

# CJASN

Clinical Journal of the American Society of Nephrology

December 2015 • Vol. 10 • No. 12

## Editorials

---

### **2101 Infections Requiring Hospitalization in Patients on Hemodialysis**

*David T. Gilbertson and James B. Wetmore*  
See related article on page 2170.

### **2104 Frailty and Cognitive Impairment in ESRD: Brain-Body Connections**

*Stephen L. Seliger*  
See related article on page 2181.

### **2107 Targeting Blood Vessel Stiffness to Protect Kidney Function**

*Neeraj Dhaun and David J. Webb*  
See related article on page 2190.

## Original Articles

---

### Acute Kidney Injury

#### **2110 AKI in Children Hospitalized with Nephrotic Syndrome**

*Michelle N. Rheault, Lei Zhang, David T. Selewski, Mahmoud Kallash, Cheryl L. Tran, Meredith Seamon, Chryso Katsoufis, Isa Ashoor, Joel Hernandez, Katarina Supe-Markovina, Cynthia D'Alessandri-Silva, Nilka DeJesus-Gonzalez, Tetyana L. Vasylyeva, Cassandra Formeck, Christopher Woll, Rasheed Gbadegesin, Pavel Geier, Prasad Devarajan, Shannon L. Carpenter, Bryce A. Kerlin, and William E. Smoyer on behalf of the Midwest Pediatric Nephrology Consortium*

### Chronic Kidney Disease

#### **2119 Plasma Vitamin D Level and Change in Albuminuria and eGFR According to Sodium Intake**

*Charlotte A. Keyzer, Hiddo J. Lambers-Heerspink, Michel M. Joosten, Petronella E. Deetman, Ron T. Gansevoort, Gerjan Navis, Ido P. Kema, Dick de Zeeuw, Stephan J.L. Bakker, and Martin H. de Borst on behalf of PREVEND Study Group*

#### **2128 Examination of Potential Modifiers of the Association of *APOL1* Alleles with CKD Progression**

*Teresa K. Chen, Michael J. Choi, W.H. Linda Kao, Brad C. Astor, Julia J. Scialla, Lawrence J. Appel, Liang Li, Michael S. Lipkowitz, Myles Wolf, Rulan S. Parekh, Cheryl A. Winkler, Michelle M. Estrella, and Deidra C. Crews*

### Clinical Nephrology

#### **2136 Randomized Clinical Trial of Sodium Polystyrene Sulfonate for the Treatment of Mild Hyperkalemia in CKD**

*Laurence Lepage, Anne-Claude Dufour, Jessica Doiron, Katia Handfield, Katherine Desforges, Robert Bell, Michel Vallée, Michel Savoie, Sylvie Perreault, Louis-Philippe Laurin, Vincent Pichette, and Jean-Philippe Lafrance*

#### **2143 Association of Serum C3 Concentration and Histologic Signs of Thrombotic Microangiopathy with Outcomes among Patients with ANCA-Associated Renal Vasculitis**

*Lucio Manenti, Augusto Vaglio, Elisa Gnappi, Umberto Maggiore, Landino Allegri, Marco Allinovi, Maria L. Urban, Marco Delsante, Maricla Galetti, Maria Nicastro, Francesco P. Pilato, and Carlo Buzio*

### Diabetes and the Kidney

#### **2152 Urinary Potassium Excretion and Renal and Cardiovascular Complications in Patients with Type 2 Diabetes and Normal Renal Function**

*Shin-ichi Araki, Masakazu Haneda, Daisuke Koya, Keiko Kondo, Sachiko Tanaka, Hisatomi Arima, Shinji Kume, Jun Nakazawa, Masami Chin-Kanasaki, Satoshi Ugi, Hiromichi Kawai, Hisazumi Araki, Takashi Uzu, and Hiroshi Maegawa*

### Diabetes and the Kidney (Continued)

#### **2159 BP and Renal Outcomes in Diabetic Kidney Disease: The Veterans Affairs Nephropathy in Diabetes Trial**

David J. Leehey, Jane H. Zhang, Nicholas V. Emanuele, Adam Whaley-Connell, Paul M. Palevsky, Robert F. Reilly, Peter Guarino, and Linda F. Fried for the VA NEPHRON-D Study Group

### Epidemiology and Outcomes

#### **2170 Risk Factors for Infection-Related Hospitalization in In-Center Hemodialysis**

Lorien S. Dalrymple, Yi Mu, Danh V. Nguyen, Patrick S. Romano, Glenn M. Chertow, Barbara Grimes, George A. Kaysen, and Kirsten L. Johansen  
See related editorial on page 2101.

#### **2181 Frailty and Cognitive Function in Incident Hemodialysis Patients**

Mara A. McAdams-DeMarco, Jingwen Tan, Megan L. Salter, Alden Gross, Lucy A. Meoni, Bernard G. Jaar, Wen-Hong Linda Kao, Rulan S. Parekh, Dorry L. Segev, and Stephen M. Sozio  
See related editorial on page 2104.

#### **2190 Arterial Stiffness and Decline in Kidney Function**

Sanaz Sedaghat, Francesco U.S. Mattace-Raso, Ewout J. Hoorn, Andre G. Uitterlinden, Albert Hofman, M. Arfan Ikram, Oscar H. Franco, and Abbas Dehghan  
See related editorial on page 2107.

#### **2198 Long-Term Risk of Cancer in Survivors of Pediatric ESRD**

Sophie Ploos van Amstel, Judith L. Vogelzang, Marcus V. Starink, Kitty J. Jager, and Jaap W. Groothoff

### ESRD and Chronic Dialysis

#### **2205 Insulin Resistance in Nondiabetic Peritoneal Dialysis Patients: Associations with Body Composition, Peritoneal Transport, and Peritoneal Glucose Absorption**

Ana Paula Bernardo, Jose C. Oliveira, Olivia Santos, Maria J. Carvalho, Antonio Cabrita, and Anabela Rodrigues

### Renal Transplantation

#### **2213 Risk Stratification for Rejection and Infection after Kidney Transplantation**

Pietro E. Cippà, Marc Schiesser, Henrik Ekberg, Teun van Gelder, Nicolas J. Mueller, Claude A. Cao, Thomas Fehr, and Corrado Bernasconi

#### **2221 Emotional and Financial Experiences of Kidney Donors over the Past 50 Years: The RELIVE Study**

Cheryl L. Jacobs, Cynthia R. Gross, Emily E. Messersmith, Barry A. Hong, Brenda W. Gillespie, Peg Hill-Callahan, Sandra J. Taler, Sheila G. Jowsey, Tim J. Beebe, Arthur J. Matas, Jonah Odum, and Hassan N. Ibrahim

## Renal Physiology

---

#### **2232 Acid-Base Homeostasis**

L. Lee Hamm, Nazih Nakhoul, and Kathleen S. Hering-Smith

## Renal Immunology

---

#### **2243 Cytokines: Names and Numbers You Should Care About**

Stephen R. Holdsworth and Poh-Yi Gan

## Attending Rounds

---

#### **2255 A Patient with Recurrent Arteriovenous Graft Thrombosis**

Michael Allon

## Ethics Series

---

### 2263 **Balancing the Duty to Treat Patients with Ebola Virus Disease with the Risks to Dialysis Personnel**

*Nicholas G. Evans*

## In-Depth Review

---

### 2268 **Mild Chronic Hyponatremia in the Ambulatory Setting: Significance and Management**


*Helbert Rondon-Berrios and Tomas Berl*

## Special Feature

---

### 2279 **Human Heredity and Health (H3) in Africa Kidney Disease Research Network: A Focus on Methods in Sub-Saharan Africa**

*Charlotte Osafo, Yemi Raheem Raji, David Burke, Bamidele O. Tayo, Nicki Tiffin, Marva M. Moxey-Mims, Rebekah S. Rasooly, Paul L. Kimmel, Akinlolu Ojo, Dwomoa Adu, Rulan S. Parekh, and the H3Africa Kidney Disease Research Network Investigators as members of The H3Africa Consortium*

 eJournal club provides a timely and interactive electronic journal club experience by offering a forum in which CJASN readers have the opportunity to converse with the featured study authors. Visit [ejc.cjasn.org](http://ejc.cjasn.org) to learn more.

### On the Cover

*What's the diagnosis?* A 63-year-old woman with an aggressive B-cell lymphoma underwent therapy with high-dose methotrexate following bicarbonate-containing intravenous fluid prophylaxis. Acute kidney injury (AKI) developed over the next 48 hours with serum creatinine rising to 1.7 mg/dl. Urine microscopy revealed numerous brownish/gold methotrexate crystals both in clumps (cover image) and in casts. Acute kidney injury from methotrexate-associated crystalline nephropathy was considered likely. Intravenous fluids containing bicarbonate were continued with the goal of high urine flow rates (> 150 ml/hour) and a urine pH of > 7.0. Over the next 48-72 hours, kidney function improved with serum creatinine approaching baseline. Methotrexate is a dihydrofolate reductase inhibitor that is employed to treat various malignancies, in particular high-grade lymphomas. Methotrexate when employed in high doses has been described to cause kidney injury through multiple possible mechanisms. In general, intratubular crystal precipitation is the most commonly described form of acute nephrotoxicity. AKI may occur from some combination of tubular obstruction from the crystals or an inflammatory reaction to the crystals. The former cause may have been more likely in our patient due to the rapidity of AKI following methotrexate administration, but a component of interstitial inflammation is impossible to exclude without a kidney biopsy. Risk factors for intratubular precipitation of methotrexate and its metabolites include low urine pH, volume depletion with low urinary flow rates, and with high urinary methotrexate concentrations associated with high dose therapy. Another potential cause of AKI includes tubular apoptosis/necrosis from lipid peroxidation that is associated with decreased adenosine deaminase activity following methotrexate therapy. (Images and text provided by Mark A. Perazella, MD, Yale University School of Medicine, New Haven, Connecticut)