**Division Introduction**

The Division of Pediatric Nephrology at UT Southwestern provides care for children with kidney disease and hypertension. The division is among the largest pediatric nephrology programs in the United States and consistently in the top 20 divisions of nephrology according to U.S. News and World Report at Children’s Health™. The faculty are not only devoted to patient care but also to improving the lives of children with renal disease by performing cutting edge research.

Michel Baum, M.D., who is a widely respected scientist, heads the Division. Dr. Baum serves as the Editor-in-Chief of *Pediatric Nephrology*, the journal of the specialty.

The clinical service of the Division consists of the following components: hemodialysis and peritoneal dialysis, inpatient services, clinic services and testing services. Each of these services is coordinated to provide outstanding care for children who have kidney disease and/or hypertension.

**Faculty**

There are nine pediatric nephrologists in the Division, each with a special area of expertise, including renal development, chronic and congenital kidney disease, X-linked hypophosphatemia, bone disease, nephrotic syndrome, hypertension, and renal tubular disorders.

**Honors / Awards**

**Best Pediatric Specialists in Dallas, *D Magazine***

- Jyothsna Gattineni
- Raymond Quigley
- Matthias Wolf

**Texas Super Doctors, *Texas Monthly***

- Michel Baum
- Mouin Seikaly

**Editorial Board, *Pediatric Nephrology***

- Michel Baum, Editor-in-Chief
- Jyothsna Gattineni
- Raymond Quigley
- Mouin Seikaly
- Matthias Wolf

**Michel Baum**

- Best Doctors in America
- Renal Editor, *Current Opinion in Pediatrics*, 2004 – present
- Chair, Ad Hoc Promotion and Tenure Committee, UT Southwestern – present
- NIH Study Section for NIDDK - (DDKD Study section-permanent member)
Invited Lectures

Matthias Wolf

- Pediatric Grand Rounds, Department of Pediatrics, Children’s Health, Dallas, TX, January 2018
  - “Old and New Etiologies in Nephrolithiasis”
- Center for Molecular Medicine, University of Cologne, Germany, March 2018
  - “Nephrolithiasis – New Etiologies for an Old Disease”
- Epithelial Physiology and Cell Biology, Telluride Science Research Center, Telluride, CO, July 2018
  - “Uromodulin Regulates Renal Magnesium Hemostasis Through TRPM6”

Conference Presentations

Drake KA, Adam M, Mahoney R, Potter SS.

Poster, International Workshop in Developmental Nephrology, Ein Gedi, Israel, April 2018
“Disruption of Hox9,10,11 Function Results in Cellular Level Lineage Infidelity in the Kidney”

Ellington N, Drake K, Torreabla J, Hendricks AR.

Poster, USCAP, Vancouver, BC, Canada, March 2018
“C3 Glomerulopathy in Children: A Clinicopathological Study”

Gattenini J.

Oral, American Academy of Pediatrics, Orlando, FL, 2018
“Treatment of Vitamin D Deficiency: More Than “Got Milk””

Hussain F, Vidi S.

Poster, 6th Annual UT Southwestern Pediatric Residency Training Program Scholarly Project Symposium, Dallas, TX, 2018
“Improving the Process of Transition of Care for Children with Chronic Kidney Disease”

Education and Training

The Division of Pediatric Nephrology is one of a hand full of Nephrology Programs to be funded by an NIH T32 grant. This grant has funded the training of some of the most successful and productive pediatric nephrologists in the country. Fellows spend a total of 12 months on inpatient clinical service during the three years of training. All fellows spend one day a week seeing outpatients in the nephrology clinic. They also spend time in the metabolic bone clinic at Texas Scottish Rite Hospital for Children. The rest of their training is devoted to clinical or basic research. The trainees may go into one of the Division’s basic science laboratories or one of the laboratories of others on campus who study renal disease. Some trainees have elected to spend a fourth year of training in renal transplantation.
Research Activities

The Division of Pediatric Nephrology has four basic research laboratories devoted to research into clinically important issues.

Baum Laboratory

The laboratory has published more than 140 research papers and 70 reviews in chapters in areas related to understanding of how ions are transported across the renal epithelia in both children and adults. The Baum laboratory has been funded by the NIH for more than 25 years and investigated the regulation of salt transport by the neonatal and adult kidney as well as the transporters involved in salt transport. The laboratory has shown that some of the mechanisms involved in both active and passive salt transport are different in neonates than adults. Recently the laboratory has focused on the mechanism of hypertension with prenatal programming. Small for gestational age infants and very premature infants develop hypertension and chronic kidney disease. The Baum laboratory uses a rat model to explore the pathophysiology for the increase in blood pressure and kidney injury with programming. Most recently they have made significant discoveries that have shown that hypertension and kidney injury can be prevented by changes in the postnatal environment.

Gattineni Laboratory

FGF23 is a phosphaturic hormone that is elevated in many metabolic bone diseases. It is the first hormone to increase in the blood in patients with chronic kidney disease and the levels increase progressively as renal disease worsens. The Gattineni laboratory has characterized the receptors for this hormone, and in so doing, has generated a mouse that has a 50-fold increase in FGF23 levels. Dr. Gattineni is using this mouse to determine if FGF23 contributes to the bone, vascular and cardiac disease seen in patients with chronic kidney disease.

Wolf Laboratory

The Wolf laboratory studies the mechanism and regulation of magnesium and calcium transport. Calcium and magnesium are transported in the distal tubule by channels. This laboratory has made seminal contributions showing how these channels traffic to and stay in the membrane to transport calcium and magnesium. Several diseases, including diabetes, have dysregulated magnesium transport that can make the disease much worse. Dr. Wolf is examining why there is dysregulation of magnesium transport in diabetes and if there are factors that can normalize magnesium transport and improve the outcome of patients with diabetes.

Drake Laboratory

Dr. Drake studies renal development using mouse models. The kidney undergoes dramatic changes during the course of prenatal development. There are thousands of steps mediated by hormones and receptors to produce the filtering part of the kidney and the tubules that regulate salt transport. Abnormal renal development can lead to kidney problems including absence of the kidneys if everything does not go just right. Dr. Drake is exploring the signaling necessary to ensure proper kidney formation and function.
Clinical Research

Pediatric Nephrology faculty members perform clinical research to study the pathogenesis and therapy for children with chronic kidney disease, end stage renal disease, hypertension, and transplantation. Patients with end stage renal disease are at risk for developing metabolic bone disease and opportunistic infections. The Division has made significant contributions examining therapy for these complications. Faculty also care for a large number of children with metabolic bone disease and have made significant strides in improving the care and outcome for patients with X-linked hypophosphatemic rickets.

Clinical Activities

Dialysis

The Division of Pediatric Nephrology cares for 60-70 patients with end stage renal disease, which places it among the three largest providers of such care for children in the United States. Approximately half of these patients are treated with peritoneal dialysis and half with hemodialysis. Under the direction of Drs. Michel Baum and Raymond Quigley, the Dialysis Program has met all of the federal and state requirements necessary to provide services for the children under its care. The Division provides 24-hour/day and seven-day/week on call services for emergency dialysis to support children with acute kidney injury hospitalized at Children’s.

Inpatient Services

The Division provides care to all hospitalized children with hypertension and renal disease at Children’s. The average inpatient census is ten patients. In addition, most of the rheumatology patients that receive intravenous immunosuppressive medication are admitted to the Nephrology service. The division also provides inpatient consultation and manages acute dialysis and continuous renal replacement therapy for the ICU. There is an Attending Physician on call for consultation 24 hours/day and seven days/week. All consults are provided within 24 hours of the time requested.

In addition to providing inpatient services for patients with chronic kidney disease and dialysis requiring hospitalization, the Division also admits and cares for patients who have received renal transplants. This includes patients who have new renal transplants and those who have complications from a transplant such as rejection or opportunistic infection.

Clinic Services

Division faculty provide outpatient treatment for children with kidney disease and hypertension in Dallas and surrounding areas. An Attending Physician staffs clinic five days/week. The division also provides outpatient care for those patients who have received renal transplants in the Solid Organ Transplant Program clinic.

Testing Services

The Division provides testing services for children with chronic kidney disease and disorders of bone and mineral metabolism. These services are directed by Dr. Mouin Seikaly and include:

- **Blood Pressure**
  - Measurement of blood pressure in an outpatient and inpatient setting has been found to be unreliable to assess whether or not the patient has hypertension. The Division offers 24-hour blood pressure monitoring, which is the gold standard for assessment of hypertension.

- **Bone Mineral Density**
  - The Division oversees a service dedicated to the quantification of bone mineral density. Many patients suffering from endocrine, rheumatologic, orthopedic and kidney diseases have decreased bone mineral density, which may require therapy to improve bone strength.
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- Renal Function
  - Renal function has traditionally been assessed using serum creatinine levels. Unfortunately, serum creatinine has been found to be an inaccurate measure of renal function in children. Creatinine levels not only reflect renal function but also muscle mass which can be quite low in children with chronic disease. To circumvent this limitation, the Division has been providing an accurate measure of renal function using the Glofil technique, which is the gold standard for assessment of glomerular filtration rate in children.

Metabolic Bone Disease

Dr. Mouin Seikaly runs the Metabolic Bone disease clinic at Texas Scottish Rite Hospital for Children and consults for disorders of metabolic bone disease at Children’s Medical Center. Metabolic bone disease comprises a number of inherited disorders which can often be treated. Dr. Seikaly is a world’s expert on the diagnosis and treatment of metabolic bone disease and has made research discoveries that have translated to improved patient care.

Patient Statistics

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tbody>
<tr>
<td>Total number of admissions to C5</td>
<td>354</td>
<td>391</td>
<td>473</td>
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<tr>
<td>New Nephrology Clinic outpatient visits</td>
<td>1,014</td>
<td>1,107</td>
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<tr>
<td>Dallas:</td>
<td>883</td>
<td>994</td>
<td>880</td>
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<tr>
<td>Plano:</td>
<td>131</td>
<td>113</td>
<td>178</td>
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<tr>
<td>Follow up Nephrology Clinic outpatient visits</td>
<td>3,591</td>
<td>3,377</td>
<td>3,447</td>
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<tr>
<td>Dallas:</td>
<td>3,118</td>
<td>2,969</td>
<td>3,045</td>
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<tr>
<td>Plano:</td>
<td>473</td>
<td>408</td>
<td>402</td>
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<tr>
<td>Patients seen at Legacy</td>
<td>641</td>
<td>568</td>
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<tr>
<td>New Patient:</td>
<td>131</td>
<td>113</td>
<td>178</td>
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<tr>
<td>Follow Up:</td>
<td>473</td>
<td>408</td>
<td>402</td>
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<tr>
<td>Nurse Visit:</td>
<td>37</td>
<td>47</td>
<td>22</td>
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<tr>
<td>Acute hemodialysis procedures: Inpatient hemodialysis</td>
<td>429</td>
<td>697</td>
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<tr>
<td>Patients treated with CVVH</td>
<td>76</td>
<td>84</td>
<td>110</td>
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<tr>
<td>Renal transplants: Live and cadaver</td>
<td>14</td>
<td>11</td>
<td>22</td>
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<tr>
<td>Average number of hemodialysis patients</td>
<td>30</td>
<td>33</td>
<td>35</td>
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<tr>
<td>Average number of peritoneal dialysis patients</td>
<td>36</td>
<td>38</td>
<td>29.5</td>
</tr>
</tbody>
</table>

Current Grant Support

Michel Baum

**Grantor:** NIH Training Grant T32 DK07257
**Title of Project:** Renal Control of Body Composition and Blood Pressure
**Role:** Co-Director with Orson Moe
**Dates:** 2007-2022
Grantor: UT Southwestern O'Brian Kidney Research Core P30DK079328  
**Title of Project:** Core B - Physiology  
**Role:** Co-Principal Investigator with Matt Wolf  
**Dates:** 2007 – 2022

**Keri Drake**

Grantor: Kidney Cancer SPORE CEP (Career Enhancement Program)  
**Title of Project:** Roles of YAP/TAZ in the Developing Kidney  
**Role:** Principal Investigator  
**Dates:** 08/2018 – 07/2019

Grantor: Children’s Clinical Research Advisory Committee Early Career Research Award  
**Title of Project:** Defining the cell type(s) of origin in Wilms Tumor  
**Role:** Principal Investigator  
**Dates:** 08/2018 – 07/2019

**Jyothsna Gattineni**

Grantor: NIH R01  
**Title of Project:** Effects of High Phosphate and FGF23 on the Cardiovascular System  
**Role:** Principal Investigator  
**Dates:** 07/2018 – 6/2023

Grantor: Mark and Marcia King Foundation  
**Title of Project:** FGF23: Friend, Foe or Innocent Bystander  
**Role:** Principal Investigator  
**Dates:** 08/2013 – 07/2020

**Raymond Quigley**

Grantor: Prismaflex  
**Title of Project:** Clinical Evaluation of the Prismaflex HF20 and Prismaflex System 7.10 for Acute Continuous Renal Replacement Therapy in Children  
**Role:** Site Investigator  
**Dates:** 2017 – Present

**Mouin Seikaly**

Grantor: Emerald  
**Title of Project:** A Phase 2, Open-Label, Multiple Dose Study to Evaluate the Pharmacodynamic Effects, Safety, and Tolerability of Patiromer for Oral Suspension in Children and Adolescents 2 to < 18 Years of Age with Chronic Kidney Disease and Hyperkalemia  
**Role:** Center Principal Investigator  
**Dates:** 2017 – 2018

**Matthias Wolf**

Grantor: Children’s Clinical Research Advisory Committee (CCRAC)  
**Title of Project:** The Role of the Hormone Ghrelin in the Regulation of the Magnesium Channel TRPM6 in Kidneys  
**Role:** Principal Investigator  
**Dates:** 2016 – Present
**Grantor:** NIH, RO3-DK11776  
**Title of Project:** Renal Regulation of the Magnesium Channel TRPM6 by Uromodulin  
**Role:** Principal Investigator  
**Dates:** 4/2017 – 2/2019

**Grantor:** UT Southwestern O'Brian Kidney Research Core P30DK079328  
**Title of Project:** Core B - Physiology  
**Role:** Co-Principal Investigator with Matt Wolf  
**Dates:** 2017 – 2022

### Publications

#### Book


#### Journal Articles


**Book Chapters**


