

Pediatric Nephrology Department of Pediatrics

PGY-4 – PGY-6

The Pediatric Nephrology Training Program at MUSC does not make distinctions in the Scope of Practice between PGY-4, -5, and -6 Resident Physicians. As trainees progress, they are encouraged to assume greater degrees of independence, as suited to their knowledge and skills in the judgment of the supervising faculty in general and the attending physician specifically, in the discharge of the responsibilities noted below:

- Acute and chronic hemodialysis
- Acute and chronic peritoneal dialysis
- Biochemical monitoring and treatment
- Continuous renal replacement therapy
- Coordinating end stage renal care
- Hemofiltration
- Plasmapheresis
- Local anesthetic techniques
- Manage, maintain, and troubleshoot indwelling venous access
- Nutritional therapy
- Percutaneous biopsy of autologous and transplanted kidney
- Perform routine medical procedures (Venipuncture, bladder catheterization, fluid and electrolyte management, administer medications and special diets through all therapeutic routes, basic cardiopulmonary resuscitation, evaluation of oliguria, interpretation of antibiotic levels and sensitivities, management of anaphylaxis and acute allergic reactions, management

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of the immunosuppressed patient, monitoring and assessment of metabolism and nutrition, pharmacokinetics

- Preoperative evaluation and preparation for transplantation
- Telehealth
- Evaluation of recipients/donors, diagnosis and treatment of rejection, diagnosis and treatment of disorders of transplant function.
- Assist in determining and serving the needs of inpatient and outpatient children with acquired or congenital diseases of the kidney.
- Assist in determining and serving the needs of adult inpatients and outpatients with congenital diseases of the kidney for who the specific expertise of pediatric nephrology is needed or requested.
- Complete a history and physical examination on patients admitted to or consulted by the pediatric service.
- Examine and assess pediatric nephrology inpatients on a daily basis. Patients in special care units require multiple daily evaluations.
- Inform the attending physician and appropriate nursing staff and house staff of all-important historical information, physical examination findings, and laboratory results involving pediatric nephrology patients.
- Participate in or direct rounds on pediatric nephrology inpatients.

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- Determine, organize, and review laboratory studies obtained in the care of pediatric nephrology patients.
- Write notes on pediatric nephrology inpatients a minimum of once per day.
- Coordinate, assess, and improve the care delivered by more junior house staff, medical, students, and nursing staff.
- Assist in or perform discharge planning for inpatients.
- Participate in or perform the formal evaluation of junior house officers and medical students.
- Assist in or perform, under attending physician supervision as appropriate for their knowledge and experience, Acute and chronic hemodialysis, Acute and chronic peritoneal dialysis, Biochemical monitoring and treatment, Continuous renal replacement therapy, Hemofiltration, Plasmapheresis, Lipopheresis, Percutaneous allograft and native kidney biopsies, renal imaging (US, DMSA, Mag-3 scans, VCUGs).
- Coordinating end stage renal care
- Interpret or assist in interpreting, under attending physician supervision as appropriate for their knowledge and experience, ambulatory blood pressure monitoring, 24-hour urine stone risk profiles, genetic testing, renal biopsy results
- Present and participate at patient care and didactic conferences.
- Provide care of outpatients in Pediatric Nephrology Continuity Clinic under the supervision of pediatric nephrology attending physicians.

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- Provide telephone consultation to outside physicians and to the MEDUCARE Emergency Transport Service.
- Assist in or direct the coordination and supervision of the transfer of patients to and from Children's Hospital.
- Assist in planning and participate in the Pediatric Nephrology Resident's On-Call Schedule.

Objectives - Beginning Fellow:

- Learn the indications for and the ability to perform percutaneous native kidney and kidney transplant biopsies under ultrasonic guidance. The fellow is expected to learn the basics of pathologic interpretation of the biopsy, including all the components: light, immunofluorescence, electron microscopy and immunohistochemical staining.
- Learn the analysis, interpretation and limitations of the urinary sediment, and its correlation with pathological entities.
- Learn the interpretation, correlation and limitations of imaging tests used in the diagnosis and treatment of pediatric nephrology disorders. These include: renal ultrasound, magnetic resonance imaging, computerized tomography, renal arteriogram and nuclear medicine renal scans.

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- Learn the indications, principles and complications and develop the ability to supervise acute and chronic peritoneal dialysis, acute and chronic hemodialysis, continuous renal replacement therapies.
- Learn the indications, principles and complications of plasmapheresis, including concurrent plasmapheresis and continuous renal replacement therapy.
- Learn the indications for and risks of kidney transplantation, including pre-emptive, living donor and deceased donor transplantation.
- Learn the elements of transplantation work-up from histocompatibility principles to donor requirements for both live-related and deceased donor transplantation.
- Understand the management of transplant recipients, including fluid and electrolyte management strategies, especially in the immediate pre- and post-transplant period.
- Know the risks and indications for the various immunosuppressive agents and protocols, and the diagnosis and management of acute cellular and humoral kidney transplant rejection.
- Longitudinal assessment of pediatric renal transplant recipients will allow the resident to learn to optimize immunosuppressive therapy to reduce the risks of rejection of the graft while minimizing the toxicities of the immunosuppressive drugs. This includes prevention or early detection of infections, promotion of adequate nutrition and optimization of growth and development of cognitive and psychosocial potential.

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- Ability to obtain a full history of pediatric and renal characteristics including relevant perinatal information, previous medical history and family history. Learning to obtain information from both patients (when appropriate) and other family members.
 - Ability to perform a full physical examination including genitourinary system.
 - Ability to present effectively orally and in writing the results of the pediatric and renal history and physical examination.
 - Ability to formulate orally and in writing a complete differential diagnosis, select the most likely diagnosis and plan of investigation and treatment.
 - Ability to write timely and legible pediatric renal progress notes in a readable and effective style.
 - Ability to provide concise and complete consultation reports and discharge summaries for inpatients or monthly review summaries for patients with end-stage renal disease.
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- Learn the characteristics, presentation, investigation, diagnosis, and treatment of pediatric patients who have a wide variety of renal conditions.
 - Learn the changes in normal renal development in order to correctly assess disease processes. These include the assessment of changing renal function, blood pressure patterns, and fluid and electrolyte physiology from the neonatal period to adolescence.

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- Learn the indications, side-effects, contraindications, and typical length of therapy of major drugs used commonly in pediatric nephrology. These include corticosteroids, anti-hypertensives, antibiotics and immunosuppressive agents, among others.
- Recognize the patterns of presentation of acute versus chronic renal failure.
- Learn the principles, therapy, and psychosocial implications of end-stage renal disease in children. Longitudinal follow-up of patients will provide acquisition of skills in the areas of nutrition and growth and replacement therapies (dialysis, control of secondary hyperparathyroidism, prevention of anemia of chronic renal failure, optimization of growth).
- Evaluate and treat general nephrology conditions: acute and chronic glomerulonephritis, nephrotic syndrome, renal tubular acidosis, renal artery stenosis, hypertension, urinary tract infections, interstitial nephritis, metabolic diseases, etc.

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Objectives - Intermediate Fellow:

- The fellow should maintain and improve the skills and knowledge acquired as a beginning fellow. In addition, the fellow is expected to master the following as an intermediate fellow in pediatric nephrology:
- Learn the various protocols in the treatment of common and uncommon pediatric nephrology disorders, the underlying rationale, and rigorous application and follow-up of these protocols.
- Ability to provide competent independent pediatric nephrology consultation in inpatient or outpatient settings.
- Ability to obtain pediatric renal history, perform a full physical examination, and formulate differential diagnosis, and plan for evaluation and treatment in a timely and efficient manner.
- Ability to discern the important from the unimportant in clinical pediatric nephrology.
- Learn the characteristics, presentations, methods of diagnosis, and treatments of the uncommon pediatric renal diseases.
- Learn the indications, contraindications, efficacy, side-effects, monitoring, and follow-up of the medications commonly used in the treatment of pediatric patients with renal disease including acute and chronic renal failure, end-stage renal disease and transplantation.
- Learn basic epidemiology and investigational skills to understand clinical studies of pediatric renal diseases or to further pursue an area of research in this field.

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- Ability to identify the controversies in treatment of pediatric nephrology disorders, formulate the pros and cons, support an opinion based upon current literature and standards of care, and discuss the options with the pediatric nephrology team.

Objectives - Advanced Fellow:

- The fellow should maintain and improve the skills and knowledge acquired as a beginning and intermediate fellow. In addition, the fellow is expected to master the following as an advanced fellow in pediatric nephrology:
 - Refine the clinical skills developed in the previous stages.
 - Develop the ability to lead the multidisciplinary renal team under the supervision of the attending physician.
 - Learn medical ethics as it applies to pediatric nephrology.
 - Learn the unusual presentations, pathophysiology, and epidemiology of the common and uncommon pediatric nephrology disorders.
 - Present complex patients at transplant multidisciplinary conferences such as selection committee.
 - Learn the complexities of kidney transplant organ selection.