

## **PEDIATRIC NEPHROLOGY/UROLOGY ROTATION**

### **Faculty:**

Nephrology: Diego Aviles, M.D.  
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Urology: Joseph Ortenberg, M.D.

**Goal:** Develop competency in pediatric nephrology.

**Competency Tools:** A review of a topic or literature.

### **Learning Objectives:**

1. Establish a basic understanding of pathophysiology of renal disease and electrolyte/mineral metabolism.
2. Identify major causes of nephritis and nephrosis in children and the approach to management.
3. Identify and treat major electrolyte and mineral disorders.
4. Identify, evaluate, and initiate treatment of hypertension.
5. Recognize acute vs. chronic renal failure and initiate evaluation.
6. Evaluate and manage urinary tract infections.
7. Know when to obtain renal/urologic consultations.
8. Develop an understanding of chronic kidney disease and its impact on the family and the health care team.
9. Develop an understanding of how to function as a member of a multidisciplinary team.

### **Curriculum Content:**

1. Problems evaluated/managed independently by a general pediatrician:
  - a. Initial evaluation of patients with hematuria.
  - b. Initial evaluation of patients with proteinuria.
  - c. Diagnosis and evaluation of patients with a urinary tract infection.
  - d. Evaluation and management of patients with uncomplicated mild to moderate essential hypertension.
  - e. Evaluation and management of dehydration, metabolic acidosis/alkalosis, and imbalances of serum sodium, potassium, calcium, phosphate, and magnesium.
2. Problems managed by a general pediatrician with consultation:
  - a. Initial evaluation and management of acute renal failure, not requiring dialysis.
  - b. Recognition and initial evaluation of chronic renal failure.

- c. Management of essential hypertension complicated by the need for more than one drug, severe elevations of blood pressure, or end-organ damage.
  - d. Management of urinary tract infections complicated by frequent recurrences, vesicoureteral reflux, or bladder dysfunction.
  - e. Management of uncomplicated (steroid sensitive without frequent relapses) minimal change nephrotic syndrome.
3. Disease to be recognized immediately by the general pediatrician as life threatening.
- a. Severe metabolic acidosis, severe hyperkalemia, and severe azolemia.
  - b. Venous congestive state (e.g., pulmonary edema), secondary to renal failure.
  - c. Life threatening anemia of acute renal failure (e.g. hemolytic uremic syndrome).
  - d. Uremic encephalopathy.
  - e. Uremic pericarditis.
  - f. Peritonitis, cellulitis, and sepsis in patients with nephrotic syndrome.
  - g. Acute vascular insufficiency (contracted plasma volume) in nephrotic patients being treated with diuretics.
  - h. Acute rejection of renal transplant.
  - i. Accelerated hypertension/hypertensive encephalopathy.
4. Emergencies to be managed independently by general pediatricians.
- a. Life threatening hyperkalemia.
  - b. Initial management of severe, acute hypertension.
  - c. Initial management of life-threatening severe metabolic acidosis.
  - d. Treatment of vascular collapse (i.e. severe hypotension and poor tissue perfusion) associated with the use of diuretics in patients with nephrotic syndrome.
5. Other learning experiences:
- a. Effect of chronic renal failure on growth and development.
  - b. Effect of chronic renal disease on the family.
  - c. Importance of utilizing a team (physician, social worker, dietitian) in caring for the patient.)

**Skills Acquisition:**

1. *Laboratory skills:* performance of a complete urinalysis, including recognition of red cell, white cell, granular, fatty and waxy casts, and oval fat bodies, red cells, white cells and bacteria.
2. *Interpreting and recognizing the importance or significance of laboratory results:*
  - a. Low C3 and C4 levels.

- b. Positive ANA.
- c. Electrolyte abnormalities.
- d. Elevations of ASO, and anti-Dnase B titers.
- e. The role of microangiopathic hemolytic anemia, thrombocytopenia, hematuris, and proteinuria in the diagnosis of hemolytic uremic syndrome.
- f. The importance of heavy proteinuria, hypoalbuminemia, and hyperlipidemia in the diagnosis of nephrotic syndrome.
- g. The importance of recognizing and understanding the pathogenesis of hyperphosphatemia, low serum bicarbonate, and normochromic, normocytic anemia in renal failure.
- h. Recognition of a urine concentrating defect in chronic renal diseases.

**Reading Materials** (available at the Pediatric Nephrology office at Children's Hospital):

1. *Pediatric Nephrology*, Editors M. Holiday, T.M. Barrat, E. Avner.
2. *Pediatric Kidney Disease*. Editor, C. Edelman.
3. *Housestaff ring binder on pediatric nephrology*.
4. *Teaching Files*: of the Division, including selected articles pertaining to particular cases, as recommended by the attending nephrologist.

**Rotation Requirements:**

1. Residents are expected to attend all pediatric nephrology outpatient clinics at Children's Hospital. There are approximately 6-15 outpatient visits per each of the three weekly half-day clinics including 1-4 new patients. There are also two monthly peritoneal dialysis clinics with 3-5 patient visits each.
2. The inpatient service consists of nephrology patients and consultations. There are typically 2.5 nephrology patients in the hospital at any one time, though occasionally there may be up to a dozen patients to round on including consultations. Residents are expected to have seen the patients and reviewed data bases prior to attending rounds. Residents are encouraged to keep a flow sheet to facilitate data management. When asked to see a new consultation, residents will examine the patient and review history and data base prior to presenting the patient to the attending nephrologist. Following presentation, the consultation will be written by residents and co-signed by the attending.
3. The nephrology attending will write dialysis orders and be directly responsible to dialysis nursing staff. All other orders are written by residents after discussion with the attending.
4. Residents are expected to attend weekly the divisional clinical nephrology conference. At the end of the rotation, residents are expected to give a topic or case-oriented presentation, agreed upon by residents/attending.
5. Residents are expected to spend some time with the program's social worker, dietitian, transplant coordinator, and dialysis nurse in order to become familiar with the various aspects of chronic renal cases as well as know how the team functions.

6. Residents will attend at least two pediatric urology clinics during the rotation month. Emphasis will be placed on common urologic problems including circumcision difficulties, epispadias, hypospadias, utereral reflux, urinary tract stones, hydronephrosis, and recurrent urinary tract infections.

**Pediatric Nephrology Schedule**

	<i>Monday</i>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
AM	8:00-9:00 Morning Report	8:30-9:30 Clinical Nephrology Conference	8:00-9:00 Grand Rounds  9:00-11:30 Dialysis Clinic (every other week)	8:00-9:00 Morning Report  11:00-12:00 Dialysis Conference (every other week)	8:30-12:00 Nephrology- Transplant Clinic
12:00-1:00	Noon Conference	Noon Conference	Noon Conference	Noon Conference	Noon Conference
PM	3:00-5:00 Urology Clinic (every other week)		1:00-4:00 Nephrology Clinic		

**Daily attending rounds:** usually 9:00-11:00am as scheduled by attending Nephrologist.