient Care 7: Wound, Burn, and Infection	
Overall Intent: To develop an understanding of wound, burn, and infection	
Milestones	Examples
<p>Level 1 <i>Identifies normal healing; knows pharmacological management of burn wounds</i></p> <p><i>Assists with wound preparation and initiates burn resuscitation</i></p> <p><i>Identifies patients with abnormal post-operative course or infections</i></p>	<ul style="list-style-type: none"> ● Lists stages of normal healing, describes indications for bacitracin, silver sulfadiazine, and sulfamylon, and lists mechanism of action and possible side effects of each ● Calculates fluid resuscitation and surgically debrides wounds, with assistance ● Identifies cellulitis and delayed wound healing; recognizes an unstable patient with worsening infection and communicates to the senior resident
<p>Level 2 <i>Identifies abnormal healing and formulates a plan; identifies infections requiring emergent surgical care</i></p> <p><i>Performs surgical and non-surgical wound management</i></p> <p><i>Manages simple complications; prescribes appropriate antibiotic regimen</i></p>	<ul style="list-style-type: none"> ● Recognizes necrotizing soft tissue infection as a surgical emergency; recognizes when a partial thickness burn has become full thickness and plans for surgical debridement; recognizes wound colonization from infection ● Performs emergency department debridement of burns and administers appropriate wound care; performs surgical drainage of abscess ● Prescribes appropriate antibiotics for Methicillin-resistant Staphylococcus aureus (MRSA) using the hospital antibiogram
<p>Level 3 <i>Develops a treatment plan for moderately complex wounds, infections, and routine burns</i></p> <p><i>Performs surgery for moderately complex wounds and routine burns</i></p> <p><i>Formulates a plan and performs non-surgical management of complications</i></p>	<ul style="list-style-type: none"> ● Determines whether a burn or wound is appropriate for autograft and discusses uses of allograft and adjuvant therapies such as negative pressure wound therapy, and skin substitutes (e.g., integra) ● Performs surgery for pressure sores including bony debridement and flap coverage; performs surgical debridement and coverage of burns ● Debrides non-adherent skin substitute and creates plan for surgical coverage
<p>Level 4 <i>Develops a treatment plan for complex wounds, infections, and burns in high-risk areas</i></p> <p><i>Performs complex wound management, including multistage procedures</i></p>	<ul style="list-style-type: none"> ● Discusses timing of surgery for facial/neck burns and formulates plan including split thickness grafts ● Plans for staged reconstruction of a large total surface body area burn and prioritizes debridement and definitive closure as it relates to area of the body

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<p><i>Performs surgical management of complications</i></p>	<ul style="list-style-type: none"> • Performs surgical management of contractures such as neck or digits including splinting and pinning
<p>Level 5 <i>Develops a treatment plan for complex secondary reconstruction patients, including post-operative rehabilitation</i></p> <p><i>Performs complex secondary reconstruction surgery</i></p> <p><i>Performs surgical management for complex complications</i></p>	<ul style="list-style-type: none"> • Directs treatment plan for hand burn including reconstruction and therapy • Performs surgical management of pressure sore in a patient with multiple previous flap surgeries • Performs microsurgical reconstruction for facial burn scar contracture
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Journal of Burn Care & Research. Practice guidelines collection. 2021. https://academic.oup.com/jbcr/pages/practice_guidelines_collection

Medical Knowledge 1: Hand

Overall Intent: To understand the pathophysiology and treatment of operative and non-operative hand disorders.

Milestones	Examples
<p>Level 1 <i>Describes the etiology of simple hand and upper extremity pathology</i></p> <p><i>Describes simple hand anatomy and examination maneuvers</i></p> <p><i>Selects appropriate initial diagnostic tests</i></p>	<ul style="list-style-type: none"> • Describes the etiology of trigger finger, carpal tunnel, cubital tunnel, De Quervains tenosynovitis, thumb carpometacarpal (CMC) arthritis, mucous cysts • Describes hand anatomy and testing maneuvers for De Quervains tenosynovitis, carpal tunnel syndrome (CTS), cubital tunnel syndrome (CuTS), thumb CMC arthritis • Identifies normal anatomy on radiographs • Select appropriate tests including electromyography/nerve conduction study, -x-rays
<p>Level 2 <i>Discusses the treatment of simple hand and upper extremity pathology</i></p> <p><i>Discusses moderately complex hand anatomy and examination maneuvers</i></p> <p><i>Identifies simple pathology on a hand and wrist radiograph and describes the appropriate treatment plan</i></p>	<ul style="list-style-type: none"> • Discusses treatment of trigger finger, CTS, CuTS, De Quervains tenosynovitis, CMC arthritis of thumb • Discusses moderately complex hand anatomy such metacarpophalangeal (MP) and proximal interphalangeal (PIP) joint anatomy, flexor and extensor anatomy; performs appropriate stress tests to identify PIP and MP joint instability, assessment of digital malrotation with hand/finger fractures, appropriate testing for identification of extensor and flexor tendon injury/pathology (Elson’s test) • Identifies simple pathology on x-ray and electromyography/nerve conduction study, and discusses treatment plan • Understands role of advanced imaging modalities
<p>Level 3 <i>Explains the etiology of and treatment of moderately complex hand and upper extremity pathology (e.g., Dupuytren’s)</i></p> <p><i>Explains complex hand anatomy and examination maneuvers</i></p> <p><i>Identifies moderately complex pathology on a hand and wrist radiograph and describes appropriate the treatment and surgical plan</i></p>	<ul style="list-style-type: none"> • Discusses treatment of moderately complex pathology such as simple hand/finger fractures and MP and interphalangeal joint dislocations. Dupuytren’s contracture, tendon injury (including mallet, Zone 1 and 2 flexor, and Boutonniere and swan neck deformities) • Discusses complex hand anatomy such as carpal bone anatomy, vascular anatomy of forearm and hand, complex peripheral nerve anatomy (Brachial plexus, shoulder/elbow) • Performs appropriate diagnostic maneuvers such as carpal bone instability testing maneuvers, e.g., Shuck and Watson’s tests and vascular testing like the Allen test • Identifies moderately complex pathology on x-ray, magnetic resonance imaging (MRI)/computerized tomography (CT), and ultrasound, and describes treatment plan

	<ul style="list-style-type: none"> • Orders appropriate therapy for moderately complex patient injury <i>OR</i> post-surgically counsels patients about expected course of recover • Orders appropriate advanced imaging
<p>Level 4 <i>Demonstrates knowledge of the etiology of complex hand and upper extremity pathology, including congenital hand and brachial plexus</i></p> <p><i>Explains hand therapy protocols for simple hand injuries and surgeries</i></p> <p><i>Identifies complex pathology on a hand and wrist radiograph and simple abnormal electrodiagnostics and describes the appropriate treatment and surgical plan</i></p>	<ul style="list-style-type: none"> • Discusses complex hand pathology such as carpal bone pathology, vascular pathology (Hypothenar hammer syndrome, Raynaud’s disease), brachial plexus lesions, complex nerve (anterior interosseus nerve, posterior interosseus nerve), congenital hand pathologies • Explains the process for hand therapy for trigger finger surgery, CMC arthroplasty, simple nerve decompressions, simple fractures, tendon injuries • Identifies complex hand pathology on x-ray (carpal dislocation, carpal instability patterns); uses MRI or ultrasound for evaluation of Stener lesions and complex peripheral neuropathy including brachial plexus, axillary nerve, and long thoracic • Interprets advanced imaging and electrodiagnostic results • Orders appropriate therapy for complex patient injury
<p>Level 5 <i>Demonstrates knowledge of the treatment of complex hand and upper extremity pathology, including congenital hand and brachial plexus</i></p> <p><i>Explains hand therapy protocols for complex hand injuries and surgeries</i></p> <p><i>Interprets the pathology on advanced imaging of hand, wrist, and upper extremity or complex abnormal electrodiagnostics and describes the appropriate treatment and surgical plan</i></p>	<ul style="list-style-type: none"> • Discusses knowledge of treatment of complex hand pathology carpal bone pathology, vascular pathology (Hypothenar hammer syndrome, Raynaud’s disease), complex nerve (brachial plexus, etc.), congenital hand pathologies • Explains hand therapy protocols for complex hand injury such as carpal bone pathology, vascular pathology (Hypothenar hammer syndrome, Raynaud’s disease), complex nerve (brachial plexus, etc.), congenital hand pathologies • Interprets pathology on advanced imaging for complex issues such as brachial plexus electromyography/nerve conduction study, CT/MRI for carpal instability/dislocation, vascular studies
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Curriculum conferencing and discussion • Direct observation • In-service exam • Multisource feedback • Skills lab
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •

Notes or Resources

- Chung, KC. *Operative Technique in Hand and Wrist Surgery*. 4th ed. Elsevier; 2021.
- Trumble E, Rayan GM, Baratz ME, Budoff JE, Slutsky DJ. *Principles of Hand Surgery and Therapy*, 3rd ed. Elsevier; 2016.
- Wolfe S, Pederson W, Kozin S, Cohen M. *Green's Operative Hand Surgery*. 8th ed. Elsevier; 2021.

Medical Knowledge 2: Breast	
Overall Intent: To understand the medical and surgical treatment of cancer and non-cancerous breast disorders	
Milestones	Examples
<p>Level 1 <i>Discusses how breast cancer affects overall patient physiologic risks of surgery (e.g., deep vein thrombosis risk)</i></p> <p><i>Discusses breast embryology and anatomy</i></p> <p><i>Describes material properties of tissue expanders/implants, acellular dermal matrices,</i></p>	<ul style="list-style-type: none"> ● Understands and explains deep vein thrombosis (DVT) risk stratification in breast cancer ● Explains the embryologic origin for breast disorders, such as describing the relationship of the milk line to super-numerary nipples ● Describes the difference between silicone and saline implants
<p>Level 2 <i>Describes the Breast Imaging-Reporting and Data System (BiRADS) staging system for mammography</i></p> <p><i>Identifies and describes non-cancer breast pathology (e.g., hypoplastic, hyperplastic, deformational, gynecomastia, and attritional breast disorders)</i></p> <p><i>Describes treatment options and implementation (e.g., tissue expander/implant sizing)</i></p>	<ul style="list-style-type: none"> ● Recites the breast imaging-reporting and data system (BI-RADS) staging system for mammography ● Categorizes non-cancerous breast pathology appropriately, e.g., hypoplastic, hyperplastic, deformational, gynecomastia, or attritional breast disorders ● Selects an appropriately sized tissue expander or implant for reconstruction, based on patient measurements
<p>Level 3 <i>Distinguishes subtypes and staging and how this affects adjuvant therapy</i></p> <p><i>Describes indications for and techniques of non-cancer breast surgery (e.g., World Professional Association for Transgender Health guidelines, incision patterns, pedicles)</i></p> <p><i>Describes short- and long-term complications of breast reconstruction (e.g., capsular contracture, breast implant-associated anaplastic large cell lymphoma, bottoming out)</i></p>	<ul style="list-style-type: none"> ● Describes what stages of invasive ductal carcinoma require adjuvant radiation therapy and neoadjuvant chemotherapy, or adjuvant chemotherapy, and how this may change reconstructive planning ● Knows World Professional Association for Transgender Health guidelines for patient selection for transgender top surgery ● Lists short- and long-term complications of implant-based breast reconstruction such as capsular contracture, breast implant-associated anaplastic large cell lymphoma, and implant malposition

<p>Level 4 <i>Explains expected patient outcomes based on tumor and reconstruction performed</i></p> <p><i>Describes physiologic, anatomic, and hormonal implications for treatment of breast disorders</i></p> <p><i>Explains indications for and timing of staged surgery, including re-operative surgery (e.g., tissue expanders, Acellular Dermal Matrix [ADM])</i></p>	<ul style="list-style-type: none"> ● Discusses capsular contracture incidence under a latissimus flap compared with pre-pectoral reconstruction with acellular dermal matrix ● Describes how pre-existing asymmetry (e.g., Poland syndrome) affects decisions for reconstruction and contralateral procedures ● Describes peri-operative management of breast cancer medications, such as aromatase inhibitors and anti-estrogens ● Explains how long a tissue expander should remain inflated prior to definitive implant placement, and the patient factors that may alter this timing
<p>Level 5 <i>Explains specific treatment algorithms in relation to other oncology care providers</i></p> <p><i>Anticipates and articulates the implications of prior surgery and treatment on surgical risk and planning</i></p> <p><i>Stays current with FDA recommendations regarding devices and materials (e.g., implants, ADM)</i></p>	<ul style="list-style-type: none"> ● Describes the full treatment algorithm for a given stage of breast cancer, including timing of interventions including surgery, radiation therapy, and chemotherapy, as well as secondary reconstructive procedures ● Explains the risks associated with nipple-sparing mastectomy after breast reduction and educates breast oncologic surgeons on patient selection ● Knows current breast implant-associated anaplastic large cell lymphoma incidence for different implants and appropriate evaluation and testing based on the suspected diagnosis ● Understands the different properties of commercially available acellular dermal matrix (pliability, thickness, porosity, antigenicity, terminal sterility)
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Curriculum conferencing and discussion ● Direct observation ● In-service exam ● Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● National Comprehensive Cancer Network (NCCN). Consensus guidelines. www.nccn.org.

Medical Knowledge 3: Facial Soft Tissue Pathology Overall Intent: To understand the nature and variety of soft tissue injury and pathology	
Milestones	Examples
<p>Level 1 <i>Describes simple facial pathology as benign or malignant with margins</i></p> <p><i>Describes pertinent facial anatomy related to simple facial soft tissue trauma pathology</i></p>	<ul style="list-style-type: none"> ● Describes lacerations and skin-only cancer defect; describes straightforward/low risk ● Describes features of benign versus malignant skin lesions; describes location and landmarks for facial nerve and parotid duct
<p>Level 2 <i>Discusses treatment options for a simple facial pathology, TNM staging and imaging/testing, and can draw closure options</i></p> <p><i>Explains the indications for imaging in a facial trauma patient</i></p> <p><i>Discusses potential complications for simple facial procedures involving a key landmark</i></p>	<ul style="list-style-type: none"> ● Identifies lacerations with involved landmarks such as vermillion border, alar rim, eyelid margin, parotid duct, and facial nerve; describes plan to resect malignant skin lesion ● Describes options for skin-only cancer defects; articulates use of computerized tomography (CT) in head and neck cancer work-up ● Describes potential complications related to maltreatment of above landmarks
<p>Level 3 <i>Explains pathophysiology and treatment options for moderately complex facial tumor pathology and can draw closure options</i></p> <p><i>Explains the treatment for moderately complex traumatic plastic surgery procedures</i></p> <p><i>Discusses potential complications for moderately complex facial procedures and options for care</i></p>	<ul style="list-style-type: none"> ● Discusses laceration with multiple landmarks or multi-layer skin cancer defect; discusses parotid tumors; discusses neck dissections for squamous cell carcinoma including description of levels of the neck ● Explains the use of sentinel node biopsy including melanoma; understands neoadjuvant and adjuvant options for head and neck cancer ● Identifies osteoradionecrosis, salivary leak, nerve injuries during treatment, and scar contractures
<p>Level 4 <i>Explains pathophysiology and treatment options for complex facial tumor pathology in multidisciplinary conference-related cases and can draw closure options</i></p> <p><i>Explains the treatment for complex traumatic plastic surgery procedures</i></p>	<ul style="list-style-type: none"> ● Discusses complex pathology including gunshot wound, mandibulectomy, and multiple organ system within head and neck; identifies facial trauma with tissue loss (e.g., dog bite) with segmental facial nerve defect; describes management of parotid injury ● Describes laryngectomy needing reconstructions

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<p><i>Discusses potential complications for complex facial procedures and options for care</i></p>	<ul style="list-style-type: none"> ● Discusses significant combination facial fracture with soft tissue
<p>Level 5 <i>Explains pathophysiology and treatment options for complex tumor revision surgery and can draw closure options</i></p> <p><i>Explains the management of revisional reconstructive procedures, including multidisciplinary care</i></p> <p><i>Discusses potential complications for revisional reconstructive procedures</i></p>	<ul style="list-style-type: none"> ● Discusses treatment options for osteoradionecrosis, salivary leak, or facial palsy after tumor/trauma ● Explains staged reconstructions with free tissue transfer ● Understands the option of facial transplantation
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Curriculum conferencing and discussion ● Direct observation ● Direct questioning ● In-training examination ● Multisource feedback
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Neligan, PC. <i>Plastic Surgery: Six-Volume Set.</i>, 4th ed. Elsevier; 2018. ● National Comprehensive Cancer Network (NCCN). Consensus guidelines. www.nccn.org.

Medical Knowledge 4: Trunk and Lower Extremity Overall Intent: To understand the nature and variety of trunk and lower extremity reconstruction	
Milestones	Examples
<p>Level 1 <i>Describes the anatomy of the abdominal wall and identifies specific pathologic concerns of the trunk</i></p> <p><i>Describes the anatomy of the lower extremity and catalogues specific pathology affecting it</i></p>	<ul style="list-style-type: none"> ● Understands the layers of abdominal muscle and fascia ● Understands the major compartments of the lower extremity and the neurovascular and muscular components of each
<p>Level 2 <i>Interprets imaging studies of the trunk, including computed tomography (CT) scan and magnetic resonance imaging</i></p> <p><i>Interprets imaging studies of the lower extremity, including conventional angiography and CT angiography</i></p>	<ul style="list-style-type: none"> ● Diagnoses hernias of the abdominal wall and identifies abdominal perforators for free tissue transfer ● Identifies the course of the three major arteries to the lower extremity and determines their patency status
<p>Level 3 <i>Presents multiple options for reconstruction of the abdomen and trunk</i></p> <p><i>Presents multiple options for reconstruction of the lower extremity and outlines strategies for successful post-operative care and rehabilitation</i></p>	<ul style="list-style-type: none"> ● Discusses flaps available for trunk reconstruction and the benefits and limits of each ● Outlines a plan for lower extremity debridement, coverage, and post-operative care
<p>Level 4 <i>Enumerates a plan for complex abdominal wall reconstruction, including component separation</i></p> <p><i>Enumerates a plan for complex lower extremity reconstruction, including free tissue transfer and donor vessel selection/dissection</i></p>	<ul style="list-style-type: none"> ● Describes the technique of component separation, including the planes of dissection ● Delineates a plan access and chooses flaps for lower extremity reconstruction, including treatment failure options
<p>Level 5 <i>Demonstrates knowledge of management of patients with complicated secondary defects, either due to failure of initial management or in the setting of radiation or significant co-morbidities</i></p>	<ul style="list-style-type: none"> ● Describes anatomic and immunologic considerations for abdominal wall and composite limb transplantation
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Curriculum conferencing and discussion ● Direct observation

	<ul style="list-style-type: none"> ● In-training examination ● Multisource feedback
Curriculum Mapping	●
Notes or Resources	<ul style="list-style-type: none"> ● Khansa I, Janis JE. Complex open abdominal wall reconstruction: management of the skin and subcutaneous tissue. <i>Plast Reconstr Surg.</i> 2018 Sep;142(3 Suppl):125S-132S. doi: 10.1097/PRS.0000000000004887. PMID: 30138280 ● Hussain ON, Sabbagh MD, Carlsen BT. Complex microsurgical reconstruction after tumor resection in the trunk and extremities. <i>Clin Plast Surg.</i> 2020 Oct;47(4):547-559. doi: 10.1016/j.cps.2020.06.007. PMID: 32892800 ● Kedar DJ, Pak CJ, Suh HP, Hong JP. Propeller flaps in the posterior trunk. <i>Semin Plast Surg.</i> 2020 Aug;34(3):176-183. doi: 10.1055/s-0040-1714086. Epub 2020 Sep 22. PMID: 33041688 ● Ogawa R. Propeller flaps for the anterior trunk. <i>Semin Plast Surg.</i> 2020 Aug;34(3):171-175. doi: 10.1055/s-0040-1714270. Epub 2020 Sep 22. PMID: 33041687 ● Kraft CT, Janis JE. Venous thromboembolism after abdominal wall reconstruction: a Prospective Analysis and Review of the Literature. <i>Plast Reconstr Surg.</i> 2019 May;143(5):1513-1520. doi: 10.1097/PRS.0000000000005534. PMID: 30807487 ● Prevention and Treatment Strategies for Mesh Infection in Abdominal Wall Reconstruction. Kao AM, Arnold MR, Augenstein VA, Heniford BT. <i>Plast Reconstr Surg.</i> 2018 Sep;142(3 Suppl):149S-155S. doi: 10.1097/PRS.0000000000004871. PMID: 30138283

Medical Knowledge 5: Pediatric/Congenital	
Overall Intent: To understand the nature and variety of pediatric and congenital differences	
Milestones	Examples
<p>Level 1 <i>Describes the anatomy and embryology of congenital facial anomalies</i></p> <p><i>Describes the anatomy and embryology of congenital hand anomalies</i></p> <p><i>Recognizes the components of multidisciplinary care for congenital anomalies</i></p>	<ul style="list-style-type: none"> ● Understands embryologic roots of craniofacial anomalies such as cleft lip/palate, microtia, hemifacial microsomia, and synostosis ● Describes embryology and categorization of congenital hand anomalies ● Describes the critical components of cleft palate, craniofacial, vascular tumors, and congenital hand teams and their roles
<p>Level 2 <i>Identifies diagnostic protocol, including imaging for facial anomalies</i></p> <p><i>Identifies diagnostic protocol, including imaging for hand anomalies</i></p> <p><i>Describes the typical post-operative course for simple facial and hand anomalies</i></p>	<ul style="list-style-type: none"> ● Discusses the use of imaging, endoscopy, and consultants to develop plans ● Describes critical portions of simple post-operative care (cleft, syndactyly, finger duplication) ● Describes vascular anomalies
<p>Level 3 <i>Identifies the genetic pathways for congenital anomalies of the face and hand</i></p> <p><i>Explains the timing of intervention for multiple-step treatments of facial and hand anomalies</i></p> <p><i>Explains the complications of facial and hand anomaly treatments and their management</i></p>	<ul style="list-style-type: none"> ● Articulates known genetic syndromes and altered genes with known other anomalies such as Poland syndrome, midface hypoplasia, or submucous cleft ● Sequence surgical care for cleft lip and palate, syndromic hand anomalies; identifies common complications of cleft lip and palate and syndactyly repair ● Discusses vascular anomalies with combined treatment such as arteriovenous malformation embolization with resection
<p>Level 4 <i>Explains the treatment of routine facial anomalies and can draw repair</i></p> <p><i>Explains the treatment of routine hand anomalies and can draw repair</i></p>	<ul style="list-style-type: none"> ● Explains cleft lip and palate ● Explains syndactyly and duplication

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<p><i>Explains timing of intervention, adjunctive treatments, and potential complications for complex problems</i></p>	<ul style="list-style-type: none"> ● Describes timing of serial procedures over the lifetime of a child with cleft lip and palate
<p>Level 5 <i>Explains the treatment of unusual facial anomalies and their revisions</i></p> <p><i>Explains the treatment of unusual hand anomalies and their revisions</i></p> <p><i>Explains timing of intervention, adjunctive treatments, and potential complications for complex revision problems</i></p>	<ul style="list-style-type: none"> ● Explains hemifacial microsomia, Romberg’s disease, syndromic synostosis, and congenital facial palsy ● Explains radial agenesis such as pollicization or toe-thumb ● Explains treatment of subsequent obstructive sleep apnea after velopharyngeal insufficiency repair
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Curriculum conferencing and discussion ● Direct questioning ● In-service exam
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● American Society of Plastic Surgeons. <i>Plastic and Reconstructive Surgery</i> (journal). https://www.plasticsurgery.org/for-medical-professionals/publications/plastic-and-reconstructive-surgery ● Losee J, Kirshner RE. eds. <i>Comprehensive Cleft Care</i>. 2nd ed, two-volume set. Boca Raton, FL: CRC Press; 2015. ● Neligan, PC. <i>Plastic Surgery: 6-Volume Set</i>. 4th ed. Elsevier; 2018. ● Thaller S, Garri JI, Bradley, JP. <i>Craniofacial Surgery</i>. New York, NY: Thieme Medical Publishers Inc.; 2007.

Systems-Based Practice 1: Patient Safety and Quality Improvement	
Overall Intent: To engage in the analysis and management of patient safety events, including relevant communication with patients, families, and health care professionals; to conduct a QI project	
Milestones	Examples
<p>Level 1 <i>Demonstrates knowledge of common patient safety events</i></p> <p><i>Demonstrates knowledge of how to report patient safety events</i></p> <p><i>Demonstrates knowledge of basic quality improvement methodologies and metrics</i></p>	<ul style="list-style-type: none"> ● Lists patient misidentification, lack communication surrounding procedures or medication errors as common patient safety events, e.g., needle stick in the operating room due to lack of communication between scrub nurse and surgeon ● Describes how to report errors in your environment ● Describes fishbone tool
<p>Level 2 <i>Identifies system factors that lead to patient safety events</i></p> <p><i>Reports patient safety events through institutional reporting systems (simulated or actual)</i></p> <p><i>Describes local quality improvement initiatives (e.g., infection rate, smoking cessation)</i></p>	<ul style="list-style-type: none"> ● Identifies lack of education regarding how to safely handle needles ● Discusses difficulty with sign-out communication at shift change ● Aids senior residents with quality improvement project and helps to complete it
<p>Level 3 <i>Participates in analysis of patient safety events (simulated or actual)</i></p> <p><i>Participates in disclosure of patient safety events to patients and their families (simulated or actual)</i></p> <p><i>Participates in local quality improvement initiatives</i></p>	<ul style="list-style-type: none"> ● Preparing for and presents at morbidity and mortality (M and M) presentations ● Through simulation, communicates with patients/families about intra-operative surgical event or needle stick and the need for additional lab draws ● Participates in project identifying root cause of rooming inefficiency
<p>Level 4 <i>Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)</i></p> <p><i>Discloses patient safety events to patients and their families (simulated or actual)</i></p>	<ul style="list-style-type: none"> ● Collaborates with a team to conduct the analysis of lack of education about avoidance needle safety and develops an educational program to help teach safety techniques

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<p><i>Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project</i></p>	<ul style="list-style-type: none"> • Participates in the completion of a QI project to improve breast implant infection rates, including assessing the problem, articulating the goal, developing targeted changes in implant placement that can be made and following up on outcomes prospectively
<p>Level 5 <i>Actively engages teams and processes to modify systems to prevent patient safety events</i></p> <p><i>Role models or mentors others in the disclosure of patient safety events</i></p> <p><i>Creates, implements, and assesses quality improvement initiatives at the institutional or community level</i></p>	<ul style="list-style-type: none"> • Assumes a leadership role within the division for patient safety • Conducts a simulation for disclosing patient safety events • Initiates and completes a QI project regarding infection rates in breast implants, writes up the data with statistical analysis, and publishes the paper in a plastic surgery journal
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Institute of Healthcare Improvement website. http://www.ihl.org/Pages/default.aspx. Note: this includes multiple choice tests, reflective writing samples, and more

Systems-Based Practice 2: System Navigation for Patient-Centered Care	
Overall Intent: To effectively navigate the health care system, including the interdisciplinary team and other care providers, to adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	Examples
<p>Level 1 <i>Demonstrates knowledge of care coordination</i></p> <p><i>Identifies key elements for safe and effective transitions of care and hand-offs</i></p>	<ul style="list-style-type: none"> ● Coordinates care for a patient needing a new wheelchair with pressure offloading cushion ● Lists the essential components of an I-PASS sign-out and care transition and hand-offs
<p>Level 2 <i>Coordinates care of patients in routine clinical situations, effectively using the roles of interprofessional team members</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in routine clinical situations</i></p>	<ul style="list-style-type: none"> ● Coordinates care for a breast free flap patient after mastectomy including drain care, home health resources, and oncology follow-up ● Routinely uses I-PASS for a stable patient during night float sign-out
<p>Level 3 <i>Coordinates care of patients in complex clinical situations, effectively using the roles of interprofessional team members</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in complex clinical situations</i></p>	<ul style="list-style-type: none"> ● For a patient with paraplegia and a pressure ulcer, identifies need for a physical medicine and rehabilitation consult, home health nurse for wound care, and identifies social workers as members of the team ● Routinely uses I-PASS when transferring a patient to the ICU
<p>Level 4 <i>Role models effective coordination of patient-centered care among different disciplines and specialties</i></p> <p><i>Role models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems, including outpatient settings</i></p>	<ul style="list-style-type: none"> ● Leads team members in approaching consultants to review cases/recommendations and arranges coordinated meeting to review treatment plan for large vascular malformations ● Prior to going on vacation, discusses complicated wound patient who will need coordination of treatment across vascular surgery, orthopedic surgery, and plastic surgery, and who will likely need surgery within the next two to three days
<p>Level 5 <i>Analyzes the process of care coordination and leads in the design and implementation of improvements</i></p> <p><i>Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes</i></p>	<ul style="list-style-type: none"> ● Leads a program to coordinate wound care clinic with multidisciplinary outreach including podiatry, vascular surgery, and wound care nurses ● Develops a protocol to improve transitions to long-term care facilities
Assessment Models or Tools	<ul style="list-style-type: none"> ● Direct observation

	<ul style="list-style-type: none"> • Medical record (chart) audit • Multisource feedback • Objective structures clinical exam (OSCE) • Review of sign-out tools, use and review of checklists • Quality metrics and goals mined from electronic health records (EHR)
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Centers for Disease Control and Prevention (CDC). Population Health Training in Place Program (PH-TIPP). October 2020. https://www.cdc.gov/pophealthtraining/whatis.html • Kaplan KJ. In pursuit of patient-centered care. <i>Tissue Pathology</i>. March 2016. http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns • Skochelak SE, Hawkins RE, Lawson LE, etc. al. <i>AMA Education Consortium: Health Systems Science</i>. 1st ed. Elsevier; 2016.

Systems-Based Practice 3: Physician Role in Health Care Systems	
Overall Intent: To understand the physician’s role in the complex health care system and how to optimize the system to improve patient care and the health system’s performance	
Milestones	Examples
<p>Level 1 <i>Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility)</i></p> <p><i>Identifies the appropriate hospital resources (e.g., case management, social work) to aid in understanding patient costs</i></p> <p><i>Demonstrates use of information technology (e.g., electronic health record)</i></p>	<ul style="list-style-type: none"> ● Articulates differences between skilled nursing and long-term care facilities ● Understands the impact of health plan coverage on prescription drug costs for individual patients ● Identifies that patient notes must meet coding requirements
<p>Level 2 <i>Describes how working within the health care system impacts patient care</i></p> <p><i>Delivers care with the understanding that there are different payment models (e.g., private, government, public)</i></p> <p><i>Describes components of documentation for coding</i></p>	<ul style="list-style-type: none"> ● Explains that improving patient satisfaction impacts patient adherence and payment to the health system ● Takes into consideration patient’s insurance coverage when discussing need for post-operative hand therapy after flexor tendon repair ● Recognizes that appropriate documentation can influence the severity of illness determination upon discharge
<p>Level 3 <i>Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency)</i></p> <p><i>Engages with patients in shared decision-making, informed by each patient’s payment models</i></p> <p><i>Documents the key components required for billing and coding for simple procedures and inpatient status</i></p>	<ul style="list-style-type: none"> ● Ensures that patient with breast flaps has a follow-up in a week for drain removal to avoid patient coming to the emergency room for drain removal ● Discusses risks and benefits of ordering MRI imaging for ulnar-sided wrist pain if patient has high deductible and cannot afford surgery or to be out of work ● Correctly chooses Current Procedural Terminology (CPT) code and documents the operative note appropriately
<p>Level 4 <i>Manages various components of the complex health care system to provide efficient and effective patient care and transitions of care</i></p>	<ul style="list-style-type: none"> ● Ensures proper documentation of three-day qualifying hospital stay prior to discharging a patient to a skilled nursing facility for physical therapy

<p><i>Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model</i></p> <p><i>Analyzes individual practice patterns and professional requirements in preparation for practice</i></p>	<ul style="list-style-type: none"> ● Works collaboratively to improve patient assistance resources for a patient with a recent amputation and limited resources ● Identifies opportunities for advanced training ● Recognizes gaps in surgical skills and seeks additional mentorship
<p>Level 5 <i>Advocates for or leads systems change that enhances high value, efficient, and effective patient care and transitions of care</i></p> <p><i>Participates in health policy advocacy activities</i></p> <p><i>Educates others to prepare them for the transition to practice</i></p>	<ul style="list-style-type: none"> ● Works with community or professional organizations to create multidisciplinary meetings for patients with cleft lip to discuss their treatment plans ● Improves informed consent process for non-English-speaking patients requiring interpreter services ● Educates others in different practice models and contract types
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Medical record (chart) audit ● Patient satisfaction data ● Portfolio
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Agency for Healthcare Research and Quality (AHRQ). The challenges of measuring physician quality. 2016. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/challenges.html. ● AHRQ. Major physician performance sets. 2018. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/measurementsets.html. ● Center for Medicare and Medicaid Services. The merit-based incentive payment system: advancing care information and improvement activities performance categories. 2018. https://www.cms.gov/Medicare/Quality-Payment-Program/Resource-Library/2018-Advancing-Care-information-Fact-Sheet.pdf. ● Center for Medicare and Medicaid Services. MIPS and MACRA. 2018. https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs.html

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- The Commonwealth Fund. Health reform resource center: [http://www.commonwealthfund.org/interactives-and-data/health-reform-resource-center#/f:@facasubcategoriesfacet63677=\[Individual%20and%20Employer%20Responsibility](http://www.commonwealthfund.org/interactives-and-data/health-reform-resource-center#/f:@facasubcategoriesfacet63677=[Individual%20and%20Employer%20Responsibility)
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Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice Overall Intent: To incorporate evidence and patient values into clinical practice	
Milestones	Examples
Level 1 <i>Demonstrates how to access and use available evidence and incorporate patient preferences and values to the care of a routine patient</i>	<ul style="list-style-type: none"> • Identifies evidence-based guidelines for peri-operative antibiotics and DVT prophylaxis
Level 2 <i>Articulates clinical questions and elicits patient preferences and values to guide evidence-based care</i>	<ul style="list-style-type: none"> • In a patient with requiring wound coverage, identifies and discusses potential evidence-based treatment options, and solicits patient perspective
Level 3 <i>Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients</i>	<ul style="list-style-type: none"> • Obtains, discusses, and applies evidence for the treatment of a patient requiring wound coverage and co-existing vascular disease and history of smoking • Understands and appropriately uses clinical practice guidelines in making patient care decisions while eliciting patient preferences
Level 4 <i>Critically appraises and applies evidence, even in the face of uncertainty and conflicting evidence, to guide care tailored to the individual patient</i>	<ul style="list-style-type: none"> • Accesses the primary literature to identify alternative treatments to negative pressure wound therapy for wound management and temporization
Level 5 <i>Coaches others to critically appraise and apply evidence for complex patients, and/or participates in the development of guidelines</i>	<ul style="list-style-type: none"> • Leads clinical teaching on application of best practices in critical appraisal of sepsis criteria • As part of a team, develops opioid-sparing post-operative pain management pathways
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Oral or written examinations • Presentation evaluation • Research portfolio
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • National Institutes of Health. Write your application. July 14, 2020. https://grants.nih.gov/grants/how-to-apply-application-guide/format-and-write/write-your-application.htm • US National Library of Medicine. PubMed online training. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html • Institutional Review Board guidelines • Various academic journal submission guidelines

Practice-Based Learning and Improvement 2: Reflective Practice and Commitment to Personal Growth	
Overall Intent: To seek clinical performance information with the intent to improve care; reflects on all domains of practice, personal interactions, and behaviors, and their impact on colleagues and patients (reflective mindfulness); develop clear objectives and goals for improvement in some form of a learning plan	
Milestones	Examples
<p>Level 1 <i>Accepts responsibility for personal and professional development by establishing goals</i></p> <p><i>Identifies factors that contribute to gap(s) between expectations and performance</i></p> <p><i>Actively seeks opportunities to improve</i></p>	<ul style="list-style-type: none"> ● Sets a personal practice goal of keeping a record of operations performed and what was learned from each procedure ● Identifies gaps in knowledge of wound-healing pathways ● Appropriately asks for feedback from more senior residents, and faculty and clinic staff members
<p>Level 2 <i>Demonstrates openness to performance data (feedback and other input) to inform goals</i></p> <p><i>Analyzes the factors that contribute to gap(s) between expectations and performance</i></p> <p><i>Designs and implements a learning plan, with prompting</i></p>	<ul style="list-style-type: none"> ● Integrates feedback to improve preoperative management of inpatients ● Assesses time management skills and how it impacts timely completion of clinic notes and literature reviews ● After patient encounter, debriefs with the attending and other patient care team members to optimize future collaboration in the care of the patient and family ● When prompted, develops individual education plan to improve personal evaluation of pre-operative readiness
<p>Level 3 <i>Continually seeks performance data, with adaptability and receptivity</i></p> <p><i>Institutes behavioral change(s) to narrow the gap(s) between expectations and performance</i></p> <p><i>Independently creates and implements a learning plan</i></p>	<ul style="list-style-type: none"> ● Conducts a chart audit to determine the percent of patients who received appropriate orders for peri-operative antibiotics and DVT prophylaxis ● Completes a comprehensive literature review prior to patient encounters ● Using web-based resources, creates a personal curriculum to improve personal evaluation of medical comorbidities
<p>Level 4 <i>Continually self-assesses and uses external feedback to confirm and augment performance data</i></p>	<ul style="list-style-type: none"> ● Uses reported M and M cases to drive chart review to promote future safe practices and preventing harm

<p><i>Challenges one's own assumptions and considers alternatives in narrowing the gap(s) between expectations and performance</i></p> <p><i>Uses performance data to measure the effectiveness of the learning plan, and, when necessary, improves it</i></p>	<ul style="list-style-type: none"> ● Sets up cadaver dissections to pre-plan for an unfamiliar procedure ● Actively implements a plan to improve personal surgical efficiency
<p>Level 5 <i>Consistently models self-assessment and feedback incorporation</i></p> <p><i>Coaches others on reflective practice</i></p> <p><i>Facilitates the design and implementation of learning plans for others</i></p>	<ul style="list-style-type: none"> ● Models practice improvement and adaptability ● Develops educational module for collaboration with other patient care team members ● Assists first-year residents in developing their individualized learning plans
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Review of learning plan
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Burke AE, Benson B, Englander R, Carraccio C, Hicks PJ. Domain of competence: practice-based learning and improvement. <i>Acad Pediatr.</i> 2014;14: S38-S54. ● Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. <i>Acad Med.</i> 2009 Aug;84(8):1066-74. Note: Contains a validated questionnaire about physician lifelong learning. ● Lockspeiser TM, Schmitter PA, Lane JL et al. Assessing residents' written learning goals and goal writing skill: validity evidence for the learning goal scoring rubric. <i>Acad Med.</i> 2013 Oct;88(10)1558-63.

Professionalism 1: Professional Behavior and Ethical Principles	
Overall Intent: To recognize and address lapses in ethical and professional behavior, demonstrates ethical and professional behaviors, and use appropriate resources for managing ethical and professional dilemmas	
Milestones	Examples
<p>Level 1 <i>Understands and describes appropriate professionalism by oneself and others</i></p> <p><i>Understands the ethical principles underlying informed consent, surrogate decision-making, advance directives, HIPAA/confidentiality, error disclosure, stewardship of limited resources, and related topics</i></p>	<ul style="list-style-type: none"> ● Understands that being tired can cause a lapse in professionalism ● Understands being late to sign-out has adverse effect on patient care and on professional relationships ● Articulates how the principle of “do no harm” applies to a patient who may not need a central line even though the training opportunity exists
<p>Level 2 <i>Demonstrates professional behavior in all situations</i></p> <p><i>Demonstrates knowledge of ethical principles</i></p>	<ul style="list-style-type: none"> ● Respectfully approaches a resident who is late to sign-out about the importance of being on time ● Notifies appropriate supervisor when a resident is routinely late to sign-out ● Identifies and applies ethical principles involved in informed consent when the resident is unclear of all the risks
<p>Level 3 <i>Describes when and how to appropriately report professionalism lapses by oneself and others</i></p> <p><i>Recognizes the need to seek help in managing and resolving complex ethical situations</i></p>	<ul style="list-style-type: none"> ● After noticing an impaired colleague, reviews policies and seeks guidance ● Sees unauthorized release of protected health information and alerts appropriate leadership person ● Offers treatment options for a terminally ill patient, free of bias, while recognizing own limitations, and consistently honoring the patient’s choice
<p>Level 4 <i>Recognizes situations that may trigger professionalism lapses in oneself and others</i></p> <p><i>Utilizes appropriate resources for managing and resolving ethical dilemmas (e.g., ethics consultations, literature review, risk management/legal consultation)</i></p>	<ul style="list-style-type: none"> ● Actively considers the perspectives of others ● Models respect for patients and promotes the same from colleagues when a patient has been waiting an excessively long time to be seen ● Recognizes and uses ethics consults, literature, risk-management/legal counsel to resolve ethical dilemmas regarding conflict between an incapacitated but verbal patient with medical proxy regarding goals for treatment and care
<p>Level 5 <i>Coaches others when their behavior fails to meet professional expectations</i></p>	<ul style="list-style-type: none"> ● Coaches others when their behavior fails to meet professional expectations and creates a performance improvement plan to prevent recurrence

<p><i>Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution</i></p>	<ul style="list-style-type: none"> • Engages stakeholders to address excessive wait times in the clinic to decrease patient and provider frustrations that lead to unprofessional behavior.
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • Global evaluation • Multisource feedback • Oral or written self-reflection • Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • AMA. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. 2019. • American Board of Internal Medicine; American College of Physicians-American Society of Internal Medicine; European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. <i>Ann Intern Med</i>. 2002;136:243-246. http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millennium-A-Physician-Charter.pdf • Bynny RL, Paauw DS, Papadakis MA, Pfeil S. <i>Medical Professionalism Best Practices: Professionalism in the Modern Era</i>. Aurora, Colorado: Alpha Omega Alpha Honor Medical Society; 2017. ISBN: 978-1-5323-6516-4 • Bynny RL, Papadakis MA, Paauw DS. Medical Professionalism Best Practices. Menlo Park, CA: Alpha Omega Alpha Medical Society; 2015. https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf • Domen RE, Johnson K, Conran RM, et al. Professionalism in pathology: a case-based approach as a potential education tool. <i>Arch Pathol Lab Med</i>. 2017; 141:215-219. doi: 10.5858/arpa.2016-2017-CP • Levinson W, Ginsburg S, Hafferty FW, Lucey CR. <i>Understanding Medical Professionalism</i>. 1st ed. McGraw-Hill Education; 2014.

Professionalism 2: Accountability/Conscientiousness	
Overall Intent: To take responsibility for one’s own actions and the impact on patients and other members of the health care team	
Milestones	Examples
<p>Level 1 <i>Performs tasks and responsibilities in a timely manner, with appropriate attention to detail, in routine situations</i></p> <p><i>Responds promptly to requests or reminders to complete tasks and responsibilities</i></p>	<ul style="list-style-type: none"> ● Completes work hour logs without prompting ● Timely attendance at conferences ● Completes end of rotation evaluations
<p>Level 2 <i>Performs tasks and responsibilities in a timely manner, with appropriate attention to detail, in complex or stressful situations</i></p> <p><i>Identifies potential contributing factors for failing to complete a task and describes strategies for ensuring timely task completion in the future</i></p>	<ul style="list-style-type: none"> ● Completes administrative tasks, documents safety modules, procedure review, and licensing requirements by specified due date ● Before going out of town, completes tasks in anticipation of lack of computer access while traveling
<p>Level 3 <i>Delegates some tasks or responsibilities in routine situations</i></p> <p><i>Recognizes situations that may impact one’s own or others’ ability to complete tasks and responsibilities in a timely manner in routine situations</i></p>	<ul style="list-style-type: none"> ● Notifies attending of multiple competing demands on call, appropriately triages tasks, and asks for assistance from other residents or faculty members as needed ● In preparation for being out of the office, arranges coverage for assigned clinical tasks and ensures appropriate continuity of care
<p>Level 4 <i>Delegates some tasks or responsibilities in complex or stressful situations</i></p> <p><i>Recognizes situations that may impact one’s own or others’ ability to complete tasks and responsibilities in a timely manner in complex or stressful situations</i></p>	<ul style="list-style-type: none"> ● Takes responsibility for inadvertently omitting key patient information during sign-out and professionally discusses with the patient, family, and interprofessional team ● Proactively rearranges a clinic when an emergency case presents
<p>Level 5 <i>Teaches concepts of or counsels others on accountability or conscientiousness in the workplace</i></p> <p><i>On a departmental or system-wide level, advocates to improve systems that ensure</i></p>	<ul style="list-style-type: none"> ● Educates more junior residents on various methods of time management ● Creates a system where patient post-operative disposition is arranged prior to surgery

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<i>patients' needs are met within the hospital, upon discharge, and in follow-up</i>	
Assessment Models or Tools	<ul style="list-style-type: none"> ● Compliance with deadlines and timelines ● Direct observation ● Global evaluations ● Multisource feedback ● Self-evaluations and reflective tools ● Simulation
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● Code of conduct from fellow/resident institutional manual ● Expectations of residency program regarding accountability and professionalism

Professionalism 3: Self-Awareness and Help-Seeking Overall Intent: To identify, use, manage, improve, and seek help for personal and professional well-being for self and others	
Milestones	Examples
Level 1 <i>Is aware of the importance of one's personal and professional well-being</i> <i>Is aware of the resources available for professional well-being</i>	<ul style="list-style-type: none"> ● Acknowledges own response to disappointment at work ● Aware of burnout resources available through graduate medical education (GME)
Level 2 <i>Independently recognizes status of personal and professional well-being</i> <i>Demonstrates appropriate help-seeking behaviors</i>	<ul style="list-style-type: none"> ● Independently identifies and communicates impact of a personal family tragedy ● Reaches out to well-being resources if suffering from burnout
Level 3 <i>With assistance, proposes a plan to optimize personal and professional well-being</i> <i>With assistance, proposes a plan to improve co-workers' knowledge of well-being resources</i>	<ul style="list-style-type: none"> ● With the multidisciplinary team, develops a reflective response to deal with personal impact of difficult patient encounters and disclosures ● Educates new residents on well-being resources
Level 4 <i>Independently develops a plan to optimize personal and professional well-being</i> <i>Independently advocates for and raises awareness of resources for physician well-being</i>	<ul style="list-style-type: none"> ● Independently identifies ways to manage personal stress ● Advocates for resident well-being through committees
Level 5 <i>Optimizes departmental or system-wide tools available for maximizing personal and professional well-being</i> <i>Coaches others when emotional responses or limitations in knowledge/skills do not meet professional expectations</i>	<ul style="list-style-type: none"> ● Assists in organizational efforts to address clinician well-being after patient diagnosis/prognosis/death ● Works with multidisciplinary team to develop a feedback framework for learners around family meetings
Assessment Models or Tools	<ul style="list-style-type: none"> ● Direct observation ● Group interview or discussions for team activities ● Individual interview ● Institutional online training modules plan ● Self-assessment and personal learning
Curriculum Mapping	

Notes or Resources	<ul style="list-style-type: none">• This subcompetency is not intended to evaluate a resident's well-being, but to ensure each resident has the fundamental knowledge of factors that impact well-being, the mechanisms by which those factors impact well-being, and available resources and tools to improve well-being.• Local resources, including Employee Assistance• ACGME. Well-Being Tools and Resources. https://dl.acgme.org/pages/well-being-tools-resources• Hicks PJ, Schumacher D, Guralnick S, Carraccio C, Burke AE. Domain of competence: personal and professional development. <i>Acad Pediatr.</i> 2014 Mar-Apr;14(2 Suppl):S80-97.
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Interpersonal and Communication Skills 1: Patient and Family Communication	
Overall Intent: To deliberately use language and behaviors to form constructive relationships with patients, to identify communication barriers including self-reflection on personal biases, and minimize them in the doctor-patient relationships; organize and lead communication around shared decision-making	
Milestones	Examples
<p>Level 1 <i>Uses language and non-verbal behavior to demonstrate respect and establish rapport</i></p> <p><i>Establishes a therapeutic relationship in straightforward encounters using active listening and clear language</i></p>	<ul style="list-style-type: none"> ● Introduces self and faculty member, identifies patient and others in the room, and engages all parties in health care discussion ● Identifies need for trained interpreter with non-English-speaking patients ● Uses age-appropriate language when discussing bedside procedures with pediatric patients
<p>Level 2 <i>Identifies common barriers to effective communication (e.g., language, disability) and identifies the need to adjust communication strategies based on assessment of a patient/patient’s family</i></p> <p><i>Reflects on personal biases while attempting to minimize communication barriers, with prompting</i></p>	<ul style="list-style-type: none"> ● Avoids medical jargon and restates patient perspective when discussing tobacco cessation ● Recognizes the need for handouts with diagrams and pictures to communicate information to a patient who is unable to read ● Uses patient’s preferred pronouns and name
<p>Level 3 <i>Identifies complex barriers to effective communication (e.g., health literacy, cultural differences)</i></p> <p><i>Establishes a therapeutic relationship in challenging patient encounters</i></p>	<ul style="list-style-type: none"> ● Insists on using hospital approved interpreter even when the patient wishes to use a family member ● Acknowledges own discomfort in performing repeated abscess surgeries in a patient who continues to skin pop
<p>Level 4 <i>Independently, uses shared decision-making to align a patient’s/patient’s family’s values, goals, and preferences with treatment options to make a personalized care plan</i></p> <p><i>Independently recognizes personal biases while attempting to proactively minimize communication barriers</i></p>	<ul style="list-style-type: none"> ● Continues to engage representative stakeholders with competing goals in the care of a noncompliant patient with chronic wounds ● Reflects on bias related to personal experiences on evaluating treatment options when counseling patients
<p>Level 5 <i>Mentors others in shared decision-making in communication with patients/patients’</i></p>	<ul style="list-style-type: none"> ● Leads a discussion group on personal experience of moral distress

<p><i>families, including in situations with a high degree of uncertainty/conflict</i></p> <p><i>Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships</i></p>	<ul style="list-style-type: none"> • Develops a residency curriculum on social justice which addresses unconscious bias • Serves on a hospital bioethics committee
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> • Direct observation • OSCE • Self-assessment including self-reflection exercises • Standardized patients
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> •
<p>Notes or Resources</p>	<ul style="list-style-type: none"> • Laidlaw A, Hart J. Communication skills: an essential component of medical curricula. Part I: Assessment of clinical communication: AMEE Guide No. 51. <i>Med Teach.</i> 2011;33(1):6-8. • Makoul G. Essential elements of communication in medical encounters: The Kalamazoo consensus statement. <i>Acad Med.</i> 2001;76:390-393. • Makoul G. The SEGUE Framework for teaching and assessing communication skills. <i>Patient Educ Couns.</i> 2001;45(1):23-34. • Symons AB, Swanson A, McGuigan D, Orrange S, Akl EA. A tool for self-assessment of communication skills and professionalism in fellows. <i>BMC Med Educ.</i> 2009; 9:1.

Interpersonal and Communication Skills 2: Interprofessional and Systems Communication Overall Intent: To effectively communicate with the health care team, in both straightforward and complex situations	
Milestones	Examples
Level 1 <i>Communicates information to health care team members</i> <i>Accurately records and safeguards patient information</i>	<ul style="list-style-type: none"> ● Acknowledges the contribution of each member of the care team ● Documentation is accurate but may include extraneous information
Level 2 <i>Clearly, directly, and specifically communicates with team members in a way that is respectful of their time</i> <i>Efficiently uses the electronic health record to communicate with the health care team</i>	<ul style="list-style-type: none"> ● While on rounds, speaks to the nursing staff regarding changes in wound dressing orders. ● Sends a message in electronic health record to the dietician of the patient
Level 3 <i>Communicates concerns and provides feedback to peers and learners</i> <i>Integrates and synthesizes all relevant data from outside systems and prior encounters into the health record</i>	<ul style="list-style-type: none"> ● Explains to a more junior resident why a clinic note may insufficiently record discussion had during a visit ● Reviews x-rays taken at referring emergency department ● Consolidates records from two institutions to plan care
Level 4 <i>Communicates feedback and constructive criticism to superiors</i> <i>Initiates difficult conversations with appropriate stakeholders to improve the system</i>	<ul style="list-style-type: none"> ● Diplomatically communicates with the attending the positive and negative interactions during a rotation and provides suggestions for change ● Resident reviews the treatment plan and offers evidence-based alterations ● Talks directly to an emergency room physician about breakdowns in communication to prevent recurrence
Level 5 <i>Facilitates regular health care team-based feedback in complex situations</i> <i>Facilitates dialogue regarding systems issues among larger community stakeholders (health care system)</i>	<ul style="list-style-type: none"> ● Mediates a conflict resolution between different members of the health care team ● Better elucidates the process for COVID-19 testing for pre-surgical patients
Assessment Models or Tools	<ul style="list-style-type: none"> ● Direct observation ● Global assessment ● Medical record (chart) audit ● Multi-source feedback

	<ul style="list-style-type: none"> ● Simulation
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● Dehon E, Simpson K, Fowler D, Jones A. Development of the faculty 360. <i>MedEdPORTAL</i>. 2015;11:10174. http://doi.org/10.15766/mep_2374-8265.10174. Accessed 2021. ● Fay D, Mazzone M, Douglas L, Ambuel B. A validated, behavior-based evaluation instrument for family medicine residents. <i>MedEdPORTAL Publications</i>. May 2007. 10.15766/mep_2374-8265.622 ● François, J. Tool to assess the quality of consultation and referral request letters in family medicine. <i>Can Fam Physician</i>. 2011 May;57(5), 574–575. ● Green M, Parrott T, Cook G., Improving your communication skills. <i>BMJ</i> 2012;344. https://www.bmj.com/content/344/bmj.e357. Accessed 2021. ● Henry SG, Holmboe ES, Frankel RM. Evidence-based competencies for improving communication skills in graduate medical education: A review with suggestions for implementation. <i>Med Teach</i>. 2013 May; 35(5):395-403. doi: 10.3109/0142159X.2013.769677. https://pubmed.ncbi.nlm.nih.gov/23444891/. Accessed 2021. ● Roth CG, Eldin KW, Padmanabhan V, Freidman EM. Twelve tips for the introduction of emotional intelligence in medical education. <i>Med Teach</i>. 2019;41(7):746-749. https://pubmed.ncbi.nlm.nih.gov/30032720/. Accessed 2021.

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To help programs transition to the new version of the Milestones, the ACGME has mapped the original Milestones 1.0 to the new Milestones 2.0. Indicated below are where the subcompetencies are similar between versions. These are not exact matches but are areas that include similar elements. Not all subcompetencies map between versions. Inclusion or exclusion of any subcompetency does not change the educational value or impact on curriculum or assessment.

Milestones 1.0	Milestones 2.0
PC1: Surgical Care	PC6: Surgical Maturity/Surgical Care
PC2: Wound Care	PC7: Wound, Burn, and Infection
PC3: Tissue Transfer	PC2: Microsurgery PC3: Flaps and Graphs
PC4: Congenital Anomalies	PC2: Microsurgery PC3: Flaps and Graphs
PC5: Head and Neck	PC2: Microsurgery PC3: Flaps and Graphs
PC6: Maxillofacial Trauma	PC1: Fractures PC2: Microsurgery PC3: Flaps and Graphs
PC7: Facial Aesthetics	PC4: Aesthetic Surgery PC2: Microsurgery PC3: Flaps and Graphs
PC8: Non-Cancer Breast Surgery	PC4: Aesthetic Surgery PC2: Microsurgery PC3: Flaps and Graphs
PC9: Breast Reconstruction	PC2: Microsurgery PC3: Flaps and Graphs
PC10: Reconstruction of Trunk and Perineum	PC2: Microsurgery PC3: Flaps and Graphs
PC11: Upper Extremity Trauma	PC1: Fractures
PC12: Non-Trauma Hand	PC2: Microsurgery PC3: Flaps and Graphs
PC13: Cosmetic Surgery of the Trunk and Lower Extremity	PC2: Microsurgery PC3: Flaps and Graphs PC4: Aesthetic Surgery
PC14: Lower Extremity	PC2: Microsurgery PC3: Flaps and Graphs
No match	PC5: Consults

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MK1: Surgical Care	PC6: Surgical Maturity/Surgical Care
MK2: Wound Care	PC7: Wound, Burn, and Infection
MK3: Tissue Transfer	PC2: Microsurgery PC3: Flaps and Graphs
MK4: Congenital Anomalies	MK5: Pediatric/Congenital
MK5: Head and Neck	PC2: Microsurgery PC3: Flaps and Graphs
MK6: Maxillofacial Trauma	MK3: Facial Soft Tissue Pathology
MK7: Facial Aesthetics	PC4: Aesthetic Surgery
MK8: Non-Cancer Breast Surgery	PC4: Aesthetic Surgery MK2: Breast
MK9: Breast Reconstruction	MK2: Breast
MK10: Reconstruction of Trunk and Perineum	MK4: Trunk and Lower Extremity
MK11: Upper Extremity Trauma	MK1: Hand
MK12: Non-Trauma Hand	MK1: Hand
MK13: Cosmetic Surgery of the Trunk and Lower Extremity	MK4: Trunk and Lower Extremity
MK14: Lower Extremity	MK4: Trunk and Lower Extremity
SBP1: Patient Safety	SBP1: Patient Safety and Quality Improvement
SBP2: Resource Allocation	SBP3: Physician Role in the Health Care Systems
SBP3: Practice Management	SBP3: Physician Role in the Health Care Systems
No match	SBP2: System Navigation for Patient-Centered Care
PBLI1: Investigate, Evaluate, Assimilate	PBLI1: Evidence-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Personal Growth
PBLI2: Research and Teaching	No match
PROF1: Ethics and Values	PROF1: Professional Behavior and Ethical Principles
PROF2: Personal Accountability	PROF2: Accountability/Conscientiousness
No match	PROF3: Self-Awareness and Help-Seeking
ICS1: Interpersonal and Communication Skills	ICS1: Patient- and Family-Centered Communication. ICS2: Interprofessional and Team Communication ICS3: Communication within Health Care Systems

Available Milestones Resources

Milestones 2.0: Assessment, Implementation, and Clinical Competency Committees Supplement, new 2021 - <https://meridian.allenpress.com/jgme/issue/13/2s>

Clinical Competency Committee Guidebook, updated 2020 - <https://www.acgme.org/Portals/0/ACGMEClinicalCompetencyCommitteeGuidebook.pdf?ver=2020-04-16-121941-380>

Clinical Competency Committee Guidebook Executive Summaries, new 2020 - <https://www.acgme.org/What-We-Do/Accreditation/Milestones/Resources> - Guidebooks - Clinical Competency Committee Guidebook Executive Summaries

Milestones Guidebook, updated 2020 - <https://www.acgme.org/Portals/0/MilestonesGuidebook.pdf?ver=2020-06-11-100958-330>

Milestones Guidebook for Residents and Fellows, updated 2020 - <https://www.acgme.org/Portals/0/PDFs/Milestones/MilestonesGuidebookforResidentsFellows.pdf?ver=2020-05-08-150234-750>

Milestones for Residents and Fellows PowerPoint, new 2020 - <https://www.acgme.org/Residents-and-Fellows/The-ACGME-for-Residents-and-Fellows>

Milestones for Residents and Fellows Flyer, new 2020
<https://www.acgme.org/Portals/0/PDFs/Milestones/ResidentFlyer.pdf>

Implementation Guidebook, new 2020 - <https://www.acgme.org/Portals/0/Milestones%20Implementation%202020.pdf?ver=2020-05-20-152402-013>

Assessment Guidebook, new 2020 - <https://www.acgme.org/Portals/0/PDFs/Milestones/Guidebooks/AssessmentGuidebook.pdf?ver=2020-11-18-155141-527>

Milestones National Report, updated each Fall - <https://www.acgme.org/Portals/0/PDFs/Milestones/2019MilestonesNationalReportFinal.pdf?ver=2019-09-30-110837-587> (2019)

Milestones Bibliography, updated twice each year - <https://www.acgme.org/Portals/0/PDFs/Milestones/MilestonesBibliography.pdf?ver=2020-08-19-153536-447>

Developing Faculty Competencies in Assessment courses - <https://www.acgme.org/Meetings-and-Educational-Activities/Other-Educational-Activities/Courses-and-Workshops/Developing-Faculty-Competencies-in-Assessment>

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Assessment Tool: Direct Observation of Clinical Care (DOCC) - <https://dl.acgme.org/pages/assessment>

Assessment Tool: [Teamwork Effectiveness Assessment Module \(TEAM\)](https://dl.acgme.org/pages/assessment) - <https://dl.acgme.org/pages/assessment>

Learn at ACGME has several courses on Assessment and Milestones - <https://dl.acgme.org/>