**Nephrology Competencies**

**Competency Based Goals and Objectives**

**COMPETENCY 1. Patient Care.** Provide family centered patient care that is developmentally and age appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

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<th>Competency</th>
<th>Description</th>
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<td>1.</td>
<td>Perform appropriate history and examination, paying attention to blood pressure and growth. Interpret BP in terms of age and size appropriate percentiles.</td>
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<td>2.</td>
<td>Integrate the history and physical examination, and make appropriate differential diagnoses.</td>
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<td>3.</td>
<td>Order and interpret appropriate laboratory tests on blood and urine to support or rule out items on the differential diagnosis.</td>
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<td>4.</td>
<td>Order and interpret appropriate imaging and/or radiographic studies to support or rule out items on the differential diagnosis.</td>
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<td>5.</td>
<td>Arrive at a working diagnosis, decide further management and follow-up using evidence based medicine.</td>
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<td>6.</td>
<td>Prescribe and/or monitor common medications used in nephrology including anti hypertensive, Prednisone, Cyclosporin, Cyclophosphamide, Calcitriol, diuretics.</td>
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<td>7.</td>
<td>Use clinical data obtained from history, physical examination and laboratory values, to diagnose and manage common pediatric renal problems, including:</td>
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<td>- UTI</td>
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<td>- Voiding dysfunction</td>
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<td>- Proteinuria, asymptomatic and symptomatic</td>
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<td>- Hematuria: microscopic (symptomatic and asymptomatic) and gross, and differentiate between glomerular hematuria and non-glomerular hematuria.</td>
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<td>- Acute glomerulonephritis: diagnose and manage acute post streptococcal nephritis and Henoch Schönlein Purpura with nephritis or nephrotic syndrome, and distinguish it from chronic nephritis presenting acutely.</td>
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<td>- Chronic glomerulonephritis: including membranoproliferative GN (MPGN), IgA nephritis, and Alport’s disease. Know the various causes of low C3.</td>
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<td>- Nephrotic syndrome (NS): clinically diagnose minimal lesion nephrotic syndrome (MLNS) and to understand the importance of steroid responsive NS and steroid resistant NS. Know the management of Focal Segmental Glomerulosclerosis (FSGS) and MLNS. Know the long term outcome of kidney function in different types of nephrotic syndrome.</td>
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<td>- Hypertension (HTN): Know to gauge the severity of HTN and to make an appropriate diagnosis of HTN by evaluating the Blood pressure percentiles. Order appropriate tests and prescribe common anti HTN medications. Distinguish between primary essential and secondary HTN. Use anticipatorily guidance and talk to overweight children about diet and exercise.</td>
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<td>- Renal calculi and nephrocalcinosis and determine the causes using stone analysis, 24-hour urinary chemistries, CT scan and ultrasound. Interpret random urine calcium and creatinine ratios. Know the importance of diagnosing hyperoxaluria.</td>
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<td>- Metabolic acidosis: determine the causes of normal anion gap and high anion gap metabolic acidosis. Know the importance of following growth curves to be able to evaluate causes of Failure to Thrive including renal tubular acidosis.</td>
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<td>- Tubular disorders: evaluate and diagnose children with tubular disorders including Bartter syndrome, hypophosphatemic rickets, different types of renal tubular acidosis, nephrogenic diabetes insipidus, Fanconi syndrome including cystinosis.</td>
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<td>- Renal failure: know the diagnosis and management of acute and chronic renal failure. Know the distinguishing features of pre renal, renal and post renal acute renal failure.</td>
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Monitor renal patients appropriately with regards to IV fluids, blood or plasma infusion. Be able to order fluids correctly for children with renal failure and nephrotic syndrome.

Interpret and follow-up abnormal results of antenatal renal ultrasounds. Differentiate between different congenital kidney diseases including multicystic kidney, autosomal recessive polycystic kidney and autosomal dominant polycystic kidney disease.

Observe and assist in procedures like acute peritoneal dialysis, kidney biopsy, and urine sediment examination. Interpret different kidney biopsy findings.

**COMPETENCY 2. Medical Knowledge.** Understand the scope of established and evolving biomedical, clinical, epidemiological and social-behavioral knowledge needed by a pediatrician; demonstrate the ability to acquire, critically interpret and apply this knowledge in patient care.

1. Know the presentation and findings seen in common renal diseases like nephrotic syndrome.
2. Know the pathophysiology of common renal diseases like tubular diseases, nephrotic syndrome, and glomerulonephritis.
3. Be aware of the pathophysiology of various systemic diseases that cause renal involvement including vasculitis like HSP, Sickle cell disease, Diabetes mellitus, Sepsis, Shock, and dehydration, Lupus.
4. Demonstrate knowledge of differential diagnoses of diseases presenting with the same sign such as hematuria.
5. Be aware of evidence based medical knowledge and learn to apply it to manage various renal problems.
6. Read textbooks as well as current medical literature to gain knowledge of the various renal problems. Access current medical literature by reading appropriate journals and by doing appropriate literature searches on the computer.
7. Have basic knowledge of techniques and expected complications in children getting home dialysis and immunosuppressive medications.
8. Show an understanding of common tests and imaging studies, and know the limitation of each study.
9. Have a basic understanding of renal physiology, especially as applicable to clinical medicine, like tubular function, glomerular function, sodium and potassium balance, fluid balance, calcium and phosphorus balance and acid-base balance.
10. Have an in-depth knowledge of interpretation of urinary indices like FeNa and urinalysis, including conditions causing false positive and false negative results.
11. Distinguish renal conditions according to their likelihood to occur in different age groups and make age appropriate differential diagnoses.
12. Learn the mechanism of action and side effects of medications commonly used in nephrology like:
   - Antihypertensives
   - Prednisone
   - Transplant medications like Cyclosporin
   - Antibiotics used in treatment and prophylaxis of UTI.
   - Erythropoietin
   - Calcitriol
   - Phosphate binders
   - Base substitutes like Sodium Citrate
   - Diuretics
   - Kayexalate (Na polystyrene Sulfonate)
13. Explain the basics of different types of continuous renal replacement therapy including Hemofiltration (CVVH), peritoneal dialysis, hemodialysis. Order peritoneal dialysis fluids correctly. Make diagnosis of peritonitis in a child on peritoneal dialysis and to initiate appropriate treatment.

14. Know the value of home monitoring: blood pressure levels at home and in school, home urine dipsticks test for protein, home weight and output in dialysis and nephrotic syndrome patients, voiding diary for children with voiding dysfunction.

15. Describe the long term and acute management of renal transplant recipient. Diagnose acute rejection and order correct tests. Know mechanisms of action and the side effects of commonly used medications in renal transplant recipients including cyclosporin, Prograf and Mycophenolate. Know immunization precautions in an immunosuppressed child, and the importance of exposure to Varicella.

COMPETENCY 3. Communication Skills. Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates.

1. Make patients and parents comfortable so that history taking and examination are done in an optimal manner.
2. Talk to the parents and the child about various differential diagnoses without causing undue panic
3. Be able to convey sympathy by body language and verbal skills
4. Include the child in discussion with the parents in an age appropriate manner
5. Be able to discuss results of tests and future follow-up as well as prognosis in a knowledgeable yet kind and empathetic manner.
6. Deal with difficult situations so that they can be resolved satisfactorily
7. Allay fears and anxiety of the patient and parents, which often leads to the difficult situations.
8. Give a bad prognosis without causing hostility and panic.
9. Communicate with the referring physicians in a timely manner for more effective patient care.
10. Educate parents, patient and referring physician about the disease, about the medications prescribed including side effects, by giving handouts and patient education materials.
11. Access various online educational materials in different languages.
12. Maintain clear and complete medical records.

COMPETENCY 4. Practice-based Learning and Improvement. Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice.

1. Use information technology to continually upgrade knowledge about renal disease, medications and their interactions
2. Keep abreast of the current thinking by reading medical journals and accessing on line resources like “up to date”.
3. Discuss common renal problems with members of the team and with the attending, which ultimately improves patient care.
4. Research nephrology literature for current papers for discussion at the Nephrology/Urology Journal Club. Be able to critically study them to be able to evaluate the relevancy of the paper, drawbacks and positive aspects of the study.
5. Always be comfortable asking question about anything, no matter how senior one becomes
6. Attend all formal teaching conferences, board reviews, and journal clubs and be critical listener
7. Ask for and use both positive and negative feedback from colleagues, attendings and patients to continuously improve oneself

COMPETENCY 5. Professionalism. Demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

1. Work as a team with other health care workers - interdisciplinary team in nephrology, which includes dialysis nurses, dieticians, social workers, transplant coordinators, urologist, transplant surgeon and other physicians and subspecialties. Realize that it would be extremely difficult to work alone if the support staff was not there.
2. Show sensitivity and be respectful of patient privacy, as well as to various religious and cultural beliefs.
3. Maintain a professional demeanor while maintaining a friendly and empathetic manner with patients and colleagues.
4. Maintain a calm attitude and an even, clear head when confronted with difficult patients and times of anxiety.
5. Never lie to a patient. Say, “I don’t know”. You can tell the patients you will look up the answer and call them back. They will respect your honesty.
6. Be efficient and learn to manage your time effectively.
7. Always be polite no matter how severe the provocation.
8. Respect the privacy of patients. Learn not to discuss patients in public areas, which include corridors of the clinic and wards.

COMPETENCY 6. Systems-Based Practice. Understand how to practice quality health care and advocate for patients within the context of the health care system.

1. Know the cost of care and of the tests prescribed.
2. Use community resources for home monitoring of patients as in home blood pressures monitoring, which could be done by the school nurse or the paramedics in the local fire station or by the parents.
3. Utilize home health nurses for home monitoring of patients within constraints of their insurance and HMO.
4. Utilize referring physician’s offices for HMO patients, for laboratory evaluations, radiology and follow-up and develop effective communication with them.
5. Use support groups in the community for patients and families.
6. Identify community resources for providing patient care for children with renal diseases.