Curricular Components That Support the Functions of EPA 3: Care of the Pediatric Patient with ESKD and Kidney Transplant

1. Applying clinical, epidemiologic, and regulatory knowledge in the care of children with ESRD and/or kidney transplantation including interactions with regulatory bodies, organ procurement organizations, transplant teams, and national organizations
   - Determines the level of renal function and anticipates changes of function to provide safe timing of renal replacement and adequate preparation of the patient and family
   - Incorporates patient-specific risk factors as well as the outcome variables of the different renal replacement modalities to inform appropriate modality selection for individual patients
   - Engages the major systems structure surrounding the provision of maintenance dialysis, including the role of dialysis units, vascular access specialists, dialysis providers, Centers for Medicare & Medicaid Services and other payer regulations
   - Utilizes the major system structures surrounding the provision of renal transplants, including the roles of nephrologists in collaboration with transplant surgeons, the roles of organ procurement organizations, organ preservation, organ allocation criteria, and the National Organ Procurement and Transplantation Network (OPTN). Navigates the listing process for a deceased donor kidney and the process of paired donation to enhance living-donor transplantation
   - Leads a multidisciplinary care team to provide coordinated acute and chronic care

2. Directing appropriate evaluation for children with or approaching ESRD including evaluation and selection for various dialysis modalities and identification of suitable candidates and preparation for transplantation
   - Incorporates the impact of the underlying renal diagnosis, concomitant medical conditions, anatomic abnormalities, and psychosocial and economic issues of the patient and family on choice of dialysis modality and engages the patient/family in shared decision making
   - Articulates the advantages and disadvantages of different dialysis modalities to facilitate a patient-centered selection process
   - Compares and discusses the outcome differences of chronic dialysis versus transplant with the patient and family
   - Uses regulatory criteria for referral/evaluation and listing for renal transplantation
   - Identifies risk factors for successful transplantation and communicates these effectively to patients/family
   - Incorporates special preparations for successful transplantation including control of nutritional status, hypertension, anemia, and electrolyte disorders as well as indications for native nephrectomies into management plans
   - Recognizes risk for disease recurrence post-transplant and possible prevention or treatment strategies and communicates such risks to patients and families
3. Identifying and providing appropriate management plans including selection of dialysis modality for children undergoing chronic dialysis, management of all perioperative issues, and implementation and supervision of dialysis treatments and other dialysis-related therapies (all renal replacement therapies)
   - Selects dialysis modality (hemodialysis vs. peritoneal dialysis) on the basis of individual risk factors, psychosocial circumstances, patient/family preference
   - Orders a customized dialysis prescription appropriate to the individual clinical situation
   - Monitors relevant response variables including dialysis adequacy, volume status, biochemical status, hematologic status, blood pressure, treatment tolerance, growth rate, and family stressors
   - Selects and monitors dialysis vascular access or catheter access devices, knows access risks and complications, and communicates access issues effectively to the patient and family and with surgical/interventional consultants
   - Recognizes dialysis complications (e.g., dialysis disequilibrium, peritonitis or membrane failure) and can manage these complications or refer as appropriate

4. Identifying and providing appropriate management plans, including all ESRD therapies, and addressing care issues for children undergoing kidney transplantation, management of all perioperative issues, and implementation and supervision of immunosuppression and other kidney transplantation therapies
   - Communicates outcome differences in transplantation vs. dialysis to patient/family and facilitates family involvement in treatment selection
   - Educates patient and family about necessity for lifelong monitoring, adherence to medications and other recommendations, health insurance, and lifelong risks of transplantation related to infection, cancer, fertility, and cardiovascular health
   - Identifies appropriate chronic kidney disease (CKD) candidates for preemptive renal transplantation and manages appropriate timing of this strategy
   - Explains differences in living vs. deceased donor kidney transplant outcomes and counsels family accordingly
   - Incorporates appropriate transplant donor ABO and HLA compatibility issues and selects donors accordingly
   - Discusses the influence of kidney donor risk factors on transplant recipient outcome
   - Manages preoperative transplant patient preparations including evaluation of biochemical and volume stability, the need for/timing of dialysis, infectious disease issues, and psychosocial preparations
   - Coordinates with transplant surgery and anesthesia to determine optimal perioperative and intraoperative protocols addressing immunologic management, fluid management, and use of adjunctive agents such as diuretics or mannitol
   - Determines postoperative management including frequency of intake/output assessment, vital sign determinations, arterial and/or central pressure monitoring, post-operative fluid management, and biochemical, hematologic, immunological, and infectious disease monitoring
• Recognizes, evaluates, and develops investigation and intervention in the presence of primary or secondary renal nonfunction
• Determines immediate and long-term postoperative transplant immunosuppressive treatment and protocol for pharmacologic monitoring
• Plans routine post-transplant protocol for monitoring of renal function and other monitoring (e.g., donor-specific antibodies, viral surveillance)
• Recognizes common and uncommon transplant complications, such as allograft rejection or obstruction, and directs the diagnosis and management of these complications or refers as appropriate
• Integrates CKD monitoring and provides appropriate care for nutritional concerns, growth restriction, hypertension, hematologic and biochemical status, CKD, mineral and bone disorders, vitamin D status, and lipid disorders. The above is accomplished in tandem with post-transplant immunosuppressive care, as appropriate, based upon level of renal function and patient specific risk factors

5. Demonstrating effective communication and principled professional behavior with patients, families, and the interprofessional health care team including surgeons, interventional radiologists, histocompatibility laboratory scientists, and allied health professionals
   • Effectively communicates with patients and families in a compassionate and professional manner
   • Acknowledges and appreciates the role of multidisciplinary team members and utilizes their input and skills to optimize patient care
   • Leads the multidisciplinary team within the boundaries of the transplant/dialysis nephrologist’s role in perioperative and postoperative care
   • Demonstrates sensitivity to the complexity and difficulty of chronic ESRD care and anticipates and helps to provide the support required by families to affect the level of medical adherence necessary to successful long-term outcomes

Curricular Components Author

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

References
