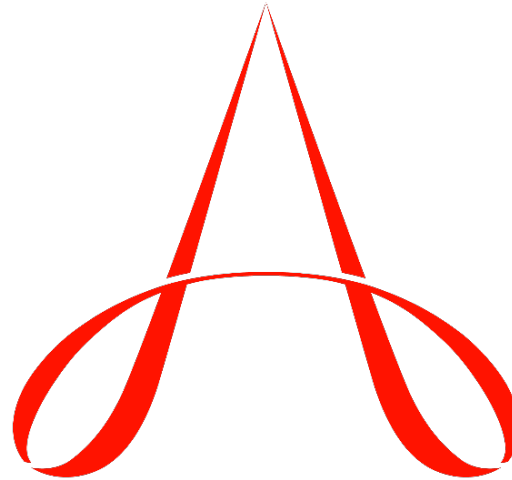# Supplemental Guide:
Ophthalmology

ACGME

January 2020

Milestones Supplemental Guide

This document provides additional guidance and examples for the Ophthalmology 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.

Some milestone descriptions include statements about performing independently. It is important to use this guide in conjunction with the ACGME specialty-specific Program Requirements. Specific language has been included that is best defined through the Program Requirements. One notable area within the requirements is VI.A.2.c) which includes the definitions for levels of supervision:

Levels of Supervision

To promote oversight of resident supervision while providing for graded authority and responsibility, the program must use the following classification of supervision:

Direct Supervision – the supervising physician is physically present with the resident and patient.

Indirect Supervision:

with Direct Supervision immediately available – the supervising physician is physically within the hospital or other site of patient care, and is immediately available to provide Direct Supervision.

with Direct Supervision available – the supervising physician is not physically present within the hospital or other site of patient care, but is immediately available by means of telephonic and/or electronic modalities, and is available to provide Direct Supervision.

Oversight – the supervising physician is available to provide review of procedures/encounters with feedback provided after care is delivered

Patient Care 1: Data Acquisition – Basic Ophthalmology Exam and Testing **Overall Intent:** To independently interview, examine, and use appropriate tests to assess a given condition	
Milestones	**Examples**
Level 1 *Acquires relevant problem-focused history, including outside medical records* *Performs and documents a comprehensive ophthalmic examination; distinguishes between normal and abnormal findings*	● Obtains a relevant history including prior medical records ● Performs a complete ophthalmic exam
Level 2 *Performs problem-focused exam with appropriate techniques (e.g., gonioscopy and scleral depression), consistently identifies common abnormalities on examination; may identify subtle findings* *Orders, performs, and interprets basic testing (e.g., visual field testing, Optical Coherence Tomography, B-scan)*	● Performs sclerotic scatter to assess corneal epithelial edema ● Uses gonioscopy to document narrow angles prior to dilation ● Orders appropriate test for specific ocular condition visual field test for glaucoma, Optical Coherence Tomography for post cataract macular edema ● Recognizes retinal detachment with B-scan
Level 3 *Identifies subtle or uncommon examination findings of common disorders and typical or common findings of rarer disorders* *Interprets unusual findings on routine testing, identifies artifacts; recognizes indications for advanced diagnostic tests and imaging procedures (e.g., specular microscopy, electroretinography)*	● Identifies guttae on slit-lamp exam, iris transillumination defects, and lattice degeneration with atrophic holes ● Uses biomicroscopy to distinguish retinoschisis from retinal detachment ● Identifies gonioscopic findings of anterior segment dysgenesis syndrome compared to traumatic peripheral anterior synechiae ● Refers patient without anatomic evidence of suspected retinitis pigmentosa for electroretinography (ERG) testing
Level 4 *Orders and interprets advanced diagnostic tests and imaging procedures according to evidence-based medicine (i.e., when and when not to order testing)*	● Interprets retina Optical Coherence Tomography findings in patients with chronic plaquenil use ● Performs RPE65 gene screening for patient with ERG findings consistent with retinitis pigmentosa
Level 5 *Demonstrates expertise in advanced diagnostic tests and imaging*	● Interprets meningeal findings of orbital cellulitis ● Uses Belin-Ambrosio keratoconus index to assess progression of keratoconus
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Focused skills assessment

	● Medical record (chart) audit ● Ophthalmic Clinical Exercise Examination (OCEX) ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● University of Iowa. Ophthalmology and Visual Sciences. Atlas of Gonioscopy. www.gonioscopy.org. Accessed 2019. ● American Academy of Ophthalmology (AAO). Basic and Clinical Science Course. Fundamental Principles of Ophthalmology. https://www.aao.org/Assets/b415860a-b6ec-4f22-ac33-a6fb8e668065/636312511027800000/bcsc1718-s02-pdf. Accessed 2019. ● American Academy of Ophthalmology. Clinical Education. https://www.aao.org/clinical-education. Accessed 2019.

Patient Care 2: Hospital-Based Consultation	
Overall Intent: To independently triage and manage hospital-based consultation	

Milestones	Examples
Level 1 *Acquires relevant problem-focused history, including outside medical records* *Performs inpatient consultation, with direct supervision*	● Obtains history and computerized tomography (CT) performed at outside hospital for patient transferred for evaluation of orbital fracture ● Performs examination to rule out open globe with direct supervision
Level 2 *Triages consult requests* *Performs a complete examination* *Recognizes ophthalmic emergencies and initiates non-surgical treatment plan, with indirect supervision*	● Promptly evaluates and medically manages acute angle closure glaucoma with indirect supervision ● Recognizes severe pain with trauma consult is prioritized over flashes and floaters
Level 3 *Manages consultations (including coordination of care) requiring surgical intervention, including procedural options and timing; requests ophthalmic subspecialty advice, with indirect supervision* *Manages ophthalmic emergencies with non-surgical and surgical treatment, with indirect supervision*	● Appropriately develops treatment plan for patient with orbital abscess that may require drainage with indirect supervision ● Performs laser iridotomy for acute angle closure with indirect supervision
Level 4 *Manages consultations (including coordination of care) requiring surgical intervention, including procedural options and timing; requests ophthalmic subspecialty input, with oversight* *Manages ophthalmic emergencies with non-surgical and surgical treatment, with oversight*	● Recognizes and coordinates care for patient with intraocular foreign body including retina consultation ● Repairs marginal lid laceration
Level 5 *Oversees the consultation process and manages interdisciplinary systems issues affecting patient care*	● Coordinates care for patient with mucormycosis with central nervous system involvement
Assessment Models or Tools	● Direct observation

	● End-of-rotation evaluation ● Multisource feedback ● OCEX ● Portfolio ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● American Academy of Ophthalmology (AAO). Basic and Clinical Science Course. Fundamental Principles of Ophthalmology. https://www.aao.org/Assets/b415860a-b6ec-4f22-ac33-a6fb8e668065/636312511027800000/bcsc1718-s02-pdf. Accessed 2019. ● American Academy of Ophthalmology. Clinical Education. https://www.aao.org/clinical-education. Accessed 2019. ● Bagheri N, Wajda B, Calvo C, Durrani A. *The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease.* 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2017.

Patient Care 3: Office-Based Procedures	
Overall Intent: To perform common office-based procedures independently	

Milestones	Examples
Level 1 *Describes essential components of care related to office-based procedures (e.g., informed consent, indications and contraindications, anesthesia, sterile procedure prep)*	● Obtains informed consent and preps patient for chalazion excision
Level 2 *Administers anesthesia and performs procedure, with direct supervision* *Recognizes and manages intra- and post-operative complications, with direct supervision*	● Uses sterile technique to excise chalazion with direct supervision ● Recognizes hyphema associated with laser peripheral iridotomy with direct supervision
Level 3 *Administers anesthesia and performs procedure, with indirect supervision* *Manages intra- and post-operative complications, with indirect supervision*	● Performs chalazion excision with indirect supervision ● Manages persistent epithelial defect after superficial keratectomy with indirect supervision
Level 4 *Administers anesthesia and performs procedure, with oversight* *Manages intra- and post-operative complications, with oversight*	● Performs panretinal photocoagulation with indirect supervision ● Manages elevated intraocular pressure after laser peripheral iridotomy with indirect supervision
Level 5 *Incorporates recent advancements in technologies or techniques*	● Performs collagen crosslinking to prevent keratoconus progression
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Focused skills assessment ● Medical record (chart) audit ● Portfolio ● Procedure evaluation tool/checklist ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● American Academy of Ophthalmology. Multimedia. www.aao.org/browse-multimeida. Accessed 2019.

	● American Academy of Ophthalmology. Basic and Clinical Science Course Self-Assessment Program. https://store.aao.org/basic-and-clinical-science-course-self-assessment-program.html. Accessed 2019.

Patient Care 4: Cataract Surgery – Technical Skill	
Overall Intent: To independently complete cataract surgery and manage complications	
Milestones	**Examples**
Level 1 *Identifies visually significant cataract* *Demonstrates ability to scrub, prep and drape patient for surgery; performs basic suturing skills*	● Is prepared to assist in the operating room
Level 2 *Assesses patients for routine cataract surgery* *Performs elements of cataract surgery in the hands-on surgical skills laboratory and in the operating room (OR)* *Manages common post-operative complications (e.g., post-op pain, high intraocular pressure)*	● Knows when a patient needs cataract surgery ● Completes wet lab or simulation curriculum ● Completes initial positioning, lens insertion, closes the wound ● Manages post-operative pain, high intraocular pressure
Level 3 *Assesses patients for complex cataract surgery* *Performs routine cataract surgery in the OR* *Manages common intra- and post-operative complications (e.g., posterior capsule rupture, wound leak)*	● Recognizes and formulates a plan for a patient with pseudoexfoliation ● Is primary surgeon on a routine cataract surgery case ● Recognizes and manages vitreous prolapse
Level 4 *Assesses patients who are candidates for refractive intraocular lenses to correct astigmatism and/or provide near correction* *Performs cataract surgery requiring complex technical maneuvers (e.g., pupil expander, capsular tension ring)* *Manages complex intra- and post-operative complications (e.g., endophthalmitis)*	● Incorporates corneal imaging and lens measurement for toric implants ● Appropriately assesses for laser-assisted surgery ● Marks the cornea for toric placement, manages small pupil during surgery ● Recognizes and manages retained lens fragments

Level 5 *Assesses patients for intraocular lenses complications requiring a more complex intervention* *Performs lens surgery for patients with complications requiring a more complex intervention (e.g., sutured intraocular lenses)* *Manages rare and complex intra- and post-operative complications (e.g., aqueous misdirection, suprachoroidal hemorrhage)*	● Assesses potential complications associated with traumatic intraocular implant dislocation ● Performs intraocular implant placement on an aphakic patient ● Manages intraoperative aqueous misdirection
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Portfolio of surgical outcomes and refractive outcomes ● Post-surgical evaluation tool ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● This is a technical skill milestone and it pertains to the surgical management of patients. There will be overlap with the Medical Knowledge milestone describing recognition of conditions and situations that predispose patients to complications. The Medical Knowledge milestones may be met before the resident is able to manage the condition. ● University of Iowa Health Care. Department of Ophthalmology and Visual Sciences. https://medicine.uiowa.edu/eye/. Accessed 2019. ● Online cataract surgery curriculum ● American Academy of Ophthalmology. Practicing Ophthalmologists Curriculum, 2017-2019:Cataract/Anterior Segment. https://store.aao.org/practicing-ophthalmologists-curriculum-2017-2019-cataract-anterior-segment.html. Accessed 2019. ● Video Journal of Cataract, Refractive, & Glaucoma Surgery. https://vjcrgs.com/. Accessed 2019. ● Regional cataract surgical skills courses

Patient Care 5: Extraocular Surgery (Plastics, Strabismus)
Overall Intent: To independently complete extraocular surgery and manage complications

Milestones	Examples
Level 1 *Demonstrates ability to scrub, prep and drape patient for surgery; performs basic suturing skills* *Identifies common post-operative complications (e.g., post-op pain, bleeding)*	● Is prepared to assist in the operating room
Level 2 *Identifies patients for routine extraocular surgery* *Performs simple extraocular surgery (e.g., simple lid laceration repair, nasolacrimal duct probing)* *Manages common post-operative complications*	● Knows when a patient needs extraocular surgery ● Completes simple eyelid laceration repair with assistance ● Manages post-operative pain, bleeding
Level 3 *Develops a pre-operative plan for routine extraocular surgery* *Performs routine extraocular surgery (e.g., complex lid laceration repair, horizontal strabismus, ptosis)* *Manages intra- and post-operative complications (e.g., bleeding, perforation)*	● Recognizes and formulates a surgical plan for a patient with esotropia using pre-operative measurements and nomogram ● Resident is primary surgeon on a simple ptosis repair ● Recognizes and manages lagophthalmos after ptosis repair
Level 4 *Develops a pre-operative plan for complex extraocular surgery* *Performs complex extraocular surgery (e.g., vertical strabismus), with assistance* *Manages complex intra- and post-operative complications (e.g., infection, retrobulbar hemorrhage)*	● Recognizes and formulates a surgical plan for a patient with Duane's syndrome ● Performs dacryocystorhinostomy with assistance ● Identifies and manages retained lens fragment

Level 5 *Assess patients and develops a pre-operative plan for complex/ multidisciplinary extraocular surgery (e.g., nerve sheath decompression, vessel sparing strabismus)*	● Coordinates complex extraocular surgery with other services and assesses for surgery (Graves' disease needing orbital decompression and strabismus with appropriate staging)
Performs complex extraocular surgery	● Performs and manages complications of fellow level cases in subspecialty area
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Portfolio of surgical outcomes and refractive outcomes ● Post-surgical evaluation tool ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● This is a technical skill milestone and it pertains to the surgical management of patients. There will be overlap with the Medical Knowledge milestone describing recognition of conditions and situations that predispose patients to complications. The Medical Knowledge milestones may be met before the resident is able to manage the condition ● Association of University Professors of Ophthalmology Professional Development Committee (AUPO PDC) Toolbox

Patient Care 6: Intraocular Surgery (Cornea, Retina, Glaucoma)	
Overall Intent: To gain experience with surgery in these subspecialties	

Milestones	Examples
Level 1 *Demonstrates ability to scrub, prep and drape patient for surgery; performs basic suturing skills*	● Is prepared to assist in the operating room
Level 2 *Assesses patients for routine intraocular surgery* *Performs routine intraocular surgery in the hands-on surgical skills laboratory* *Manages common post-operative complications (e.g., post-op pain, high intraocular pressure)*	● Knows indications for subspecialty surgery ● Completes wet lab or simulation curriculum ● Manages post-operative pain, high intraocular pressure
Level 3 *Assesses patients for complex intraocular surgery* *Assists in subspecialty intraocular surgery* *Manages common intra- operative complications (e.g., flat chamber, wound leak, hyphema)*	● Performs appropriate pre-operative evaluation for subspecialty procedures ● Assists in surgery (pars plana vitrectomy, glaucoma filtration surgery, penetrating keratoplasty) ● Performs Seidel test for wound leak; initiates medical management of flat chamber
Level 4 *Assesses patients for multispecialty intraocular surgeries* *Performs routine intraocular surgery* *Manages complex intra- and post-operative complications (e.g., re-bubble graft, blebitis)*	● Evaluates patients for combined pars plana vitrectomy with pars plana tube, corneal transplant with anterior chamber tube shunt ● Performs as primary surgeon on trabeculectomy, penetrating keratoplasty, pars plana vitrectomy, etc. ● Reforms flat anterior chamber post-operatively
Level 5 *Assess patients requiring surgery from multiple disciplines (e.g., plastic surgery, facial trauma)* *Performs complex intraocular surgery*	● Coordinates complex trauma cases with other services and performs intraocular surgery (ruptured globe with concomitant facial fractures and lacerations) ● Performs and manages complications of fellow level cases in subspecialty area

Manages rare and complex intra- and post-operative complications (e.g., tube erosion, proliferative vitreoretinopathy)	
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Portfolio of surgical outcomes and refractive outcomes ● Post-surgical evaluation tool ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● This is a technical skill milestone and it pertains to the surgical management of patients. There will be overlap with the Medical Knowledge milestone describing recognition of conditions and situations that predispose patients to complications. The Medical Knowledge milestones may be met before the resident is able to manage the condition. ● Regional skills courses ● AUPO PDC Toolbox

Medical Knowledge 1: Pathophysiology	
Overall Intent: To demonstrate progressive understanding of the pathophysiology of common and complex ophthalmic conditions	

Milestones	Examples
Level 1 *Articulates knowledge of pathophysiology and clinical findings for ophthalmic conditions routinely managed by non-ophthalmologists*	● Understands pathogenesis of conjunctivitis
Level 2 *Demonstrates basic knowledge of pathophysiology and clinical findings for common ophthalmic conditions routinely managed by ophthalmologists*	● Understands pathogenesis of acute angle closure versus open angle glaucoma; can articulate specific clinical findings of each
Level 3 *Demonstrates advanced knowledge of pathophysiology and clinical findings for commonly encountered ophthalmic conditions; demonstrates basic knowledge of pathophysiology and clinical findings for uncommon conditions*	● Understands underlying basic mechanism of proliferative vitreoretinopathy; is familiar with multifactorial presentations and underlying etiologies of post-operative high intraocular pressure in glaucoma (retained healon versus heme obstructing sclerostomy versus aqueous misdirection)
Level 4 *Demonstrates advanced knowledge of pathophysiology and clinical findings for uncommon ophthalmic conditions*	● Articulates pathogenesis of complex developmental glaucomas
Level 5 *Contributes new knowledge for pathophysiology and clinical findings for ophthalmic conditions (e.g., publication, curriculum development)*	● Publishes case series correlating pathology and clinical findings of epithelial downgrowth
Assessment Models or Tools	● End-of-rotation examinations ● Global assessment ● Mock oral examinations ● Ophthalmic Knowledge Assessment Program (OKAP)
Curriculum Mapping	●
Notes or Resources	● American Academy of Ophthalmology. Basic and Clinical Science Course Self-Assessment Program. https://store.aao.org/basic-and-clinical-science-course-self-assessment-program.html. Accessed 2019. ● American Academy of Ophthalmology. OKAP User Guide. https://www.aao.org/Assets/de9a7a72-9742-496b-8a48-527d78b1d72a/636909236440970000/user-guide-2019-pdf. Accessed 2019. ● American Academy of Ophthalmology. www.aao.org. Accessed 2019.

Medical Knowledge 2: Differential Diagnosis	
Overall Intent: To progress in knowledge from creating a broad differential to a problem-focused differential to guide accurate clinical evaluation and management, and avoid unnecessary testing and use of resources	
Milestones	**Examples**
Level 1 *Identifies resources to generate a focused differential* *Generates a basic differential diagnosis based on patient symptoms and history*	● Identifies differential diagnosis of red eye
Level 2 *Generates comprehensive differential diagnosis based on patient symptoms and history; documents and presents differential in oral presentation clearly and concisely* *Describes diagnostic tests to aid in the differential diagnosis*	● Succinctly presents a patient with red eye on-call, with pertinent positives and negatives, avoiding irrelevant information ● Orders chlamydia culture/enzyme-linked immunosorbent assay or digital fluorescein angiography in conjunctivitis patient with history of sexually transmitted diseases ● Discusses management of vision loss associated with trauma to include rationale for ultrasound to rule out retinal detachment, CT to rule out intraocular foreign body, and follow up magnetic resonance imaging (MRI) if traumatic optic neuropathy is suspected
Level 3 *Generates refined differential based on patient symptoms, history and examination findings, distinguishing between common and uncommon conditions* *Selects additional diagnostic testing to distinguish between conditions on the differential*	● Prioritizes different etiologies of red eye in patient based on symptoms (pain versus no pain), history (chronic versus acute), and findings (conjunctival injection versus episcleral corkscrew vessels) to distinguish between conjunctivitis and carotid-cavernous fistula ● Avoids ordering MRI in patient with signs/symptoms suggestive of conjunctivitis
Level 4 *Generates probabilistic differential diagnosis in patients with multiple ocular and medical comorbidities; modifies likely differential with new information from additional testing* *Articulates the rationale for ordering diagnostic testing in hierarchical fashion based upon probabilistic differential*	● Recognizes poorly controlled diabetic, pseudophakic, with new-onset angle closure glaucoma as neovascular in etiology versus primary acute angle closure; does gonioscopy to confirm findings
Level 5 *Recognizes, self-reflects, and shares experiences to educate others on factors that contributed to missed diagnosis or faulty clinical*	● Presents and disseminates a review of the data on the anchoring fallacy (locks in on diagnosis in spite of conflicting data) in clinical decision making

reasoning (e.g., publication, curriculum development)	
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Mock oral examinations ● On-call assessment tool/morning report
Curriculum Mapping	●
Notes or Resources	● Bagheri N, Wajda B, Calvo C, Durrani A. *The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease.* 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2017. ● American Academy of Ophthalmology. Basic and Clinical Science Course Self-Assessment Program. https://store.aao.org/basic-and-clinical-science-course-self-assessment-program.html. Accessed 2019. ● Pemberton JD. *Ophthalmology Clinical Vignettes.* 2nd ed. Little Rock, AR: Crimson House Publishing; 2015.

Medical Knowledge 3: Therapeutic Interventions	
Overall Intent: To obtain comprehensive understanding of medical and surgical therapeutic interventions	
Milestones	**Examples**
Level 1 *Describes basic concepts of ophthalmic pathophysiology and pharmacology*	● Identifies mechanism of action of phenylephrine use in pupillary dilation
Describes basic ophthalmic anatomy and categories of procedural interventions	● Describes normal visual pathway
Level 2 *Explains relevant pathophysiology and lists indications and contraindications for planned medical therapy*	● Identifies mechanism of action of carbonic anhydrase inhibitors for treatment of glaucoma and understands that use is contraindicated in sickle-cell disease
Explains indications, contraindications, and relevant steps required for procedural intervention (e.g., anesthesia, technique, instruments)	● Understands risk of retinal detachment with pilocarpine
Level 3 *Identifies and describes side effects of medical therapies and ways to minimize potential complications*	● Understands indications for temporal artery biopsy and timeline for initiation of steroids and transition to non-steroidal immunomodulatory therapy in patients with suspected giant cell arteritis
Identifies and describes causes of complications and alternatives for routine procedural interventions	● Understands indications for laser or surgical intervention in glaucoma patients who have inadequate control of intraocular pressure
Level 4 *Describes and articulates the rationale for using emerging alternative medical therapies*	● Understands indications for vitrectomy and choice of antibiotics in treatment of patients with endophthalmitis ● Describes management of post herpetic neurotrophic keratitis including indications for and outcomes associated with use of human nerve growth factor
Describes and articulates the rationale for using novel alternative procedural interventions	● Describes risks and benefits associated with use of gene therapy for retinitis pigmentosa
Level 5 *Participates in the development and dissemination of novel therapies or interventions*	● Understands therapeutic options of enucleation, intra-arterial chemotherapy or chemoreduction in patients with retinoblastoma ● Presents at the Association for Research in Vision and Ophthalmology (ARVO) on the phenotype associated with a new gene mutation for glaucoma
Assessment Models or Tools	● Basic and Clinical Science Course self-assessment program ● End-of-rotation evaluation/examination

	● OKAPs ● Online question databases
Curriculum Mapping	●
Notes or Resources	● American Academy of Ophthalmology. Multimedia. www.aao.org/browse-multimeida. Accessed 2019. ● American Academy of Ophthalmology. Basic and Clinical Science Course Self-Assessment Program. https://store.aao.org/basic-and-clinical-science-course-self-assessment-program.html. Accessed 2019.

Systems-Based Practice 1: Patient Safety and Quality Improvement (QI)	
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**
Level 1 *Demonstrates knowledge of common patient safety events*	● Understands near miss surgical error
Demonstrates knowledge of how to report patient safety events	● Knows mechanism to report safety event at institution
Demonstrates knowledge of basic quality improvement methodologies and metrics	● Understands that root cause analysis is a QI method to evaluate a safety event
Level 2 *Identifies system factors that lead to patient safety events*	● Identifies the electronic health record (EHR) messaging system as inappropriate for acute events and time sensitive communication
Reports patient safety events through institutional reporting systems (simulated or actual)	● Reports wrong intraocular implant placement
Describes local quality improvement initiatives (e.g., eye protection for high risk activities, diabetic eye screening)	● Describes pediatric vision screening initiatives in the local community
Level 3 *Participates in analysis of patient safety events (simulated or actual)*	● Reviews wrong intraocular implant placement event (e.g., preparing for morbidity and mortality presentations, joining a Root Cause Analysis group)
Participates in disclosure of patient safety events to patients and families (simulated or actual)	● Observes disclosure to patients/families about incorrect intraocular implant placement
Participates in local quality improvement initiatives	● Participates in a QI project, though they may not have yet designed a QI project
Level 4 *Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)*	● Collaborates with a team to lead the analysis of incorrect intraocular implant placement events
Discloses patient safety events to patients and families (simulated or actual)	● Communicates with patients/families about incorrect intraocular implant placement

Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	● Initiates and completes a QI project, including communication with stakeholders
Level 5 *Actively engages teams and processes to modify systems to prevent patient safety events* *Role models or mentors others in the disclosure of patient safety events* *Creates, implements, and assesses quality improvement initiatives at the institutional or community level*	● Competently assumes a leadership role at the departmental or institutional level for patient safety and/or QI initiatives, possibly even being the person to initiate action or call attention to the need for action
Assessment Models or Tools	● Chart or other system documentation by resident ● Direct observation ● E-module assessments ● Multisource feedback ● Portfolio ● Reflection with self-assessment ● Simulation with structured feedback
Curriculum Mapping	●
Notes or Resources	● Institute for Healthcare Improvement. http://www.ihi.org/Pages/default.aspx. Accessed 2019.

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**
Level 1 *Demonstrates knowledge of care coordination*	● Identifies the members of the interprofessional team, including other services, optometry, and technicians, and describes their roles
Identifies key elements for safe and effective transitions of care and hand-offs	● Lists the essential components of an effective sign-out and care transition including sharing information necessary for successful on-call/off-call transitions
Demonstrates knowledge of the role of the physician in addressing community health needs and disparities	● Identifies components of social determinants of health and how they impact the delivery of patient care ● Understands the need to accommodate individual patients' values, cultural norms, and desires with shared decision making
Level 2 *Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams*	● Contacts interprofessional team members for routine patient care, relies on senior resident to ensure all necessary referrals, testing, and care transitions are made
Performs safe and effective transitions of care/hand-offs in routine clinical situations	● Contacts primary care physician on new diagnosis of diabetic retinopathy ● Performs a patient handoff from overnight call to the day team, with supervision
Demonstrates knowledge of local population and community health needs and disparities	● Identifies different populations within own panel of patients, cases, and/or the local community ● Knows which patients are at high risk for specific health outcomes related to health literacy concerns, cost of testing or therapy, access to transportation, etc.
Level 3 *Coordinates care of patients in complex clinical situations effectively using the roles of their interprofessional teams*	● Effectively communicates with other specialty services to coordinate surgical management in a trauma patient with multiple injuries
Performs safe and effective transitions of care/hand-offs in complex clinical situations	● Communicates with nursing home necessary post-operative management for a patient with dementia ● Coordinates care for a homeless person with corneal ulcer
Identifies specific local health needs and disparities related to ophthalmic care	● Appreciates the need for and uses clinic or local resources, such as social support services, Medicaid, counseling, etc.
Level 4 *Teaches effective coordination of patient-centered care among different*	● Teaches medical students and junior team members on how to manage follow-up care for a homeless patient with corneal ulcer

disciplines and specialties to junior members of the team *Advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems* *Uses local resources effectively to meet the needs of a patient population and community*	● Participates in resident run taskforce for improving transitions in care ● Deliver lecture to internal medicine residents on screening and referral for diabetic retinopathy ● Refers patient with low vision to community services for the visually impaired
Level 5 *Analyzes the process of care coordination and leads in the design and implementation of improvements* *Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes* *Participates in changing and adapting practice to provide for the needs of specific populations*	● Works with hospital or ambulatory site team members or leadership to analyze care coordination in that setting, and takes a leadership role in designing and implementing changes to improve the care coordination ● Works with a QI mentor to identify better hand-off tools for on-call services or to improve teaching sessions ● Designs a social determinants of health curriculum to help others learn to identify local resources and barriers to care ● Assumes a leadership role in implementing interprofessional programs to improve access (telemedicine screening in the internal medicine clinic)
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback ● Objective structured clinical examination ● Quality metrics and goals mined from EHR ● Review of sign-out tools, use and review of checklists
Curriculum Mapping	●
Notes or Resources	● Centers for Disease Control and Prevention. Population Health Training in Place Program (PH-TIPP). https://www.cdc.gov/pophealthtraining/whatis.html. Accessed 2019. ● Skochelak SE, Hawkins RE, Lawson LE, Starr SR, Borkan JM, Gonzalo JD. *AMA Education Consortium: Health Systems Science.* 1st ed. Philadelphia, PA: Elsevier; 2016. https://commerce.ama-assn.org/store/ui/catalog/productDetail?product_id=prod2780003. Accessed 2019.

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**
Level 1 *Describes basic health care systems and access models (e.g., government, private, public, uninsured care)*	● Recognizes there are different payment systems, such as Medicare, Medicaid, the VA, and commercial third-party payers, and contrast practice models, and how these impact patient care
Demonstrates use of electronic medical record	● Completes a note template following a routine patient encounter and apply appropriate coding in compliance with regulations with direct supervision
Level 2 *Describes how different system types require the physician to deliver care effectively with available resources*	● Applies knowledge of health plan features, including formularies and network requirements, in patient care situations
Identifies the documentation required for billing and coding compliance	● Completes a note template following a routine patient encounter and applies appropriate coding in compliance with regulations, with oversight
Level 3 *Optimizes patient care given available resources*	● Uses shared decision making with patients when appropriate and adapts the choice of the most cost-effective testing depending on the relevant clinical needs
Describes knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding)	● Understands the link between proper documentation and billing/coding
Level 4 *Advocates for patient care needs beyond patients' available resources (e.g., community resources, patient assistance resources, telehealth)*	● Works collaboratively with the institution to improve patient assistance resources or design the institution's community health needs assessment, or develop/implement/assess the resulting action plans
Demonstrates administrative knowledge needed for transition to practice (e.g., contract negotiations, malpractice insurance, government regulation, compliance)	● Applies knowledge of contract negotiations, choosing malpractice insurance carriers and features, and reporting requirements for reimbursement ● Recognizes importance of compliance with credentialing requirements
Level 5 *Participates in health policy advocacy activities*	● Works with community or professional organizations to advocate for sensible regulations on compounding law for ophthalmic drugs

Analyzes individual practice patterns and professional requirements in preparation for practice	● Improves informed consent process for non-English-speaking patients requiring interpreter services
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback ● Portfolio
Curriculum Mapping	●
Notes or Resources	● Agency for Healthcare Research and Quality. Major Physician Measurement Sets. https://www.ahrq.gov/talkingquality/measures/setting/physician/measurement-sets.html. Accessed 2019. ● The Kaiser Family Foundation. www.kff.org. Accessed 2019. ● The Kaiser Family Foundation. Health Reform. https://www.kff.org/topic/health-reform/. Accessed 2019. ● Dzau VJ, McClellan M, Burke S, et al. Vital directions for health and health care: priorities form a national academy of medicine initiative. *JAMA*. 2017;317(14):1461-1470. https://nam.edu/vital-directions-for-health-health-care-priorities-from-a-national-academy-of-medicine-initiative/. Accessed 2019. ● The Commonwealth Fund. Health System Data Center. http://datacenter.commonwealthfund.org/?_ga=2.110888517.1505146611.1495417431-1811932185.1495417431#ind=1/sc=1. Accessed 2019. ● The Commonwealth Fund. Health Reform Resource Center: http://www.commonwealthfund.org/interactives-and-data/health-reform-resource-center#f:@facasubcategoriesfacet63677=[Individual%20and%20Employer%20Responsibility. Accessed 2019. ● Institute for Healthcare Improvement - Learning modules centered on patient safety and quality improvement, improvement collaboratives (evidenced based strategies for improvement), learning networks (develop evidenced based strategies) www.ihi.org. ● American Academy of Ophthalmology. Eye on Advocacy. https://www.aao.org/advocacy/eye-on-advocacy. Accessed 2019.

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 *Demonstrates how to access and use available evidence, and incorporate patient preferences and values in order to take care of a routine patient*	● Identifies that a patient is taking a high-risk medication (i.e., hydroxychloroquine) and requires vision screening
Level 2 *Articulates clinical questions and elicits patient preferences and values in order to guide evidence-based care*	● Recognizes that there are multiple appropriate screening modalities based on patients cumulative dose of a high-risk medication (i.e., hydroxychloroquine) and asks the appropriate questions of the patient in order to elicit preferences for ongoing screening
Level 3 *Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients*	● Obtains and applies evidence in the care of a patient taking a high-risk medication (i.e., hydroxychloroquine) with a comorbid condition such as age-related macular degeneration
Level 4 *Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient*	● Recognizes that ERG identifies up to 50 percent of patients taking hydroxychloroquine as abnormal whereas fewer than 5 percent develop maculopathy
Level 5 *Coaches others to critically appraise and apply evidence for complex patients; and/or participates in the development of patient care guidelines*	● Designs a study to determine threshold for ERG abnormality that is clinically relevant in patients taking hydroxychloroquine ● Contributes to the medical literature by documenting case studies of unique or challenging cases
Assessment Models or Tools	● Direct observation ● Oral or written examination ● Presentation evaluation ● Research portfolio
Curriculum Mapping	●
Notes or Resources	● U.S. National Library of Medicine. PubMed Tutorial. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html. Accessed 2019. ● Librarian presentation ● Duke University Medical Center Library & Archives. Evidence-Based Practice: Home. https://guides.mclibrary.duke.edu/ebm. Accessed 2019 ● JAMAevidence. https://jamaevidence.mhmedical.com. Accessed 2019.

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**
Level 1 *Accepts responsibility for personal and professional development by establishing goals; actively seeks opportunities to improve* *Identifies the factors which contribute to gap(s) between expectations and actual performance*	● Commits to spending one hour per week in the wet lab/dry lab to improve procedural skills ● Sets a personal practice goal of identifying the types and stages of age-related macular degeneration ● Recognizes that time management, reading, and practice in the lab are essential to improvement
Level 2 *Demonstrates openness to performance data (feedback and other input) in order to inform goals; designs and implements a learning plan, with guidance* *Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance*	● Integrates feedback on capsulorhexis creation and commits to completing additional modules on the EyeSi ● Integrates feedback to adjust the goal of identifying the types and stages of age-related macular degeneration ● Assesses time management skills and how it impacts timely completion of clinic notes and literature reviews
Level 3 *Seeks performance data and accepts it with responsibility and equipoise; demonstrates implementation of a learning plan* *Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance*	● Does a chart audit to determine personal rate of errant capsulorhexis ●Completes a comprehensive literature review prior to patient encounters when challenged with a complex or unfamiliar case
Level 4 *Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it* *Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance*	● Does a quarterly chart audit to determine personal rate of errant capsulorhexis ● 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 members
Level 5 *Facilitates the design and implementing learning plans for others*	● Models practice improvement and adaptability

Coaches others on reflective practice	● Develops and shares tracking method for monitoring surgical outcomes module for collaboration with other patient care team members ● Actively discusses learning goals with supervisors and colleagues
Assessment Models or Tools	● Direct observation ● Review of learning plan ● Self-assessment ● Tracking wet lab/dry lab time
Curriculum Mapping	●
Notes or Resources	● Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. *Acad Med.* 2009;84(8):1066-74. https://insights.ovid.com/crossref?an=00001888-200908000-00021. Accessed 2019. ● Burke AE, Benson B, Englander R, Carraccio C, Hicks PJ. Domain of competence: practice-based learning and improvement. Acad Pediatr. 2014;14(2 Suppl):S38-S54. https://www.academicpedsjnl.net/article/S1876-2859(13)00333-1/fulltext. Accessed 2019. ● Lockspeiser TM, Schmitter PA, Lane JL, Hanson JL, Rosenberg AA, Park YS. Assessing residents' written learning goals and goal writing skill: validity evidence for the learning goal scoring rubric. Acad Med. 2013;88(10):1558-1563. https://insights.ovid.com/article/00001888-201310000-00039. Accessed 2019. ● American Society of Cataract and Refractive Surgery. ASCRS Center for Learning. https://ascrs.org/member-benefits/ascrs-center-learning. Accessed 2019.

Professionalism 1: Professional Behavior and Ethical Principles	
Overall Intent: To recognize and address lapses in ethical and professional behavior, demonstrate ethical and professional behaviors, and use appropriate resources for managing ethical and professional dilemmas	
Milestones	**Examples**
Level 1 *Identifies and describes potential triggers for professionalism lapses*	● Is aware of situations or circumstances that could impact professional behavior (e.g., fatigue, patient attitudes)
Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers	● Identifies policy on reporting in institutional handbook
Demonstrates knowledge of the ethical principles underlying informed consent, surrogate decision making, advance directives, confidentiality, error disclosure, stewardship of limited resources, and related topics	● Discusses the basic principles underlying ethics (beneficence, nonmaleficence, justice, autonomy) and professionalism (professional values and commitments), and how they apply in various situations (e.g., informed consent process)
Level 2 *Demonstrates insight into professional behavior in routine situations*	● Demonstrates professional behavior in routine situations, can acknowledge a lapse without becoming defensive, making excuses, or blaming others
Takes responsibility for own professionalism lapses	● Apologizes for the lapse when appropriate and takes steps to make amends if needed ● Articulates strategies for preventing similar lapses in the future; monitors and responds to triggers (fatigue, hunger, stress, etc.) in self
Analyzes straightforward situations using ethical principles	● Recognizes and responds effectively to the emotions of patients and colleagues
Level 3 *Demonstrates professional behavior in complex or stressful situations*	● Navigates a situation while not at his/her personal best (due to fatigue, hunger, stress, etc.), or when the system poses barriers to professional behavior (e.g., inefficient workflow, inadequate staffing, conflicting policies)
Recognizes need to seek help in managing and resolving complex ethical situations	● Analyzes difficult real or hypothetical ethics and professionalism case scenarios or situations, recognizes own limitations, and consistently demonstrates professional behavior
Analyzes complex situations using ethical principles	● Suggests debriefing with team about appropriate surgeon selection for a monocular patient

Level 4 *Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others* *Recognizes and uses appropriate resources for managing and resolving ethical dilemmas as needed (e.g., ethics consultations, literature review, risk management/legal consultation)*	● Actively seeks to identify at-risk situations and intervenes (e.g., sends junior resident to get lunch when clinic has calmed down) ● Considers the perspectives of others in complex situations ● Requests an ethics consult when determining exenteration versus medical management for mucormycosis or tumor ● Serves as the resident member of an Institutional Review Board or Ethics Committee
Level 5 *Coaches others when their behavior fails to meet professional expectations* *Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution*	● Addresses lapses directly with open communication in the moment (for minor or moderate single episodes of unprofessional behavior) or after the moment (for major single episodes or repeated minor to moderate episodes of unprofessional behavior) ● Participates in a professionalism work group, committee, or task force
Assessment Models or Tools	● Direct observation ● End-of-rotation evaluation ● Multisource feedback ● Oral or written self-reflection (e.g., of a personal or observed lapse, ethical dilemma, or systems-level factors) ● Peer-to-peer evaluation ● Simulation (standardized patient encounters/online or "live" patients)
Curriculum Mapping	●
Notes or Resources	● American Medical Association. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. Accessed 2019. ● Byyny RL, Papadakis MA, Paauw DS, Pfiel S, Alpha Omega Alpha. *Medical Professionalism Best Practices.* Menlo Park, CA: Alpha Omega Alpha Honor Medical Society; 2015. https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf. Accessed 2019. ● Levinson W, Ginsburg S, Hafferty FW, Lucey CR. *Understanding Medical Professionalism.* 1st ed. New York, NY: McGraw-Hill Education; 2014. https://accessmedicine.mhmedical.com/book.aspx?bookID=1058. Accessed 2019. ● Bynny RL, Paauw DS, Papadakis MA, Pfeil S, Alpha Omega Alpha. *Medical Professionalism Best Practices: Professionalism in the Modern Era.* Menlo Park, CA: Alpha Omega Alpha Honor Medical Society; 2017. http://alphaomegaalpha.org/pdfs/Monograph2018.pdf. Accessed 2019.

	● American Academy of Ophthalmology. Redmond Ethics Center. https://www.aao.org/clinical-education/redmond-ethics-center. Accessed 2019.

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
Level 1 *Takes responsibility for failure to complete tasks and responsibilities, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future*	● Recognizes that not completing safety modules or licensing requirements impacts ability to train ● Takes responsibility for not completing case logs
Responds promptly to requests or reminders to complete tasks and responsibilities	● Responds promptly to reminders to complete rotation evaluations
Level 2 *Performs tasks and responsibilities in a timely manner with attention to detail in routine situations*	● Independently completes and documents procedure review, surgical log, and work hour log
Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner	● Completes all clinic notes and checks out pending lab results to another resident prior to leaving on vacation
Level 3 *Performs tasks and responsibilities in a timely manner with attention to detail in complex or stressful situations*	● Asks nurse to contact another team member to see an urgent consult while scrubbed in the operating room
Recognizes detrimental consequences when tasks and responsibilities are not completed in a timely manner (e.g., team members, compliance)	● Recognizes the detrimental impact on fellow learners when one does not respond to pages while on call ● Recognizes that delays in completing tasks will adversely impact future credentialing
Level 4 *Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner*	● Alerts others when additional clinic coverage is necessary due to emergent surgical patient ● Identifies that a delayed consult in the emergency room may delay patient care from other services
Proactively implements strategies to ensure that the needs of patients, teams, and systems are met	● Senior residents advise junior residents how to manage their time in completing patient care tasks; escalates to communicating with program director if problem requires a system-based approach and needs addressing at a higher administrative level
Level 5 *Takes ownership of system outcomes, attempts to implement changes at a systems*	● Shares personal accountability for patient safety event and encourages others to be transparent and improve patient care and safety outcomes

level in order to advance the goals of professional accountability	
Assessment Models or Tools	● Compliance with deadlines and timelines ● Direct observation ● Multisource feedback ● Peer-to-peer evaluations ● Self-assessment and reflective tools
Curriculum Mapping	●
Notes or Resources	● Code of conduct from fellow/resident institutional manual ● Policies of residency program regarding accountability and professionalism ● American Academy of Ophthalmology. Redmond Ethics Center. https://www.aao.org/clinical-education/redmond-ethics-center. Accessed 2019.

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 *Recognizes status of personal and professional well-being, with assistance* *Recognizes limits in the knowledge/skills of self and/or team, with assistance*	● Accepts feedback and exhibits positive responses to criticism
Level 2 *Independently recognizes status of personal and professional well-being* *Independently recognizes limits in the knowledge/ skills of self and/or team; demonstrates appropriate help-seeking behaviors for self or others*	● Recognizes that family illness may interfere with professional performance ● Asks upper level resident to confirm exam finding and/or review medical decision making for patient management
Level 3 *With assistance, proposes a plan to optimize personal and professional well-being* *With assistance, proposes a plan to improve knowledge/skills of self and/or team*	● Seeks help when experiencing stress or burnout in self or team member, with prompting ● With supervision, assists in developing a personal learning or action plan to address gaps in knowledge (e.g., a structured reading curriculum)
Level 4 *Independently develops a plan to optimize personal and professional well-being* *Independently develops a plan to improve the knowledge/skills of self and/or team*	● Acknowledges that professional support may be necessary for personal well-being ● Develops a personal learning or action plan to address gaps in knowledge
Level 5 *Coaches others when emotional responses or limitations in knowledge/skills do not meet professional expectations*	● Mentors patients and colleagues in self-awareness and establishes health management plans to limit stress and burnout ● Creates a wellness program for co-residents to recognize burnout
Assessment Models or Tools	● Direct observation ● Group interview or discussions for team activities ● Individual interview ● Institutional online training modules with assessment ● Mini-Z Burnout Survey ● Self-assessment and personal learning plan
Curriculum Mapping	●
Notes or Resources	● Local resources, including Employee Assistance

- Hicks PJ, Schumacher D, Guralnick S, Carraccio C, Burke AE. Domain of competence: personal and professional development. *Acad Pediatr*. 2014;14(2 Suppl):S80-97. https://www.academicpedsjnl.net/article/S1876-2859(13)00332-X/fulltext. Accessed 2019.
- Accreditation Council for Graduate Medical Education. ACGME Tools and Resources for Resident and Faculty Member Well-Being. https://www.acgme.org/What-We-Do/Initiatives/Physician-Well-Being/Resources. Accessed 2019.
- Mayo Clinic. Program on Physician Well-Being. https://www.mayo.edu/research/centers-programs/program-physician-well-being/mayos-approach-physician-well-being/mayo-clinic-well-being-index. Accessed 2019.
- Continuing Certification Directory. AMA Mini Z Burnout Survey. https://www.continuingcertification.org/resources/physician-well-being-resources/. Accessed 2019.

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication	
Overall Intent: To deliberately use language and behaviors to form constructive relationships with patients, identify communication barriers including self-reflection on personal biases, and minimize them in the doctor-patient relationships; to organize and lead communication around shared decision making	
Milestones	**Examples**
Level 1 *Uses language and nonverbal behavior to demonstrate respect and establish rapport* *Identifies barriers to effective communication (e.g., health literacy, language, disability, cultural) while accurately communicating own role within the health care system*	● Self-monitors and controls non-verbal responses and language and asks questions to invite patient/family participation ● Accurately communicates their role in the health care system to patients/families ● Identifies language, culture, and health literacy/numeracy as common communication barriers in patient care ● Avoids medical jargon when talking to patients, makes sure communication is at the appropriate level to be understood by a layperson
Level 2 *Establishes a therapeutic relationship in straightforward encounters using active listening and clear language* *Addresses barriers to effective communication*	● Does not interrupt a patient until they have expressed their complete thought ● Uses teach-back technique to ensure the patient understands treatment plan ● Engages in shared decision making with the patient and family, including a recommended plan to align patient's unique goals with treatment options ● Includes a language translation in the after visit summary
Level 3 *Establishes a therapeutic relationship in challenging patient encounters (e.g., breaking bad news)* *When prompted, reflects on personal biases while attempting to minimize communication barriers*	● Reassures patient after complicated cataract surgery and takes time to thoroughly disclose the implications and prognosis ● Attempts to mitigate identified communication barriers, including reflection on implicit biases when prompted ● Elicits what is most important to the patient and family, and acknowledges uncertainty in the medical complexity and prognosis
Level 4 *Easily establishes therapeutic relationships, with attention to patient/family concerns and context, regardless of complexity* *Role models self-awareness to minimize communication barriers*	● Establishes rapport and effectively communicates with patient with low vision and their family to discuss how to transition after giving up driving ● Role models and supports colleagues in self-awareness of implicit bias and teaches others to actively adjust behavior
Level 5 *Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships*	● Successfully leads an interdisciplinary team to manage a patient with retinoblastoma, including communication and shared decision making with the family
Assessment Models or Tools	● Direct observation

	● Implicit Assumption Test ● Multisource feedback ● Self-assessment including self-reflection exercise ● Standardized patients or structured case discussions
Curriculum Mapping	●
Notes or Resources	● Laidlaw A, Hart J. Communication skills: an essential component of medical curricula. Part I: Assessment of clinical communication: AMEE Guide No. 51. *Med Teach*. 2011;33(1):6-8. https://www.researchgate.net/publication/49706184_Communication_skills_An_essential_component_of_medical_curricula_Part_I_Assessment_of_clinical_communication_AMEE_Guide_No_511. Accessed 2019. ● Makoul G. The SEGUE Framework for teaching and assessing communication skills. *Patient Educ Couns*. 2001;45(1):23-34. https://www.researchgate.net/publication/11748796_The_SEGUE_Framework_for_teaching_and_assessing_communication_skills. Accessed 2019. ● Symons AB, Swanson A, McGuigan D, Orrange S, Akl EA. A tool for self-assessment of communication skills and professionalism in residents. *BMC Med Educ*. 2009;9:1. https://bmcmededuc.biomedcentral.com/articles/10.1186/1472-6920-9-1. Accessed 2019. ● Project Implicit. Implicit Association Test. https://implicit.harvard.edu/implicit/takeatest.html Accessed 2019.

Interpersonal and Communication Skills 2: Interprofessional and Team Communication	
Overall Intent: To effectively communicate with the health care team, including consultants, in both straightforward and complex situations	

Milestones	Examples
Level 1 *Uses language that values all members of the health care team* *Accepts feedback on performance from all members of the health care team (e.g., nurses, staff members, peers)*	● Shows respect in written and verbal health care team communications ● Resident with punctuality issues accepts feedback in a respectful manner without making excuses or assigning blame ● Listens to and considers others' points of view, is nonjudgmental and actively engaged, and demonstrates humility
Level 2 *Communicates information effectively and uses active listening with all health care team members* *Solicits feedback on performance as a member of the health care team*	● Actively participates in timeout in the operating room and actively voices concerns ● Uses teach-back or other strategies to assess understanding during consultations ● Asks for feedback on how to improve communications with other services
Level 3 *Communicates concerns to the team and learners* *Provides feedback and constructive criticism to peers and learners*	● Stops the line when noticing wrong intraocular implant was chosen ● Raises concerns or provides opinions and feedback when needed to others on the team ● Respectfully suggests to a junior member of the team that they should use corneal protector when performing a lid laceration repair in the emergency room
Level 4 *Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed* *Provides feedback and constructive criticism to superiors*	● Works to resolve a miscommunication about clinic scheduling with office staff and residents ● Provides feedback to program director about a faculty member using derogatory language
Level 5 *Facilitates regular health care team-based feedback in complex situations*	● Organizes a team meeting with office manager, office staff members, and chief resident to discuss and resolve conflicting points of view on clinic overbooking
Assessment Models or Tools	● Direct observation ● End-of-rotation assessment ● Multisource feedback ● Simulation with structured feedback
Curriculum Mapping	●

Notes or Resources	● Roth CG, Eldin KW, Padmanabhan V, Freidman EM. Twelve tips for the introduction of emotional intelligence in medical education. *Med Teach.* 2018:1-4. https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1481499. Accessed 2019. ● Green M, Parrott T, Cook G. Improving your communication skills. *BMJ.* 2012;344:e357. https://www.bmj.com/content/344/bmj.e357. Accessed 2019. ● Henry SG, Holmboe ES, Frankel RM. Evidence-based competencies for improving communication skills in graduate medical education: a review with suggestions for implementation. *Med Teach.* 2013;35(5):395-403. https://www.tandfonline.com/doi/full/10.3109/0142159X.2013.769677. Accessed 2019. ● Dehon E, Simpson K, Fowler D, Jones A. Development of the faculty 360. *MedEdPORTAL.* 2015;11:10174. https://www.mededportal.org/publication/10174/. Accessed 2019.

Interpersonal and Communication Skills 3: Communication within Health Care Systems
Overall Intent: To effectively communicate using a variety of methods

Milestones	Examples
Level 1 *Accurately records information in the medical record*	● Notes are accurate but may include extraneous information
Aware of the role of communication in patient safety and privacy; safeguards patient personal health information	● Never discusses patient care in public spaces
Aware of responsibility to report system deficiencies	● Knows that there is an institutional reporting system for patient safety events
Level 2 *Demonstrates organized diagnostic and therapeutic reasoning through notes in the medical record*	● Documents a rational assessment and plan
Appropriately selects forms of communication (e.g., telephone versus text) to promote patient safety and privacy	● Never uses unencrypted devices to communicate protected health information
Identifies appropriate channels to communicate system deficiencies	● Reports a patient safety event through institutional reporting system
Level 3 *Communicates clearly and concisely, including anticipatory guidance, in the medical record*	● Documentation is accurate, organized, and concise, with anticipatory (if/then) guidance
Avoids creating or propagating errors in the medical record through accurate use of documentation tools	● Does not use copy forward in the EHR
Uses appropriate channels to communicate system deficiencies	● Communicates opportunities for improvement in the EHR ● Knows when to direct concerns locally, departmentally, or institutionally through appropriate escalation
Level 4 *Provides feedback to improve others' written communication*	● Critiques junior resident's EHR notes

Provides feedback and constructive criticism regarding compliance with patient privacy and safety *Offers clear and constructive suggestions to address system deficiencies*	● Redirects conversation when medical student begins discussing patients in a public space ● Participates in task force to update policy for sharing abnormal results
Level 5 *Facilitates dialogue regarding systems issues among larger community stakeholders (institution, health care system, field)* *Guides departmental or institutional communication around policies and procedures*	● Leads a task force established by the QI committee to develop a plan to improve lab result reporting to patients ● Becomes a super user for transition to new EHR
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback
Curriculum Mapping	●
Notes or Resources	● Bierman JA, Hufmeyer KK, Liss DT, Weaver AC, Heiman HL. Promoting responsible electronic documentation: validity evidence for a checklist to assess progress notes in the electronic health record. *Teach Learn Med.* 2017;29(4):420-432. https://www.tandfonline.com/doi/full/10.1080/10401334.2017.1303385. Accessed 2019. ● Departmental or institutional policies regarding patient protections and EHR use ● American Academy of Ophthalmology. Practice Management. https://www.aao.org/practice-management/electronic-health-records/ehrs. Accessed 2019.

In an effort to aid programs in the transition to using the new version of the Milestones, we have mapped the original Milestones 1.0 to the new Milestones 2.0. Below we have indicated where the subcompetencies are similar between versions. These are not necessarily exact matches, but are areas that include some of the same elements. Note that 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: Patient Interview	PC1: Data Acquisition – Basic Ophthalmology Exam and Testing
PC2: Patient Examination	PC1: Data Acquisition – Basic Ophthalmology Exam and Testing
PC3: Office Diagnostics Procedures	PC1: Data Acquisition – Basic Ophthalmology Exam and Testing
PC4: Disease Diagnosis	MK2: Differential Diagnosis
PC5: Non-Surgical Therapy	MK3: Therapeutic Interventions
PC6: Non-Operating Room Surgery	PC3: Office-Based Procedures
PC7: OR Surgery	PC4: Cataract Surgery – Technical Skill PC5: Extraocular Surgery PC6: Intraocular Surgery
PC8: Consultation	PC2: Hospital-Based Consultation
MK1: Demonstrate level-appropriate knowledge	MK1: Pathophysiology
MK2: Demonstrate level-appropriate knowledge applied to patient management	MK2: Differential Diagnosis
SBP1: Work effectively and coordinate patient care in various health care delivery systems	SBP2: System Navigation for Patient-Centered Care
SBP2: Incorporate cost-effectiveness, risk/benefit analysis, and IT to promote safe and effective patient care	SBP3: Physician Role in Health Care Systems ICS3: Communication within Health Care Systems
SBP3: Work in inter-professional teams to enhance patient safety, identify system errors, and implement solutions	SBP1: Patient Safety and Quality Improvement ICS2: Interprofessional and Team Communication
PBLI1: Self-directed Learning	PBLI2: Reflective Practice and Commitment to Personal Growth
PBLI2: Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems	PBLI1: Evidence-Based and Informed Practice
PBLI3: Participate in a quality improvement project	SBP1: Patient Safety and Quality Improvement
PROF1: Compassion, integrity, and respect for others; sensitivity and responsiveness to diverse patient populations	PROF1: Professional Behavior and Ethical Principles

PROF2: Responsiveness to patient needs that supersedes self-interest	PROF1: Professional Behavior and Ethical Principles
PROF3: Respect for patient privacy and autonomy	PROF1: Professional Behavior and Ethical Principles
PROF4: Accountability to patients, society, and the profession	PROF2: Accountability/ Conscientiousness
No match	PROF3: Self-Awareness and Help-Seeking
ICS1: Communicate effectively with patients and families with diverse socioeconomic and cultural backgrounds	ICS1: Patient and Family-Centered Communication
ICS2: Communicate effectively with physicians, other health professionals, and health-related agencies	ICS2: Interprofessional and Team Communication
ICS3: Work effectively as a member or leader of a health care team or other professional group	ICS2: Interprofessional and Team Communication
ICS4: Effectively present didactic and case-based educational material to physicians and other health care professionals	ICS2: Interprofessional and Team Communication