

# CJASN

Clinical Journal of the American Society of Nephrology

April 2019 • Vol. 14 • No. 4

## Patient Voice

---

### 483 Patient Perspective of Smartphone-Based Apps for CKD Self-Care

*Dale Rogers*

*See related editorial and article on pages 491 and 523, respectively.*

## Editorials

---

### 485 Complex Decision Making about Dialysis in Critically Ill Older Adults with AKI

*Catherine R. Butler and Ann M. O'Hare*

*See related article on page 496.*

### 488 Prediction Models for AKI: Will They Result in Improved Outcomes for AKI?

*Yuenting Diana Kwong and Kathleen D. Liu*

*See related article on page 506.*

### 491 Got CKD? There's an App for That!

*Joel M. Topf and Swapnil Hiremath*

*See related Patient Voice and article on pages 483 and 523, respectively.*

### 493 Frailty and Cognitive Deficits Limit Access to Kidney Transplantation: Unfair or Unavoidable?

*Meera N. Harhay and Peter P. Reese*

*See related articles on pages 567 and 576, respectively.*

## Original Articles

---

### Acute Kidney Injury and ICU Nephrology

### 496 Selection and Receipt of Kidney Replacement in Critically Ill Older Patients with AKI

*Sean M. Bagshaw, Neill K.J. Adhikari, Karen E.A. Burns, Jan O. Friedrich, Josée Bouchard, Francois Lamontagne, Lauralyn A. McIntyre, Jean-François Cailhier, Peter Dodek, Henry T. Stelfox, Margaret Herridge, Stephen Lapinsky, John Muscedere, James Barton, Donald Griesdale, Mark Soth, Althea Ambosta, Gerald Lebovic, and Ron Wald on behalf of the Canadian Critical Care Trials Group*

*See related editorial on page 485.*

### 506 A Prediction Model for Severe AKI in Critically Ill Adults That Incorporates Clinical and Biomarker Data

*Pavan Kumar Bhatraju, Leila R. Zelnick, Ronit Katz, Carmen Mikacenic, Susanna Kosamo, William O. Hahn, Victoria Dmyterko, Bryan Kestenbaum, David C. Christiani, W. Conrad Liles, Jonathan Himmelfarb, and Mark M. Wurfel*

*See related editorial on page 488.*

### Chronic Kidney Disease

### 515 Secondhand Smoke and CKD

*Jong Hyun Jhee, Young Su Joo, Youn Kyung Kee, Su-Young Jung, Seohyun Park, Chang-Yun Yoon, Seung Hyeok Han, Tae-Hyun Yoo, Shin-Wook Kang, and Jung Tak Park*

### 523 Patients' and Nephrologists' Evaluation of Patient-Facing Smartphone Apps for CKD

*Karandeep Singh, Clarissa J. Diamantidis, Shreyas Ramani, Nrupen A. Bhavsar, Peter Mara, Julia Warner, Jorge Rodriguez, Tianshi Wang, and Julie Wright-Nunes*

*See related Patient Voice and editorial on pages 483 and 491, respectively.*

## Original Articles (Continued)

---

### 530 Estimated Glomerular Filtration Rate and the Risk of Cancer

Hong Xu, Kunihiro Matsushita, Guobin Su, Marco Trevisan, Johan Ärnlöv, Peter Barany, Bengt Lindholm, Carl-Gustaf Elinder, Mats Lambe, and Juan-Jesus Carrero

#### Clinical Nephrology

### 540 Dynamics of Organic Anion Transporter-Mediated Tubular Secretion during Postnatal Human Kidney Development and Maturation

Jeremiah D. Momper, Jin Yang, Mary Gockenbach, Florin Vaida, and Sanjay K. Nigam

#### Diabetes and the Kidney

### 549 Rates of Cardiac Rhythm Abnormalities in Patients with CKD and Diabetes

Nazem Akoum, Leila R. Zelnick, Ian H. de Boer, Irl B. Hirsch, Dace Trence, Connor Henry, Nicole Robinson, and Nisha Bansal

#### Glomerular and Tubulointerstitial Diseases

### 557 Etiology and Outcomes of Thrombotic Microangiopathies

Guillaume Bayer, Florent von Tokarski, Benjamin Thoreau, Adeline Bauvois, Christelle Barbet, Sylvie Cloarec, Elodie Mérieau, Sébastien Lachot, Denis Garot, Louis Bernard, Emmanuel Gyan, Franck Perrotin, Claire Pouplard, François Maillot, Philippe Gatault, Bénédicte Sautenet, Emmanuel Rusch, Matthias Buchler, Cécile Vigneau, Fadi Fakhouri, and Jean-Michel Halimi

#### Transplantation

### 567 Subclinical Cognitive Impairment and Listing for Kidney Transplantation

Aditi Gupta, Robert N. Montgomery, Victor Bedros, John Lesko, Jonathan D. Mahnken, Shweta Chakraborty, David Drew, Jeffrey A. Klein, Tashra S. Thomas, Amna Ilahe, Pooja Budhiraja, William M. Brooks, Timothy M. Schmitt, Mark J. Sarnak, Jeffrey M. Burns, and Diane M. Cibrik  
See related editorial and article on pages 493 and 576, respectively.

### 576 Frailty and Access to Kidney Transplantation

Christine E. Haugen, Nadia M. Chu, Hao Ying, Fatima Warsame, Courtenay M. Holscher, Niraj M. Desai, Miranda R. Jones, Silas P. Norman, Daniel C. Brennan, Jacqueline Garonzik-Wang, Jeremy D. Walston, Adam W. Bingaman, Dorry L. Segev, and Mara McAdams-DeMarco  
See related editorial and article on pages 493 and 567, respectively.

## Research Letter

---

### 583 Usability Testing of a Sick-Day Protocol in CKD

Rebecca M. Doerfler, Clarissa J. Diamantidis, Lee-Ann Wagner, Beth M. Scism, Monifa Vaughn-Cooke, Wanda J. Fink, Thomas Blakeman, and Jeffrey C. Fink

## Erratum

---

### 586 Correction

## Nephro pharmacology for the Clinician

---

### 587 Estimation of Kidney Function in Oncology: Implications for Anticancer Drug Selection and Dosing

Morgan A. Casal, Thomas D. Nolin, and Jan H. Beumer

## Evidence-Based Nephrology

---

### 597 Risks of Living Kidney Donation: Current State of Knowledge on Outcomes Important to Donors

Krista L. Lentine, Ngan N. Lam, and Dorry L. Segev  
See related Commentary on page 609.

## Commentary

---

### 609 **Commentary on Risks of Living Kidney Donation: Current State of Knowledge on Core Outcomes Important to Donors**

*Bryan R. Kestenbaum and Stephen L. Seliger*  
See related article on page 597.

## Kidney Case Conference: How I Treat

---

### 611 **Management of the Hemodialysis Patient with Catheter-Related Bloodstream Infection**

*Crystal A. Farrington and Michael Allon*

### 614 **Kidney Transplantation in a HIV-Positive Recipient**

*Deirdre Sawinski and Jayme E. Locke*

## Perspectives

---

### 617 **Stopping RAS Inhibitors to Minimize AKI: More Harm than Good?**

*Charles Tomson and Laurie A. Tomlinson*

### 620 **Kidney Xenotransplantation: Steps toward Clinical Application**

*Brian I. Shaw and Allan D. Kirk*

### 623 **From Patient-Centered to Person-Centered Care for Kidney Diseases**

*Rachael L. Morton and Marcus Sellars*

## Features

---

### 626 **Recommendations for the Care of Patients Receiving Conservative Kidney Management: Focus on Management of CKD and Symptoms**

*Sara N. Davison, Beth Tupala, Betty Ann Wasyluk, Valerie Siu, Aynharan Sinnarajah, and Jean Triscott*

### 635 **A Conceptual Framework of Palliative Care across the Continuum of Advanced Kidney Disease**

*Daniel Y. Lam, Jennifer S. Scherer, Mark Brown, Vanessa Grubbs, and Jane O. Schell*

### On the Cover

*What's the diagnosis?*

Details: This patient with progressive CKD had a past medical history of seizures and episodes of tetany and was taking carbamazepine, lamotrigine and calcium and vitamin D supplements. She had an eGFR of 33 mL/min/1.73m<sup>2</sup>, hypomagnesaemia, hypocalcemia and hypercalciuria with a mildly elevated PTH. Vitamin D levels were sufficient. Renal imaging demonstrated nephrocalcinosis and a renal biopsy demonstrated nephrocalcinosis. The unifying diagnosis is autosomal dominant hypocalcaemia with progressive CKD secondary to nephrocalcinosis. Genetic analysis confirmed a heterozygous c.354C>A, p.(Asn118Lys) missense mutation in CASR, encoding the Calcium-sensing receptor (CaSR).

Description: The three images show:

- CT brain scan demonstrating calcium deposition in a symmetrical pattern at the junction of the grey and white matter
- CT of kidneys showing bilateral nephrocalcinosis
- Renal biopsy stained with Von Kossa demonstrating nephrocalcinosis

Key teaching points: A family history revealed the patient's mother and sibling were also affected, consistent with autosomal dominant inheritance. The PTH is usually low as activating mutations in CaSR lower the set-point of calcium-responsive parathyroid hormone release, allowing a low serum calcium to be perceived as normal. In this case PTH was mildly elevated in the context of longstanding CKD. Overzealous attempts at correcting hypocalcaemia in patients with autosomal dominant hypocalcaemia result in hypercalciuria and nephrocalcinosis. Brain calcification (typically basal ganglia calcification) is a frequent finding, the mechanism is not known but is likely to be secondary to the CASR mutation itself. Symptomatic and judicious correction of hypocalcaemia is advised.

*(Images and text provided by Shahid Abdullah<sup>1</sup>, Shalabh Srivastava<sup>2</sup>, Simren Rakhra<sup>2</sup>, Philip Haslam<sup>1</sup>, and John A. Sayer<sup>1,3</sup>; <sup>1</sup>The Newcastle Upon Tyne Hospitals NHS Foundation Trust, <sup>2</sup>City Hospitals Sunderland NHS Foundation Trust; and <sup>3</sup>Newcastle University, Institute of Genetic Medicine, Central Parkway, Newcastle NE1 3BZ)*