inflammation, such as diabetics or ESRD patients, when administered at early stages of atherosclerosis. Finally, we believe that the appropriate form, dosage and route of administration are of major importance and are matters that need to be reevaluated with more selective criteria.

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Bariatric surgery for diabetic nephropathy

Sir,

The letters to the editor by Canales et al. [1] and Ahmed et al. [2] comment on hyperoxaluria, the formation of kidney stones and the stabilization or improvement of renal function after bariatric surgery. Several recent articles should assuage these concerns.

Hyperoxaluria occurs as a consequence of procedures that result in malabsorption (RYGB) but not with restrictive procedures (gastric banding and gastric sleeve) [3]. Additionally, renal cytokines were observed to improve shortly after surgery [4], while patients with stage 3 renal failure experienced renal function improvement at 6- and 12-month intervals after bariatric surgery [5].

A major concern for health care delivery, worldwide, is the prevalence of diabetic nephropathy which continues to accelerate as the epidemic of type 2 diabetes goes unchecked. The early recognition of diabetic nephropathy is frequently late, as tubulointerstitial injury often precedes the onset of significant glomerular disease. Regardless of the specific mechanisms involved with the genesis of kidney injury, bariatric surgery may provide an approach that limits the progression of diabetic nephropathy to ESRD.

Obesity may be associated with renal injury, however, severe abdominal obesity has been associated with increased renal venous pressure as well as increased plasma renin activity and aldosterone concentrations [6]. In men, obesity is often associated with diminished testosterone levels which allows for the preferential deposition of abdominal/visceral fat and a hypogonadal obesity cycle [7]. This location of adipose accumulation may provide an additional ‘hydraulic effect’ for elevating the intra-abdominal pressure. Therefore, there is a reasonable possibility that the improvement of kidney function after bariatric surgery may, in part, be related to the reduction in renal venous pressure.

Studies will have to be performed to determine whether bariatric surgery can help stabilize renal function once injury is detected. This will require intervention early in the disease process, even for those patients who do not meet the current criteria for bariatric surgery. Conceptual adjustments will have to be made, as the indications for bariatric surgery will shift to renoprotective guidelines rather than to obesity metrics alone.

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Editorial note: Dr Ahmed et al. had been invited to reply to this letter but we did not receive a response.

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Reply

We agree that there are multiple theoretical renal benefits to bariatric surgery, some of which are detailed above. In our original letter [1], our group stressed that the long-term net effects of gastric bypass on renal function remain unclear. To address diabetes mellitus (DM) in particular, we stress that only one small prospective renal study [2] (n = 19 DM patients) has been performed specifically in diabetics undergoing Roux-en-Y gastric bypass surgery. Although DM improved in 16/19 patients, no significant