



# Entrustable Professional Activities

## EPA 4 for Pediatric Nephrology

### EPA 4: Provision and Supervision of Kidney-Related Procedures Including Native and Transplant Kidney Biopsy, Peritoneal Dialysis

#### Supervision Scale for This EPA

1. Trusted to observe or assist
2. Trusted to execute with direct supervision and coaching
3. Trusted to execute with indirect supervision for most simple cases and some complex cases
4. Trusted to execute with indirect supervision but may require discussion or direct supervision at critical portions for a few complex cases
5. Trusted to execute without supervision

#### Description of the Activity

Pediatric nephrologists are specifically trained to perform and supervise kidney-related procedures required to diagnose specific renal diseases by performing native or transplant kidney biopsies. In addition, pediatric nephrologists provide renal replacement therapy in the setting of both acute kidney injury and chronic kidney disease. This is accomplished through peritoneal dialysis, hemodialysis, or continuous renal replacement therapy (CRRT). The scope of practice includes all children and young adults from birth through late adolescence/early adulthood under the care or consultation from pediatric nephrology in both the outpatient and inpatient hospital setting.

The specific functions which define this EPA include:

1. Knowing the provisions including laboratory testing, establishing dialysis access, and equipment required to perform kidney biopsies and renal replacement therapy
2. Obtaining informed consent for kidney-related procedures from patients and legal guardians after readily understandable explanations of risks, benefits, and potential complications associated with each procedure
3. Developing, through deliberate practice, the skills necessary to perform and supervise kidney-related procedures, including native and transplant kidney biopsy, peritoneal dialysis, hemodialysis, and CRRT
4. Monitoring the status of patients during kidney-related procedures, including timely treatment of potential complications associated with each procedure
5. Providing appropriate and timely follow-up testing as well as short- and long-term post-procedure management to ensure patient safety after kidney-related procedures
6. Recognizes and, if desired and important to the trainee, develops the skills to perform ultrasound for diagnosis and treatment and pheresis therapies

#### Judicious Mapping to Domains of Competence

- Patient Care
- Medical Knowledge
- Practice-Based Learning and Improvement
- Interpersonal and Communication Skills



# Entrustable Professional Activities

## EPA 4 for Pediatric Nephrology

- Professionalism
- Systems-Based Practice
- Personal and Professional Development

### Competencies Within Each Domain Critical to Entrustment Decisions

PC 6:	Using optimal clinical judgment
MK 2:	Practicing EBM
PBLI 1:	Identifying gaps
PBLI 2:	Setting goals
ICS 4:	Working as a member of the health care team
P 2:	Demonstrating professional conduct
P 3:	Demonstrating humanism
SBP 4:	Advocating for quality
SBP 5:	Working in interprofessional teams

### Context for the EPA

**Rationale:** Pediatric nephrologists must be able to safely perform kidney-related procedures to both diagnose specific renal disease and provide renal replacement therapy, when indicated. This occurs in both the setting of acute kidney injury and as part of transition from chronic kidney disease care to end-stage renal disease care in children and adolescents/young adults.

**Scope of Practice:** This document is intended to address the scope of knowledge and skills in performing kidney-related procedures for a pediatric nephrologist. The scope of care in providing kidney-related procedures encompasses a wide patient age range from pre-term newborns to fully grown and mature young adults. As such, the diversity of size of patients covered varies vastly and the pediatric nephrologist must be able to negotiate this seamlessly. Furthermore, the provision of these procedures can and will occur both in the outpatient as well as inpatient setting. As such it focuses on the understanding, technical ability, and experience necessary to safely perform each procedure and deal with potential complications. The procedures covered under this EPA center around 1) percutaneous renal biopsy of both native and transplanted kidneys, 2) renal replacement therapy in the forms of acute CRRT and both acute and chronic hemodialysis and peritoneal dialysis, and 3) ultrasound and pheresis techniques where desired and important to the trainee.

### Curricular Components That Support the Functions of the EPA

1. Knowing the provisions including laboratory testing, establishing access, and preparing equipment required to perform kidney biopsies and renal replacement therapy
  - Orders and reviews pre-kidney biopsy laboratory testing to ensure the patient is safe to undergo kidney biopsy
  - Refers patients with evidence of potential coagulopathy for further evaluation based on the results of pre-kidney biopsy testing



# Entrustable Professional Activities

## EPA 4 for Pediatric Nephrology

- Communicates to the appropriate provider the size and type of hemodialysis catheter required for either acute or chronic hemodialysis/CRRT
  - Orders the appropriate size filters, dialyzer, tubing and priming volumes for patients undergoing hemodialysis and/or CRRT
  - Verifies the proper positioning and placement of both tunneled chronic and nontunneled acute peritoneal dialysis catheters
  - Identifies components and basic operation of all CRRT, hemodialysis, and peritoneal dialysis machines and equipment
2. Obtaining informed consent for kidney related procedures from patients and legal guardians after readily understandable explanations of risks, benefits, and potential complications associated with each procedure
- Explains, in a readily understandable fashion, the indications necessitating kidney biopsy and initiation of renal replacement therapy to legal guardians and patients when age appropriate
  - Reviews, to the sufficient understanding of the consenting parties, potential complications that may occur during and after a kidney biopsy
  - Reviews, to the sufficient understanding of the consenting parties, potential complications that may occur during and after hemodialysis and peritoneal dialysis catheter placement
  - Reviews, to the sufficient understanding of the consenting parties, potential complications that may occur during and after initiation of CRRT, hemodialysis, and peritoneal dialysis
3. Developing, through deliberate practice, the skills necessary to perform and supervise kidney related procedures, including native and transplant kidney biopsy, peritoneal dialysis, hemodialysis, and continuous renal replacement therapy
- Successfully performs kidney biopsies of native and transplanted kidneys to obtain sufficient kidney tissue for evaluation
  - Identifies principles underlying and differences associated with providing renal replacement therapy in the acute versus chronic kidney disease setting
  - Prescribes a detailed CRRT order to comprehensively manage electrolyte and fluid balance in critically ill patients in the intensive care hospital-based setting
  - Prescribes a detailed acute and chronic hemodialysis order meant to effectively manage fluid and electrolyte balance and provide safe and adequate clearance
  - Prescribes a detailed acute and chronic peritoneal dialysis order meant to effectively manage fluid and electrolyte balance and provide adequate clearance
4. Monitoring the status of patients during kidney related procedures, including timely treatment of potential complications associated with each procedure
- Diagnoses and treats acute and remote complications associated with percutaneous kidney biopsy including renal hemorrhage, perinephric hematoma, gross hematuria, and AV fistula formation
  - Diagnoses potential complications in electrolytes, circuit anticoagulation, and fluid balance with CRRT and provides changes in the CRRT prescription to correct
  - Details clinical and laboratory features indicative of recirculation in hemodialysis and CRRT and addresses appropriately to resolve
  - Manages hemodialysis complications including catheter malfunctions, extrusions, and breaks in the circuit and dialyzer to ensure the provision of safe and effective hemodialysis/CRRT



# Entrustable Professional Activities

## EPA 4 for Pediatric Nephrology

- Manages ineffective peritoneal dialysis cycling including catheter malfunction, mal-positioning, and exit site leakage
  - Responds to clinical and laboratory signs of excessive ultrafiltration
  - Diagnoses and appropriately manages hemodialysis catheter-line associated blood stream infections (CLABSI)
  - Evaluates and effectively treats infectious complications of peritoneal dialysis including exit site/tunnel infection and peritonitis
5. Providing appropriate and timely follow-up testing and post-procedure management as well as short and long-term post-procedure management to ensure patient safety after kidney-related procedures
- Safely monitors kidney biopsy patients for clinical and laboratory evidence of complications and manages appropriately
  - Orders and accurately interprets targeted follow-up testing to diagnose complications arising from kidney-related procedures
  - Engages in closed loop communication with patient and legal guardians about complications that arose during kidney-related procedures and how they were addressed
  - Provides timely information and guidelines for care and monitoring at home to patients and legal guardians after kidney-related procedures
6. Recognizes and, if desired and important to the trainee, develops the skills to perform ultrasound for diagnosis and treatment and pheresis therapies
- Explains indications, operations, and methods to use ultrasound devices and techniques for urinary tract diagnoses and procedures (e.g., renal biopsy, line placement)
  - Successfully performs ultrasound for diagnosis and as an adjunct to procedures and appropriately monitors for complications
  - Orders the appropriate equipment and selects the necessary methods to provide effective pheresis treatments
  - Successfully provides pheresis therapies and monitors appropriately for complications

## References

1. The American Board of Pediatrics. Training Requirements for Subspecialty Certification. 2004. Available at <https://www.abp.org/sites/abp/files/trainingrequirements.pdf>.
2. Federation of Pediatric Organizations Policy Statement. Pediatric Fellowship Training. *Pediatrics* 2004;114:295-296.

## EPA Authors

John Mahan, MD (lead), Alicia Neu, MD, Beatrice Goilav, MD, Paul Grimm, MD, Barry Warshaw, MD, Shamir Tuchman, MD



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### Curricular Components Authors

John Mahan, MD (lead), Beatrice Goilav, MD, Paul Grimm, MD, Susan Halbach, MD, Rebecca Lombel, MD, Kevin Meyers, MD, Jordan Symons, MD, Shamir Tuchman, MD, Barry Warshaw, MD