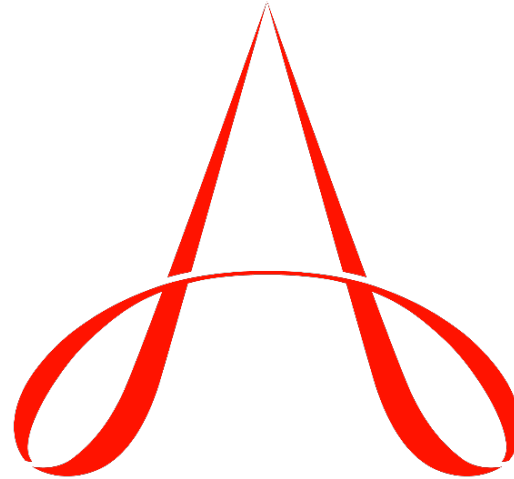




Supplemental Guide: Rheumatology



ACGME

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Milestones Supplemental Guide

This document provides additional guidance and examples for the Rheumatology 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: Gathers an Essential and Accurate Patient History	
Overall Intent: To gather an essential and accurate patient history as relates to a comprehensive evaluation of rheumatic conditions	
Milestones	Examples
Level 1 <i>Acquires a basic rheumatic history</i> <i>Reviews available medical records</i>	<ul style="list-style-type: none"> ● In a patient referred for knee pain, inquires about symptoms of the back, hips, contralateral knee, and ankles/feet ● Reads available notes from the referring provider and any documentation completed by the patient pre-visit, confirming information with the patient and correcting discrepancies
Level 2 <i>Integrates a rheumatic history with a comprehensive medical history, including functional aspects</i> <i>Identifies relevant findings in the medical record</i>	<ul style="list-style-type: none"> ● Recognizes the diagnostic importance of long-standing gastroesophageal reflux disease (GERD) and new exertional dyspnea in a patient referred for symptoms consistent with Raynaud’s phenomenon ● During hospital consultation, extracts pertinent historical information from all primary and consultative notes, and reviews their accuracy with the patient
Level 3 <i>Acquires a tailored comprehensive rheumatic history, including historical subtleties and psychosocial aspects</i> <i>Independently requests additional information to supplement available medical records</i>	<ul style="list-style-type: none"> ● In a patient taking hydroxychloroquine, reviews records to determine whether the screening ocular exam included optical coherence tomography (OCT) testing ● Contacts the referral lab at an outside institution to request anti-neutrophil cytoplasmic antibodies (ANCA) test results that were pending at the time of hospital discharge
Level 4 <i>Integrates the current patient history with the complete medical record, supplemental information, and disease activity measures</i>	<ul style="list-style-type: none"> ● Acquires a comprehensive history on a patient with systemic lupus erythematosus (SLE) and depression that addresses potential disease-, pharmacologic-, and psychosocial-related causes, and their effects on home and work life
Level 5 <i>Identified as a role model in interpreting subtleties and resolving ambiguities in the patient history</i>	<ul style="list-style-type: none"> ● Recommended for an evaluator position in a medical student objective structured clinical examination (OSCE) station assessing the ability to acquire a focused patient history
Assessment Models or Tools	<ul style="list-style-type: none"> ● Direct observation ● Faculty member evaluations ● Medical record (chart) audit ● Multisource feedback ● Rheumatology OSCE ● Simulation
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● Textbooks

- American College of Rheumatology. Patient History Form. <https://www.rheumatology.org/Portals/0/Files/New%20Patient%20History%20Form.pdf>. 2019.
- ACR. Patient History Update. <https://www.rheumatology.org/Portals/0/Files/Patient%20History%20Update%20Form.pdf>. 2019.
- ACR. Disease Activity and Functional Status Assessments. <https://www.rheumatology.org/Practice-Quality/Clinical-Support/Quality-Measurement/Disease-Activity-Functional-Status-Assessments>. 2019.
- Guidelines for the initial evaluation of the adult patient with acute musculoskeletal symptoms. American College of Rheumatology Ad Hoc Committee on Clinical Guidelines. *Arthritis Rheum*. 1996;39(1):1-8. <https://www.ncbi.nlm.nih.gov/pubmed/8546717>. 2019.
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- Criscione-Schreiber LG. Turning objective structured clinical examinations into reality. *Rheumatic Dis Clin North Am*. 2020;46(1):21-35. <https://www.ncbi.nlm.nih.gov/pubmed/31757285>. 2019.

Patient Care 2: Physical Examination	
Overall Intent: To perform a relevant detailed physical exam pertinent to the patient presentation	
Milestones	Examples
<p>Level 1 <i>Identifies the elements of a comprehensive physical examination</i></p> <p><i>Identifies the elements of a musculoskeletal examination</i></p>	<ul style="list-style-type: none"> ● Recognizes the need to do a skin exam for a patient with psoriatic arthritis including the need to evaluate the nails ● Describes the need to examine the small joints of the hands and feet, including the distal interphalangeal (DIP) joints, the sacroiliac joints, as well as the other joints in a comprehensive musculoskeletal examination
<p>Level 2 <i>Performs all elements of a comprehensive physical examination</i></p> <p><i>Performs all elements of a musculoskeletal examination</i></p>	<ul style="list-style-type: none"> ● Identifies ankle edema and heart murmur in a patient with lupus ● Identifies psoriasis in the gluteal cleft of a patient presenting with joint pain ● Performs a tender and swollen joint count in a patient with psoriatic arthritis
<p>Level 3 <i>Performs a tailored comprehensive physical examination including advanced techniques, when applicable</i></p> <p><i>Performs a tailored comprehensive musculoskeletal examination including advanced techniques, when applicable</i></p>	<ul style="list-style-type: none"> ● Performs a general exam for a patient with scleroderma that includes nailfold capillaroscopy ● Palpates for tendon friction rubs in a patient with scleroderma ● Performs provocative testing to detect shoulder impingement
<p>Level 4 <i>Performs a tailored comprehensive physical examination that elicits subtle findings</i></p> <p><i>Performs a tailored comprehensive musculoskeletal examination that elicits subtle findings</i></p>	<ul style="list-style-type: none"> ● Identifies periungual erythema on physical exam in a patient presenting with muscle weakness ● Identifies joint hypermobility on musculoskeletal exam in a patient who presents with diffuse pain ● Performs a shoulder exam to differentiate acromioclavicular arthritis from rotator cuff pathology
<p>Level 5 <i>Identified as a role model for performing and interpreting a comprehensive, accurate physical and musculoskeletal examination</i></p>	<ul style="list-style-type: none"> ● Is identified by the program director to lead a medical student musculoskeletal exam workshop
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Faculty member evaluations ● Medical record (chart) audit ● OSCE ● Simulation

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Curriculum Mapping	●
Notes or Resources	<ul style="list-style-type: none">● Textbooks● Online resources● Workshops● Standardized outcome measures (e.g., tender and swollen joint counts, modified Rodnan skin score)● Villasenor-Ovies P, navarro E, Canoso J. The rheumatology physical examination: making clinical anatomy relevant. <i>Clin Rheumatol</i>. 2019. https://www.ncbi.nlm.nih.gov/pubmed/31446539. 2019.

Patient Care 3: Comprehensive Management Plan Development Overall Intent: To develop and implement comprehensive management plans for patients with rheumatic conditions	
Milestones	Examples
<p>Level 1 <i>With supervision, formulates a differential diagnosis for a patient</i></p> <p><i>Demonstrates an awareness of disease activity measures</i></p> <p><i>With supervision, develops a management plan</i></p>	<ul style="list-style-type: none"> ● Recognizes rheumatoid arthritis and gout as potential causes of polyarthritis, and with prompting, identifies infectious and other potential autoimmune diseases ● Recognizes the need to have the patient grade the current level of pain on a 1-10 scale ● Recommends colchicine for a patient with acute crystal-proven gout, and with prompting adjusts the dose based on renal function
<p>Level 2 <i>Independently formulates a broad differential diagnosis for typical disease presentations</i></p> <p><i>Identifies applicable disease activity measures</i></p> <p><i>Independently develops a management plan for a patient with common disease presentations</i></p>	<ul style="list-style-type: none"> ● Recognizes autoimmune, infectious, and crystalline causes of inflammatory arthritis and the pattern of joint involvement seen in these conditions ● Identifies the routine assessment of patient index data 3 (RAPID3) as a disease activity measure ● Identifies laboratory studies important for diagnosis (rheumatoid factor, cyclic citrullinated peptides, uric acid, antinuclear antibodies) and management (complete blood count, comprehensive metabolic panel, hepatitis B and C testing, TB testing) of inflammatory arthritis
<p>Level 3 <i>Independently formulates a prioritized differential diagnosis for typical disease presentations</i></p> <p><i>Incorporates and interprets the results of disease activity measures</i></p> <p><i>Independently recognizes disease acuity, and with supervision, develops a prioritized management plan</i></p>	<ul style="list-style-type: none"> ● Recognizes chikungunya as a likely cause of inflammatory polyarthritis in a patient with recent travel to the Caribbean ● Collects RAPID3 scores and compares to prior assessments ● In a patient with acute monoarthritis, performs joint aspiration with cell count, crystal analysis, gram stain, bacterial culture, and discusses indications for empiric treatment with antibiotics
<p>Level 4 <i>Independently formulates a prioritized differential diagnosis with consideration of typical and atypical disease presentations</i></p>	<ul style="list-style-type: none"> ● Recognizes inflammatory arthritis as the presenting feature of anti-synthetase syndrome in a patient with Raynaud phenomenon and subtle findings of proximal weakness and bibasilar dry crackles

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<p><i>Independently develops and implements a prioritized management plan with consideration of acuity and complexity of disease presentation</i></p>	<ul style="list-style-type: none"> ● Prescribes biologic therapy to a patient with rheumatoid arthritis and high disease activity, and identifies relative contraindications to specific biologic treatments
<p>Level 5 <i>Independently formulates a prioritized differential diagnosis with consideration of newly recognized and emerging conditions</i></p> <p><i>Identified as an expert resource for management of a focused disease area</i></p>	<ul style="list-style-type: none"> ● Recognizes IgG4-related disease as a potential cause of parotitis in a patient without obvious features of Sjogren syndrome, sarcoidosis, or lymphoma ● Is identified by the program director to teach medical students and residents about the spectrum of disease presentations and potential therapies for patients with IgG4-related disease
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Faculty member evaluations ● Medical record (chart) audit ● OSCE ● Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Textbook ● ACR, EULAR Guidelines ● ACR. https://www.rheumatology.org/. 2019.

Patient Care 4: Therapeutics, including Immunomodulatory Agents	
Overall Intent: To develop and implement therapeutic plans, taking into consideration a patient’s comorbid conditions and risk for adverse events	
Milestones	Examples
Level 1 <i>Identifies indications and adverse effects of medications used to treat patients with common rheumatic conditions</i>	<ul style="list-style-type: none"> • Identifies that methotrexate can cause liver toxicity
Level 2 <i>Prescribes and monitors medications used in patients with common rheumatic conditions</i> <i>Evaluates for comorbidities that may alter therapeutic recommendations</i>	<ul style="list-style-type: none"> • Checks for liver enzyme abnormalities prior to starting methotrexate and repeats hepatic function tests while patient is taking methotrexate • Inquires about contraceptive use in women of reproductive age prior to starting and while taking methotrexate
Level 3 <i>Prescribes, monitors, and assesses the response to pharmacotherapy used in the management of patients with common rheumatic conditions</i> <i>Modifies treatment plans to address comorbidities, with supervision</i>	<ul style="list-style-type: none"> • Obtains hepatic function tests in patients taking methotrexate and escalates therapy when rheumatoid arthritis is not controlled based on disease activity measures • When deciding to use interleukin-6 (IL-6) inhibitors, recognizes the potential of lipid abnormalities and discusses this along with risks of cardiac disease in patients with rheumatoid arthritis
Level 4 <i>Integrates best available evidence to prescribe, monitor, and assess the response to pharmacotherapy used in the management of patients with common and complex rheumatic conditions</i> <i>Independently modifies treatment plans to address comorbidities</i>	<ul style="list-style-type: none"> • In a patient who failed mycophenolate mofetil for induction in lupus nephritis, decides to use cyclophosphamide, and addresses risks for infection, cytopenias, bladder toxicity, malignancy, and infertility with the patient • For a patient being treated with high-dose steroids, initiates bone protection strategies and pneumocystis jirovecii pneumonia (PJP) prophylaxis, when appropriate
Level 5 <i>Develops a clinical practice pathway for management of patients with rheumatic conditions</i>	<ul style="list-style-type: none"> • Develops a tool within the electronic health record (EHR) that calculates appropriate dosing of hydroxychloroquine and provides a reminder to inquire about ocular toxicity screening
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation at bedside • In-training exam or other formal assessments • Medical record (chart) audit • Multisource feedback • Simulation

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Curriculum Mapping	•
Notes or Resources	• Textbooks • Guidelines • Online resources

Patient Care 5: Procedures

Overall Intent: To recognize the indications, obtain consent, and perform procedures for patients with rheumatic conditions

Milestones	Examples
<p>Level 1 <i>Identifies indications for joint and soft tissue aspirations and injections, and discusses principles of informed consent</i></p>	<ul style="list-style-type: none"> ● In a patient with acute monoarthritis, recognizes the importance of joint aspiration for synovial fluid analysis and discusses the risks and benefits of the procedure with the patient, explaining the importance in differentiating a septic joint from crystalline arthritis
<p>Level 2 <i>Performs common joint and soft tissue injections and aspirations with direct supervision, including independently discussing risks and benefits, obtaining informed consent, identifying anatomic landmarks, and demonstrating aseptically technique</i></p> <p><i>Recognizes the role of musculoskeletal ultrasound in the diagnosis and treatment of patients with rheumatic conditions</i></p>	<ul style="list-style-type: none"> ● Under direct supervision, identifies anatomic landmarks and performs a wrist aspiration and injection after obtaining informed consent ● Recognizes the utility of musculoskeletal ultrasound to identify imaging features consistent with crystalline arthropathy
<p>Level 3 <i>Performs common joint and soft tissue aspirations and injections with indirect supervision</i></p> <p><i>Interprets the findings of musculoskeletal ultrasound for common conditions with supervision</i></p>	<ul style="list-style-type: none"> ● After presenting a patient to a faculty preceptor in clinic, performs a knee aspiration in a patient with a history of podagra and new knee effusion ● Interprets a double contour sign on a musculoskeletal ultrasound as suggestive of a diagnosis of gout in a patient with monoarthritis ● Interprets presence of doppler signal within the synovium as evidence of active synovitis
<p>Level 4 <i>Independently performs common joint and soft tissue aspirations and injections</i></p> <p><i>Independently interprets the findings of musculoskeletal ultrasound for common conditions, and recognizes the role of ultrasound in non-musculoskeletal rheumatic conditions</i></p>	<ul style="list-style-type: none"> ● Independently identifies the indications for and performs a knee aspiration for synovial fluid analysis ● Recognizes the role of ultrasound in evaluating a patient with left-sided temporal headache, jaw claudication, and scalp tenderness ● Independently differentiates the findings of prepatellar bursitis from knee effusion in a musculoskeletal ultrasound
<p>Level 5 <i>Independently performs complex joint and soft tissue aspirations or injections, including unusual sites, anatomic abnormalities, or incorporating imaging guidance</i></p>	<ul style="list-style-type: none"> ● Independently performs an aspiration of the acromioclavicular joint in a patient with leukemia who is neutropenic, and has fever and shoulder pain with swelling

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<p><i>Independently performs and interprets point-of-care diagnostic ultrasound and uses ultrasound to guide invasive procedures</i></p>	<ul style="list-style-type: none"> ● Independently performs a musculoskeletal ultrasound of wrist, identifies an enlarged median nerve and injects the patient with glucocorticoids for carpal tunnel syndrome
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Faculty member evaluations ● OSCE ● Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● The Milestones for ultrasonography are matched to the program requirements for Rheumatology fellows. Fellows are expected to be able to recognize the indications for and interpretation of sonographic imaging. Programs may have varying ability to teach the skills necessary to attain Level 5. ● Online resources ● Textbooks ● Workshops ● ACR. 2019 Rheumatologic Ultrasound (RhUS) Curriculum Supplement to the American College of Rheumatology 2015 Core Curriculum Outline. https://www.rheumatology.org/Portals/0/Files/Rhumatologic-Ultrasound-Curriculum-Supplement.pdf. 2019. ● ACR. Professional Learning Center. https://www.rheumatology.org/Learning-Center. 2019. ● USSONAR. https://ussonar.org/. 2019. ● Widener BB, Cannella AC, Martirosian L, Kissin EY. Modern landscapes and strategies for learning ultrasound in rheumatology. <i>Rheum Dis Clin North Am</i>. 2020;46(1):61-71. https://www.ncbi.nlm.nih.gov/pubmed/31757287. 2019.

Patient Care 6: Provides Consultative Care	
Overall Intent: To provide integrated and comprehensive consultative care for patients in the inpatient and outpatient settings	
Milestones	Examples
<p>Level 1 <i>Respectfully receives a consultation request</i></p> <p><i>With supervision, recognizes disease acuity</i></p>	<ul style="list-style-type: none"> ● Introduces self when receives consult by phone and respectfully agrees to see the patient and provide recommendations ● Confirms with attending that an outpatient referred by phone for new onset temporal headache and erythrocyte sedimentation rate (ESR) 70 should be seen promptly
<p>Level 2 <i>Clearly and concisely responds to a consultation request</i></p> <p><i>Independently recognizes disease acuity</i></p>	<ul style="list-style-type: none"> ● Politely asks clarifying questions during a consult request call from an inpatient service, and advises the team when the patient will be seen ● Schedules a same-day appointment for a new patient with acute knee swelling
<p>Level 3 <i>Verifies understanding of recommendations with the primary team when providing consultation</i></p> <p><i>Recognizes disease acuity and prioritizes management steps</i></p>	<ul style="list-style-type: none"> ● Reviews consult recommendations, discusses their rationale, and answers questions from team members caring for a patient admitted with new polyarthritis ● In evaluation of a patient with suspected giant cell arteritis, initiates corticosteroids and arranges for a temporal artery biopsy as soon as possible
<p>Level 4 <i>Integrates recommendations from different members of the health care team and effectively conveys consultative assessment and rationale to all health care team members</i></p> <p><i>Mobilizes resources to provide care in high-acuity situations</i></p>	<ul style="list-style-type: none"> ● Discusses plans for evaluation and potential therapeutic options with the pulmonologist concurrently consulting on an inpatient with limited scleroderma and progressive dyspnea; contacts the primary team to provide integrated recommendations ● Requests placement of a central venous access device and initiation of plasma exchange from the responsible hospital service in a patient admitted with newly diagnosed anti-glomerular basement membrane disease
<p>Level 5 <i>Identified as a role model for the provision of consultative care across the spectrum of disease complexity and acuity</i></p>	<ul style="list-style-type: none"> ● Leads an interdisciplinary committee creating a protocol to facilitate consultation for osteoporosis management in patients admitted with hip fragility fracture
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Faculty member evaluations ● Medical record (chart) audit ● Multisource feedback ● Rheumatology OSCE ● Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●

Notes or Resources

- Chen DC, Miloslavsky EM, Winn AS and McSparron JI: Fellow as clinical teacher (FACT) curriculum: improving fellows' teaching skills during inpatient consultation. *MedEdPortal*. 2018;14:10728. <https://www.mededportal.org/publication/10728/#324747>. 2019.
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Medical Knowledge 1: Possesses Clinical Knowledge	
Overall Intent: To demonstrate and apply broad and deep knowledge of rheumatic conditions	
Milestones	Examples
<p>Level 1 <i>Identifies key features of common rheumatic conditions</i></p> <p><i>Demonstrates basic knowledge of anatomy, physiology, and other basic sciences</i></p>	<ul style="list-style-type: none"> ● Recognizes prolonged morning stiffness as a feature of inflammatory arthritis ● Describes the basic anatomy and function of lymph nodes
<p>Level 2 <i>Demonstrates broad knowledge of common rheumatic conditions</i></p> <p><i>Demonstrates basic knowledge of anatomy, genetics, immunology, metabolism, and other basic sciences pertaining to rheumatic conditions</i></p>	<ul style="list-style-type: none"> ● Applies classification criteria for rheumatoid arthritis to a patient presenting with inflammatory arthritis ● Applies treatment guidelines to a patient presenting with his fourth episode of gouty arthritis within a year ● Describes the role of innate and adaptive immunity in the pathogenesis of a rheumatologic diagnosis ● Describes the pathophysiology of hyperuricemia, genetic risk factors regarding treatment (e.g., HLA-B5801), and the importance of comorbid conditions in a patient with gout
<p>Level 3 <i>Demonstrates knowledge of less common rheumatic conditions as well as common rheumatic conditions associated with higher complexity</i></p> <p><i>Demonstrates in-depth knowledge of anatomy, genetics, immunology, metabolism, and other basic sciences pertaining to rheumatic conditions</i></p>	<ul style="list-style-type: none"> ● Differentiates features of episcleritis from scleritis and conjunctivitis in a patient with longstanding rheumatoid arthritis ● Describes the role of signaling from T-helper cells in the activation of B cells during the production of a humoral immune response
<p>Level 4 <i>Integrates knowledge of the pathogenesis, epidemiology, clinical expression, treatments, and prognosis of a broad range of rheumatic conditions</i></p> <p><i>Integrates knowledge of anatomy, genetics, immunology, metabolism, and other basic</i></p>	<ul style="list-style-type: none"> ● Succinctly explains the role of smoking and genetic risk factors to a patient when discussing the pathogenesis and prognosis of rheumatoid arthritis ● Describes how citrullination of peptides leads to neoantigen formation, and the steps that lead to loss of tolerance and development of synovial inflammation in rheumatoid arthritis

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<i>sciences pertaining to a broad range of rheumatic conditions</i>	
Level 5 <i>Identified as a subject matter expert in basic and/or clinical science of rheumatic conditions</i>	<ul style="list-style-type: none"> ● Publishes a review or presents findings of new research in a regional or national forum
Assessment Models or Tools	<ul style="list-style-type: none"> ● Assessment of case presentations ● Direct observation ● Faculty member evaluations ● In-training exam ● Multisource feedback ● OSCE ● Scholarly activity
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● ACR. Core Curriculum Outline for Rheumatology Fellowship Programs. https://www.rheumatology.org/Portals/0/Files/Core%20Curriculum%20Outline_2015.pdf. 2019. ● Textbooks ● Online resources

Medical Knowledge 2: Knowledge of Diagnostic Testing	
Overall Intent: To demonstrate and apply broad and deep knowledge of diagnostic testing in patients with suspected rheumatic conditions	
Milestones	Examples
Level 1 <i>Explains the rationale, risks, and benefits for common diagnostic testing in patients being evaluated for rheumatic conditions</i>	<ul style="list-style-type: none"> Explains the rationale for obtaining anti-cyclic citrullinated peptide (CCP) and rheumatoid factor (RF) in a patient with inflammatory polyarthritis Explains the rationale for obtaining hand radiographs in a patient with chronic hand arthritis
Level 2 <i>Integrates value and test characteristics into diagnostic strategies in patients with uncomplicated rheumatic conditions</i>	<ul style="list-style-type: none"> Compares and contrasts the value and test characteristics of individual antiphospholipid tests in a patient suspected of having antiphospholipid syndrome Compares and contrasts the value and test characteristics of individual myositis specific antibodies in a patient with an idiopathic inflammatory myopathy
Level 3 <i>Integrates value and test characteristics into diagnostic strategies in patients with complex rheumatic conditions</i>	<ul style="list-style-type: none"> Compares and contrasts the value and test characteristics of biopsy versus imaging methods in a patient with suspected central nervous system vasculitis Compares and contrasts the value and test characteristics of cerebral spinal fluid tests in the setting of possible central nervous system lupus
Level 4 <i>Integrates and reconciles information, including non-specific and/or conflicting diagnostic test results to form a cohesive evaluation</i>	<ul style="list-style-type: none"> Integrates non-diagnostic results from electromyography (EMG), magnetic resonance imaging (MRI), and muscle biopsy in a patient with a suspected myopathy Integrates and reconciles information from conflicting results of serologic tests in a patient suspected of having lupus
Level 5 <i>Identified as an expert in testing strategies and in the selection and interpretation of complex, new, or emerging tests</i>	<ul style="list-style-type: none"> Is identified by program director to teach medical students, residents, and junior fellows in the selection and interpretation of rheumatologic autoantibody tests Publishes a description of how to integrate a new test into the evaluation of a patient
Assessment Models or Tools	<ul style="list-style-type: none"> Assessment of case presentations Direct observation Faculty member evaluations In-training exam Multisource feedback OSCE Scholarly activity
Curriculum Mapping	<ul style="list-style-type: none">
Notes or Resources	<ul style="list-style-type: none"> Guidelines Textbooks Online resources Choosing Wisely. Choosing Wisely: When to Question Tests, Procedures or Treatment for Rheumatologic Diseases. https://www.choosingwisely.org/choosing-wisely-when-to-question-tests-procedures-or-treatment-for-rheumatologic-diseases/. 2019.

- ACR. Core Curriculum Outline for Rheumatology Fellowship Programs. https://www.rheumatology.org/Portals/0/Files/Core%20Curriculum%20Outline_2015.pdf. 2019.

Medical Knowledge 3: Scholarly Activity	
Overall Intent: To produce scholarly work suitable for dissemination	
Milestones	Examples
Level 1 <i>Identifies areas worthy of scholarly investigation, with supervision</i>	<ul style="list-style-type: none"> • With the assistance of a mentor, reviews the scientific literature and determines it would be important to investigate the presence of human papillomavirus (HPV) in patients with rheumatoid arthritis and psoriatic arthritis treated with tumor necrosis factor inhibitors
Level 2 <i>Designs a scholarly activity with a mentor(s)</i>	<ul style="list-style-type: none"> • Designs a study and collects data to determine the efficacy of the flu vaccine for patients taking leflunomide, with mentorship
Level 3 <i>Engages in scholarly work, incorporates feedback, and participates in critical appraisal and analysis of project data</i>	<ul style="list-style-type: none"> • Organizes and implements the project, appropriately records the relevant findings into a data set, and participates in the data analysis with assistance of the research team (i.e., research assistant, statistician)
Level 4 <i>Produces scholarly work suitable for dissemination as an abstract or presentation</i>	<ul style="list-style-type: none"> • Synthesizes the relevant findings and develops an abstract suitable for presentation at a local, regional, or national meeting
Level 5 <i>Dissemination of independent scholarly work that has generated new medical knowledge, educational programs, or process improvement</i>	<ul style="list-style-type: none"> • Presents an abstract of their independent research project with original findings at a local, regional, or national meeting
Assessment Models or Tools	<ul style="list-style-type: none"> • Documentation of research processes or outcomes • Peer-reviewed scholarly work • Presentation evaluation • Research mentor and research staff member evaluation
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Textbooks • Workshops • Online resources • Mentorship • Human Subject Protection Certification Course (e.g., CITI) • Local Institutional Review Board (IRB)

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
<p>Level 1 <i>Demonstrates knowledge of common patient safety events</i></p> <p><i>Demonstrates knowledge of how to report patient safety events</i></p> <p><i>Demonstrates knowledge of basic quality improvement methodologies and metrics</i></p>	<ul style="list-style-type: none"> ● Identifies potential complications related to arthrocentesis ● Identifies anaphylaxis as a risk for patients receiving infusion of biologic medications ● Describes how to report errors in the inpatient and outpatient settings ● Identifies Plan-Do-Study-Act cycle testing (PDSA Worksheet) as a quality improvement tool
<p>Level 2 <i>Identifies system factors that lead to patient safety events</i></p> <p><i>Reports patient safety events through institutional reporting systems (actual or simulated)</i></p> <p><i>Describes quality improvement initiatives relevant to rheumatology practice</i></p>	<ul style="list-style-type: none"> ● Identifies that a lack of hand sanitizer dispensers at each clinical exam room may lead to increased infection rates ● Identifies in the outpatient clinic that round doorknobs as opposed to lever door handles may lead to increased risk for falls ● Reports lack of hand sanitizer dispensers in each clinical exam room to the medical director ● Via the institutional reporting system, reports incorrect dose of biologic infusion therapy was administered ● Describes fracture liaison service initiatives for secondary prevention of fracture, including the need to partner with other relevant specialties such as orthopaedic surgery and endocrinology
<p>Level 3 <i>Participates in analysis of patient safety events (simulated or actual)</i></p> <p><i>Participates in disclosure of patient safety events to patients and families (simulated or actual)</i></p> <p><i>Participates in quality improvement initiatives relevant to rheumatology practice</i></p>	<ul style="list-style-type: none"> ● Prepares and participates in morbidity and mortality presentations ● Participates in a root cause analysis to identify reasons for dosing errors ● Participates in a conversation with patients/families that the patient was given daily methotrexate rather than once weekly ● Participates in project identifying root cause of rooming inefficiency ● Participates in a PDSA cycle formulation
<p>Level 4 <i>Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)</i></p>	<ul style="list-style-type: none"> ● As part of a team, conducts the analysis of a vaccine administration error and formulates a plan to reduce subsequent events

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<p><i>Discloses patient safety events to patients and families (simulated or actual)</i></p> <p><i>Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project</i></p>	<ul style="list-style-type: none"> ● Leads a conversation with patient/family that the patient was given daily methotrexate rather than once weekly ● Initiates PDSA cycle to reduce fragility fracture rates among postmenopausal women admitted to the hospital who have had a primary fracture
<p>Level 5 <i>Actively engages teams and processes to modify systems to prevent patient safety events</i></p> <p><i>Role models or mentors others in the disclosure of patient safety events</i></p> <p><i>Creates, implements, and assesses quality improvement initiatives at the institutional or community level</i></p>	<ul style="list-style-type: none"> ● Assumes a leadership role at the departmental or institutional level for patient safety ● Conducts a simulation for disclosing patient safety events ● Teaches residents and junior fellows about difficult conversations with patients after adverse events ● Initiates and completes a QI project to improve county HPV vaccination rates in collaboration with the county health department and shares results with stakeholders
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● E-module multiple choice tests ● Medical record (chart) review ● Multisource feedback ● OSCE ● Portfolio ● QI project ● Reflection ● Simulation
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Institute of Healthcare Improvement. http://www.ihl.org/Pages/default.aspx. 2019 ● Agency for Healthcare Research and Quality. Reporting Patient Safety Events. https://psnet.ahrq.gov/primers/primer/13/reporting-patient-safety-events%20on%20April%2016. 2019. ● American College of Rheumatology Position Statements related to Patient Safety ● Quality tools for process improvement - including but not limited to Cause and Effect Diagram (aka Ishikawa or fishbone diagram), Failure Modes and Effects Analysis (FMEA); Run Charts and Control Charts; Plan-Do-Study-Act rapid-cycle testing (PDSA Worksheet) ● Downey C, Panikkath DR, Solomon DH. Education and professional development in rheumatology: translating quality improvement and education to clinical practice. Rheum

Dis Clin North Am. 2020;46(1):155-166. <https://www.ncbi.nlm.nih.gov/pubmed/31757282>.
2019.

Systems-Based Practice 2: System Navigation for Patient-Centered Care	
Overall Intent: To effectively navigate the health care system, including the interdisciplinary team and other care providers; to adapt care to a specific patient population to ensure high-quality patient outcomes	
Milestones	Examples
<p>Level 1 <i>Demonstrates knowledge of care coordination</i></p> <p><i>Identifies key elements for safe and effective transitions of care and hand-offs</i></p> <p><i>Demonstrates knowledge of population and community health needs and disparities</i></p>	<ul style="list-style-type: none"> ● For a patient with severe rheumatoid arthritis with functional limitations, identifies the potential role of a home health nurse, physical therapist, occupational therapist, pharmacist, and a social worker as members of the team ● Lists the essential components of a standardized sign-out tool for care transitions and hand-offs ● Identifies that patients in rural areas may have different needs than urban patients
<p>Level 2 <i>Coordinates care of patients in routine clinical situations effectively using the roles of the interprofessional teams</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in routine clinical situations</i></p> <p><i>Identifies specific population and community health needs and inequities for their local population</i></p>	<ul style="list-style-type: none"> ● Coordinates timely outpatient appointment following hospital discharge ● Routinely uses a standardized sign-out tool for a stable patient during sign-out ● Identifies that limited transportation options may be a factor in rural patients getting to multiple specialty appointments ● Identifies barriers to medication access for patients related to drug costs
<p>Level 3 <i>Coordinates care of patients in complex clinical situations effectively using the roles of their interprofessional teams</i></p> <p><i>Performs safe and effective transitions of care/hand-offs in complex clinical situations</i></p> <p><i>Uses local resources effectively to meet the needs of a patient population and community</i></p>	<ul style="list-style-type: none"> ● Works with the social worker to coordinate transportation for multiple visits to the infusion clinic for a homeless patient with vasculitis ● Routinely uses a standardized sign-out tool for an unstable patient during sign-out ● Refers patients to a local pharmacy which provides a sliding fee scale option ● Prints pharmacy coupons for patients in need
<p>Level 4 <i>Role models effective coordination of patient-centered care among different disciplines and specialties</i></p>	<ul style="list-style-type: none"> ● During consult rotations coordinates a multidisciplinary patient care meeting for a patient with lupus nephritis

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<p><i>Role models and advocates for safe and effective transitions of care/hand-offs within and across health care delivery systems including outpatient settings</i></p> <p><i>Participates in changing and adapting practice to provide for the needs of specific populations</i></p>	<ul style="list-style-type: none"> ● Prior to going on leave, proactively arranges for a colleague to review results of a scheduled temporal artery biopsy ● Participates in e-consults and/or telemedicine to assist primary care providers in remote rural areas to mitigate delays in care
<p>Level 5 <i>Leads in the design and implementation of improvements to the care coordination process</i></p> <p><i>Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes</i></p> <p><i>Leads innovations and advocates for populations and communities with health care inequities</i></p>	<ul style="list-style-type: none"> ● Leads a program to arrange for outpatient osteoporosis management for patients admitted to the hospital with fragility fractures ● Develops a protocol to improve transitions from pediatric to adult rheumatology care ● Leads development of telehealth diagnostic services for a rural site ● Establishes an early inflammatory arthritis clinic and coordinates with primary care providers to identify appropriate patients
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Medical record (chart) audit ● Multisource feedback ● OSCE
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● CDC. Population Health Training in Place Program (PH-TIPP). https://www.cdc.gov/pophealthtraining/whatis.html. 2019. ● Skochelak SE, Hawkins RE, Lawson LE, Starr SR, Borkan JM, Gonzalo JD. <i>AMA Education Consortium: Health Systems Science</i>. 1st ed. Philadelphia, PA: Elsevier; 2016. https://commerce.ama-assn.org/store/ui/catalog/productDetail?product_id=prod2780003. 2019. ● Starmer, AJ, et al. I-pass, a mnemonic to standardize verbal handoffs. <i>Pediatrics</i>. 2012;129(2):201-204. https://pediatrics.aappublications.org/content/129/2/201?sso=1&sso_redirect_count=1&nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token. 2019. ● Sandhu VK, Jose D, Feldman CH. Underserved communities: enhancing care with graduate medical education. <i>Rheum Dis Clin North Am</i>. 2020;46(1):167-178. https://www.ncbi.nlm.nih.gov/pubmed/31757283. 2019.

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Systems-Based Practice 3: Physician Role in Health Care Systems	
Overall Intent: To understand the physician’s role in the complex health care system and how to optimize the system to improve patient care and the health system’s performance	
Milestones	Examples
<p>Level 1 <i>Identifies key components of the complex health care system (e.g., hospital, skilled nursing facility, finance, personnel, technology)</i></p> <p><i>Recognizes the impact of cost and patient payment model on care decisions</i></p>	<ul style="list-style-type: none"> ● Articulates differences between physical therapy and occupational therapy ● Understands the impact of health plan coverage on prescription drugs for individual patients
<p>Level 2 <i>Describes how components of a complex health care system are interrelated, and how this impacts patient care</i></p> <p><i>Identify the principles of high-value care and delivers care with consideration of each patient’s payment model</i></p> <p><i>Demonstrates use of information technology (e.g., electronic health record) needed for clinical practice</i></p>	<ul style="list-style-type: none"> ● Explains that improving patient satisfaction impacts patient adherence ● Takes into consideration a patient’s prescription drug coverage when choosing a disease-modifying anti-rheumatic drugs (DMARD) for treatment of rheumatoid arthritis ● Identifies that notes must meet coding and compliance requirements
<p>Level 3 <i>Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency)</i></p> <p><i>Engages with patients in shared decision making and incorporates principles of high-value care into management plans</i></p> <p><i>Demonstrates knowledge of current evaluation and management billing practices</i></p>	<ul style="list-style-type: none"> ● Recognizes that close outpatient follow-up of a patient with active lupus can reduce need for admission for lupus flare ● Discusses risks and benefits of pursuing MRI imaging in the setting of low back pain ● Differentiates the elements that separate a Level 3 visit from a Level 4 visit, with regards to billing, in the outpatient setting
<p>Level 4 <i>Manages various components of the complex health care system to provide efficient and effective patient care and transition of care</i></p>	<ul style="list-style-type: none"> ● Ensures proper documentation to support an application for a power wheelchair

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<p><i>Advocates for individual patient care needs to provide high-value care</i></p> <p><i>Independently completes proper documentation and coding for a patient encounter</i></p>	<ul style="list-style-type: none"> ● Works collaboratively to provide patient assistance resources for a patient needing biologic therapy for rheumatoid arthritis ● Independently chooses correct level of service for an outpatient encounter
<p>Level 5 <i>Advocates for or leads systems change that enhances high-value, efficient, and effective patient care and transition of care</i></p> <p><i>Participates in health policy advocacy activities</i></p> <p><i>Educates others on proper documentation, billing, and coding practices</i></p>	<ul style="list-style-type: none"> ● Works with orthopaedic surgery to implement a fracture liaison service for patients admitted with fragility fractures ● Participates in regional or national advocacy initiatives ● Teaches junior fellows to document and select correct level of service for the outpatient encounter
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Medical record (chart) audit ● QI project
<p>Curriculum Mapping</p>	<ul style="list-style-type: none"> ●
<p>Notes or Resources</p>	<ul style="list-style-type: none"> ● Agency for Healthcare Research and Quality (AHRQ). Measuring the Quality of Physician Care. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/challenges.html. 2019. ● AHRQ. Major physician performance sets. https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/measurementssets.html. 2019. ● The Kaiser Family Foundation. www.kff.org. 2019. ● Dzau VJ, McClellan M, Burke S, et al. Vital directions for health and health care: priorities from a National Academy of Medicine Initiative. <i>NAM Perspectives</i>. Discussion Paper, National Academy of Medicine, Washington, DC. https://nam.edu/vital-directions-for-health-health-care-priorities-from-a-national-academy-of-medicine-initiative/. 2019. ● American Board of Internal Medicine. QI/PI activities. http://www.abim.org/maintenance-of-certification/earning-points/practice-assessment.aspx. 2019. ● American College of Rheumatology. Quality Measurement. https://www.rheumatology.org/Practice-Quality/Clinical-Support/Quality-Measurement. 2019. ● National Quality Forum. Musculoskeletal Measures. https://www.qualityforum.org/ProjectDescription.aspx?projectId=73845. 2019. ● National Committee for Quality Assurance. HEDIS Measures and Technical Resources. https://www.ncqa.org/hedis/measures/. 2019.

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- Sadun RE. Mind the gap: improving care in pediatric-to-adult rheumatology transitional clinics. *Rheum Dis Clin North Am*. 2020;46(1):103-118. <https://www.ncbi.nlm.nih.gov/pubmed/31757279>. 2019.
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- Downey C, Panikkath DR, Solomon DH. Education and professional development in rheumatology: translating quality improvement and education to clinical practice. *Rheum Dis Clin North Am*. 2020;46(1):155-166. <https://www.ncbi.nlm.nih.gov/pubmed/31757282>. 2019.
- Yu M, Downey C. Incorporating quality improvement in fellowship training to address the osteoporosis care gap. *Clinical Rheumatol*. In press as part of medical education topical collection.
- Srinivasalu H, Riebschleger M. Medical education in pediatric rheumatology - unique challenges and opportunities. *Clin Rheumatol*. 2019. <https://www.ncbi.nlm.nih.gov/pubmed/31444651>. 2019.
- Sandhu VK, Hojjati M, Blanco I. Healthcare disparities in rheumatology: the role of education at a global level. *Clin Rheumatol*. 2019. <https://www.ncbi.nlm.nih.gov/pubmed/31602534>. 2019.

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice Overall Intent: To incorporate evidence and patient values into clinical practice	
Milestones	Examples
Level 1 <i>Formulates clinical questions and elicits patient preferences to inform care</i>	<ul style="list-style-type: none"> • Questions whether there is a difference in efficacy between oral and intravenous (IV) administration of bisphosphonates; asks patient if there is a preference for route of administration
Level 2 <i>Locates available evidence and incorporates patient preferences to inform patient care</i>	<ul style="list-style-type: none"> • In a patient with rheumatoid arthritis unresponsive to methotrexate, identifies and discusses potential evidence-based treatment options, and solicits patient perspective
Level 3 <i>Evaluates and applies best available evidence and incorporates patient preferences and values in order to provide care tailored to individual patients</i>	<ul style="list-style-type: none"> • Obtains, discusses, and applies evidence for the treatment of a patient with rheumatoid arthritis and co-existing chronic kidney disease • Understands and appropriately uses clinical practice guidelines in making patient care decisions while eliciting patient preferences
Level 4 <i>Critically appraises and applies evidence, and recognizes gaps and conflicting evidence to guide care tailored to individual patients</i>	<ul style="list-style-type: none"> • Reviews the primary literature to choose alternative treatments to bisphosphonates for a patient with osteoporosis and chronic kidney disease • Reviews the primary literature to decide with the patient who has osteoporosis if a bisphosphonate holiday is warranted
Level 5 <i>Coaches others to critically appraise and apply evidence for complex patients; and/or participates in the development of guidelines</i>	<ul style="list-style-type: none"> • Participates in an institutional guideline development committee • Develops a journal club for internal medicine residents interested in rheumatology
Assessment Models or Tools	<ul style="list-style-type: none"> • Assessment of a case-based presentation • Direct observation • Faculty member evaluations • In-training examination
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • National Institutes of Health. U.S. National Library of Medicine. PubMed Tutorial. https://www.nlm.nih.gov/bsd/disted/pubmedtutorial/cover.html. 2019 • American College of Rheumatology. Evidence-Based Practice (EBP) for Clinical Researchers. https://www.rheumatology.org/I-Am-A/Rheumatologist/Research/Clinician-Researchers/Evidence-Based-Practice-EBP. 2019. • American College of Rheumatology. Medication Guides. https://www.rheumatology.org/Learning-Center/Medication-Guides. 2019. • Aizer J, Schell JA, Frey MB, Tiongson MD, Mandl LA. Learning to critically appraise rheumatic disease literature: educational opportunities during training and into practice. <i>Rheum Dis Clin North Am</i>. 2020;46(1):85-102. https://www.ncbi.nlm.nih.gov/pubmed/31757289. 2019.

Practice-Based Learning and Improvement 2: Commitment to Reflective Practice and Personal Growth	
Overall Intent: To seek clinical performance information with the intent to improve care; to reflect on all domains of practice, personal interactions, and behaviors, and their impact on colleagues and patients (reflective mindfulness); to develop a learning plan with clear objectives and goals for improvement	
Milestones	Examples
Level 1 <i>Establishes personal and professional goals, identifying gap(s) between goals and current performance</i>	<ul style="list-style-type: none"> ● Sets a personal practice goal of documenting tender and swollen joint counts in patients with rheumatoid arthritis ● Identifies gaps in knowledge of mechanisms of action of biologic medications
Level 2 <i>Demonstrates receptiveness to feedback, analyzing and reflecting on factors contributing to gap(s) between goals and current performance</i> <i>Designs and implements a learning plan, with prompting</i>	<ul style="list-style-type: none"> ● Integrates feedback to improve documentation of rheumatoid arthritis disease activity ● Discusses time management skills with clinic preceptor, including how it impacts timely completion of clinic notes, and implements a plan to increase timeliness of clinic notes
Level 3 <i>Seeks feedback episodically, and institutes behavioral change(s) when necessary</i> <i>Independently creates and implements an individualized learning plan</i>	<ul style="list-style-type: none"> ● Debriefs with attending after a difficult patient encounter and reflects on suggestions for improving communication skills ● Creates a learning plan to improve knowledge of systemic sclerosis ● Creates a plan to systematically read through the rheumatology textbook
Level 4 <i>Seeks feedback consistently, and sustains behavioral change as necessary</i> <i>Uses data and feedback from multiple sources to measure the effectiveness of the learning plan and when necessary, improves it</i>	<ul style="list-style-type: none"> ● Consistently seeks feedback at the end of the rotation ● Routinely debriefs with the attending and other patient care team members to optimize future collaboration in the care of the patient and family ● Modifies a learning plan based on results of the in-training exam to improve knowledge of systemic sclerosis
Level 5 <i>Role models consistently seeking performance data with adaptability and humility, and coaches others on reflective practice</i> <i>Facilitates the design and the implementation of learning plans for others</i>	<ul style="list-style-type: none"> ● Works with the medical students to reflect on difficult patient encounters and guides development of a learning plan to improve communication skills ● Assists internal medicine residents in the creation of an independent learning plan focused on key topics of rheumatology for the primary care provider ● Participates as an instructor in a board review course for internal medicine residents
Assessment Models or Tools	<ul style="list-style-type: none"> ● Direct observation ● Faculty evaluations ● Multisource feedback

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	<ul style="list-style-type: none"> ● Portfolio review ● Review of learning plan
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● Hojat M, Veloski JJ, Gonnella JS. Measurement and correlates of physicians' lifelong learning. <i>Acad Med.</i> 2009;84(8):1066-74. https://insights.ovid.com/crossref?an=00001888-200908000-00021. 2019. ● Lockspeiser TM, Schmitter PA, Lane JL, et al. Assessing residents' written learning goals and goal writing skill: validity evidence for the learning goal scoring rubric. <i>Acad Med.</i> 2013;88(10):1558-63. https://insights.ovid.com/article/00001888-201310000-00039. 2019. ● Torralba K, Doo L. Active learning strategies to improve progression from knowledge to action. <i>Rheum Dis Clin North Am.</i> 2020;46(1):1-19. https://www.ncbi.nlm.nih.gov/pubmed/31757278. 2019.

Professionalism 1: Professional Behavior	
Overall Intent: To recognize and address lapses in ethical and professional behavior, demonstrate ethical and professional behaviors, and use appropriate resources for managing ethical and professional dilemmas	
Milestones	Examples
Level 1 <i>Describes when and how to appropriately report professionalism lapses, including strategies for addressing common barriers</i>	<ul style="list-style-type: none"> • Describes mechanisms for reporting impaired physicians
Level 2 <i>Identifies and describes triggers for professionalism lapses and takes responsibility for own professional behavior</i>	<ul style="list-style-type: none"> • Recognizes that fatigue can cause a lapse in professionalism and creates a plan to mitigate fatigue • Recognizes tardiness has adverse effect on professional relationships
Level 3 <i>Proactively recognizes situations that may trigger professionalism lapses</i>	<ul style="list-style-type: none"> • After noticing a colleague’s inappropriate social media post, reviews policies related to posting of content and seeks guidance
Level 4 <i>Demonstrates professional behavior in complex or stressful situations and intervenes to prevent lapses in self and others</i>	<ul style="list-style-type: none"> • Models respectful behavior in a situation where a family member is upset about diagnostic uncertainty • Recognizes that a co-fellow may be emotionally distressed and offers to see remaining clinic patients
Level 5 <i>Coaches others when behavior fails to meet professional expectations</i>	<ul style="list-style-type: none"> • Addresses a co-fellow’s disrespectful interactions with the program administrator • Develops a protocol to improve communication when responding to a call for an inpatient consult
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Multisource feedback • OSCE • Self-reflection • Simulation
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • American College of Rheumatology. Code of Ethics. https://www.rheumatology.org/Portals/0/Files/Code%20of%20Ethics.pdf. 2019. • American Medical Association. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. 2019. • ABIM Foundation; American Board of Internal Medicine, ACP-ASIM Foundation, American College of Physicians-American Society of Internal Medicine, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. <i>Ann Intern Med</i>. 2002;136:243-246. http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millennium-A-Physician-Charter.pdf. 2019.

Professionalism 2: Ethical Principles	
Overall Intent: To recognize and address lapses in ethical and professional behavior, demonstrate ethical and professional behaviors, and use appropriate resources for managing ethical and professional dilemmas	
Milestones	Examples
Level 1 <i>Demonstrates knowledge of basic ethical principles</i>	<ul style="list-style-type: none"> • Articulates how the principle of “do no harm” applies to a patient who may not need a joint aspiration even though the learning opportunity exists
Level 2 <i>Applies basic principles to resolve straightforward ethical situations</i>	<ul style="list-style-type: none"> • Identifies and applies ethical principles involved in informed consent
Level 3 <i>Analyzes complex situations using ethical principles and recognizes need to seek help in resolving complex ethical situations</i>	<ul style="list-style-type: none"> • Seeks an ethics consult regarding a 23-year-old patient refusing treatment for life-threatening antineutrophil cytoplasmic antibodies (ANCA)-associated vasculitis
Level 4 <i>Manages and resolves complex ethical dilemmas using available resources</i>	<ul style="list-style-type: none"> • Incorporates recommendations from an ethics consult to formulate a shared treatment plan for a 23-year-old patient previously refusing treatment for life threatening ANCA-associated vasculitis
Level 5 <i>Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution</i>	<ul style="list-style-type: none"> • Participates in developing a program for identifying or reporting sexual harassment in the workplace
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Multisource feedback • Self-reflection • Simulation
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • American College of Rheumatology. Code of Ethics. https://www.rheumatology.org/Portals/0/Files/Code%20of%20Ethics.pdf. 2019. • American Medical Association. Ethics. https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. 2019. • ABIM Foundation; American Board of Internal Medicine, ACP-ASIM Foundation, American College of Physicians-American Society of Internal Medicine, European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. <i>Ann Intern Med</i>. 2002;136:243-246. http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millennium-A-Physician-Charter.pdf. 2019. • Kang JS. Ethics and industry interactions: impact on specialty training, clinical practice, and research. <i>Rheum Dis Clin of North Am</i>. 2020;46(1):119-133. https://www.ncbi.nlm.nih.gov/pubmed/31757280. 2019.

Professionalism 3: Accountability/Conscientiousness	
Overall Intent: To take responsibility for one’s own actions and the impact on patients and other members of the health care team	
Milestones	Examples
<p>Level 1 <i>Performs tasks and responsibilities, with prompting</i></p> <p><i>Takes responsibility for failure to complete tasks and responsibilities</i></p>	<ul style="list-style-type: none"> ● Responds promptly to reminders from program administrator to complete work-hour logs ● Has timely attendance at conferences ● Completes end-of-rotation evaluations ● When notified that the end-of-rotation evaluation is overdue and has not been completed, apologizes and completes the evaluation promptly
<p>Level 2 <i>Performs tasks and responsibilities in a timely manner with attention to detail in routine situations</i></p> <p><i>Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner</i></p>	<ul style="list-style-type: none"> ● Completes administrative tasks, documents safety modules, procedure review, and licensing requirements by specified due date ● Before going on vacation, responds to all current patient care tasks
<p>Level 3 <i>Performs tasks and responsibilities in a timely manner with attention to detail in complex or stressful situations</i></p> <p><i>Recognizes situations that may impact others’ ability to complete tasks and responsibilities in a timely manner</i></p>	<ul style="list-style-type: none"> ● Notifies attending of multiple competing demands on call, appropriately triages tasks, and asks for assistance from other fellows or faculty members as needed ● Ensures timely completion of individual tasks for a team QI project
<p>Level 4 <i>Demonstrates leadership to ensure tasks and responsibilities are completed in a timely manner with attention to detail in complex or stressful situations</i></p> <p><i>Proactively implements strategies to ensure that the needs of patients, teams, and systems are met</i></p>	<ul style="list-style-type: none"> ● Orchestrates infusion therapy for patient needing a medication for non-Food and Drug Administration (FDA)-approved indication ● In preparation for being out of the office, places infusion orders for the time the fellow is away and notifies covering physician of potential patient care concerns that may arise
<p>Level 5 <i>Creates strategies to enhance others’ ability to efficiently complete tasks and responsibilities</i></p>	<ul style="list-style-type: none"> ● Sets up a meeting with the nurse manager and infusion nurse to share best practices and streamline patient infusion order sets to mitigate late order entry, urgent orders and patients waiting for orders to be entered at the time of patient’s infusion
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Compliance with deadlines and timelines ● Direct observation

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	<ul style="list-style-type: none"> ● Multisource feedback ● OSCE ● Self-reflection ● Simulation
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● Code of conduct from fellow/resident institutional manual ● Expectations of residency program regarding accountability and professionalism ● Torralba KD, Jose D, Byrne J. Psychological safety, the hidden curriculum, and ambiguity in medicine. <i>Clin Rheumatol</i>. 2019.

Professionalism 4: Self-Awareness and Help-Seeking Overall Intent: To identify, use, manage, improve, and seek help for personal and professional well-being for self and others	
Milestones	Examples
Level 1 <i>Recognizes status of own and others' well-being, with assistance</i> <i>With assistance recognizes personal gaps in knowledge, skills, and attitudes</i>	<ul style="list-style-type: none"> ● Acknowledges own response to navigating a challenging patient encounter ● Receives feedback on missed emotional cues after a challenging patient encounter
Level 2 <i>Independently recognizes status of own and others' well-being, and asks for help when needed</i> <i>Independently recognizes limits in personal knowledge, skills, and attitudes</i>	<ul style="list-style-type: none"> ● Independently identifies and communicates the personal impact of a poor patient outcome ● Recognizes a pattern of missing emotional cues during challenging patient encounters and asks for feedback
Level 3 <i>Recognizes the impact of own and others' well-being on the patient and team, with assistance</i> <i>With assistance, develops a plan to improve personal knowledge, skills, and attitudes</i>	<ul style="list-style-type: none"> ● With the patient care team, develops a reflective response to deal with personal impact of difficult patient encounters and disclosures ● Based on feedback from the patient care team, develops a plan for identifying and responding to emotional cues during the next challenging patient encounter
Level 4 <i>Independently recognizes the impact of own and others' well-being on the patient and team, and asks for help when needed</i> <i>Independently implements a plan to improve personal knowledge, skills, and attitudes</i>	<ul style="list-style-type: none"> ● Independently identifies ways to manage personal stress ● Self-assesses and attends a seminar that helps develop communication skills around responding to emotional cues during challenging patient encounters
Level 5 <i>Leads initiatives to improve wellness at the program or institutional level</i> <i>Coaches others when limitations in knowledge, skills, and attitudes do not meet professional expectations</i>	<ul style="list-style-type: none"> ● Assists in organizational efforts to address clinician well-being through institution of an incentive program to increase physical activity in the workplace through tracking steps ● Works with multidisciplinary team to develop a feedback framework for learners around navigating emotional responses to challenging patient encounters
Assessment Models or Tools	<ul style="list-style-type: none"> ● Direct observation ● Faculty member evaluation ● Institutional online training modules ● Participation in institutional well-being programs

	<ul style="list-style-type: none"> ● Personal learning plan ● Self-assessment
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● This subcompetency is not intended to evaluate a fellow’s well-being, but to ensure each fellow has the fundamental knowledge of factors that impact well-being, the mechanisms by which those factors impact well-being, and available resources and tools to improve well-being. ● Local resources, including Employee Assistance ● Coaching Programs ● ACGME. Tools and Resources. https://dl.acgme.org/pages/well-being-tools-resources ● Torralba KD, Doo L. Active learning strategies to improve progression from knowledge to action. <i>Rheum Dis Clin North Am.</i> 2020;46(1):1-19. https://www.ncbi.nlm.nih.gov/pubmed/31757278. 2019. ● Torralba KD, Jose D, Byrne J. Psychological safety, the hidden curriculum, and ambiguity in medicine. <i>Clin Rheumatol.</i> 2019.

Interpersonal and Communication Skills 1: Patient- and Family-Centered Communication	
Overall Intent: To deliberately use language and behaviors to form constructive relationships with patients, to identify communication barriers including self-reflection on personal biases and minimize them in the doctor-patient relationships; and to organize and lead communication around shared decision making	
Milestones	Examples
<p>Level 1 <i>Uses language and nonverbal behavior to demonstrate respect and establish rapport</i></p> <p><i>Recognizes common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system</i></p>	<ul style="list-style-type: none"> ● Introduces self and faculty member, identifies patient and others in the room, and engages all parties in health care discussions ● Identifies need for trained interpreter with non-English-speaking patients ● Uses appropriate means of communication with patients with disabilities such as deafness, blindness, or learning disabilities
<p>Level 2 <i>Establishes a therapeutic relationship with the patient in uncomplicated clinical encounters using active listening and clear language</i></p> <p><i>Recognizes complex barriers to effective communication (e.g., health literacy, cultural competency)</i></p>	<ul style="list-style-type: none"> ● Avoids medical jargon and restates patient perspective when discussing diagnosis and management ● Recognizes the need for handouts with diagrams and pictures to communicate information to a patient who is unable to read
<p>Level 3 <i>Establishes a therapeutic relationship with the patient in challenging clinical encounters</i></p> <p><i>Adjusts communication strategies based on identified barriers, incorporating patient and caregiver expectations and goals of care</i></p>	<ul style="list-style-type: none"> ● Acknowledges patient’s concerns regarding positive antinuclear antibodies test without signs of an associated connective tissue disease and arranges appropriate follow-up ● In a discussion with the faculty member, acknowledges potential for bias in caring for a patient with arthritis who is on chronic opioid therapy ● Conducts a family meeting to discuss hospice care for a patient with end-stage gastrointestinal manifestations of scleroderma
<p>Level 4 <i>Consistently establishes and maintains therapeutic relationships using shared decision making</i></p> <p><i>Uses self-reflection to proactively minimize communication barriers</i></p>	<ul style="list-style-type: none"> ● Continues to engage representative family members with disparate goals in the care of a patient with persistently altered mental status from lupus cerebritis ● Uses patient and family input to engage spiritual care and develop a plan for home hospice in the terminally ill patient, aligned with the patient’s values
<p>Level 5 <i>Serves as a role model in establishing respectful, culturally sensitive therapeutic</i></p>	<ul style="list-style-type: none"> ● Leads a discussion group on personal experience of moral distress ● Develops a residency curriculum on social justice which addresses unconscious bias

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<i>relationships while mitigating communication barriers</i>	<ul style="list-style-type: none"> • Serves on a hospital bioethics committee
Assessment Models or Tools	<ul style="list-style-type: none"> • Direct observation • Multisource feedback • OSCE
Curriculum Mapping	<ul style="list-style-type: none"> •
Notes or Resources	<ul style="list-style-type: none"> • Workshops on unconscious bias and communication skills • Project Implicit. https://implicit.harvard.edu/implicit/index.jsp. 2019. • Patterson K. <i>Crucial Conversations: Tools for Talking When Stakes Are High</i>. New York, NY: McGraw-Hill; 2013.

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
<p>Level 1 <i>Uses language that is respectful and values all members of the health care team</i></p> <p><i>Accepts feedback from team members</i></p>	<ul style="list-style-type: none"> ● In a patient with possible giant cell arteritis, respectfully requests an urgent consult from the surgical service ● Respectfully receives feedback from the nursing staff about timely response to patient calls
<p>Level 2 <i>Communicates basic information effectively with all health care team members</i></p> <p><i>Solicits feedback on performance as a member of the health care team</i></p>	<ul style="list-style-type: none"> ● After a consultation has been completed, communicates with the primary care team to verify they have received and understand the recommendations ● Requests a feedback meeting with the faculty member of the consult team at the end of the rotation
<p>Level 3 <i>Communicates highly complex information effectively with all health care team members</i></p> <p><i>Provides feedback to peers and other learners on the team</i></p>	<ul style="list-style-type: none"> ● Speaks with the resident caring for a patient with concern for scleroderma renal crisis to initiate angiotensin-converting enzyme (ACE) inhibitor treatment immediately ● Provides feedback to the medical student about the initial consult note in the medical record
<p>Level 4 <i>Optimizes flexible communication strategies using input from all team members to build consensus and resolve conflicts, as needed</i></p> <p><i>Communicates detailed and effective feedback to any member of the health care team</i></p>	<ul style="list-style-type: none"> ● Initiates a multidisciplinary meeting to develop a shared care plan for a patient with sinus, renal, and pulmonary involvement in granulomatosis with polyangiitis (GPA) ● Provides feedback to the faculty preceptor following an inpatient consult rotation
<p>Level 5 <i>Demonstrates leadership in promoting open and safe communication within and between teams</i></p> <p><i>Educates others in providing effective feedback</i></p>	<ul style="list-style-type: none"> ● Leads a meeting to resolve disparate recommendations between different consult teams involved in caring for a patient with active lupus ● Organizes and leads a meeting of rheumatology fellows and faculty members to improve feedback
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Faculty evaluation ● Medical record (chart) audit ● Multisource feedback

	<ul style="list-style-type: none"> ● Simulation encounters
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● Workshops ● Online resources ● Roth CG, Eldin KW, Padmanabhan V, Freidman EM. Twelve tips for the introduction of emotional intelligence in medical education. <i>Med Teach</i>. 2019;41(7):1-4. https://www.tandfonline.com/doi/full/10.1080/0142159X.2018.1481499. 2019. ● Henry SG, Holmboe ES, Frankel RM. Evidence-based competencies for improving communication skills in graduate medical education: a review with suggestions for implementation. <i>Med Teach</i>. 2013;35(5):395-403. https://www.tandfonline.com/doi/full/10.3109/0142159X.2013.769677. 2019. ● Serling-Boyd N, Miloslavsky EM. Enhancing the inpatient consultation learning environment to optimize teaching and learning. <i>Rheum Dis Clin North Am</i>. 2020;46(1):73-83. https://www.rheumatic.theclinics.com/article/S0889-857X(19)30079-1/fulltext. 2019. ● Torralba KD, Jose D, Byrne J. Psychological safety, the hidden curriculum, and ambiguity in medicine. <i>Clin Rheumatol</i>. 2019.

Interpersonal and Communication Skills 3: Patient-Centered Interprofessional Communication within Health Care Systems Overall Intent: To effectively communicate using a variety of methods	
Milestones	Examples
<p>Level 1 <i>Accurately records information in the patient record</i></p> <p><i>Safeguards patient personal health information in direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) communications</i></p>	<ul style="list-style-type: none"> ● Documentation is accurate but may include extraneous information ● Shreds patient list after completion of work ● Avoids talking about patients in the elevator
<p>Level 2 <i>Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record</i></p> <p><i>Accurate and timely documentation with appropriate use of documentation tools</i></p>	<ul style="list-style-type: none"> ● Organized and accurate documentation outlines clinical reasoning that supports the treatment plan ● Uses documentation templates for the inpatient consult rotation
<p>Level 3 <i>Concisely reports diagnostic and therapeutic reasoning in the patient record</i></p> <p><i>Appropriately selects direct and indirect forms of communication based on context</i></p>	<ul style="list-style-type: none"> ● Complex clinical thinking is documented concisely but may not contain anticipatory guidance ● Calls patient immediately about a potentially critical test result
<p>Level 4 <i>Communicates clearly, concisely, timely, and in an organized written form, including anticipatory guidance</i></p> <p><i>Produces written or verbal communication (e.g., patient notes, email) that could serve as an example for others to follow</i></p>	<ul style="list-style-type: none"> ● For patients with polymyalgia rheumatica who are tapering off of prednisone, provides anticipatory guidance to the patient on how to adjust prednisone dose if symptoms increase ● For patients with rheumatoid arthritis, notes include next course of action if patient has an inadequate response to methotrexate ● Writes exemplary notes that are used by the program director to teach incoming fellows
<p>Level 5 <i>Participates in establishing communication tools or policies for the division, department, or institution</i></p>	<ul style="list-style-type: none"> ● Leads a task force established by the hospital QI committee to develop a plan to improve house staff hand-offs
<p>Assessment Models or Tools</p>	<ul style="list-style-type: none"> ● Direct observation ● Faculty evaluation ● Medical record (chart) audit

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	<ul style="list-style-type: none"> ● Multisource feedback
Curriculum Mapping	<ul style="list-style-type: none"> ●
Notes or Resources	<ul style="list-style-type: none"> ● 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. <i>Teach Learn Med.</i> 2017;29(4):420-432. https://www.ncbi.nlm.nih.gov/pubmed/28497983. 2019. ● Battistone MJ, Barker AM, Durning SJ. Interprofessional musculoskeletal education: a review of national initiatives from the Department of Veterans Affairs. <i>Rheum Dis Clin North Am.</i> 2020;46(1):135-153. https://www.ncbi.nlm.nih.gov/pubmed/31757281. 2019.

Available Milestones Resources

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

Milestones Guidebooks: <https://www.acgme.org/milestones/resources/>

- *Assessment Guidebook*
- *Clinical Competency Committee Guidebook*
- *Clinical Competency Committee Guidebook Executive Summaries*
- *Implementation Guidebook*
- *Milestones Guidebook*

Milestones Guidebook for Residents and Fellows: <https://www.acgme.org/residents-and-fellows/the-acgme-for-residents-and-fellows/>

- *Milestones Guidebook for Residents and Fellows*
- *Milestones Guidebook for Residents and Fellows Presentation*
- *Milestones 2.0 Guide Sheet for Residents and Fellows*

Milestones Research and Reports: <https://www.acgme.org/milestones/research/>

- *Milestones National Report*, updated each fall
- *Milestones Predictive Probability Report*, updated each fall
- *Milestones Bibliography*, updated twice each year

Developing Faculty Competencies in Assessment courses - <https://www.acgme.org/meetings-and-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://team.acgme.org/>

Improving Assessment Using Direct Observation Toolkit - <https://dl.acgme.org/pages/acgme-faculty-development-toolkit-improving-assessment-using-direct-observation>

Remediation Toolkit - <https://dl.acgme.org/courses/acgme-remediation-toolkit>

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