Real-time Measurement of Glomerular Filtration Rate

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Abstract

Glomerular filtration rate (GFR) is the most widely used metric of kidney function. The search for an ideal marker of glomerular filtration was ultimately resolved by Homer Smith and his colleagues with the introduction of inulin (1). For many years, inulin clearance was considered the gold standard for measurement of GFR but was not practical for clinical medicine. Creatinine was adopted as a surrogate serum marker of GFR and in the past 15 years, equations utilizing serum creatinine, age, gender, and race were developed to estimate GFR in the steady state (2).

Unfortunately, serum creatinine is not an ideal marker of filtration resulting in misclassification of patients (3). In addition, the estimating equations are not validated for the non-steady state making diagnosis and treatment of acute kidney disease (AKI) problematic (4). Because a rise in creatinine in the setting of an acute decrease in GFR takes time (usually 24-48 hours), identification of patients with AKI is delayed resulting in lost opportunities for interventions that would reverse or minimize the injury to the kidney and patient.

Biography

Richard Solomon trained in Internal Medicine at the University of California and in Nephrology at Beth Israel Hospital in Boston, MA. He joined the faculty of the University of Vermont in 2002. He is an experienced clinical investigator with interests in hypertension, chronic kidney disease, acute renal failure, and electrolyte disorders. In the area of acute renal failure, Dr. Solomon's work in contrast-induced nephropathy (CIN) remains the pivotal standard for prophylaxis. He has been a thought leader on the adverse long-term effects of CIN on cardiovascular and renal events. He is currently the Chief of the Nephrology Unit in the Department of Medicine at the University of Vermont Medical Center. contrast-induced nephropathy (CIN) remains the pivotal standard for prophylaxis. He has been a thought leader on the adverse long-term effects of CIN on cardiovascular and renal events. He is currently the Chief of the Nephrology Unit in the Department of Medicine at the University of Vermont Medical Center.

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