Editorials

703 The Role of Bicarbonate in CKD: Evidence Bulks Up
Eric E. Simon and L. Lee Hamm
See related article on page 714.

706 Clinical Implications of the Relationship between Low Calcium Concentration Dialysate and Sudden Death
Anthony J. Bleyer
See related article on page 797.

708 Lifting the Veil: Insights into Vascular Access Options
Lalathaksha Kumbar and Anatole Besarab
See related articles on pages 804 and 810.

711 Ionizing Radiation During Pretransplant Evaluation: Time to Reconsider the Evaluation Process
Deborah B. Adey
See related article on page 833.

Original Articles

Acid/Base and Electrolyte Disorders

714 Effects of Oral Sodium Bicarbonate in Patients with CKD
Matthew K. Abramowitz, Michal L. Melamed, Carolyn Bauer, Amanda C. Raff, and Thomas H. Hostetter
See related editorial on page 703.

Chronic Kidney Disease

721 Clinical Correlates of Ambulatory BP Monitoring among Patients with CKD
Satoshi Iimuro, Enyu Imai, Tsuyoshi Watanabe, Kosaku Nitta, Tadao Akizawa, Seiichi Matsuo, Hirofumi Makino, Yasuo Ohashi, and Akira Hishida, for the Chronic Kidney Disease Japan Cohort Study Group

731 Association of BP Variability with Mortality among African Americans with CKD
Ciaran J. McMullan, George L. Bakris, Robert A. Phillips, and John P. Forman

739 Documentation and Management of CKD in Rural Primary Care
Maya K. Rao, Cynthia D. Morris, Jean P. O’Malley, Melinda M. Davis, Motomi Mori, and Sharon Anderson

Clinical Nephrology

749 Prognostic Value of Glomerular Collagen IV Immunofluorescence Studies in Male Patients with X-Linked Alport Syndrome
Laura Massella, Concetta Gangemi, Kostas Giannakakis, Antonella Crisafi, Tullio Faraggiana, Chiara Fallerini, Alessandra Renieri, Andrea Onetti Muda, and Francesco Emma

756 Two-Year Outcome of the ISKDC Regimen and Frequent-Relapsing Risk in Children with Idiopathic Nephrotic Syndrome
Koichi Nakanishi, Kazumoto Iijima, Kenji Ishikura, Hiroshi Hataya, Hitoshi Nakazato, Satoshi Sasaki, Masataka Honda, and Norishige Yoshikawa, for the Japanese Study Group of Renal Disease in Children
Original Articles (Continued)

764 Precision of Estimating Equations for GFR in Children with a Solitary Functioning Kidney: The KIMONO Study
Rik Westland, Yael Abraham, Arend Boëkenkamp, Birgit Stoffel-Wagner, Michiel F. Schreuder, and Joanna A.E. van Wijk

Epidemiology and Outcomes

773 The Outcomes of Patients with ESRD and ANCA-Associated Vasculitis in Australia and New Zealand
Wen Tang, Bhadran Bose, Stephen P. McDonald, Carmel M. Hawley, Sunil V. Badve, Neil Boudville, Fiona G. Brown, Philip A. Clayton, Scott B. Campbell, Chen Au Peh, and David W. Johnson

781 Serum FGF23 and Risk of Cardiovascular Events in Relation to Mineral Metabolism and Cardiovascular Pathology
Johan Ärnlov, Axel C. Carlsson, Johan Sundström, Erik Ingelsson, Anders Larsson, Lars Lind, and Tobias E. Larsson

787 Immunosuppression for Membranous Nephropathy: A Systematic Review and Meta-Analysis of 36 Clinical Trials
Yizhi Chen, Arrigo Schieppati, Guangyan Cai, Xiangmei Chen, Javier Zamora, Giovanni A. Giuliano, Norbert Braun, and Annalisa Perna

797 Dialysate Calcium Concentration and the Risk of Sudden Cardiac Arrest in Hemodialysis Patients
Patrick H. Pun, John R. Horton, and John P. Middleton
See related editorial on page 706.

ESRD and Chronic Dialysis

804 Long-term Outcomes of Arteriovenous Thigh Grafts in Hemodialysis Patients: A Comparison with Tunneled Dialysis Catheters
Song Ong, Jill Barker-Finkel, and Michael Allon
See related editorial on page 708.

Charmaine E. Lok, Jessica M. Sontrop, George Tomlinson, Dheeraj Rajan, Mark Cattral, George Oreopoulos, Jeremy Harris, and Louise Moist
See related editorial on page 708.

Mineral Metabolism/Bone Disease

819 The Relation between Renal Function and Serum Sclerostin in Adult Patients with CKD
Solenne Pelletier, Laurence Dubourg, Marie-Christine Carlier, Aoumeur Hadj-Aissa, and Denis Fouque

824 The Skeletal Consequences of Growth Hormone Therapy in Dialyzed Children: A Randomized Trial
Justine Bacchetta, Katherine Wesseling-Perry, Beatriz Kuizon, Renata C. Pereira, Barbara Gales, He-jing Wang, Robert Elashoff, and Isidro B. Salusky

Renal Transplantation

833 Ionizing Radiation Exposure among Kidney Transplant Recipients Due to Medical Imaging during the Pretransplant Evaluation
Kim N. Nguyen, Anup M. Patel, and Francis L. Weng
See related editorial on page 711.

Ethics Series

840 Nephrologists’ Professional Ethics in Dialysis Practices
David T. Ozar, Cynthia Kristensen, Stephen Z. Fadem, Robert Blaser, Dale Singer, and Alvin H. Moss

Public Policy Series

845 The USRDS: What You Need to Know about What It Can and Can’t Tell Us about ESRD
Robert N. Foley and Allan J. Collins
In-Depth Reviews

852 Effect of Red Cell Transfusions on Future Kidney Transplantation  
Gregorio T. Obrador and Iain C. Macdougall

861 Assessing Physical Function and Physical Activity in Patients with CKD  
Patricia Painter and Robin L. Marcus

Mini-Review

873 β-Trace Protein: From GFR Marker to Cardiovascular Risk Predictor  
Esteban Orenes-Piñero, Sergio Manzano-Fernández, Ángel López-Cuenca, Francisco Marín, Mariano Valdés, and James L. Januzzi

Special Feature

882 ASN Clinical Pathological Conference  
Mohamed G. Atta and Michael B. Stokes

Erratum

891 Correction

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On the Cover

What’s the diagnosis? Microscopic examination of the spun urine sediment often provides a window into a patient’s disease. In patients with hematuria, a number of different urinary red blood cells (RBCs) may be seen. Most commonly, isomorphic or normal appearing RBCs are noted, typically indicative of non-glomerular bleeding from the kidney, collecting system, bladder, or urethra. The most common causes of isomorphic urinary RBCs are nephrolithiasis and renal or other genitourinary cancers. However, non-isomorphic RBCs may also appear in the urine; some unique examples are pictured on this CJASN cover. In the upper left panel, sickled RBCs are present. Hematuria occurs in approximately 3-4% of patients with sickle cell disease. These RBCs are similar in morphology to the sickled RBCs found on peripheral blood smear. Case reports describe the diagnosis of sickle cell disease following recognition of these RBCs in patients presenting with hematuria. Acanthocytes, the classic dysmorphic RBC found in the urine most often reflect glomerular bleeding. In patients who present with hematuria, RBC casts and acanthocytes are usually indicative of glomerular bleeding from an underlying glomerulonephritis or other form of glomerular injury. Elliptocytes, as seen in the lower left panel are elongated RBCs, which are classically described as “cigar shaped”. These RBCs are extremely rare in the urine. These cells were observed in the urine of a patient with hemolytic anemia, which was associated with elliptocytes in the peripheral blood. Dacrocytes, like elliptocytes are rarely seen in the urine and reflect peripheral blood dacrocytes that enter the urine following glomerular injury. These cells, noted in the lower right panel are “tear drop” shaped and are a form of poikilocyte, sometimes found in patients with myelofibrosis and myelophthisis anemia. (Images and text provided by Jose Antonio Tesser Poloni, Irmandade da Santa Casa de Misericordia de Porto Alegre, Porto Alegre, Brazil, and Mark A. Perazella, Yale University, New Haven, Connecticut)