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 the second highest ranking medical service 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. Two new faculty joined the Division in 2017, Drs. Keri Drake and Erin Kim.

Keri Drake, M.D.
Instructor

B.A.
Saint Mary’s University of Minnesota, Winona, MN, 2005

M.D.
University of Wisconsin School of Medicine and Public Health, Madison, WI, 2010

Postdoctoral Training
Residency, Pediatrics
University of Minnesota, Minneapolis, MN, 2010-2013
Fellowship, Pediatric Nephrology
Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, 2013-2017

Interests
Congenital anomalies of the kidney and urinary tract (CAKUT), chronic and cystic kidney disease, genetics of kidney disease, and renal development

Dr. Michel Baum has served as the Editor-in-Chief of the Pediatric Nephrology since 2011. Four division faculty, Drs. Jyothsna Gattineni, Raymond Quigley, Mouin Seikaly and Matthias Wolf, currently serve on the editorial board.
Erin Kim, M.D.
Assistant Professor

B.A., B.S.
University of California, San Diego, La Jolla, CA, 2007

M.D.
Temple University School of Medicine, Philadelphia, PA, 2011

Postdoctoral Training
Residency, Pediatrics
Albert Einstein College of Medicine/Jacobi Medical Center, Bronx, NY, 2011-2014
Fellowship, Pediatric Nephrology
Lucile Packard Children’s Hospital at Stanford, Palo Alto, CA, 2014-2017

Interests
Chronic kidney disease, hemodialysis, peritoneal dialysis, tubular disorders, hypertension, and epithelial ion transport

Honors / Awards

Best Pediatric Specialists in Dallas, D Magazine
• Jyothsna Gattineni
• Raymond Quigley
• Mouin Seikaly

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
• Editorial Board, American Journal of Physiology: Renal Physiology, 2001 – present
• Chair, Ad Hoc Promotion and Tenure Committee, UT Southwestern
• NIH Study Section for NIDDK - 6 study sections in 2017 and chair of two of the study sections

Keri Drake
• Fellow Research Presentation Award, American Society for Pediatric Nephrology

Raymond Quigley
• Member of Training and Certification Committee, ASPN

Mouin Seikaly
• NAPRTCS Participating Centers Committee

Matthias Wolf
• Editorial Board for Frontiers in Medicine - Nephrology
Invited Lectures

Michel Baum

- ISN World Congress of Nephrology, Mexico City, Mexico, April 2017
  o “Prenatal Programming of Chronic Kidney Disease and Hypertension”
- Hospital Infantil de Mexico Federico Gomez, Mexico City, Mexico, April 2017
  o “How to Write a Scientific Paper”
- Asian Congress of Pediatric Nephrology, Malaysia, October 2017
  o “How to Write a Manuscript for Publication”

Jyothsna Gattineni

- Prune Belly Syndrome Network Convention, Dallas, TX, July 2017
  o “Prune Belly Syndrome; A Nephrologists Perspective”
- American Society of Pediatric Nephrology, Dallas, TX, October 2017

Mouin Seikaly

- Mahidol University Bangkok Thailand, Department of Pediatrics Grand Rounds, February 2017
  o “Metabolic Bone Disease in Children”
- Mahidol University, Bangkok Thailand, Division of Nephrology, February 2017
  o “Postoperative Management of a Patient with Kidney Transplant”
- Driscoll Hospital, Department of Pediatrics Grand Rounds, Galveston Texas, April 2017
  o “Management of a Child with HPP”
- International Pediatric Transplant Association, Barcelona, May 2017
  o “Treatment of Acute Antibody Mediated Rejection (aAMR) in Pediatric Renal Transplantation Recipients: A Single Center Experience”
- Texas Tech University, Department of Pediatrics Grand Rounds, Lubbock Texas, June 2017
  o “Management of a Child with HPP”
- Tulane University, New Orleans, LA, December 2017
  o “Metabolic Bone Disease in Children”

Matthias Wolf

- Pediatric Grand Rounds, University of Iowa, IA, July 2017
  o “Urinary Proteins Uromodulin and Mucin-1 Are New Modifiers of Renal Magnesium Regulation”
- Pediatric Grand Rounds, Boston Children’s Hospital, October 2017
  o “Uromodulin is a New Modifier of Magnesium and Glucose Homeostasis”
- American Society of Nephrology, New Orleans, LA, November 2017
  o “Uromodulin and Nephrolithiasis”

Conference Presentations

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

Oral, Pediatric Academic Societies Meeting, San Francisco, CA, May 2017
“Hox mutant kidneys show cell identity ambiguity and reveal novel insights into multicystic renal dysplasia”
Education and Training

The Division of Pediatric Nephrology is one of a handful 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. There are four trainees in the ACGME training program. They 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 arrived this year from Cincinnati and is setting up her laboratory to explore 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 Dr. 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**
  o 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**
  o 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.

• **Renal Function**
  o 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**

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<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
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<tbody>
<tr>
<td>Total number of admissions to C5</td>
<td>354</td>
<td>391</td>
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<tr>
<td>New Nephrology Clinic outpatient visits</td>
<td></td>
<td></td>
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<tr>
<td>Dallas – 1,532</td>
<td></td>
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<tr>
<td>Plano – 267</td>
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<tr>
<td>1,799</td>
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<tr>
<td>Follow up Nephrology Clinic outpatient visits</td>
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<tr>
<td>Dallas – 4,799</td>
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<tr>
<td>Plano – 865</td>
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<tr>
<td>5,664</td>
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<td>Patients seen at Legacy</td>
<td>1,132</td>
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<td>Acute hemodialysis procedures: Inpatient hemodialysis</td>
<td>429</td>
<td>697</td>
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<td>Patients treated with CVVH</td>
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<td>78</td>
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<tr>
<td>Renal transplants: Live and cadaver</td>
<td>14</td>
<td>11</td>
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<tr>
<td>Average number of hemodialysis patients</td>
<td>30</td>
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<tr>
<td>Average number of peritoneal dialysis patients</td>
<td>36</td>
<td>38</td>
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**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:** 2017-2022

**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
Jyothsna Gattineni
Grantor: K08, National Institute of Diabetes and Digestive and Kidney Diseases
Title of Project: FGF23 and its Receptors, R03DK105298
Role: Principal Investigator
Dates: 2015 – 2017

Grantor: Mark and Marcia King Foundation
Title of Project: FGF23: Friend, Foe or Innocent Bystander
Role: Principal Investigator
Dates: 2013 – Present

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

Matthias Wolf
Grantor: 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, R03-DK111776
Title of Project: Renal Regulation of the Magnesium Channel TRPM6 by Uromodulin”
Role: Principal Investigator
Dates: 7/2016 – 6/2018

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

Grantor: UT Southwestern O’Brian Kidney Research – Pilot and Feasibility
Title of Project: Role of Urinary Mucin-1 and Uromodulin in Calcium Nephrolithiasis
Role: Co-Principal Investigator with Matt Wolf
Dates: 2017 – Present

Peer-Reviewed Publications


