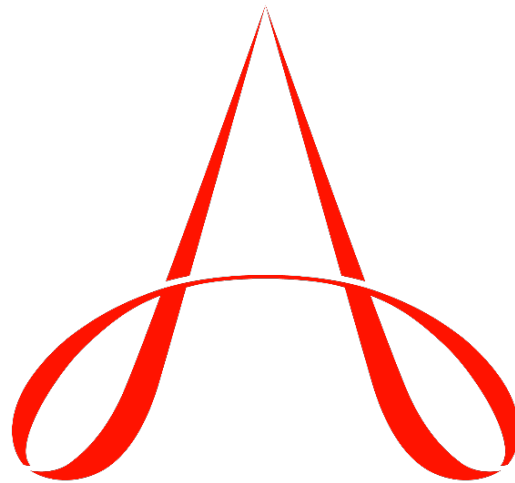




Transplant Nephrology Supplemental Guide



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2026

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Milestones Supplemental Guide

This document provides additional guidance and examples for the Transplant Nephrology 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.

Patient Care 1: Pre-Transplant Candidate

Overall Intent: To develop competence in the evaluation of potential transplant candidates and create workup plans to assess risk factors for transplant and ways to improve candidacy and mitigate risks for transplant.

Milestones	Examples
Level 1 <i>Identifies the indications and contraindications for kidney transplantation, donor options, and components of a pre-transplant evaluation and workup</i> <i>Describes selection process and waitlist management requirements</i>	• Lists the absolute and relative medical, psychosocial, nutritional, and institutional requirements for kidney evaluation and listing • Lists various deceased and living donor options for transplant • Describes the structure and workflow of the selection and waitlist process and identifies roles of participating team members
Level 2 <i>Performs pre-transplant evaluation and formulates a workup plan, including donor options, for a transplant candidate with low medical complexities with guidance</i> <i>Participates in selection process and waitlist management</i>	• With guidance, performs a workup of a 34-year-old patient with IgA nephropathy • Presents patient at multidisciplinary selection conference
Level 3 <i>Independently performs pre-transplant evaluation and formulates a workup plan for a transplant candidate with low medical complexities</i> <i>Formulates a plan for status change, maintaining transplant readiness, or delisting, with guidance</i>	• Performs a workup of a 50-year-old patient with polycystic kidney disease (PCKD) • With guidance, develops a reactivation plan for a patient who was inactivated due to loss of social support
Level 4 <i>Performs pre-transplant evaluation and formulates a workup plan for a transplant candidate with high medical complexities</i> <i>Formulates a plan for status change, maintaining transplant readiness, or delisting</i>	• Performs a workup for a 68-year-old patient with coronary heart disease, diabetes, and peripheral vascular disease • Recommends inactivation of a patient who has lost their social support and formulates a multidisciplinary reactivation plan

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Level 5 <i>Performs pre-transplant evaluation with advanced decision-making to formulate a workup plan and path to transplant for a candidate with rare or high medical complexity</i> <i>Uses advanced decision-making to formulate a plan for candidate status change, transplant readiness maintenance, or delisting</i>	• Performs a workup for a 72-year-old patient with heart failure with ejection fraction of 25 percent and diabetes, and collaborates with cardiology to optimize their cardiac function to allow transplant listing • Collaborates with hematology/oncology service for a 71-year-old patient with multiple myeloma to identify pre-transplant treatment plan, optimizing transplant candidacy and monitoring needed to maintain transplant readiness
Assessment Models or Tools	• Dashboards on quality and safety metrics • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation
Curriculum Mapping	•
Notes or Resources	• Kidney Disease Improving Global Outcomes 2020 Transplant Candidate Guidelines. https://kdigo.org/guidelines/transplant-candidate/

Patient Care 2: Living Kidney Donor

Overall Intent: To develop competence in evaluation of potential living kidney donors and assess for and mitigate individual risk factors.

Milestones	Examples
Level 1 <i>Identifies the benefits, risks, and contraindications to living donation, and components of donor evaluation, workup, and selection</i>	• Describes the workup and selection process including medical, surgical, and psychosocial evaluation of living donors • Lists donor risks for chronic kidney disease (CKD)/end-stage kidney disease (ESKD) and potential benefits of living donation for donors and recipients
Level 2 <i>Performs donor evaluation and formulates a workup plan for a donor candidate, with guidance</i>	• With guidance, performs a living donor evaluation for a 35-year-old patient with no past medical history who comes forward to donate a kidney to a friend
Level 3 <i>Independently performs donor evaluation and formulates a workup plan for a donor candidate</i>	• Performs a living donor evaluation for a 35-year-old patient with no past medical history who comes forward to donate a kidney to a friend
Level 4 <i>Performs donor evaluation and formulates a workup plan for a higher risk donor candidate</i>	• Performs a living donor evaluation of a 60-year-old with hypertension well controlled on a single agent who comes forward to donate to a spouse
Level 5 <i>Performs donor evaluation with advanced decision-making to formulate a novel workup plan, path to donation, and post-donation follow-up for a higher risk candidate</i>	• Performs a living donor evaluation of a 35-year-old obese woman with a history of gestational diabetes and outlines a pre-donation plan for weight loss and minimizing metabolic risk with long-term follow-up plan for her if she proceeds with donation
Assessment Models or Tools	• Dashboards on quality and safety metrics • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation
Curriculum Mapping	•
Notes or Resources	• Kidney Disease Improving Global Outcomes 2017 Living Kidney Donors Guideline. https://kdigo.org/guidelines/living-kidney-donor/

- | | |
|--|--|
| | <ul style="list-style-type: none">• Organ Procurement & Transplantation Network (OPTN) Policy 14. Living Donation.
https://www.hrsa.gov/sites/default/files/hrsa/optn/optn_policies.pdf |
|--|--|

Patient Care 3: Post-Transplant Care

Overall Intent: To develop competence in the management of post-transplant patients, including alloimmune and non-alloimmune complications.

Milestones	Examples
Level 1 <i>Describes institutional practices to care for patients, including immunological and nonimmunological complications, acute and long-term monitoring</i>	• Lists the institutional guidelines for evaluation and management of kidney transplant patients with acute rejection • Lists the institutional guidelines for evaluation and management of kidney transplant patients with urinary tract infection (UTI)
Level 2 <i>Identifies and manages common immunological and nonimmunological complications, with guidance</i>	• Under guidance, recognizes the indication and contraindication for a renal biopsy and manages and monitors a kidney transplant recipient with acute rejection • Under guidance, evaluates and manages a kidney transplant recipient with UTI
Level 3 <i>Independently identifies and manages common immunological and nonimmunological complications</i>	• Independently, recognizes the indication and contraindication for a renal biopsy and manages and monitors a kidney transplant recipient with acute rejection • Independently, evaluates and manages a kidney transplant recipient with UTI
Level 4 <i>Independently identifies and manages complex immunological and nonimmunological complications, including cases requiring deviations from institutional practices</i>	• Independently evaluates and manages a kidney transplant recipient with a history of recent rejection, presenting with cytomegalovirus disease requiring modification of immunosuppression regimen • Evaluates and manages a kidney transplant recipient presenting with recurrent UTI
Level 5 <i>Manages the interdisciplinary team to formulate a care plan to achieve the best possible outcome</i>	• Leads the management efforts of a kidney transplant recipient with a history of recent rejection, presenting with resistant cytomegalovirus disease with acute kidney injury (AKI), with input from interdisciplinary team • Leads transplant infectious disease and urology team members to evaluate and manage a kidney transplant recipient with ileal conduit presenting with recurrent UTI with drug resistant organisms
Assessment Models or Tools	• Dashboards on quality and safety metrics • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation
Curriculum Mapping	•

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Notes or Resources	● Kasiske, Bertram L., Martin G. Zeier, Jeremy R. Chapman, et al. 2009. "KDIGO Clinical Practice Guideline for the Care of Kidney Transplant Recipients: A Summary." <i>International Society of Nephrology</i>. https://kdigo.org/wp-content/uploads/2017/02/KITxpGL_summary.pdf ● Danovich, Gabriel M. 2026. <i>Handbook of Kidney Transplantation</i>. Wolters Kluwer. ● American Society of Transplantation (AST) Transplant Core Curriculum. 2019. https://ast.digitellinc.com/p/cf/transplant-nephrology-core-curriculum-2019-3080.
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Medical Knowledge 1: Immunology and Histocompatibility	
Overall Intent: To demonstrate progressive knowledge of transplant immunology and histocompatibility principles, including donor and recipient selection, immunosuppressive management, rejection risk assessment, and care of kidney transplant recipients.	
Milestones	Examples
Level 1 <i>Demonstrates basic knowledge of the immune system and histocompatibility testing as it relates to transplant</i>	• Comprehends the basics of human leukocyte antigen (HLA), including class 1 and class 2 antigens • Describes methods to detect anti-HLA antibodies, and clinical implications of donor-specific antibodies and calculated panel reactive antibody (cPRA) • Understands principles of direct and indirect allorecognition
Level 2 <i>Demonstrates advanced knowledge of the immune system and histocompatibility testing as it relates to transplant</i>	• Describes the role of HLA mismatch and risk rejection • Discusses the role of non-HLA antibodies in transplant outcomes • Describes immunology of rejection
Level 3 <i>Applies basic knowledge of immunology and histocompatibility to the management of transplant candidates and recipients</i>	• Applies principles of virtual crossmatch testing in organ acceptance • Uses HLA match to help select induction/maintenance immunosuppression
Level 4 <i>Applies advanced knowledge of immunology and histocompatibility to the management of immunologically complex transplant candidates and recipients</i>	• Suggests entry to a paired exchange program based on crossmatch results for a highly sensitized patient • Interprets complex crossmatches for highly sensitized patient for transplant organ acceptance and management decision
Level 5 <i>Researches literature and disseminates newly described and emerging concepts in immunology and histocompatibility as they apply to transplant candidates and recipients</i>	• Critically analyzes research on the role of eplet mismatches and other advanced matching techniques • In the setting of malignancy, describes the use of immune check point inhibitors, counsels patients regarding rejection risk and potential modification of immunosuppression
Assessment Models or Tools	• Dashboards on quality and safety metrics • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation

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Curriculum Mapping	•
Notes or Resources	• Nankivell, Brian J., and Stephen I Alexander. 2010. "Rejection of the Kidney Allograft." <i>NEJM</i> 363:1451-1462, doi:10.1056/NEJMRA0902927. • Lim, Wai H., Jeremy R. Chapman, Patrick T. Coates, et al. 2016. "HLA-DQ Mismatches and Rejection in Kidney Transplant Recipients." <i>CJASN</i> 11(5): 875-883. doi:10.2215/cjn.11641115.

Medical Knowledge 2: Transplant Pharmacology and Therapeutics Overall Intent: To demonstrate knowledge of pharmacology and therapeutics of immunosuppressive medications through assessment and management of drug dosing, drug interactions, and toxicology.	
Milestones	Examples
Level 1 <i>Demonstrates basic knowledge of transplant medications, including mechanisms of action</i>	• Describes the main classes of induction and maintenance immunosuppression medications
Level 2 <i>Demonstrates knowledge of pharmacokinetics, pharmacodynamics, and drug interactions of transplant medications</i>	• Recognizes drug-drug interactions between calcineurin inhibitors and medications that interact with the CYP3A4 system • Lists allograft dysfunction, hyperkalemia, hypertension, and neurologic toxicities as common toxicities of calcineurin inhibitors
Level 3 <i>Applies knowledge of therapeutic monitoring to avoid drug toxicity and ensure adequate immunosuppression</i>	• Adjusts tacrolimus dosing based on target drug levels at different times after transplant • Routinely reconciles medications and reviews for drug interactions
Level 4 <i>Applies knowledge of transplant therapeutics to individualize care of recipients with transplant-related complications and in populations with unique needs</i>	• Recommends switching from a calcineurin inhibitor to Belatacept in patient with calcineurin inhibitor toxicity • Individualizes immunosuppressant management in patients with active infection or malignancy • Selects appropriate immunosuppressant for a patient attempting to conceive
Level 5 <i>Researches literature and applies knowledge of newly described and emerging transplant therapeutics</i>	• Stays up to date on research regarding ongoing trials using CD38 inhibitors for the treatment of chronic antibody antibody-mediated rejection • Analyzes potential role of complement inhibitors in treatment of recurrent glomerular disease
Assessment Models or Tools	• Dashboards on quality and safety metrics • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation
Curriculum Mapping	•

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Notes or Resources	• Halloran, Philip F. 2004. "Immunosuppression Drugs For Kidney Transplantation." <i>NEJM</i> 351:2715-2729. doi:10.1056/NEJMRA033540 • Mayer, Katharina A., Eva Schrezenmeier, Matthias Diebold, et al. 2024. "A Randomized Phase 2 Trial of Felzartamab in Antibody Mediated Rejection." <i>NEJM</i> 391: 122-132. doi:10.1056/NEJMoa2400763.
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Medical Knowledge 3: Transplant Diagnostics (Pathology, Lab, Radiology) Overall Intent: To evaluate the risks, benefits, and application of diagnostic testing in transplant kidney disease.	
Milestones	Examples
Level 1 <i>Explains the indications, risks, and benefits for common diagnostic modalities</i>	Recognizes the risks and benefits of a transplant kidney biopsy for a 50-year-old kidney transplant recipient with allograft dysfunction
Level 2 <i>Interprets results of common diagnostic modalities</i>	In the same patient, recognizes thrombotic microangiopathy on kidney biopsy and describes differential diagnosis, including rejection
Level 3 <i>Integrates cost, utility, and test characteristics of diagnostic modalities in decision-making</i>	In the same patient, discusses the cost and utility of additional testing including complement and genetic testing, donor-specific antibody, cell-free DNA, and urine protein/creatinine ratio in treatment plan
Level 4 <i>Integrates and reconciles patient-specific information with diagnostic modalities to form a cohesive assessment and develop an individualized treatment plan</i>	In the same patient, incorporates patient history and above diagnostic results to come up with a specific diagnosis and treatment plan
Level 5 <i>Recognizes and applies emerging, novel diagnostic modalities and technologies</i>	Identifies the value of donor-derived cell-free DNA and gene expression assays as a replacement for a kidney biopsy if the patient is on an anticoagulant
Assessment Models or Tools	- Dashboards on quality and safety metrics - Direct observation - E-module multiple choice tests - Medical record (chart) audit - Multisource feedback - Path conference
Curriculum Mapping	
Notes or Resources	- Naesens, Maarten, Candice Roufosse, Lynn D. Cornell, et al. 2026. "The Banff 2024 Kidney Meeting Report: Rejection as a Spectrum of Phenotypes and Focus on Differential Diagnostic Reasoning." <i>American Journal of Transplantation</i> 26, 922-936. - Mirioglu, S., J. Morelle, O. Efe, O. Hurdogan, A.B. Dirim, G. Kumru, K.L. Lentine, and Y. Caliskan. 2026. "Thrombotic Microangiopathy After Kidney Transplantation: Diagnosis and Management Strategies." <i>Clin Kidney J</i> Jan 24;19(3):sfag018. doi: 10.1093/ckj/sfag018. PMID: 41822056; PMCID: PMC12976228.

Medical Knowledge 4: Organ Procurement, Allocation, and Donor Selection Overall Intent: To use knowledge of organ procurement and donor selection options to maximize access to and benefits of transplant for individual patients.	
Milestones	Examples
Level 1 <i>Demonstrates knowledge of basic principles of organ procurement and allocation for living and deceased donors, including donor options</i>	• Recognizes donor-after-brain death and donor-after-cardiac death deceased donors and marginal living donors • Describes the kidney allocation system
Level 2 <i>Demonstrates knowledge of advanced principles of organ procurement and allocation for living and deceased donors, including donor options</i>	• Recognizes factors related to deceased donor organ quality including kidney donor profile index (KDPI), cold ischemia time, warm ischemia time, and pump parameters
Level 3 <i>Applies knowledge of organ procurement and deceased donor and living donor options to the care of kidney transplant patients</i>	• Advises transplant candidates on potential benefits and risks of high KDPI, hepatitis-C kidneys, dual kidneys, or pediatric kidneys
Level 4 <i>Applies knowledge of organ procurement and deceased donor and living donor options to the care of patients with medical complexities, including candidates for multi-organ transplant or those with unique needs</i>	• Advises insulin-dependent diabetic kidney transplant candidate about pros and cons of different transplant options, including deceased vs. living kidney donor transplant, simultaneous pancreas-kidney transplant, or pancreas after kidney transplant
Level 5 <i>Recognizes and applies emerging, novel strategies as they apply to donor selection and organ allocation practices</i>	• Advises highly sensitized patients about imlifidase, CAR-T cell therapy, and tolerance as desensitization options
Assessment Models or Tools	• Dashboards on quality and safety metrics • Direct observation • E-module multiple choice tests • Medical record (chart) audit • Multisource feedback • Reflection • Simulation
Curriculum Mapping	•
Notes or Resources	• Danovitch, Gabriel M. 2026. <i>Handbook of Kidney Transplantation 7th Ed.</i> Lippincott Williams & Wilkins.

- Zhang, Xingyu, Chethan Puttarajappa, Frank Spitz, et al. 2026. "Rethinking High-KDPI Kidneys: A Multidomain Approach to Predicting Success." *Clinical Transplantation* 40:2. doi/10.1111/ctr.70472.
- [Concepcion](#), Beatrice P., [Meera Harhay](#), [Jay Ruterbories](#), [Jan Finn](#), [Alex Wiseman](#), [Matthew Cooper](#), [Sumit Mohan](#), and [Mona D. Doshi](#). 2023. "Current landscape of Kidney Allocation: Organ Procurement Organization Perspectives." *Clinical Transplantation* 37:4. <https://doi.org/10.1111/ctr.14925>.
- Kandaswamy, R., P.G. Stock, J.M. Miller, D. Handarova, A.K. Israni, and J.J. Snyder. 2025. "OPTN/SRTR 2023 Annual Data Report: Pancreas." *Am J Transplant* Feb;25(2S1):S138-S192. doi: 10.1016/j.ajt.2025.01.021. PMID: 39947803; PMCID: PMC12334190.

Systems-Based Practice 1: Patient Safety and Quality Improvement Overall Intent: To engage in the analysis and management of patient safety events, including relevant communication with patients, families, and health care professionals; to conduct a quality improvement (QI) project.	
Milestones	Examples
Level 1 <i>Demonstrates knowledge of common patient safety events</i> <i>Demonstrates knowledge of how to report patient safety events</i> <i>Demonstrates knowledge of basic quality improvement methodologies and metrics</i>	• Lists patient misidentification or medication errors as common patient safety events • Describes how to report errors at their institution • Describes quality improvement tools such as the fishbone diagram, Five Whys, and Plan-Do-Study-Act (PDSA) cycles
Level 2 <i>Identifies system factors that lead to patient safety events</i> <i>Reports patient safety events through institutional reporting systems (simulated or actual)</i> <i>Describes local quality improvement initiatives</i>	• Identifies that lack of recognition of drug-drug interactions can lead to toxic or subtherapeutic immunosuppressant levels • Reports near miss of wrong medication administration due to similar-looking container/labeling through institutional reporting system • Summarizes protocols and initiatives aimed at reducing medication errors
Level 3 <i>Participates in analysis of patient safety events (simulated or actual)</i> <i>Participates in disclosure of patient safety events to patients and families (simulated or actual)</i> <i>Participates in local quality improvement initiatives</i>	• Actively participates in morbidity and mortality conference or other patient safety/quality improvement conferences • Through simulation, communicates with patients/families about a medication error • Participates in a QI project, but has not yet designed a QI project
Level 4 <i>Conducts analysis of patient safety events and offers error prevention strategies (simulated or actual)</i>	• Collaborates with a multidisciplinary team to lead the analysis of a patient safety event and uses tools such as PDSA cycle or Five Whys to analyze the underlying causes

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<i>Discloses patient safety events to patients and families (simulated or actual)</i> <i>Demonstrates the skills required to identify, develop, implement, and analyze a quality improvement project</i>	• Leads disclosure of inappropriate medication administration to the patient and family • Participates in a QI project to reduce rates of readmission after transplantation
Level 5 <i>Actively engages teams and processes to modify systems to prevent patient safety events</i> <i>Role models or mentors others in the disclosure of patient safety events</i> <i>Creates, implements, and assesses quality improvement initiatives at the institutional or community level</i>	• Assumes a leadership role to represent the transplant program at the departmental or institutional level for a patient safety committee • Mentors peers in processes and procedures for disclosing medication errors • Initiates and completes a QI project to reduce incidence of leukopenia in the early post-transplant period
Assessment Models or Tools	• Direct observation • Documentation of QI or patient safety project processes or outcomes • Medical record (chart) audit • Multisource feedback • Portfolio • Reflection • Simulation
Curriculum Mapping	•
Notes or Resources	• Institute for Healthcare Improvement (IHI) website (http://www.ihl.org/Pages/default.aspx), which includes multiple choice tests, reflective writing samples, and more) • IHI Open School online modules: Improvement Capability & Patient Safety • Quorum QI Tools & Resources website (https://quorum.hqontario.ca/en/Home/QI-Tools-Resources/QI-Essentials) • American Medical Association (AMA) STEPS Forward PDSA website (https://edhub.ama-assn.org/steps-forward/module/2702507?resultClick=1&bypassSolrId=J_2702507)

- Centers for Medicare and Medicaid Services (CMS) PDSA Cycle Template (<https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/QAPI/downloads/PDSACycledebedits.pdf>)
- Silver, S.A., Z. Harel, R. McQuillan, et al. 2016. "How to Begin a Quality Improvement Project." *CJASN* May; 11(5) 893-900. doi: [10.2215/CJN.11491015](https://doi.org/10.2215/CJN.11491015).
- ACGME Clinical Learning Environment Review (CLER): Health Care Quality
 - Wagner, Robin, Nancy Koh, James P. Bagian, and Kevin B. Weiss for the CLER Program. 2016. *CLER 2016 National Report of Findings. Issue Brief #3: Health Care Quality*. Accreditation Council for Graduate Medical Education, Chicago, Illinois USA
- CLER: Patient Safety
 - Wagner, Robin, Nancy Koh, James P. Bagian, and Kevin B. Weiss for the CLER Program. 2016. *CLER 2016 National Report of Findings. Issue Brief #2: Patient Safety*. Accreditation Council for Graduate Medical Education, Chicago, Illinois USA

Systems-Based Practice 2: System Navigation for Patient-Centered Care

Overall Intent: To effectively navigate the health care system, including the interdisciplinary team and other care providers, to adapt care to a specific patient population to ensure high-quality patient outcomes.

Milestones	Examples
Level 1 <i>Demonstrates knowledge of care coordination</i> <i>Identifies key elements for safe and effective transitions of care</i> <i>Demonstrates knowledge of population and community health needs</i>	• Lists interprofessional team members involved in kidney transplant • Lists the essential components of effective care transition and hand-off between fellow colleagues • Recognizes that organ allocation systems exist • Identifies that patients in rural areas may have different needs than urban patients
Level 2 <i>Coordinates care of patients in routine clinical situations, effectively using the roles of the interprofessional teams</i> <i>Performs effective transitions of care in routine clinical situations</i> <i>Demonstrates general knowledge of barriers to transplantation and adherence of care</i>	• Coordinates care with the outpatient clinic at the time of discharge from the hospital • Performs a routine case sign-out but still needs guidance to identify and appropriately triage cases or calls • Attaches electronic health record inbox to another colleague prior to going on vacation • Identifies components of social determinants of health and how they impact the delivery of patient care
Level 3 <i>Coordinates care of patients in complex clinical situations, effectively using the roles of the interprofessional teams</i> <i>Performs effective transitions of care in complex clinical situations</i> <i>Identifies barriers to transplantation and adherence of care in specific populations</i>	• For a kidney transplant patient with acute rejection in renal failure, coordinates with other interprofessional teams including the admitting physician, dialysis nurses, post-transplant nurse coordinator, transplant pharmacist, social workers, pathologist, and interventional radiologist for dialysis or apheresis access • Works with the social worker to coordinate care for a patient treated for acute rejection that will ensure follow-up to a clinic visit after discharge from the hospital • Coordinates with local rural laboratories to order blood work to prevent long drives to hospital

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Level 4 <i>Role models effective coordination of patient-centered care among different disciplines and specialties</i> <i>Role models and advocates for effective transitions of care within and across health care delivery systems</i> <i>Adapts practice to address barriers to transplantation and adherence of care, and to provide for the needs of specific populations</i>	• Role models and educates other team members regarding the engagement of appropriate interprofessional teams and ensures that the necessary resources have been arranged • During inpatient rotations, leads multidisciplinary rounds for the team • Performs safe and effective transition of care of a patient treated for rejection to the outpatient community nephrologist • Analyzes care gaps for rural patients with transplant
Level 5 <i>Critically analyzes the process of care coordination and leads in the design and implementation of improvements</i> <i>Improves quality of transitions of care within and across health care delivery systems to optimize patient outcomes</i> <i>Leads innovations and advocates for populations with health care barriers</i>	• Works with team members or leadership to analyze and develop protocols for care coordination, and takes a leadership role in implementing changes to improve the care coordination • Works with a QI mentor to identify better hand-off tools for on-call services • Designs a health curriculum to help others learn to identify local resources and barriers to care and laboratory testing • Helps develop telehealth program to ensure that patients in rural areas can be seen by transplant nephrologists
Assessment Models or Tools	• Direct observation • Objective structured clinical examination (OSCE) • Medical record (chart) audit • Multisource feedback • Quality metrics and goals mined from electronic health records (EHR) • Review of sign-out tools, utilization and review of checklists
Curriculum Mapping	•
Notes or Resources	• Kaplan, K.J. 2016. "In Pursuit of Patient-Centered Care." tissuepathology.com. <u>http://tissuepathology.com/2016/03/29/in-pursuit-of-patient-centered-care/#axzz5e7nSsAns</u>

- Skochelak, S.E., R.E. Hawkins, L.E. Lawson, et. al. 2016. *AMA Education Consortium: Health Systems Science. 1st ed.* Elsevier.
- I-PASS (<http://www.ipassstudygroup.com/>) Handoff Study—Faculty Observation Tools (<http://www.ipasshandoffstudy.com/materialsrequest>)
- Institute for Healthcare Improvement website (<https://www.ihl.org/>)
 - IHI Open School online modules: Triple Aim for Populations
- CLER: Care Transitions
 - Wagner, Robin, Nancy Koh, James P. Bagian, Kevin B. Weiss, for the CLER Program. *CLER 2016 National Report of Findings. Issue Brief #5: Care Transitions.* Accreditation Council for Graduate Medical Education, Chicago, Illinois USA. ISBN-13: 978-1-945365 -10-2
- CLER: Health Care Disparities
 - Wagner, Robin, Nancy Koh, James P. Bagian, Kevin B. Weiss, for the CLER Program. *CLER 2016 National Report of Findings. Issue Brief #4: Health Care Disparities.* Accreditation Council for Graduate Medical Education, Chicago, Illinois USA. ISBN-13: 978-1-945365-07-2

Systems-Based Practice 3: Physician Role in Health Care Systems

Overall Intent: To understand one'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 <i>Identifies key components of the complex health care system (e.g., hospital, finance, personnel, technology)</i> <i>Describes basic health payment systems (e.g., government, private, public, uninsured care) and practice models</i>	• Discusses the role of OPTN and CMS as regulators of transplant care • Identifies the physician's role and professional identity within the transplant system • Describes the types of insurance coverage for transplant care and related medications
Level 2 <i>Describes how components of a complex health care system are inter-related, and how this impacts patient care</i> <i>Delivers care with consideration of each patient's payment model (e.g., insurance type)</i>	• Identifies how the unavailability of an outpatient dialysis chair impacts timely discharge of patients with delayed graft function • Takes into consideration patient's prescription drug coverage when choosing a tacrolimus formulation
Level 3 <i>Discusses how individual practice affects the broader system (e.g., length of stay, readmission rates, clinical efficiency)</i> <i>Engages with patients in shared decision-making, informed by each patient's payment models</i>	• Ensures that patients admitted for acute kidney injury have appropriately scheduled labs and clinic follow-up at discharge to avoid readmission • In a patient who has a high out-of-pocket deductible, discusses the option of conversion of calcineurin inhibitor to belatacept, using shared decision-making
Level 4 <i>Manages various components of the complex health care system to provide efficient and effective patient care</i> <i>Advocates for patient care needs (e.g., community resources, patient assistance resources) with consideration of the limitations of each patient's payment model</i>	• Coordinates care with outpatient infusion clinic, infectious disease, and pharmacy to administer intravenous antivirals for patient with cytomegalovirus (CMV) infection to avoid admission • Works collaboratively with pharmacy, financial counselors, and social work to arrange patient-assistance resources for immunosuppression coverage in a patient who cannot afford their medications

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Level 5 <i>Advocates for or leads systems change that enhances high-value, efficient, and effective patient care</i> <i>Participates in health policy advocacy activities</i>	• Works with community or professional organizations to advocate for increased insurance coverage of immunosuppression drugs • Works with local organizations to raise awareness of and educate the community about living and deceased organ donation
Assessment Models or Tools	• Direct observation • Medical record (chart) audit • Panel practice data • Patient satisfaction data • Portfolio
Curriculum Mapping	•
Notes or Resources	• Center for Medicare and Medicaid Services. 2018. "MIPS and MACRA." https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/MACRA-MIPS-and-APMs/MACRA-MIPS-and-APMs.html. • Agency for Healthcare Research and Quality (AHRQ). 2016. "The Challenges of Measuring Physician Quality." https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/challenges.html. • AHRQ. 2018. "Major physician performance sets." https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/physician/measurementssets.html. • The Kaiser Family Foundation website: www.kff.org. • Dzau, V. J., M. McClellan, S. Burke, et al. 2017. "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://doi.org/10.31478/201703e. The Commonwealth Fund: Health system data center. http://datacenter.commonwealthfund.org/?_ga=2.110888517.1505146611.1495417431-1811932185.1495417431#ind=1/sc=1 • AMA Practice Management: https://www.ama-assn.org/practice-management • Askin, Elisabeth, Nathan Moor, and Vikram Shankar. 2014. <i>The Health Care Handbook: A Clear & Concise Guide to the United States Health Care System, 2nd Ed.</i> Washinton University in St. Louis.

Practice-Based Learning and Improvement 1: Evidence-Based and Informed Practice Overall Intent: To incorporate evidence and patient values into clinical practice.	
Milestones	Examples
Level 1 <i>Demonstrates how to access and use available evidence and incorporate patient preferences and values to take care of a routine patient</i>	Identifies evidence-based guidelines for cancer screening for pre-transplant evaluation
Level 2 <i>Articulates clinical questions and elicits patient preferences and values to guide evidence-based care</i>	Discusses patient preferences for colon cancer screening based on available evidence-based modalities as a part of pre-transplant evaluation
Level 3 <i>Locates and applies the best available evidence, integrated with patient preference, to the care of complex patients</i>	For a patient with high risk of colon cancer, discusses colonoscopy as the recommended screening modality based on current evidence as a part of transplant evaluation
Level 4 <i>Critically appraises and applies evidence even in the face of uncertainty and conflicting evidence to guide care, tailored to the individual patient</i>	Applies evidence, including new primary literature, to the treatment of a patient with chronic antibody-mediated rejection
Level 5 <i>Coaches others to critically appraise and apply evidence for complex patients and/or participates in the development of guidelines</i>	Helps update multidisciplinary institution guideline based on new primary literature for treatment of CMV
Assessment Models or Tools	- Direct observation - Evidence-based write-up - Journal club or evidence-based medicine presentation evaluation - Oral or written examinations - Research portfolio
Curriculum Mapping	
Notes or Resources	- Al-Adra, David P., Laura Hammel, John Roberts, et al. 2021. "Pretransplant Solid Organ Malignancy and Organ Transplant Candidacy: A Consensus Expert Opinion Statement." <i>American Journal of Transplantation</i> Feb 21(2):460-474 doi: 10.1111/ajt.16318. Epub 2020 Oct 23. Mayer, Katharina A., Eva Schrezenmeier, Matthias Diebold, et al. 2024. "A Randomized Phase 2 Trial of Felzartamab in Antibody Mediated Rejection." <i>NEJM</i> 391: 122-132. doi:10.1056/NEJMoa2400763.

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; reflect 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 <i>Accepts responsibility for personal and professional development by establishing goals</i> <i>Identifies the factors which contribute to gap(s) between expectations and actual performance</i> <i>Actively seeks opportunities to improve</i>	● Sets a personal practice goal to increase patient discussions and chart documentation of recommended healthy living habits ● Identifies gaps in knowledge of acute rejection and develops study plan ● Asks for feedback from patients, families, and patient care team members
Level 2 <i>Demonstrates openness to performance data (feedback and other input) in order to inform goals</i> <i>Analyzes and reflects on the factors which contribute to gap(s) between expectations and actual performance</i> <i>Designs and implements a learning plan, with prompting</i>	● Shows appreciation and integrates feedback from faculty on counseling patients on healthy living habits ● Assesses time management skills and how it impacts timely completion of clinic notes and patient care tasks ● In preparation for semi-annual review, analyzes practice habit data in relation to program goals, department and/or institutional standards/national protocols to assist in the development of an individual learning plan (ILP) for indicated areas
Level 3 <i>Seeks performance data episodically, with adaptability and humility</i> <i>Analyzes, reflects on, and institutes behavioral change(s) to narrow the gap(s) between expectations and actual performance</i> <i>Independently creates and implements a learning plan</i>	● Performs a singular chart audit to determine the percent of their patients who received education on healthy living habits ● Identifies and documents goals using the Milestones document as a reference and prioritizes areas for improvement ● Starts reviewing charts on patients prior to clinic visit/hospital rounds to assist with time management during the clinic session/hospital team rounds

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Level 4 <i>Intentionally seeks performance data consistently, with adaptability and humility</i> <i>Challenges assumptions and considers alternatives in narrowing the gap(s) between expectations and actual performance</i> <i>Uses performance data to measure the effectiveness of the learning plan and, when necessary, improves it</i>	• Completes a quarterly chart audit to ensure proper documentation of counseling on healthy living habits • After a challenging patient encounter, debriefs with the attending and other patient care team members to optimize future collaboration in the care of the patient and family • At the following semi-annual review, reviews individualized learning plan goals and plans next steps if necessary
Level 5 <i>Role models consistently seeking performance data with adaptability and humility</i> <i>Coaches others on reflective practice</i> <i>Facilitates the design and implementation of learning plans for others</i>	• Encourages others to perform quarterly chart audits • Develops and shares an educational module for discussing healthy living habits with patients • Assists other learners in developing their individualized learning plans
Assessment Models or Tools	• Career development plan • Direct observation • Hospital and conference presentations • Performance data, including 360 feedback from evaluations, quality scorecards • Review of learning plan
Curriculum Mapping	•
Notes or Resources	• Hojat, M., J.J. Veloski, J.S. Gonnella. 2009. "Measurement and Correlates of Physicians' Lifelong Learning." <i>Acad Med</i> Aug;84(8):1066-74. doi: 10.1097/ACM.0b013e3181acf25f. <i>Contains a validated questionnaire about physician lifelong learning.</i> • Burke, A.E., B. Benson, Robert Englander, C. Carraccio, and P.J. Hicks. 2014. "Domain of Competence: Practice-Based Learning and Improvement." <i>Acad Pediatr</i>. 14: S38-S54. doi: 10.1016/j.acap.2013.11.018. • Lockspeiser, T.M., P.A. Schmitter, J.L. Lane, et al. 2013. "Assessing Residents' Written Learning Goals and Goal Writing Skill: Validity Evidence for the Learning

	Goal Scoring Rubric." <i>Acad Med</i> Oct;88(10)1558-63. doi: 10.1097/ACM.0b013e3182a352e6 .
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Professionalism 1: Professional Behavior and Ethical Principles Overall Intent: To recognize and address lapses in ethical and professional behavior, demonstrate ethical and professional behaviors, and use appropriate resources for managing ethical and professional dilemmas.	
Milestones	Examples
Level 1 <i>Demonstrates professional behavior in routine situations</i> <i>Demonstrates knowledge of the ethical principles underlying informed consent, confidentiality, and stewardship of limited resources</i>	• Respectfully interacts with colleagues in the consultant role • Checks patient's understanding when seeking informed consent to ensure that the medical team's actions are consistent with the patient's care directives • Articulates how the principle of "do no harm" applies to a patient who may not need a kidney biopsy even though the training opportunity exists
Level 2 <i>Demonstrates professional behavior in complex or stressful situations</i> <i>Recognizes need to seek help in managing and resolving straightforward ethical situations</i>	• Respectfully interacts with colleagues even when census is high post-call • Identifies and applies ethical principles involved in informed consent when the fellow is unclear of all of the risks and consults with an attending
Level 3 <i>Identifies and demonstrates insight into potential triggers for lapses in professional behavior</i> <i>Recognizes need to seek help in managing and resolving complex ethical situations</i>	• Apologizes to team member for insisting on a particular management strategy when a collaborative approach may have been more effective • Engages the family of a critically ill transplant patient who may require renal replacement therapy and recognizes the need for help from other team members to navigate the family's conflicting goals of care
Level 4 <i>Acts to prevent lapses in professional behavior in oneself and others</i> <i>Recognizes and uses appropriate resources for managing and resolving ethical situations as needed (e.g., ethics consultations, literature review, risk management/legal consultation)</i>	• Identifies fatigue or burnout in a colleague as a potential source of professionalism lapse and proposes an alternate call schedule • In a braindead transplant recipient whose family insists on aggressive life-sustaining measures, engages ethics consult and legal consultation

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Level 5 Serves as a role model to others for exceptional professional behavior <i>Identifies and seeks to address system-level factors that induce or exacerbate ethical problems or impede their resolution</i>	● Is identified by peers and faculty as a role model who displays integrity, high emotional intelligence, active listening skills, clear and respectful communication, and accountability and reliability, and is supportive of other team members ● Engages stakeholders to address excessive wait times in clinic to decrease patient and clinician frustrations that may lead to unprofessional behavior
Assessment Models or Tools	● Clinical and educational work hour logging ● Completion of required institutional human resource assignments ● Direct observation ● Global evaluation ● Health care system safety or professionalism reports ● Multisource feedback ● Obtainment of required vaccines ● Oral or written self-reflection
Curriculum Mapping	●
Notes or Resources	● American Board of Pediatrics. "Chapter 3: Professionalism with Physician Colleagues and Other Health Professionals." <i>Includes several vignettes for discussion.</i> ● American Medical Association Code of Ethics: https://www.ama-assn.org/delivering-care/ama-code-medical-ethics. ● American Board of Internal Medicine; American College of Physicians-American Society of Internal Medicine; European Federation of Internal Medicine. 2002. "Medical Professionalism in the New Millennium: A Physician Charter." <i>Ann Intern Med</i> 136:243-246. http://abimfoundation.org/wp-content/uploads/2015/12/Medical-Professionalism-in-the-New-Millennium-A-Physician-Charter.pdf. ● Bynny, R.L., D.S. Paauw, M.A. Papadakis, and S. Pfeil. 2017. Medical Professionalism Best Practices: Professionalism in the Modern Era. Alpha Omega Alpha Honor Medical Society. ISBN: 978-1-5323-6516-4 ● Domen, R.E., K. Johnson, R.M. Conran, et al. 2017. "Professionalism in Pathology: A Case-Based Approach as a Potential Education Tool." <i>Arch Pathol Lab Med</i> 141:215-219. doi: 10.5858/arpa.2016-2017-CP.

- Ginsburg, S., G. Regehr, D. Stern, and L. Lingard. 2002. "The Anatomy of the Professional Lapse: Bridging the Gap Between Traditional Frameworks and Students' Perceptions." *Acad Med* Jun;77(6):516-22. PubMed PMID: 12063195.
- Chang, Hyung-Joo, Young-Mee Lee, Young-Hee Lee, and Hyo-Jin Kwon. 2017 Causes of Resident Lapses in Professional Conduct During the Training: A Qualitative Study on the Perspectives of Residents. *Medical Teacher* 39:3, 278-284, DOI: 10.1080/0142159X.2017.1270432
- Levinson, W., S. Ginsburg, F.W. Hafferty, and C.R. Lucey. 2014. *Understanding Medical Professionalism*. 1st ed. McGraw-Hill Education.
- Papadakis, M.A., D.S. Paauw, F.W. Hafferty, J. Shapiro, R.L. Byyny; Alpha Omega Alpha Honor Medical Society Think Tank. 2012. "Perspective: The Education Community Must Develop Best Practices Informed by Evidence-Based Research to Remediate Lapses of Professionalism." *Acad Med* Dec;87(12):1694-8. doi: 10.1097/ACM.0b013e318271bc0b. PubMed PMID: 23095921.
- Ziring, D., R.M. Frankel, D. Danoff, J.H. Isaacson, and H. Lochnan. 2018. "Silent Witnesses: Faculty Reluctance to Report Medical Students' Professionalism Lapses." *Acad Med* Nov;93(11):1700-1706. doi: 10.1097/ACM.0000000000002188. PubMed PMID: 29489466.

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 <i>Takes responsibility for failure to complete tasks and responsibilities, identifies potential contributing factors, and describes strategies for ensuring timely task completion in the future</i> <i>Responds promptly to requests or reminders to complete tasks and responsibilities</i>	• Maintains timely attendance at conferences • Completes patient notes within expected institutional time frame • Completes administrative tasks such as end-of-rotation evaluations • Responds promptly to reminders from program administrator to complete work hour logs
Level 2 <i>Performs tasks and responsibilities in a timely manner with appropriate attention to detail in routine situations</i> <i>Recognizes situations that may impact own ability to complete tasks and responsibilities in a timely manner</i>	• Completes administrative tasks, documents safety modules, procedure review, and licensing requirements by specified due date • Anticipates need for patient or test result follow-up after completing a rotation • Before going out of town, completes tasks in anticipation of lack of computer access while traveling
Level 3 <i>Performs tasks and responsibilities in a timely manner with appropriate attention to detail in complex or stressful situations</i> <i>Proactively implements strategies to ensure that the needs of patients, teams, and systems are met</i>	• Notifies attending of multiple competing demands on call, appropriately triages tasks, and asks for assistance from other fellows or faculty members as needed • Maintains professional accountability by demonstrating a commitment to lifelong learning and the provision of high-quality care • In preparation for being out of the office, arranges coverage for assigned clinical tasks on patients and ensures appropriate continuity of care
Level 4 <i>Recognizes situations that may impact others' ability to complete tasks and responsibilities in a timely manner</i>	• Notes a colleague's ill child and takes over their clinical duties unprompted

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Level 5 <i>Offers and implements strategies to make systems-level care responsibilities more efficient</i>	• Sets up a meeting with transplant infectious disease and urology to streamline management of recurrent urinary tract infection and reduce readmissions • Notes fatigue among other learners and proposes a system to relieve colleagues when they are too tired to work
Assessment Models or Tools	• Chart audit • Compliance with deadlines and timelines • Direct observation • Global evaluations • Multisource feedback • Self-evaluations and reflective tools • Simulation
Curriculum Mapping	•
Notes or Resources	• American Sociological Association Code of Ethics • Mueller, P.S. 2015. "Teaching and Assessing Professionalism in Medical Learners and Practicing Physicians." <i>Rambam Maimonides Med J</i> Apr 29;6(2):e0011. doi: 10.5041/RMMJ.10195. eCollection 2015 Apr. Review. PubMed PMID: 25973263; PubMed Central PMCID: PMC4422450. • Levinson, Wendy, Shiphra Ginsburg, Frederic W. Hafferty, and Catherine R. Lucey. 2014. "<u>Chapter 5: Integrity and Accountability</u>" in <i>Understanding Medical Professionalism</i>. McGraw-Hill Education. • Individual program resources: • Code of conduct from fellow/resident institutional manual • Expectations of residency program regarding accountability and professionalism

Professionalism 3: Self-Awareness and Well-Being**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>With assistance, recognizes status of personal and professional well-being</i>	• Acknowledges own response after a transplant recipient experiences graft loss, severe rejection, or death • Accepts and takes to heart feedback about their personal and professional well-being from others • Receives feedback on missed emotional cues after difficult transplant conversations with patients and/or families
Level 2 <i>Independently recognizes status of personal and professional well-being and seeks help when needed</i>	• Articulates signs of distress including depression, anxiety, burnout, substance use disorder, and suicidal ideation • Independently identifies and communicates impact of a personal family tragedy • Recognizes a pattern of missing emotional cues during difficult transplant conversations with patients and/or families and asks for feedback
Level 3 <i>With assistance, proposes a plan to optimize personal and professional well-being</i>	• Develops a reflective response to deal with personal impact of difficult patient encounters • Integrates feedback from the multi-disciplinary team to develop a plan for identifying and responding to emotional cues during the next difficult transplant conversations with patients and/or families
Level 4 <i>Independently develops a plan to optimize personal and professional well-being (e.g., well-being survey, fatigue assessment)</i>	• Independently identifies ways to manage personal stress • Self-assesses and seeks additional feedback on skills responding to emotional cues during difficult transplant conversations with patients and/or families
Level 5 <i>Participates in a system change to improve well-being in self and others</i>	• Assists in organizational efforts to address clinician well-being after patient diagnosis/prognosis/death • Works with multi-disciplinary team to develop a feedback framework for learners around difficult transplant conversations with patients and/or families
Assessment Models or Tools	• 360-degree evaluations • Direct observation • Group interview or discussions for team activities • Individual interview • Institutional online training modules • Self-assessment and personal learning plan • Work hour logs

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Curriculum Mapping	•
Notes or Resources	• 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 Programs • Hicks, P.J., D. Schumacher, S. Guralnick, C. Carraccio, and A.E. Burke. 2014. "Domain of Competence: Personal and Professional Development." <i>Acad Pediatr</i> Mar-Apr;14(2 Suppl):S80-97. doi: 10.1016/j.acap.2013.11.017. • ACGME Tools and Resources on Physician Well-Being: https://www.acgme.org/education-and-resources/physician-well-being-resources/. • Papanikitas, Andrew N. 2017. "Self-Awareness and Professionalism." <i>InnovAiT</i> 10(8): 452–45). https://ora.ox.ac.uk/objects/uuid:16ee6cd3-fca4-4e6c-b2c4-3497c4842457/download_file?file_format=pdf&safe_filename=Papanikitas_2018_self_awareness_professionalism.pdf&type_of_work=Journal+article. • AMA: Physician Well-Being and Burnout: https://www.ama-assn.org/topics/physician-well-being • AMA: 4 Steps to Creating an Effective Physician Well-Being Program:https://www.ama-assn.org/practice-management/physician-health/4-steps-creating-effective-physician-well-being-program

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 <i>Uses language and nonverbal behavior to demonstrate respect and establish rapport</i> <i>Identifies common barriers to effective communication (e.g., language, disability) while accurately communicating own role within the health care system</i> <i>Identifies the need to adjust communication strategies to achieve shared decision-making</i>	• Introduces self, faculty member, and other health care team members and identifies patient and others in the room • Engages all parties in health care discussion • Uses proper posture and maintains eye contact • Identifies specific patient needs such as a trained interpreter for limited English proficiency patients • Uses written materials that are language and literacy appropriate • Identifies patients who require informed consent that have questionable capacity
Level 2 <i>Establishes a therapeutic relationship in straightforward encounters using active listening and clear language</i> <i>Identifies complex barriers to effective communication (e.g., health literacy, cultural)</i> <i>Organizes and initiates communication with patient/patient's family to facilitate shared decision-making</i>	• Listens and demonstrates empathy toward the patient • In general, communicates in a manner that is uncomplicated, specific, minimizes jargon, and incorporates teach-back with the patient • Recognizes that a patient who is unable to read will need handouts with diagrams and pictures to communicate information • Uses shared decision-making to discuss option for high KDPI kidneys with a patient and family during pre-transplant evaluation

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Level 3 <i>Establishes a therapeutic relationship in challenging patient encounters</i> <i>When prompted, reflects on personal biases while attempting to minimize communication barriers</i> <i>With guidance, uses shared decision-making to implement a personalized care plan</i>	• Maintains a normal tone of voice with difficult patients • Acknowledges patient's symptom burden from medications and underlying disease, and displays empathy • When prompted by a faculty member, acknowledges potential bias in caring for a patient with non-adherence experiencing allograft rejection • With help from an attending, conducts a family meeting to determine a plan for return to dialysis in a patient with a failing allograft
Level 4 <i>Easily establishes therapeutic relationships, with attention to patient/family concerns and context, regardless of complexity</i> <i>Independently recognizes personal biases while attempting to proactively minimize communication barriers</i> <i>Independently uses shared decision-making to implement a personalized care plan</i>	• Engages family to help support the patient for successful transplant listing and post-transplant course • Implements perspective-taking and individuation to reduce implicit bias when treating a patient with non-adherence experiencing allograft rejection • Engages patient to decide whether to proceed with living kidney donation after discovering high-risk APOL1 genotype
Level 5 <i>Mentors others in situational awareness and critical self-reflection to consistently develop positive therapeutic relationships</i> <i>Role models self-awareness while identifying a contextual approach to minimize communication barriers</i> <i>Role models shared decision-making in patient/family communication, including situations with a high degree of uncertainty/conflict</i>	• Role models and teaches self-reflection skills to facilitate shared understanding and shared decision-making • Addresses disagreements among team members, consultants, and patients • Develops an educational program to mitigate unconscious bias in the transplant team

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Assessment Models or Tools	• Direct observation • Kalamazoo Essential Elements Communication Checklist (Adapted) • Standardized patients • 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)
Curriculum Mapping	
Notes or Resources	• DeAngelis, Tori. 2019.. “How Does Implicit Bias by Physicians Affect Patients’ Health Care?” <i>American Psychological Association CE Corner</i> Vol 50, No. 3, page 22. https://www.apa.org/monitor/2019/03/ce-corner. • Gutmann, E. 2003. “Pathologists and Patients: Can We Talk?” <i>Mod Pathol</i> 16, 515–518. doi:10.1097/01.MP.0000068260.01286.AC. • Institute for Healthcare Improvement. 2017. “How to Reduce Implicit Bias.” https://www.ihl.org/library/blog/how-reduce-implicit-bias. • Laidlaw, Anita and Jo Hart. 2011. “Communication Skills: An Essential Component of Medical Curricula. Part I: Assessment of Clinical Communication: AMEE Guide No. 51.” <i>Med Teach</i>. 33(1):6-8. doi: 10.3109/0142159X.2011.531170. Review. PubMed PMID: 21182378. • Makoul, G. 2001. “Essential Elements of Communication in Medical Encounters: The Kalamazoo Consensus Statement.” <i>Acad Med</i> Apr;76(4):390-3. Review. PubMed PMID: 11299158. • Makoul, G. 2001. “The SEGUE Framework for Teaching and Assessing Communication Skills.” <i>Patient Educ Couns</i> Oct;45(1):23-34. PubMed PMID: 11602365. • Lovell, Brenda. 2010. “Physician Communication: Barriers to Achieving Shared Understanding and Shared Decision Making with Patients.” <i>J Participat Med</i> 2:e12. https://participatorymedicine.org/journal/evidence/research/2010/10/13/physician-communication-barriers-to-achieving-shared-understanding-and-shared-decision-making-with-patients/. • Wade, Stanley R. 2008. “Put Conflict Resolution Skills to Work.” <i>J Oncol Pract</i> 4(1):37–40. doi:10.1200/JOP.0816501.

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| | <ul style="list-style-type: none">• Symons, A.B., A. Swanson, D. McGuigan, S. Orrange, and E.A. Akl. 2009. "A Tool for Self-Assessment of Communication Skills and Professionalism in Fellows." <i>BMC Med Educ</i> 9:1. |
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Interpersonal and Communication Skills 2: Patient and Family Education Overall Intent: To effectively educate patients and their families and use shared-decision making to improve outcomes.	
Milestones	Examples
Level 1 <i>Recognizes link between effective patient education and transplant outcomes</i>	• Knows the relationship between patients' understanding of the importance of taking their medications to prevent rejection and the appropriate timing of lab draws to guide medication dosing in ensuring allograft health
Level 2 <i>Describes methods for effective patient and patient family education</i>	• Identifies strategies to improve medication adherence to anti-rejection medications • Identifies a pharmacy teaching session about anti-rejection medications as an additional learning opportunity for patients and families
Level 3 <i>Educates patients and their families effectively in straightforward situations, including eliciting understanding of information provided</i>	• Uses the teach-back method to confirm that patients and families understand the appropriate timing of laboratory draws in relation to medication administration • Provides patients/families with strategies to remember to take medications, including pillbox use and phone alarms
Level 4 <i>Educates patients and their families effectively in complex situations</i>	• For a patient with chronic antibody-mediated rejection, educates the patient/family about potential etiologies of this, what is known, and the limits of treatment, saying "I don't know" when that is the case, and follows up appropriately • Uses available resources to educate a patient with low health literacy or other barriers to care
Level 5 <i>Educates patients and their families in self-advocacy, community outreach, and activism</i>	• Visits local dialysis units to educate patients and staff about kidney transplant and how to improve access to transplant
Assessment Models or Tools	• Direct observation • Multisource feedback • Self-assessment • Self-reflection • Standardized patients or structured case discussions
Curriculum Mapping	•
Notes or Resources	• Jotterand, F., A. Amodio, and B.S. Elger. 2016. "Patient Education as Empowerment and Self-Rebiasing." <i>Med Health Care Philos</i> 19(4):553-561. https://link.springer.com/article/10.1007%2Fs11019-016-9702-9. • Lindeman, CA. Patient education. <i>Annu Rev Nur Res</i>. 1988;6:29-60. • Parent, K., K. Jones, L. Phillips, J.N. Stojan, and J.B. House. 2016. "Teaching Patient- and Family-Centered Care: Integrating Shared Humanity into Medical

	Education Curricula." <i>AMA J Ethics</i> 18(1):24-32. https://journalofethics.ama-assn.org/sites/journalofethics.ama-assn.org/files/2018-06/medu1-1601.pdf .
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Interpersonal and Communication Skills 3: 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 <i>Respectfully requests and/or receives a consultation</i> <i>Uses language that values all members of the health care team</i>	• When asking for a urology consultation for a kidney transplant patient with hydronephrosis, respectfully relays the diagnosis and need for intervention to relieve the obstruction • Following rounds, calls primary services to relay recommendations
Level 2 <i>Clearly and concisely requests and/or responds to a consultation request</i> <i>Communicates information effectively with all health care team members</i>	• For a kidney transplant patient with acute kidney injury, communicates diagnostic evaluation recommendations clearly and concisely in an organized and timely manner to the primary service • Sends a secure chat message to the dietitian of a chronic kidney disease patient to arrange education about dietary potassium restriction
Level 3 <i>Checks own understanding of Consultant recommendations and/or understanding of recommendations when providing consultation</i> <i>Uses active listening to adapt communication style to fit team needs</i>	• For a kidney transplant patient with acute rejection who needs thymoglobulin, communicates with the primary team to verify the understanding of the treatment plan and potential side effects • When conveying recommendations to a medical student, respectfully verifies understanding of recommendations and identifies opportunities for teaching
Level 4 <i>Coordinates recommendations from different members of the health care team to optimize patient care and resolve conflicts over recommendations</i>	• Initiates a multidisciplinary meeting to discuss discontinuation of immunosuppressant in a kidney transplant patient with cancer • Patiently explains the indications for dialysis in a newly transplanted patient with slow graft function
Level 5 <i>Role models flexible communication strategies that value input from all health care team members, resolving conflict when needed</i>	• Mediates a conflict resolution between members of the heart transplant team and kidney transplant team on a patient who may require a combined heart-kidney transplant • Explains the importance of including bedside nurse in discussion when the nurse was unintentionally excluded by a junior learner
Assessment Models or Tools	• Direct observation

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	• Global assessment • Multi-source feedback • Simulation • Medical record (chart) audit
Curriculum Mapping	•
Notes or Resources	• Roth, C.G., K.W. Eldin, V. Padmanabhan, and E.M. Freidman. 2018. "Twelve Tips for the Introduction of Emotional Intelligence in Medical Education." <i>Med Teach</i> Jul 21:1-4. doi: 10.1080/0142159X.2018.1481499. [Epub ahead of print] • Green, M., T. Parrott, and G. Cook. 2012. "Improving your Communication Skills." <i>BMJ</i> 344:e357 doi: https://doi.org/10.1136/bmj.e357. • Henry, S.G., E.S. Holmboe, and R.M. Frankel. 2013. "Evidence-Based Competencies for Improving Communication Skills in Graduate Medical Education: A Review with Suggestions for Implementation." <i>Med Teach</i> May; 35(5):395-403. doi: 10.3109/0142159X.2013.769677.

Interpersonal and Communication Skills 4: Communication Within Health Care Systems Overall Intent: To effectively communicate using a variety of methods.	
Milestones	Examples
Level 1 <i>Accurately records information in the patient record and safeguards patient personal health information</i>	• Creates documentation that is accurate but may include extraneous information • Shreds patient list after rounds; avoids talking about patients in the elevator
Level 2 <i>Documents diagnostic and therapeutic reasoning in the patient record in a timely manner</i> <i>Appropriately selects and uses direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context</i>	• Organizes and accurately documents clinical reasoning that supports the treatment plan • Completes documentation within institutional requirements, using standard documentation if applicable • Does not copy and paste extraneous information • Calls the patient with critical tacrolimus level to assess symptoms and immediately adjust medication dosing • Communicates with transplant coordinator for adjustment of non-critical tacrolimus level dosing
Level 3 <i>Demonstrates advanced diagnostic and therapeutic reasoning in the patient record</i> <i>Demonstrates effective use of direct (e.g., telephone, in-person) and indirect (e.g., progress notes, text messages) forms of communication based on context</i>	• Produces documentation that is accurate, organized, and concise, but may not consistently contain anticipatory (if/then) guidance • Calls the patient's emergency contact when patient with critical tacrolimus level is unreachable to assess symptoms and immediately adjust medication dosing
Level 4 <i>Communicates clearly, concisely, in a timely manner, and in an organized written form, including anticipatory guidance</i> <i>Achieves written and/or verbal communication (patient notes, email, etc.) that serves as an example for others to follow</i>	• In a patient with rejection, lays out an admission and treatment plan including medication dosage, labs needed, and anticipatory guidance on potential thymoglobulin infusion reaction and infectious prophylaxis • Develops or improves documentation templates or smart phrases

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Level 5 Models feedback to improve others' written communication <i>Guides departmental or institutional communication around policies and procedures</i>	• Leads a task force established by the transplant program to improve weekend hand-offs • Incorporates and ensures institutional policies are embedded within transplant program policies
Assessment Models or Tools	• Direct observation • Hand-off audit • Medical record (chart) audit • Multisource feedback
Curriculum Mapping	•
Notes or Resources	• Bierman, J.A., K.K. Hufmeyer, D.T. Liss, A.C. Weaver, and H.L. Heiman. 2017. "Promoting Responsible Electronic Documentation: Validity Evidence for a Checklist to Assess Progress Notes in the Electronic Health Record." <i>Teach Learn Med</i> Oct-Dec;29(4):420-432. doi: 10.1080/10401334.2017.1303385. Epub 2017 May 12. PubMed PMID: 28497983. • Haig, K.M., S. Sutton, and J. Whittington. 2006. "SBAR: A Shared Mental Model for Improving Communication Between Clinicians." <i>Jt Comm J Qual Patient Saf</i> Mar;32(3):167-75. PubMed PMID: 16617948. doi: 10.1016/s1553-7250(06)32022-3. • Starmer, A.J., N.D. Spector, R. Srivastava, A.D. Allen, C.P. Landrigan, T.C. Sectish; I-PASS Study Group. 2012. "I-pass, a Mnemonic to Standardize Verbal Handoffs." <i>Pediatrics</i> Feb;129(2):201-4. doi: 10.1542/peds.2011-2966. Epub 2012 Jan 9. PubMed PMID: 22232313.

Available Milestones Resources

Milestones 2.0: Assessment, Implementation, and Clinical Competency Committees Supplement, 2021 - <https://jgme.kglmeridian.com/view/journals/jgme/13/2s/article-p1.xml>

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/education-and-resources/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>

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