Supplemental Guide: Preventive Medicine – Occupational Medicine

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Milestones Supplemental Guide

This document provides additional guidance and examples for the Preventive Medicine – Occupational Medicine 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: History and Physical Examination **Overall Intent:** To obtain and document an accurate, detailed occupational/environmental history for work fitness, workplace injury/exposure, impairment assessment, and safety-sensitive tasks; to perform both a comprehensive and a focused, directed physical examination suited to the presentation	
Milestones	**Examples**
Level 1 *Obtains an accurate history*	● Obtains a competent clinical history consistent with a PGY-1 skill level ● Elicits the chief complaint, history of present illness, past medical history, surgical history, medications, allergies, family history, and social history
Performs a basic physical exam accurately	● Performs a physical examination to at least the proficiency level of a PGY-1 resident ● Performs all components of a general physical exam, including head, eyes, ears, nose, and throat, neck, cardiovascular, pulmonary, abdominal, musculoskeletal/extremities, neurological, and mental health exams
Level 2 *Obtains and reports an accurate and organized history, including occupational and environmental history*	● Obtains a Level 1 history and includes information regarding current employer, length of time in current position, job title, job tasks, and mechanism of injury; or includes information regarding history of environmental exposure; presents history in an organized manner ● Begins to obtain information regarding disability risks factors, including alcohol use (heavy or at-risk drinking behaviors), smoking and tobacco use, illicit drug use (including non-medical use of a prescription drug), body measurements and overweight/obesity status (weight circumference, body mass index (BMI)), diet/nutrition (e.g., fast food, caffeine, sugar sweetened beverages), physical activity (e.g., intensity, duration, type; aerobic versus strengthening), sleep hygiene, and functioning in the six domains (seeing, hearing, mobility, communication, cognition, self-care)
Performs an accurate and organized physical exam, and identifies appropriate physical findings for the chief complaint	● Performs and presents an organized examination, following a template such as inspection, palpation, auscultation, percussion, range of motion, strength testing, neurovascular (e.g., sensation, reflexes, coordination, gate, pulses/circulation), and relevant special tests ● Focuses presentation on pertinent positives and negatives based on patient's chief complaint (e.g., focus on musculoskeletal exam if patient presents with musculoskeletal complaint)

Level 3 *Consistently obtains and reports a comprehensive and accurate history, including occupational and environmental factors, and seeks appropriate data from secondary sources*	● Obtains a Level 2 history and seeks/obtains data from secondary sources such as a formal job description from the employer, safety data sheets from the employer, data on documented exposures from online sources such as the Agency for Toxic Substances and Disease Registry (ATSDR), has the patient sign authorization for release of medical records from outside providers, obtains exposure records/information from employers (including site-specific sampling, relevant to the worker's position), contacts former employers, etc. ● Uses information regarding disability risk factors to begin to identify patients at risk ● Includes the patient's risk factors in consideration of the initial treatment plan and follow-up visit schedule
Consistently performs an accurate and thorough physical examination, and reports relevant findings in support of likely clinical diagnosis	● Performs a Level 2 physical examination with skill and accuracy, including skilled use of relevant special tests for the clinical presentation ● For a patient with complaints of onset of shoulder pain after overhead work, select correct special clinical tests (e.g., Neer's, Hawkin's, or empty can tests) and explains the clinical relevance of test findings
Level 4 *Consistently obtains and concisely reports a focused history, including occupational and environmental factors, with pertinent details*	● Obtains a Level 3 history; documents an occupational/environmental history accurately and in detail including exposure assessment, review of job duties and prior medical records and integrates relevant information from multiple sources; obtains a pertinent occupational history for safety-sensitive work ● Identifies patients at risk of prolonged recovery or early disability in order to address return to work issues
Consistently identifies subtle physical findings; is proficient with advanced maneuvers	● Performs physical examination at a Level 3 skill level and discusses sensitivity and specificity of special tests used, along with their correlation with imaging findings; performs maneuvers such as the Thompson Test, understands when a straight leg raise is truly positive, and is able to use a goniometer and a digital inclinometer to measure degrees of joint movement ● Considers using descriptive result rather than positive or negative for commonly misinterpreted tests (e.g., performs straight leg raise and reports sharp pain radiating past the knee with hip flexion between 30 and 60 degrees, increased with dorsiflexion)
Level 5 *Consistently serves as a role model and educator in obtaining and presenting a focused history, including occupational and environmental factors, with pertinent details*	● Develops an individual occupational or environmental history form suitable for a particular employer or for use in a unique situation, such as exposure to a particular substance (e.g., lead, chromium, beryllium, silica) or evaluation of occupational skin or lung disease

Consistently serves as a role model and educator in the performance of an advanced physical exam	● Conducts an advanced examination such as an impairment rating examination using formal range of motion measurements, formal measurement of sensation and grip strength, and ascertainment of the presence of muscle atrophy using limb circumference
Assessment Models or Tools	● Direct observation ● Mini-CEX ● Medical record (chart) audit ● Simulation
Curriculum Mapping	●
Notes or Resources	● Occupational and Environmental Health Committee of the American Lung Association of San Diego and Imperial Counties. Taking the occupational history. *Ann Intern Med*. 1983;99(5) https://depts.washington.edu/uwmedres/pdf/clinics/Occupational_History.pdf ● Washington Health System. Medical and occupational history form. http://www.co.washington.pa.us/DocumentCenter/View/2804/OMC-Patient-History ● ATSDR. Exposure history form. https://www.atsdr.cdc.gov/csem/exphistory/docs/CSEMExposHist-26-29.pdf ● Fairbank JCT, Pynsent PB. The Oswestry Disability Index. *Spine*, 25(22):2940-2953. http://www.rehab.msu.edu/_files/_docs/oswestry_low_back_disability.pdf ● Health and Safety Authority (HSA). Safety data sheets for hazardous chemicals information sheet. https://www.hsa.ie/eng/Publications_and_Forms/Publications/Information_Sheets/SDS_hazchem_info_sheet.pdf ● CDC. National Center for Health Statistics. Disability and risk factors. https://www.cdc.gov/nchs/fastats/disability-and-risk-factors.htm ● Uptodate. Acute lumbosacral radiculopathy: Pathophysiology, clinical features, and diagnosis. https://www.uptodate.com/contents/acute-lumbosacral-radiculopathy-pathophysiology-clinical-features-and-diagnosis?search=positive%20straight%20leg%20raise&sectionRank=1&usage_type=default&anchor=H24&source=machineLearning&selectedTitle=1~150&display_rank=1#H24 ● Seidel HM, Stewart RW, Bal JW, Danis JE, Flynn JA, Solomon BS. *Mosby's Guide to Physical Examination*. 7th ed. Maryland Heights, MO: Mosby Inc; 2010. ● Bickley LS. *Bates Guide to Physical Examination and History Taking.* 12th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2016. ● LaDou J, Harrison RJ. *CURRENT Diagnosis & Treatment: Occupational & Environmental Medicine.* 5th ed. New York, NY: McGraw-Hill Education; 2014. ● Micheo W, Buschbacher R. *Musculoskeletal, Sports, and Occupational Medicine (Rehabilitation Medicine Quick Reference Guide)*. New York, NY: Demo's Medical; 2010.

	● Cleland JA, Koppenhave S, Su J. *Netter's Orthopadic Clinical Examination: And Evidence-Based Approach*. 3rd ed. Amsterdam, Netherlands; 2015. ● Starkey C, Brown SD, Ryan J. *Orthopedic and Athletic Injury Examination Handbook.* 2nd ed. Philadelphia, PA: F.A. Davis Company; 2009. ● Provide the resident with a history template to assist in organization and use in assessment during development throughout residency. ● Guide the resident toward resources such as online resources (ATSDR, for example), samples and templates for formal Occupational/Environmental History taking, and use to guide assessment and formative feedback

Patient Care 2: Clinical Assessment and Management **Overall Intent:** To develop the ability to develop a wide differential diagnosis and a focused working diagnosis that can be adjusted in the presence of new information; to master the knowledge and skills required to diagnose, treat, and manage patients in the clinical occupational medicine setting	
Milestones	**Examples**
Level 1 *Integrates patient-specific information to generate a working diagnosis* *Determines indicated tests and initiates a management plan*	● Uses information gained from history, physical examination, and diagnostic testing to arrive at a reasonable differential or working diagnosis ● For a lead exposure case, identifies the need to order a blood lead level, zinc protoporphyrin, complete blood cell count (CBC), and metabolic panel ● For a worker who presents with an acute ankle sprain, refers to appropriate guidelines (e.g., Ottawa Ankle Rules) to determine whether imaging is indicated, suggests rest, ice, nonsteroidal anti-inflammatory drugs (NSAIDs), compression, and elevation
Level 2 *Provides a prioritized differential diagnosis using supporting rationale and/or exposure assessment* *Orders indicated tests, and initiates a management plan, suggesting work restrictions*	● Organizes available information into diagnostic categories and prioritizes based on clinical assessment to provide a differential diagnosis in order of priority along with a working diagnosis ● Lists musculoskeletal sprain/strain or contusion ahead of herniated disc or spinal fracture in a patient presenting with the relevant history and exam and no red flags ● Uses the electronic health record (EHR) to order appropriate labs for lead exposure, describes criteria for chelation versus no chelation, and suggests restrictions from further lead exposure
Level 3 *Consistently provides an accurate diagnosis for common occupational and environmental conditions; demonstrates the ability to modify a diagnosis based on a patient's clinical course and additional data* *Interprets indicated tests and develops a management plan; determines work restrictions*	● Consistently performs at Level 2, with the additional ability to adapt the working diagnosis as additional data are gathered ● Modifies a working diagnosis of shoulder strain when a patient fails to respond to physical therapy and subsequent magnetic resonance imaging (MRI) results show a rotator cuff or biceps tendon tear ● For a worker who presents with crush injury to a finger, orders a three-view x-ray of affected finger and joint and accurately diagnoses a closed nondisplaced tuft fracture, appropriately cleans and inspects the wound, places L-shaped alumafoam splint on the volar aspect of the affected finger, and records restrictions on use of the affected hand on a work status form for the employer ● Employs a variety of specialized musculoskeletal tests during the physical exam as indicated to help elicit diagnosis

Level 4 *Consistently provides an accurate diagnosis for patients with complex occupational and environmental conditions, recognizing sources of diagnostic error*	● Distinguishes between multiple and/or complex factors in the workplace or environment; is knowledgeable about pre-existing conditions and their impact or contribution to conditions occurring in occupational and environmental conditions ● Distinguishes and/or discusses issues of chronic pre-existing conditions and acute traumatic injuries in claims of acute traumatic injury such as an acute rotator cuff tear superimposed on extensive chronic pre-existing degenerative changes in the shoulder ● Is knowledgeable about repetitive injury conditions and causation; for example, carpal tunnel syndrome, when and when not work-related and appropriate differential for wrist and forearm pain ● Is knowledgeable about occupational illness, including illness that also occurs outside the workplace, such as occupational asthma ● Recognizes pitfalls and sources of error in diagnostic testing; understands the details and complexities of more complex test reports such as electromyogram and nerve conduction studies reports
Consistently modifies the management plan based on the patient's clinical course and considers applicable regulatory guidelines	● For a worker with a back injury, judges if the patient is likely to benefit from formal physical therapy versus a home program, and appropriately refers for imaging studies in accordance with best practices based on the patient's clinical progression; identifies any potential "red flags" which would prompting imaging and/or change in management
Level 5 *Consistently serves as a role model and educator for deriving accurate diagnoses, recognizing sources of diagnostic error, and integrating relevant literature*	● Works at a high level performing all the previous tasks, including integrating and citing sources from the medical literature to support decision making and opinions given
Implements testing and management plans, integrating patient preferences, evidence-based guidelines, and cost	● Counsels a travel medicine client who is considering malaria prophylaxis medications using evidence-based recommendations and helps the client determine which medication will fit the client's needs regarding route of delivery, dosing frequency, cost, and timing
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback ● Simulation
Curriculum Mapping	●
Notes or Resources	● Melhorn JM, Talmage JB, Ackerman WE, Hyman MH. *AMA Guides to the Evaluation of Disease and Injury Causation.* 2nd ed. Chicago, IL: Amer Medical Assn; 2013. ● Derebery J, Anderson JR. *Low Back Pain: An Evidence-Based, Biopsychosocial Model for Clinical Management.* Beverly Farms, MA: OEM Press; 2001. ● Greenberg M. *Occupational Emergency Medicine*. London, UK: BMJ Books; 2011.

	● Pelmear PL, Wasserman DE. *Hand-Arm Vibration: A Comprehensive Guide for Occupational Health Professionals*. 2nd ed. Beverly Farm, MA: OEM Press; 2000. ● LaDou J, Harrison RJ. *CURRENT Diagnosis & Treatment: Occupational & Environmental Medicine.* 5th ed. New York, NY: McGraw-Hill Education; 2014. ● Miller MD, Dempsey IJ. *Making the Diagnosis in Orthopedics: A Video-Enhanced Guide to Identifying Musculoskeletal Disorders*. Philadelphia, PA: Lippincott Williams & Wilkins; 2019. ● Eiff MP, Hatch R. *Fracture Management for Primary Care*. 3rd ed. Philadelphia, PA: Saunders; 2011. ● Travel Medicine Resources such as Travax https://www.travax.com

Patient Care 3: Worker Health, Well-Being, and Performance Optimization **Overall Intent:** To identify, understand, and monitor the broad range of exposures and factors that impact worker health, well-being, and performance optimization	
Milestones	**Examples**
Level 1 *Discusses how individual and organizational factors in the workplace can influence health, well-being, and performance*	● Actively engages in discussions on social determinants of health, occupational, environmental, and institutional factors impact health and performance
Level 2 *Identifies individual and organizational factors in the workplace which influence the health, well-being, and performance of workers*	● Participates in a worksite visit and identifies potential safety issues (e.g., physical hazards, workplace policies, etc.) or environmental concerns ● Identifies appropriate personal protective equipment (PPE) availability and use
Level 3 *Describes the use and limitations of health risk assessment and screening for well populations, and the applications of screening, assessment, and early intervention for targeted high-risk groups*	● Participates in managing a hearing conservation program and explains the rationale of screening in accordance with Occupational Safety and Health Administration (OSHA) guidance ● Performs an ergonomic assessment ● Understands the strengths and limitations of a health risk assessment and can stratify groups for management based on health risk
Level 4 *Monitors and surveys at least one workforce, and interprets monitoring and surveillance data to enhance the health, well-being, and performance of workers (simulation or actual)*	● Manages a hearing conservation program in a workforce, including interpretation of audiometric tests, inclusion/exclusion criteria for the program, guiding OSHA-mandated record keeping, etc. ● Identifies criteria for and promotes a culture of safety in the workplace ● Assesses vaccination status amongst a population of health care workers, identifies populations who should be vaccinated, manages non-immune workers with interpretation of serologic testing, considers vaccine efficacy, etc.
Level 5 *Designs, implements, and evaluates worksite health promotion programs independently, incorporating authoritative guidelines and evidence*	● Works with a local organization to create a comprehensive well-being program, including annual medical exams and guidance surrounding nutrition, exercise, sleep, and stress-reduction strategies considers investment and related cost savings for payors ● Identifies workers who may be at risk for shift work sleep disturbance and is able to advise management on schedules which could promote sleep hygiene
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Product documentation review ● Simulation
Curriculum Mapping	●
Notes or Resources	● U.S. Department of Labor OSHA. Personal protective equipment. https://www.osha.gov/SLTC/personalprotectiveequipment/ ● U.S. Department of Labor OSHA. Standard on hearing protection. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95

	● U.S. Department of Labor OSHA Respirator Program Requirements ● https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=12716&p_table=standards ● Sherman BW, Stiehl E. Health management in commercially insured populations: it is time to include social determinants of health. *J Occup Environ Med*. 2018;60(8);688-92. ● Jehan, S., Zizi, F., Pandi-Perumal, S. R., Myers, A. K., Auguste, E., Jean-Louis, G., & McFarlane, S. I. (2017). Shift Work and Sleep: Medical Implications and Management. *Sleep medicine and disorders*: international journal, 1(2), 00008. ● Swift MD, Behram AJ. Vaccines for healthcare personnel. *Mayo Clin Proc.* 94(10): 2127-2141 ● Song Z, Baicker K. Effect of a workplace wellness program on employee health and economic outcomes: a randomized clinical trial. *JAMA*. 2019;321(15):1491–1501. ● Cohen, D. A., Wang, W., Wyatt, J. K., Kronauer, R. E., Dijk, D. J., Czeisler, C. A., & Klerman, E. B. (2010). Uncovering residual effects of chronic sleep loss on human performance. *Science translational medicine*. 2(14), 14ra3-14ra3.

Patient Care 4: Fitness for Work (Workers' Compensation, Employment and Certification Exams, Fitness for Duty, Return to Work) **Overall Intent:** To assess a worker's fitness for duty based on their individual job duties, personal medical history, medication use, and physical exam in a variety of contexts including safety sensitive positions	
Milestones	**Examples**
Level 1 *Identifies types of work restrictions*	● Recognizes the difference between Americans with Disabilities Act (ADA) accommodations and temporary work restrictions arising from a non-permanent injury or illness
Identifies elements of an examination to determine fitness for different types of work	● Recognizes how job duties or environment may impact the worker's health for example an individual with a history of asthma exacerbated by cold weather applying to work in a meatpacking industry which may require long shifts in refrigerated facilities or an individual with a history of hypertrophic cardiomyopathy may not be cleared to work outdoors in extreme heat
Level 2 *Suggests work restrictions or return to work plan in the context of a management plan for patients*	● Prescribes work restrictions on lifting, bending, and twisting for a worker with acute back strain
Conducts examinations determining fitness for work in a variety of industries	● Conducts post-offer/pre-employment exams, Department of Transportation (DOT) medical certification exams, etc. under supervision; conducts fitness for duty exams based upon the job duties provided, under supervision
Identifies the elements of work fitness and disability determination	● Identifies job-specific work fitness requirements, such as vision and hearing criteria for DOT exams, immunizations for healthcare workers, etc.; for disability determination, correlates impairments with ability to perform job-specific tasks, for example identifies that a sprained ankle may temporarily disable a letter carrier but not a call center worker
Level 3 *Provides work activity prescriptions in the context of a management plan for patients, interacting with care teams*	● Manages workers compensation injury cases, including prescribing impairment-related work restrictions
Performs fitness for duty/work examinations with knowledge of regulations and guidelines	● Conducts a fitness-for-duty evaluation of an employee who may be evaluated for substance abuse while on duty understanding relevant legal and regulatory considerations such as ADA and Equal Employment Opportunity Commission (EEOC)
Performs medical evaluations using the principles of work fitness and disability determination	● Effectively communicates to the patient that there is not a "traditional" doctor/patient relationship in terms of confidentiality the information discussed in the visit to provide a report to the disability board and as a physician involved in disability determination the physician will not assume care, diagnose, or treat any condition

Level 4 *Consistently provides work activity prescriptions in complex patient management situations, interacting with care teams*	● Manages a complex workers compensation injury, communicating with the claims manager, employer, and treating specialists to help the employee return to work safely and efficiently, following up at appropriate intervals, and graduating restrictions (as appropriate) in a timely manner
Consistently performs complicated fitness for duty/work examinations with knowledge of regulations and guidelines	● Manages a complex fitness for duty case, integrating video surveillance, employer statements, and employee's history and medical exam to synthesize fitness determination, which is communicated clearly and professionally in a letter to the employer
Participates in a disability determination or impairment assessment	● Understands the unique role in disability determinations able to seek guidance as appropriate such as using American College of Occupational and Environmental Medicine (ACOEM) Law Enforcement Officer Guidelines for disability determination in law enforcement officers
Level 5 *Serves as a role model for providing work activity prescriptions in complex patient management situations*	● Shares knowledge and expertise with other learners to help them improve, reviews cases with more junior learners, and offers constructive feedback
Serves as a role model for performing complicated fitness for duty/work examinations	● Supports disability determination with evidence such as reviewing literature to review the chance of acute hip dislocation in a fireman who is status post hip arthroplasty to assess risk of sudden incapacitation
Performs a disability determination or impairment assessment and causation analysis	● Formulates a causation analysis based upon medical record review and physical exam
Assessment Models or Tools	● Direct observation ● Medical chart audit ● Simulation
Curriculum Mapping	●
Notes or Resources	● AMA Guides to the Evaluation of Permanent Impairment www.amaguides.com ● Federal Motor Carriers Safety Administration (FMCSA) https://www.fmcsa.dot.gov ● Federal Aviation Administration Medical Examination https://www.faa.gov/licenses_certificates/medical_certification/ ● U.S. Equal Employment Opportunity Commission https://www.eeoc.gov/ ● ACOEM Law Enforcement Officer Guidelines https://www.leoguidance.org

Patient Care 5: Toxicology **Overall Intent:** To evaluate and manage health effects from work-related or environmental toxic exposures including hazard identification, dose-response relationship, exposure assessment, risk characterization, causation analysis and appropriate treatment, and/or exposure control recommendations	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of basic pathophysiology, pharmacology, and metabolism of drugs and toxicants*	● Recognizes the importance of dose response relationships, pathophysiology, or toxicokinetics in determining toxic health effects for a common exposure such as lead
Level 2 *Evaluates patients using knowledge of basic toxicological principles, including routes of exposure and metabolic pathways*	● Takes a relevant history for a specific exposure such as lead, including onset of symptoms, such as headache and fatigue—possible sources of routes of exposure, other comorbidities that may increase risk such as renal or hematologic disease, and other causes of similar symptoms ● Recognizes the role of biological monitoring such as a blood lead level ● Perform a relevant physical examination to assess possible lead health effects such as a peripheral neuropathy and orders appropriate further testing such as blood lead, CBC, and renal function tests or others as indicated to detect or confirm health effects or toxicity
Level 3 *Evaluates and recommends care for patients whose health may be affected by occupational or environmental toxic exposures, including interpretation of laboratory and/or environmental monitoring test results*	● Obtains information from secondary sources such as an employer for any available environmental monitoring results such as lead airborne levels or safety data sheets ● Interprets results of history and physical examination, additional testing such as blood lead and information from environmental testing or other sources, and determines if there is evidence of lead toxicity or blood lead is elevated above recommended guidelines ● Recommends appropriate treatment such as chelation or restrictions such as avoid lead exposure and follow-up as needed
Level 4 *Assesses clinical, worksite, and environmental data, recommends treatment of acute or chronic occupational or environmental toxic exposures, and work restrictions or exposure control measures*	● Requests further clinical testing such as follow-up blood lead levels, or environmental monitoring, or conducts a worksite visit if appropriate and interprets those results based on medical and toxicology literature to determine potential health effects from lead or other toxic exposure and risks for ongoing exposure ● Determines exposure source and provides treatment recommendations or appropriate referral with acute or chronic exposure to lead or other toxic exposure ● Recommends appropriate workplace restrictions and/or exposure control as indicated and communicates these to both the patient and the employer or appropriate responsible party
Level 5 *Performs complex causation analysis of patients with symptoms or conditions and/or conducts screening and surveillance for populations that may be related to occupational or environmental toxic exposures, and effectively communicates risk*	● Provides toxicology evaluations for a complicated patient with multiple exposures or contributing comorbidities including a thorough causation and relevant exposure analysis ● Conducts a screening program for a population exposed to lead or another toxin, interprets results, and effectively communicates risks to these groups, and recommends appropriate screening or surveillance programs if indicated

	● Conducts specialized toxicology exams such as Department of Energy claims, registry exams for veterans, and indoor/outdoor air contaminant exposure
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Program evaluation ● Toxicology course grade
Curriculum Mapping	●
Notes or Resources	● ATSDR. Taking an exposure history. 2000 https://www.atsdr.cdc.gov/hec/csem/exphistory/docs/exposure_history.pdf ● ATSDR. Taking an exposure history: what are the components of an exposure history? 2015. https://www.atsdr.cdc.gov/csem/csem.asp?csem=33&po=9 ● US Department of Health & Human Services. CHEM. Key Principles of Toxicology and Exposure. https://chemm.nlm.nih.gov/toxprinciples.htm ● LaDou J, Harrison RJ. *CURRENT Diagnosis & Treatment: Occupational & Environmental Medicine.* 5th ed. New York, NY: McGraw-Hill Education; 2014. p. 27-31. ● Guidotti TE. In Toxicology: *The Praeger Handbook of Occupational and Environmental Medicine.* Westport, CT: Praeger; 2010 p. 63-109.

Patient Care 6: Surveillance **Overall Intent:** To understand and apply principles of prevention and surveillance to individuals and groups of workers in a wide spectrum of occupational settings	
Milestones	**Examples**
Level 1 *Demonstrates working knowledge of basic principles underlying screening and surveillance*	● Describes primary, secondary, and tertiary prevention and the utility of screening potentially exposed workers for early detection of physiologic changes, end organ damage, or disease
Level 2 *Performs a medical surveillance examination following prescribed regulations and guidelines; communicates results as indicated*	● Performs an OSHA-regulated surveillance exam such as a respirator exam including collecting pertinent medical and work history, and communicates results to workers and any work-related restrictions or recommended exposure control measures to employer ● Recognizes the role of medical screening and surveillance to identify and track occupational injuries, illnesses, and exposures and to lead to appropriate follow-up, treatment, and exposure control recommendations
Level 3 *Independently identifies which tests and actions are recommended or mandated for a specific worker*	● Following a Federal Motor Carrier Safety Association (FMCSA)-regulated commercial driver examination, identifies need for any further testing such as stress testing or sleep study, and determines work status based on FMCSA regulations and guidelines (either alone or with supervision) ● Performs an OSHA-regulated surveillance exam such as a lead exam, analyzes results of any additional testing such as blood level to identify signs of lead toxicity or elevated blood lead levels, and provides an appropriate treatment and follow-up recommendations including work restrictions or exposure controls; communicates any work-related restrictions or recommended exposure controls to the employer
Level 4 *Prepares a valid aggregate analysis and summary of actual medical surveillance examinations for a specific focus, such as lead-exposed workers, lipid screening, hearing conservation (actual or simulated)*	● Performs a surveillance exam for a worker covered by multiple OSHA standards or a patient with potentially hazardous exposure that has no published US health standard and makes recommendations for future testing, follow-up, work restrictions, or exposure control ● Analyzes and summarizes results from a group of workers who underwent OSHA-regulated surveillance examinations such as lead or hearing conservation exams over time; issues an actual or simulated report including data trends or patterns and recommendations for possible exposure control measures, additional testing, or follow-up
Level 5 *Develops a comprehensive program plan for a workplace, including test selections, follow-up plans, and comparison of cost effectiveness of alternative strategies*	● Designs a comprehensive program for a group of workers covered by OSHA or other US workplace surveillance exam regulations including comparison of cost effectiveness and alternative strategies for scheduling exams, follow-up testing, and periodic monitoring of trends to assess program efficacy
Assessment Models or Tools	● Direct observation ● Program evaluation ● Simulation

	● Case-based discussion
Curriculum Mapping	●
Notes or Resources	● LaDou J, Harrison RJ. *CURRENT Diagnosis & Treatment: Occupational & Environmental Medicine.* 5th ed. New York, NY: McGraw-Hill Education; 2014. p. 693-710. ● OSHA. Medical screening and surveillance. https://www.osha.gov/SLTC/medicalsurveillance/screening.html ● OSHA. Medical screening and surveillance requirements in OSHA standards: a guide. 2014 https://www.osha.gov/Publications/osha3162.pdf. ● Guidotti TE. Monitoring, Surveillance, and Screening in: *The Praeger Handbook of Occupational and Environmental Medicine.* Westport, CT: Praeger; 2010 p327-330.

Medical Knowledge 1: Hazard Recognition and Management **Overall Intent:** To understand and apply key principles of industrial hygiene, ergonomics, occupational safety, risk assessment, and hazard controls in a variety of relevant occupational medicine settings or situations	
Milestones	**Examples**
Level 1 *Discusses how occupational and environmental risk factors contribute to injury and illness*	● Identifies various occupational and environmental sources of risk for injury and illness
Level 2 *Demonstrates knowledge of core principles of industrial hygiene, ergonomics, occupational safety, risk assessment and communication, and hazard controls*	● Describes the range of disciplines and approaches involved with occupational risk assessment and controls, such as industrial hygiene and safety
Level 3 *Participates in activities or consultations that include application of the principles of industrial hygiene, ergonomics, occupational safety, risk assessment, and hazard control to patients, populations, and/or employer/employee organizations*	● Lists physical, chemical, biological, and psychosocial factors that contribute to risk and applies knowledge to develop assessment and mitigation measures
Level 4 *Applies core principles of risk assessment and hierarchy of controls to reduce risks from industrial hygiene, ergonomic, and safety hazards to patients, populations, and/or employee/employer organizations, and communicates risks*	● Analyzes and communicates strategies to reduce risk, including elimination/substitution, administrative controls, engineering controls, and PPE
Level 5 *Interprets, analyzes, and applies the principles of industrial hygiene, ergonomics, occupational safety, risk assessment, hazard control in complex occupational or community environments and communicates risks effectively*	● Integrates the industrial hygiene approach in complex circumstances, for example, risk reduction in health care workers associated with coronavirus exposure
Assessment Models or Tools	● Direct observation ● E-module multiple choice tests ● Multisource feedback ● Portfolio ● Reflection
Curriculum Mapping	●
Notes or Resources	● ACOEM website https://acoem.org/

	● Plog BA, Quinlan PA, Villarreal J. *Fundamentals of Industrial Hygiene.* 6th ed. Itasca, IL: National Safety Council; 2012. ● Anan DH. *Occupational Environmental: Its Evaluation, Control, and Management.* 3rd ed. Fairfax, VA: American Industrial Hygiene Association; 2011. ● Simon T. *Environmental Risk Assessment.* London, UK: Routledge; 2016. ● LaDou J, Harrison RJ. *CURRENT Diagnosis & Treatment: Occupational & Environmental Medicine.* 5th ed. New York, NY: McGraw-Hill Education; 2014

Medical Knowledge 2: Biostatistics and Epidemiology **Overall Intent:** To understand and apply key principles of biostatistics and epidemiology to occupational medicine practice and academic inquiry	
Milestones	**Examples**
Level 1 *Discusses common statistical concepts (e.g., measures of central tendency, p-values, confidence intervals)*	● Identifies the differences between mean, median, and mode and distinguishes between experimental and observational studies
Level 2 *Demonstrates knowledge of biostatistical and epidemiological principles*	● Demonstrates knowledge of incidence, prevalence, and study types, including cross-sectional, case-control, and cohort studies, in the context of using best evidence to manage clinical cases
Level 3 *Interprets scientific literature using biostatistical and epidemiological principles*	● Interprets scientific literature using biostatistical and epidemiological principles (e.g., statistical significance, confidence intervals, bias, confounding, and causal inference) in the context of a journal club presentation by reviewing study design, recognizing study limitations, and reaching appropriate conclusions
Level 4 *Applies biostatistical and epidemiological principles to research or clinical practice*	● Conducts a systematic review of literature to address clinical questions pertinent to a patient case or research project
Level 5 *Role models the application of biostatistical and epidemiological principles to research and clinical practice*	● Role models application of study design, data collection, and fundamental statistical methods to address complicated population and workforce scenarios
Assessment Models or Tools	● Direct observation ● E-module multiple choice tests ● Multisource feedback ● Reflection
Curriculum Mapping	●
Notes or Resources	● ACOEM website https://acoem.org/ ● Elmore JG, Wild D, Nelson HD, Katz DL. *Jekel's Epidemiology Biostatistics Preventive Medicine and Public Health*. 5th ed. Amsterdam, Netherlands: Elsevier: 2020. ● McCunney RJ, Rountree RP. *Occupational and Environmental Medicine: Self-Assessment Review.* 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003.

Medical Knowledge 3: Regulatory **Overall Intent:** To understand and apply knowledge of regulatory agencies and standards and exposure monitoring requirements to a variety of industry, workplace, and occupational practice settings	
Milestones	**Examples**
Level 1 *Identifies relevant occupational and environmental regulatory agencies* *Identifies occupational or environmental regulations/guidelines regarding exposure in a specific industry or geographic area*	● Identifies OSHA and the Environmental Protection Agency (EPA) as regulatory agencies and distinguishes other agencies or organizations, including National Institute for Occupational Safety and Health (NIOSH) and American Conference of Governmental Industrial Hygienists (ACGIH), as non-regulatory ● Lists OSHA standards applicable to certain worker populations or in certain situations, such as standards for General Industry or Construction; recognizes different EPA standards such as Superfund
Level 2 *Lists the regulatory requirements for a specific industry* *Identifies the recommended/mandated exposure limits for a specific substance or hazard*	● Identifies relevant OSHA standards for asbestos abatement activities ● Indicates permissible exposure limit for asbestos
Level 3 *Applies knowledge of pertinent regulatory standards, to an individual worker* *Reviews exposure monitoring results for an individual and prepares written reports for employers, workers, or government*	● Applies FMCSA guidelines for hypertension, hearing, or vision to a commercial motor vehicle driver presenting for DOT certification exam ● Interprets clinical parameters such as blood pressure in determining DOT certification duration
Level 4 *Applies knowledge of regulatory requirements to develop or modify a workplace policy (actual or simulated)* *Interprets and applies exposure monitoring results to work setting or clinical cases*	● Relates knowledge of OSHA Form 300 injury and illness recordkeeping log to workplace reporting protocols ● Analyzes air monitoring and/or blood lead results and determines whether workplace mitigation measures and/or medical removal are indicated
Level 5 *Participates in developing or modifying a regulatory requirement or guideline* *Prepares a written exposure monitoring and reporting system plan for a specific workplace or other defined entity*	● Participates in modification of tuberculosis exposure control plan for health care workers in keeping with changes in national recommendations (e.g., interferon-gamma release assays as surveillance tools) ● Analyzes workplace reporting protocols to summarize exposure data for purposes of proper reporting and mitigating risk factors for workplace injury

Assessment Models or Tools	● Direct observation ● E-module multiple choice tests ● Medical record (chart) audit ● Multisource feedback ● Reflection ● Simulation
Curriculum Mapping	●
Notes or Resources	● ACOEM website https://acoem.org/ ● Elmore JG, Wild D, Nelson HD, Katz DL. *Jekel's Epidemiology Biostatistics Preventive Medicine and Public Health*. 5th ed. Amsterdam, Netherlands: Elsevier: 2020. ● McCunney RJ, Rountree RP. *Occupational and Environmental Medicine: Self-Assessment Review.* 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2003. ● OSHA website www.osha.gov ● EPA website www.epa.gov ● FMCSA website www.fmcsa.dot.gov ● ADA website www.ada.gov ● *The DOT Medical Examination: An Unofficial Guide to Commercial Drivers' Medical Certification.* 6th ed. Beverly Farms, MA: OEM Press; 2001.

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* *Demonstrates knowledge of how to report patient safety events* *Demonstrates knowledge of basic quality improvement methodologies and metrics*	● Lists common mechanical, biological, and chemical hazards that may cause injury or illness ● Recognizes that workplace injuries are subject to special recordkeeping requirements ● Describes fishbone tool, swiss cheese model, or five “whys” technique
Level 2 *Identifies system factors that lead to patient safety events* *Reports patient safety events through institutional reporting systems (simulated or actual)* *Describes local quality improvement initiatives (e.g., community vaccination rate, infection rate, smoking cessation)*	● Identifies workplace slip, trip, or fall hazards that may lead to occupational injury ● Reports slips, trips, or falls and recommends recording them as appropriate on the OSHA log ● Summarizes protocols for slip, trip, or fall prevention within a workplace setting
Level 3 *Participates in analysis of patient safety events (simulated or actual)* *Participates in disclosure of patient safety events to patients and families (simulated or actual)* *Participates in local quality improvement initiatives*	● Reviews OSHA log with safety department in order to identify events requiring further evaluation ● Communicates with patients/families/employer about a workplace recordable injury ● Participates in a root cause analysis for a workplace fall injury resulting in amputation of a body part
Level 4 *Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)* *Discloses patient safety events to patients and families (simulated or actual)*	● Collaborates with a team to analyze a workplace recordable injury event in order to recommend hazard control measures ● Communicates with patients/families/employer about a workplace recordable injury (actual or simulated)

Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project	● Participates in the completion of a QI project to optimize clinic flow and throughput, including developing a project charter, articulating a clear aims statement, incorporating SMART (Specific, Measurable, Attainable, Relevant, Time-bound) objectives, and coordinating with key stakeholders (i.e., nursing staff, attending physicians, residents, and support staff)
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*	● Assumes a leadership role at the departmental or institutional level for worker safety ● Conducts a simulation for presenting a workplace safety/environmental event analysis to a committee, senior organizational leadership, or in a community forum ● Role models development, progression, completion, and presentation of a complex, multidisciplinary QI project involving a variety of stakeholders, such as industrial hygiene, safety personnel, environmental specialists, human resources, etc.
Assessment Models or Tools	● Direct observation ● E-module multiple choice tests ● Medical record (chart) audit ● Multisource feedback ● Reflection ● Simulation
Curriculum Mapping	●
Notes or Resources	● U.S. Department of Labor - Workplace Safety and Health https://www.dol.gov/general/topic/safety-health ● OSHA. Worker safety. https://www.osha.gov/workers/ ● Institute of Healthcare Improvement website (http://www.ihi.org/Pages/default.aspx) which includes multiple choice tests, reflective writing samples, and more ● AHRQ website https://www.ahrq.gov/ ● IASSC Lean-Six Sigma certification http://www.iassc.org

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, and to adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	**Examples**
Level 1 *Demonstrates knowledge of care coordination* *Identifies key elements for safe and effective transitions of care and hand-offs*	● For a patient with persistent low back pain, identifies need for referral process to physical therapist ● Identifies a physical therapist to treat patient and communicates work restrictions if needed
Level 2 *Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams* *Performs safe and effective transitions of care/hand-offs in routine clinical situations*	● For a patient with lumbar radiculopathy with weakness, identifies magnetic resonance facility and appropriate specialist such as neurosurgeon ● Facilitates the referral process for magnetic resonance imaging (MRI) scan and specialist as needed
Level 3 *Coordinates care of patients in complex clinical situations effectively using the roles of their interprofessional teams* *Performs safe and effective transitions of care/hand-offs in complex clinical situations*	● Works with a surgeon, physical therapist, case manager, and employer to facilitate gradual return to regular duty in a post-operative low back surgery patient ● Arranges emergency department transfer or hospital admission for a patient with signs of spinal cord impingement such as urinary incontinence, lower extremity weakness, and saddle anesthesia
Level 4 *Role models effective coordination of patient-centered care among different disciplines and specialties* *Role models and advocates for safe and effective transitions of care/hand-offs*	● Effectively role models care of musculoskeletal injuries to other residents or medical students to optimize medical treatment and return to work ● Prior to going on vacation, proactively informs the covering occupational medicine resident about a plan of care for continuing to wean opioids in a pain patient
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*	● Develops a protocol to assess and ensure compliance with the OSHA bloodborne pathogen standard or other OSHA standard for a group of health care workers (actual or simulated) ● Perform a quality improvement project to optimize your clinic's return to work program for low back cases
Assessment Models or Tools	● Direct observation

	● Medical record (chart) audit ● Multisource feedback ● Objective structured clinical examination (OSCE) ● Quality metrics and goals mined from EHR ● Review of sign-out tools, use and review of checklists
Curriculum Mapping	●
Notes or Resources	● Kaplan KJ. In pursuit of patient-centered care. March 2016. http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns ● LaDou J, Harrison RJ. Disability management and prevention in: *CURRENT Diagnosis & Treatment: Occupational & Environmental Medicine.* 5th ed. New York, NY: McGraw-Hill Education; 2014. p. 51-61. ● OSHA. Medical screening and surveillance requirements in OSHA standards: a guide. 2014 https://www.osha.gov/Publications/osha3162.pdf. ● ACOEM practice guidelines https://acoem.org/Practice-Resources/Practice-Guidelines-Center

Systems-Based Practice 3: Population Health **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 population and community health needs and disparities*	● Identifies that non-English-speaking or contract workers may have different needs than English-speaking workers or employees
Level 2 *Identifies specific population and community health needs and inequities for their local population*	● Identifies need for translation services for non-English-speaking workers ● Identifies that lack of health insurance may delay treatment for underlying medical conditions such as diabetes, hypertension or non-work-related musculoskeletal pain
Level 3 *Uses local resources effectively to meet the needs of a patient population and community*	● Refers patients to a local pharmacy which provides a sliding fee scale option or to clinics that provide free or discounted care
Level 4 *Participates in changing and adapting practice to provide for the needs of specific populations*	● Assists in designing patient educational materials for non-English speakers or varying literacy levels ● Assists with implementation of workplace safety protocols in the context of small business, rural work settings, and similar vulnerable work populations that may lack access to traditional occupational safety and health services
Level 5 *Leads innovations and advocates for populations and communities with health care inequities*	● Leads development of telehealth services for migrant workers with limited access to care
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Multisource feedback ● OSCE ● Quality metrics and goals mined from EHR ● Review of sign-out tools, use and review of checklists
Curriculum Mapping	●
Notes or Resources	● CDC. Population Health Training in Place Program (PH-TIPP) https://www.cdc.gov/pophealthtraining/whatis.html ● Kaplan KJ. In pursuit of patient-centered care. March 2016. http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns ● Skochelak SE, Hawkins RE, Lawson LE, etc. al; *AMA Education Consortium: Health Systems Science*. Elsevier. 2016. ● MedScape. Setting up a telemedicine program in your practice. https://www.medscape.com/courses/section/921364

Systems-Based Practice 4: 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 *Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology)*	● Articulates major differences among the roles of medical, nursing, safety, industrial hygiene, and human resources
Describes basic health payment systems, (e.g., employer, government, private, public, uninsured care) and practice models	● Understands that workplace injury is largely managed under a different insurance model
Identifies basic knowledge domains for effective transition to practice (e.g., information technology, legal, billing and coding, financial, personnel)	● Identifies required reporting mechanisms related to workplace injury (e.g., first report of injury form)
Level 2 *Describes how components of a complex health care system are interrelated, and how this impacts patient care*	● Explains the interplay between worker's compensation insurance adjustor, occupational physician, and other physician specialists in the care of a patient with a work-related injury
Delivers care with consideration of each patient's payment model (e.g., insurance type)	● Distinguishes between client-based billing (e.g., performance of a DOT exam) versus evaluation and management coding (e.g., Workers' Compensation Program injury management)
Describes core administrative knowledge needed for transition to practice (e.g., contract negotiations, malpractice insurance, government regulation, compliance)	● Recognizes that various government entities regulate safety and health in work settings
Level 3 *Discusses how individual practice affects the broader system*	● Ensures that a patient with a work-related injury has a determination of fitness for duty or work restriction prior to return to duty and communicates with worker and supervisor
Engages with patients in shared decision making, informed by each patient's payment models	● Discusses job requirements and essential functions with a patient prior to finalizing a duty determination

Demonstrates use of information technology required for medical practice (e.g., electronic health record, documentation required for billing and coding)	● Understands scope and use of available EHR as well as coding system in occupational medicine practice
Level 4 *Manages various components of the complex health care system to provide efficient and effective patient care and transition of care* *Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model* *Analyzes practice patterns and professional requirements in preparation for practice*	● Ensures proper documentation for effective interaction with the workers' compensation system (e.g., application of ODG, ACOEM guidelines, modified duty assignment) and applicable documentation, such as permanent return-to-work restrictions or need for future medical care ● Works collaboratively to improve worker assistance resources for a worker with a work-related injury ● Monitors types of exams performed (e.g., return to work, FMCSA, surveillance, pre-placement)
Level 5 *Advocates for or leads systems change that enhances high-value, efficient, and effective patient care and transition of care* *Participates in health policy advocacy activities* *Educates others to prepare them for transition to practice*	● Implements workplace well-being program to affect system culture change and improve worker health ● Works to advocate for no smoking policies in work settings ● Guides employers for implementation of occupational safety and health practices in their business setting
Assessment Models or Tools	● Direct observation ● Medical record (chart) audit ● Patient satisfaction data
Curriculum Mapping	●
Notes or Resources	● ACOEM Practice Guidelines https://acoem.org/Practice-Resources/Practice-Guidelines-Center ● ODG https://www.mcg.com/odg/ ● OSHA https://www.osha.gov/ ● NIOSH https://www.cdc.gov/niosh/index.htm ● Reed P. *The Medical Disability Advisor: Workplace Guidelines for Disability Duration.* 5th ed. Westminster, CO: Reed Group Ltd; 2006. ● FMCSA https://www.fmcsa.dot.gov/

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice **Overall Intent:** To incorporate evidence and patient 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 evidence-based guidelines for management plans and return to work (e.g., ODG, ACOEM guidelines)
Level 2 *Articulates clinical questions and considers patient preferences and values in order to guide evidence-based care*	● In a patient with nonspecific low back pain, identifies and discusses potential evidence-based treatment options, and solicits patient perspective
Level 3 *Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients*	● Obtains, discusses, and applies evidence for the treatment of a patient with nonspecific low back pain and co-existing diabetes and hypertension ● Understands and uses clinical practice guidelines in making patient care decisions while eliciting patient preferences
Level 4 *Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient*	● Accesses the primary literature to identify alternative treatments for nonspecific low back pain
Level 5 *Coaches others to critically appraise and apply evidence for complex patients; and/or participates in the development of guidelines*	● Leads clinical teaching on application of best practices in critical appraisal of return to work criteria for lumbar or shoulder sprain ● As part of a team, develops bloodborne pathogens exposure protocol that meets OSHA standard requirements for the emergency department and/or for the occupational medicine clinic
Assessment Models or Tools	● Direct observation ● Oral or written examinations ● Presentation evaluation ● Discussion with feedback
Curriculum Mapping	●
Notes or Resources	● ODG Guidelines https://www.mcg.com/odg/ ● ACOEM Guidelines https://acoem.org/Practice-Resources/Practice-Guidelines-Center ● U.S. National Library of Medicine. PubMed Tu Lineout Error https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html

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* *Identifies the factors which contribute to gap(s) between expectations and actual performance* *Actively seeks opportunities to improve*	● Sets a personal practice goal of documenting use of evidence-based guidelines in patient management plans ● Identifies gaps in knowledge of medical surveillance requirements and OSHA standards ● Asks for feedback from patients, families, and patient-care team members
Level 2 *Demonstrates openness to performance data (feedback and other input) in order to inform goals* *Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance* *Designs and implements a learning plan, with prompting*	● Integrates feedback to adjust the use of evidence-based guidelines in selecting physical modalities in the management of nonspecific low back pain ● Assesses time management skills and how they impact timely completion of clinic notes and literature reviews ● When prompted, develops individual education plan to improve evaluation of atraumatic shoulder pain
Level 3 *Seeks performance data episodically, with adaptability, and humility* *Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance* *Independently creates and implements a learning plan*	● Does a chart audit to determine the percent of patients for whom evidence-based guidelines were used in planning patient management and return to work ● Completes a comprehensive literature review prior to a complex patient encounter ● Using web-based resources, creates a personal curriculum to improve evaluations of workplace head injuries
Level 4 *Intentionally seeks performance data consistently with adaptability, and humility* *Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance*	● Completes a quarterly chart audit to evaluate consistency of use of evidence-based guidelines and literature review in patient management and return to work plans ● After patient encounter, debriefs with the attending and other patient care team members to optimize future collaboration in the care of the patient

Uses performance data to measure the effectiveness of the learning plan and when necessary, improves it	● Performs a chart audit on personal documentation of their evaluation of workplace head injuries
Level 5 *Role models consistently seeking performance date with adaptability and humility* *Coaches others on reflective practice* *Facilitates the design and implementing learning plans for others*	● Models practice improvement and adaptability ● Develops educational module for collaboration with other patient care team members ● Assists junior residents in developing their individualized learning plans
Assessment Models or Tools	● Direct observation ● Review of learning plan
Curriculum Mapping	●
Notes or Resources	● Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. *Acad Med.* 2009 Aug;84(8):1066-74. *Contains a validated questionnaire about physician lifelong learning.* ● Burke AE, Benson B, Englander R, Carraccio C, Hicks PJ. Domain of competence: practice-based learning and improvement. *Acad Pediatr.* 2014;14: S38-S54. ● 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. *Acad Med.* 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**
Level 1 *Identifies and describes potential triggers for professionalism lapses*	● Understands that fatigue can cause a lapse in medical judgment and professionalism
Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers	● Identifies appropriate supervisor for reporting tardiness to clinic sessions
Demonstrates knowledge of the ethical principles underlying professional practice	● Articulates how the principle of "do no harm" applies to a patient who may not need a joint injection even though the learning opportunity exists
Level 2 *Demonstrates insight into professional behavior in routine situations*	● Respectfully approaches a resident who is late to clinic about the importance of being on time
Takes responsibility for own professionalism lapses	● Understands that being late to clinic has an adverse effect on patient care and professional relationships and is receptive to feedback
Analyzes straightforward situations using ethical principles	● Discusses the pros and cons of medical imaging with a patient in a clinical scenario such as low back pain without red flags or radicular symptoms
Level 3 *Demonstrates professional behavior in complex or stressful situations*	● Appropriately responds to distraught family members in situations where there are complex social and financial issues due to work-related injury
Recognizes need to seek help in managing and resolving complex ethical situations	● After noticing a colleague's inappropriate social media post, reviews policies related to posting of content and seeks guidance
Analyzes complex situations using ethical principles	● Offers treatment options for a patient, free of bias, while recognizing own limitations, and recognizing the patient's autonomy, e.g., choice of chiropractor referral versus physical therapy or the patient's choice to independently seek alternative therapy such as acupuncture or herbal medications
Level 4 *Recognizes situations that may trigger professionalism lapses and intervenes to prevent lapses in self and others*	● 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 utilizes appropriate resources for managing and resolving ethical dilemmas as	● Recognizes and uses ethics consults, literature, risk-management/legal counsel in order to resolve ethical dilemmas regarding preplacement, fitness for duty, or work-related injury

needed (e.g., ethics consultations, literature review, risk management/legal consultation)	
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*	● Creates a performance improvement plan to prevent recurrence of lapses in behavior and professional performance and discusses the plan with supervisors during quarterly evaluations including updates on progress ● Engages stakeholders to address excessive wait times in the occupational medicine clinic to decrease patient and provider frustrations that lead to unprofessional behavior
Assessment Models or Tools	● Direct observation ● Global evaluation ● Multisource feedback ● Oral or written self-reflection ● Simulation
Curriculum Mapping	●
Notes or Resources	● American Medical Association Code of 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. *Ann Intern Med*. 2002;136:243-246. http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millenium-A-Physician-Charter.pdf ● Byyny RL, Papadakis MA, Paauw DS. Medical Professionalism Best Practices. Alpha Omega Alpha Medical Society, Menlo Park, CA. 2015. https://alphaomegaalpha.org/pdfs/2015MedicalProfessionalism.pdf ● Levinson W, Ginsburg S, Hafferty FW, Lucey CR. *Understanding Medical Professionalism*. 1st ed. McGraw-Hill Education; 2014. ● Domen RE, Johnson K, Conran RM, et al. Professionalism in pathology: a case-based approach as a potential education tool. *Arch Pathol Lab Med.* 2017; 141:215-219. doi: 10.5858/arpa.2016-2017-CP ● Byyny RL, Papadakis mA, Paauw DS. Medical professionalism: best practices. 2015. ISBN: 978-0-578-16072-6 ● Bynny RL, Paauw DS, Papadakis MA, Pfeil S. Medical professionalism. Best practices: professionalism in the modern era. 2017. ISBN: 978-1-5323-6516-4

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*	● Responds promptly to reminders from program administrator to complete work hour logs ● Attends conferences in a timely manner ● Completes end-of-rotation evaluations
Level 2 *Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations*	● Completes administrative tasks, documents completion of required training and patient safety modules by specified due date ● Anticipates potential barriers and deadlines and completes clinical and academic tasks in a timely manner
Level 3 *Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations*	● Notifies faculty member, attending, and/or program director/program coordinator of multiple competing demands and asks for assistance as needed ● In preparation for absences from program site, completes tasks and coordinates coverage as necessary
Level 4 *Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner*	● Assesses programmatic gaps that affect learning and plans accordingly to recommend modifications (e.g., lack of timely completion of labs or studies) ● Takes responsibility for identifying required projects and planning for their completion
Level 5 *Proactively develops and implements strategies to ensure that the needs of patients, teams, and systems are met*	● Recommends preemptive solutions for identified gaps in learning (e.g., develops a patient flow diagram to improve care efficiency and stakeholder interaction)
Assessment Models or Tools	● Compliance with deadlines and timelines ● Direct observation ● Global evaluations ● Multisource feedback ● Self-evaluations and reflective tools ● Simulation
Curriculum Mapping	●
Notes or Resources	● ACOEM Code of Ethics https://acoem.org/about-ACOEM/Governance/Code-of-Ethics ● Institutional Handbook of Operating Procedures ● ACGME Common Program Requirements https://www.acgme.org/What-We-Do/Accreditation/Common-Program-Requirements

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 the importance of addressing personal and professional well-being*	● Acknowledges own response to patient's expressed anger towards the provider on failing to qualify during a fitness for duty examination
Level 2 *Lists available resources for personal and professional well-being* *Describes institutional resources that are meant to promote well-being*	● Independently identifies and communicates impact of an adverse outcome to a fitness for duty examination that affects an employee's employment ● Demonstrates awareness of employee assistance programs (EAPs), academic resources, resident forum meetings, and other institutional resources available to promote well-being and success
Level 3 *With assistance, proposes a plan to promote personal and professional well-being* *Recognizes which institutional factors affect well-being*	● With the multidisciplinary team, develops a reflective response to deal with personal impact of difficult patient encounters and disclosures ● Integrates feedback from the multidisciplinary team to develop a plan for identifying and responding to cues of emotion and body language during the next team meeting dedicated to formulating a return to work plan for a complex patient
Level 4 *Implements a plan to promote personal and professional well-being* *Describes institutional factors that positively and/or negatively affect well-being*	● Independently identifies ways to manage personal stress ● Self-assesses and seeks additional feedback on skills responding to cues of emotion and body language during a meeting dedicated to promoting return to work of a complex patient
Level 5 *Creates institutional-level interventions that promote colleagues' well-being* *Describes institutional programs designed to examine systemic contributors to burnout*	● 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 high-stakes team meetings with complex patients
Assessment Models or Tools	● Direct observation ● Group interview or discussions for team activities ● Individual interview ● Institutional online training modules ● Self-assessment and personal learning plan
Curriculum Mapping	●
Notes or Resources	● Local resources, including Employee Assistance, Resident Forum, academic tutoring and other resources

	● Hicks PJ, Schumacher D, Guralnick S, Carraccio C, Burke AE. Domain of competence: personal and professional development. *Acad Pediatr*. 2014 Mar-Apr;14(2 Suppl):S80-97. ● ACGME Tools and Resources on Physician Well-Being https://www.acgme.org/What-We-Do/Initiatives/Physician-Well-Being/Resources

Interpersonal and Communication Skills 1: Patient and Family-Centered 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**
Level 1 *Uses language and nonverbal behavior to demonstrate respect and establish rapport*	● Introduces self and faculty member, identifies patient and others in the room, and engages all parties in healthcare discussion
Identifies common barriers to effective communication (e.g., language, disability)	● Identifies need for trained interpreter with non-English-speaking patients
Identifies the need to adjust communication strategies based on assessment of patient/family expectations and understanding of their health status and treatment options	● Uses clear language with awareness of a patient's familiarity with English when discussing risks and management plan after a workplace blood-borne pathogen exposure
Level 2 *Establishes a therapeutic relationship in straightforward encounters using active listening and clear language*	● Avoids medical jargon and restates patient perspective when discussing importance of activity in recovery from nonspecific low back pain
Identifies complex barriers to effective communication (e.g., health literacy, cultural)	● Recognizes the need for handouts with diagrams and pictures to communicate information to a patient who is unable to read
Organizes and initiates communication with patient/family by introducing stakeholders, setting the agenda, clarifying expectations and verifying understanding of the clinical situation	● Prioritizes and sets agenda at the beginning of the appointment for a new patient with acute on chronic back pain
Level 3 *Establishes a therapeutic relationship in challenging patient encounters*	● Acknowledges patient's request for an MRI for new onset back pain without red flags and arranges timely follow-up visit to align diagnostic plan with goals of care
When prompted, reflects on personal biases while attempting to minimize communication barriers	● In a discussion with the faculty member, acknowledges discomfort in caring for a patient with non-specific low back pain who declines active participation in management plan
With guidance, sensitively and compassionately delivers medical information, elicits patient/family values, goals and preferences, and acknowledges uncertainty and conflict	● Conducts a meeting of all team members to determine a plan for transitional return to work in a complex patient with elevated risk of prolonged recovery

Level 4 *Easily establishes therapeutic relationships, with attention to patient/family concerns and context, regardless of complexity*	● Continues to engage all team members with attention to patient concerns in the context of workplace injury with comorbidities or delays in recovery that complicate return to work
Independently recognizes personal biases while attempting to proactively minimize communication barriers	● Reflects on personal bias related to disability of the resident's family member secondary to chronic nonspecific low back pain and solicits input from faculty about mitigation of communication barriers when counseling patients around need for active participation in chronic pain management
Independently, uses shared decision making to align patient/family values, goals, and preferences with treatment options to make a personalized care plan	● Uses patient and family input to engage in rehabilitation program and develop a plan for transitional return to work after significant workplace injury, aligned with the patient's values
Level 5 *Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships*	● Leads a discussion group on personal experience of moral distress
Role models self-awareness while identifying a contextual approach to minimize communication barriers	● Develops a residency curriculum on workplace injury prevention and care for underserved populations which addresses unconscious bias
Role models shared decision making in patient/family communication including those with a high degree of uncertainty/conflict	● Serves on a hospital bioethics committee
Assessment Models or Tools	● Direct observation ● Kalamazoo Essential Elements Communication Checklist (Adapted) ● OSCE ● Self-assessment including self-reflection exercises ● Skills needed to Set the state, Elicit information, Give information, Understand the patient, and End the encounter (SEGUE) ● Standardized patients
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. ● Makoul G. Essential elements of communication in medical encounters: The Kalamazoo consensus statement. *Acad Med*. 2001;76:390-393.

	● Makoul G. The SEGUE Framework for teaching and assessing communication skills. *Patient Educ Couns*. 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. *BMC Med Educ*. 2009; 9:1.

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 *Respectfully requests a consultation*	● Communicates effectively with other members in the health care team for example when speaking with colleagues to request an orthopaedic evaluation
Respectfully receives a consultation request	● Responds appropriately and in a timely manner to an occupational medicine consult request
Uses language that values all members of the team	● Acknowledges the contribution of each member of the patient care team
Level 2 *Clearly and concisely requests a consultation*	● Communicates diagnostic evaluation recommendations clearly and concisely in an organized and timely manner
Clearly and concisely responds to a consultation request	
Communicates information effectively with all team members	● Sends a message in the EHR to a consultant physician asking about next steps and directions in patient management for a mutual patient if the patient has been seen by the pain specialists
Solicits feedback on performance as a member of the team	
Level 3 *Checks own understanding of consultant recommendations*	● After a consultation has been completed, communicates with other members of the care team to verify they have received and understand the recommendations
Checks understanding of recommendations when providing consultation	● When receiving treatment recommendations from an attending physician, repeats back the plan to ensure understanding
Uses active listening to adapt communication style to fit team needs	● Able to actively listen and adapt communication modalities as needed to effectively communicate with members of the team
Communicates concerns and provides feedback to peers and learners	● Able to respectfully and appropriately interact with all members of the health care delivery team including providing feedback to both peers and learners
Level 4 *Coordinates recommendations from different members of the team to optimize patient care*	● Presents at pulmonary case rounds on a possible occupational pulmonary toxicant exposure

Facilitates regular team-based feedback in complex situations	● Demonstrates receptivity to questions and solicits opportunities for improvement in oneself
Level 5 *Role models flexible communication strategies that value input from all team members, resolving conflict when needed* *Communicates feedback and constructive criticism to superiors*	● Mediates a conflict resolution between different members of the health care team ● Able to respectfully identify opportunities for improvement in team communication and peers and communicate in a respectful manner
Assessment Models or Tools	● Direct observation ● Global assessment ● Medical record (chart) audit ● Multisource feedback ● Simulation
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 Jul 21:1-4. doi: 10.1080/0142159X.2018.1481499. [Epub ahead of print] ● Green M, Parrott T, Cook G., Improving your communication skills. BMJ 2012;344:e357 doi: https://doi.org/10.1136/bmj.e357 ● 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 May; 35(5):395-403. doi: 10.3109/0142159X.2013.769677. ● François, J. Tool to assess the quality of consultation and referral request letters in family medicine. Can Fam Physician. 2011 May;57(5), 574–575. ● Fay D, Mazzone M, Douglas L, Ambuel B. A validated, behavior-based evaluation instrument for family medicine residents. MedEdPORTAL Publications. 2007 May; 10.15766/mep_2374-8265.622 ● Dehon E, Simpson K, Fowler D, Jones A. Development of the faculty 360. MedEdPORTAL. 2015;11:10174 http://doi.org/10.15766/mep_2374-8265.10174 ● Lane JL, Gottlieb RP. Pediatrics.2000;105:973-7. Makoul GT. SEGUE. ©1993/1999 ● Braddock CH, Edwards KA, Hasenberg NM, Laidley TL, Levinson W. JAMA 1999;282:2313-2320

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 patient record*	● Documentation is accurate but may include extraneous information
Safeguards patient personal health information	● Shreds patient list after rounds; avoids talking about patients in public spaces
Communicates through appropriate channels as required by institutional policy (e.g., patient safety reports, cell phone/pager usage)	● Identifies institutional and departmental communication hierarchy for concerns and safety issues
Level 2 *Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record*	● Organized and accurate documentation outlines clinical reasoning that supports the treatment plan
Documents required data in formats specified by institutional policy	● Develops documentation templates for the inpatient rotation
Respectfully communicates concerns about the system	● Recognizes that a communication breakdown has happened and respectfully brings the breakdown to the attention of the chief resident or faculty member
Level 3 *Concisely reports diagnostic and therapeutic reasoning in the patient record*	● Complex clinical thinking is documented concisely but may not contain anticipatory guidance
Appropriately selects direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context	● Follows up promptly on critical test results and when levels of a toxicant such as lead or an infectious agent must be reported to the state and/or local public health department
Uses appropriate channels to offer clear and constructive suggestions to improve the system	● Knows where to direct concerns in the workplace locally, departmentally, or institutionally and when to escalate
Level 4 *Communicates clearly, concisely, timely, and in an organized written form, including anticipatory guidance*	● Documentation is consistently accurate, organized, and concise, and frequently incorporates anticipatory guidance

Achieves written or verbal communication (e.g., patient notes, email) that serves as an example for others to follow *Initiates difficult conversations with appropriate stakeholders to improve the system*	● Notes are exemplary and used as a teaching tool example ● Talks directly to an emergency room physician about breakdowns in communication in order to prevent recurrence
Level 5 *Guides departmental or institutional policies and procedures around communication* *Facilitates dialogue regarding systems issues among larger community stakeholders (institution, health care system, or field)*	● Leads a task force established by the hospital QI committee to develop a plan to improve house staff hand-offs ● Meaningfully participates in an emergency preparedness exercise or incident command center activities
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 Oct-Dec;29(4):420-432. ● Starmer, Amy J., et al. I-pass, a mnemonic to standardize verbal handoffs. *Pediatrics*. 2012;129.2:201-204. ● Haig, K.M., Sutton, S., Whittington, J. SBAR: a shares mental model for improving communications between clinicians. *Jt Comm J Qual Patient Saf.* 2006 Mar;32(3):167-75.

In an effort to aid programs in the transition to using the new version of the Milestones, the original Milestones 1.0 have been mapped to the new Milestones 2.0. Also indicated below are 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: Toxicology	PC5: Toxicology
PC2: Industrial Hygiene, Safety and Ergonomics and Risk/Hazard Control, and Communication	PC1: History and Physical Examination PC2: Clinical Assessment and Management MK1: Hazard Recognition and Management
PC3: Emergency Preparedness and Response	MK1: Hazard Recognition and Management
PC4: Community Health	PC3: Worker Health, Well-Being, and Performance Optimization SBP3: Population Health
PC5: Inform and Educate	ICS1: Patient- and Family-Centered Communication ICS3: Communication within Health Care Systems
PC6: Policies and Plans	SBP3: Population Health
PC7: Evaluating Health Services	SBP3: Population Health
PC8: Clinical Occupational and Environmental Medicine	PC1: History and Physical Examination PC2: Clinical Assessment and Management PC4: Fitness for Work
PC9: Occupational and Environmental Medicine Related Law and Regulations	MK3: Regulatory
PC10: Work Fitness and Disability Integration	PC1: History and Physical Examination PC2: Clinical Assessment and Management PC3: Worker Health, Well-Being, and Performance Optimization PC4: Fitness for Work
PC11: Health and Productivity	PC3: Worker Health, Well-Being, and Performance Optimization
PC12: Public Health, Surveillance, and Disease Prevention	PC6: Surveillance
PC13: OEM Related Management and Administration	SBP3: Population Health
PC14: Ethics	PROF1: Professional Behavior and Ethical Principles
MK1: Behavioral Health	PC3: Worker Health, Well-Being, and Performance Optimization
MK2: Environmental Health	PC1: History and Physical Examination PC2: Clinical Assessment and Management PC5: Toxicology MK3: Regulatory

MK3: Biostatistics	MK2: Biostatics and Epidemiology
MK4: Epidemiology	MK2: Biostatics and Epidemiology
SBP1: Work and coordinate patient care effectively in various health care delivery settings and systems	SBP2: System Navigation for Patient-Centered Care
SBP2: Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care, as appropriate	SBP2: System Navigation for Patient-Centered Care SBP3: Population Health SBP4: Physician Role in the Health Care Systems
SBP3: Work in inter-professional teams to enhance patient safety and improve patient care quality; advocate for quality patient care and optimal patient care systems; participate in identifying system errors and implementing potential systems solutions	SBP1: Patient Safety and Quality Improvement SBP2: System Navigation for Patient-Centered Care ICS2: Interprofessional and Team Communication
PBLI1: Identify strengths, deficiencies, and limits in one's knowledge and expertise; set learning and improvement goals and identify and perform appropriate learning activities utilizing information technology, evidence from scientific studies, and evaluation feedback; systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement	PBLI1: Evidence-Based and Informed Practice PBLI2: Reflective Practice and Commitment to Personal Growth
PROF1: Compassion, integrity, and respect for others as well as sensitivity and responsiveness to diverse patient populations including diversity in gender, age, culture, race, religion, disabilities, and sexual orientation; knowledge about, respect for and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice	PROF1: Professional Behavior and Ethical Principles PROF2: Accountability/Conscientiousness PROF3: Self-Awareness and Help-Seeking ICS1: Patient- and Family-Centered Communication
PROF2: Accountability to patients, society and the profession	PROF2: Accountability/Conscientiousness
ICS1: Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds; communicate effectively with physicians, other health care professionals and health related agencies; work effectively as a member or leader of a health care team or other professional	ICS1: Patient- and Family-Centered Communication ICS2: Interprofessional and Team Communication

group; act in a consultative role to other physicians and health professionals	
ICS2: Maintain comprehensive, timely and legible medical records, including electronic health records	PROF2: Accountability/Conscientiousness ICS3: Communication within Health Care Systems

Available Milestones Resources

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

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

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