# Introducing 1st Year Pediatric Residents to Pediatric Nephrology: First Steps in a Long Journey

**Roshan P. George, MD**

**Emory University and Children's Healthcare of Atlanta**

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## Abstract

**Introduction:** The current prevalence of pediatric kidney disease and the need to have a fundamental understanding of many aspects of renal functioning for any physician, makes it imperative that pediatric residency trainees get a strong foundational experience in pediatric nephrology. There is limited published literature on the knowledge base and comfort level of residency trainees in caring for patients with kidney disease; as well as dearth of innovative models for exposure to the varied aspects of this specialty. **Methods**: This curriculum provides exposure to pediatric nephrology for interns (1st year residents/PGY1), in outpatient and inpatient settings, laying the foundation in the diagnosis, evaluation, and management of basic pediatric nephrology conditions. The interns receive a short study guide which takes about 30-45 minutes to review, two 30 minutes lectures, as well as exposure to patient encounters in the inpatient and outpatient setting with faculty supervision.
**Results:** We started with a needs assessment in our faculty and outgoing residents who overwhelmingly supported nephrology exposure early, in the intern year. We will administer a pre-test and a post test as well as a qualitative survey for assessment.
**Conclusion:** This curriculum, directed towards incoming first-year residents may also be used by other trainees in nephrology. It will provide basic education, exposure to the field as well as specific outcome measures to evaluate and improve the rotation

## Background & Purpose

There is a shortage of pediatric nephrologists across the country and so it is essential that during training, residents are knowledgeable about basic fluid management and care of children who present with kidney disease. Current American Board of Pediatric (ABP) in-service and board examination scores in areas of pediatric nephrology is also relatively low for our trainees. Observing this need within our community, this project aims to implement a structured curriculum to increase exposure and training in common aspects of nephrology for interns; in collaboration with our pediatric residency program director, chief residents, hospitalists and colleagues in the nephrology division

**Goals Goals/Aims:** The overarching purpose of this proposal is to systematically implement a structured curriculum in pediatric nephrology, for pediatric residents and to evaluate this curriculum through the following outcome measures:

- 1) Compare pre- and post-tests on the content with a short quiz
- 2) Obtain information about the residents' attitudes towards nephrology in general, their decision to pursue further training, and feedback about this curriculum.
- 3) Evaluate change in the American Board of Pediatrics, In-service exam scores for the residents overall, after instituting this curriculum

## Methods

- Kern's curriculum development model was used in a systematic way to develop this curriculum
- The general needs assessment consisted of literature review that revealed among other findings, a declining interest in nephrology careers among trainees
- Targeted needs assessment was based on conversations with outgoing pediatrics residents and current faculty, revealing that residents had little confidence in caring for many aspects of kidney disease and supported early exposure to pediatric nephrology.
- Learning objectives that are specific, measurable and take into account ACGME competencies, feasibility of educational strategies and learner assessment were created
- A short study guide was created, to be given on the first day of the rotation. Learning content for the study guide was based on the Pediatric Board Examination Content.
- The interns will be given a checklist of basic topics that they have to see and learn about, during the rotation and since they may encounter different faculty in the inpatient and outpatient setting, this would be in the form of a "scavenger hunt".
- A curriculum evaluation- a short Likert scale with space available for written comments is included. The evaluation is based on level one of Kirkpatrick's Evaluating Training Programs
- Pre and post-tests will be administered during this rotation. In the future, 2nd and 3rd year residents will participate in the extended curriculum with learning activities such as flipped classroom and case based simulation along with an opportunity to participate in a formal rotation on pediatric nephrology service.

**Check List and Evaluation Form for Pediatric Nephrology Curriculum**

Your comments are appreciated.

1. **Hematuria/ Proteinuria** (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   Something I liked:
   One suggestion for improvement:
2. **CAKUT** (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   **Congenital Anomalies of the Kidney and Urinary Tract**
   Something I liked:
   One suggestion for improvement:
3. **Nephritis/ Nephrotic syndrome** (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   Something I liked:
   One suggestion for improvement:
4. **Chronic Kidney Disease** (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   Something I liked:
   One suggestion for improvement:
5. **Hypertension** (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   Something I liked:
   One suggestion for improvement:
6. **Interdisciplinary care** (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   Something I liked:
   One suggestion for improvement:
7. **Others** _____ (not helpful) 1 2 3 4 5 (very useful) ☐ I tried my best but did not see this
   Something I liked:
   One suggestion for improvement:

**Overall satisfaction with the rotation and curriculum** (not satisfied) 1 2 3 4 5 (very satisfied)
Comments:

**Your level of training:** _____

**Name (optional):**

## Results

- ❑ At our institution, each intern spends 1 month in the nursery and a few days from that rotation will be dedicated for this curriculum. Our plan is to begin with our intern class in the summer of 2020, with 2-3 days of rotation in nephrology inpatient and outpatient setting within a very structured framework of learning.
- ❑ During the 3 years of residency, the yearly in- training examination results for the pediatric nephrology portion will be evaluated in addition to the pre and post-tests. A qualitative survey to obtain information about the interns' comfort level with evaluation and management of basic nephrology conditions, satisfaction with this curriculum and ideas for improvement, will be administered.
- ❑ **Progress so far:** Information learned from all sessions of the WHEA fellowship course and findings of an in-depth literature review were incorporated in the development of this curriculum. Development of the short study guide and survey questions, submission to IRB for determination of an IRB review, and plans to pilot this in medical students and current residents (PGY2, 3) rotating through nephrology, to receive some initial feedback have been put in place.

| Content | Topic | ACGME Competency & Milestone |
|---|---|---|
| Introduction | Incidence and prevalence of common conditions in Pediatric Nephrology | Medical knowledge<br>MK1 |
| Diagnosis and initial work up | Evaluation and diagnostic testing, treatment goals | Medical knowledge, patient care<br>MK1, MK2, PC1, PC2 |
| Patient Education | Explaining to patients (age appropriate as indicated) and families, about the condition and management plan | Medical knowledge, patient care, interpersonal and communication skills<br>MK1, MK2, PC2, PROF1, ICS1 |
| Basic Nutrition | Concepts of low sodium and renal diet | Medical knowledge, patient care, and systems-based practices<br>MK1, SBP1,PC2 |
| Disease Course and Prognosis | Prognosis, possible complications, medication side effects, adherence, future monitoring and potentially transition of care | Medical knowledge, patient care & systems-based practice<br>MK1,MK2, PC2, SBP4 |

**Innovative Nephrology Rotation Schedule for Interns**

Introductory talk and 1st lecture: 45 minutes
Inpatient rotation- consult team and inpatient team: 4 hours
Outpatient clinic: 3-4 hours
General nephrology outpatient clinic: 4 hours
Participation in education and planning meetings: 1 hour
2nd Lecture, evaluation and debrief: 1 hours

## Conclusion

The goal for the trainees is not to become nephrologists but to be confident in their abilities in basic fluid management and initial evaluation of conditions such as hypertension and chronic kidney disease which is unfortunately becoming common pediatric issues in the general community. In the process, if they do develop interest in pursuing further specialized training in pediatric nephrology, we will welcome that as well, since there has been a gradual dearth in the pediatric nephrology workforce in the last decade.
Mapping our curriculum to ACGME competencies will help trainees to also apply these skills (example- interdisciplinary care, social determinants of health and transition of care) to various areas of patient care even outside nephrology

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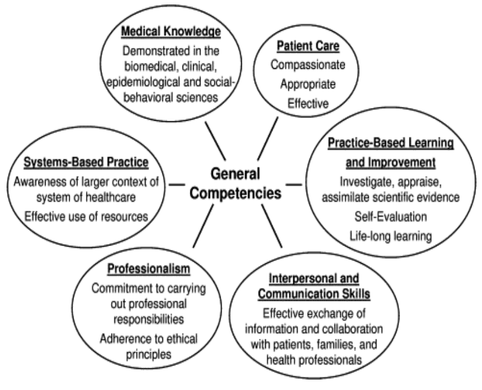


Accreditation Council for Graduate Medical Education competencies

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