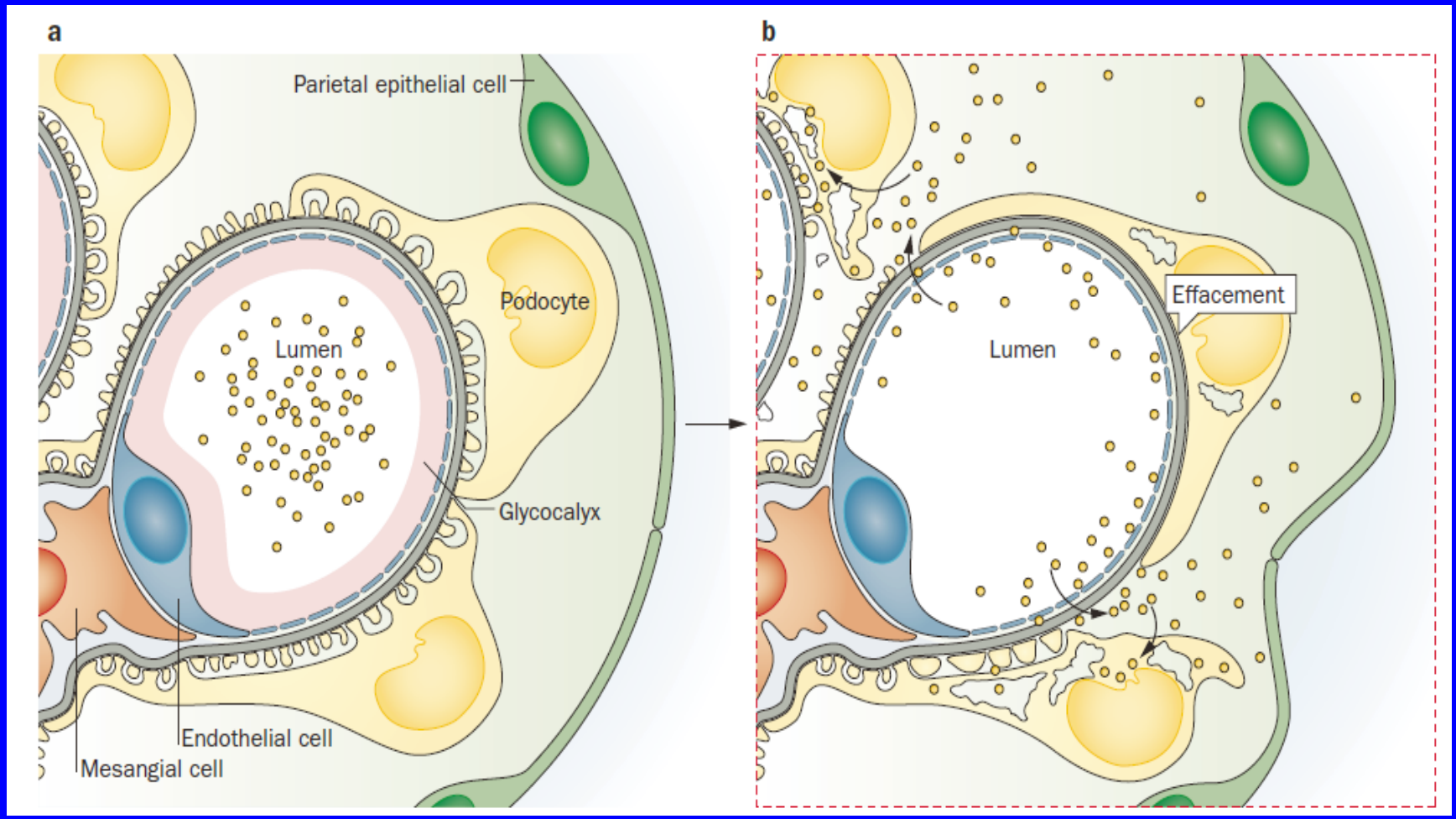
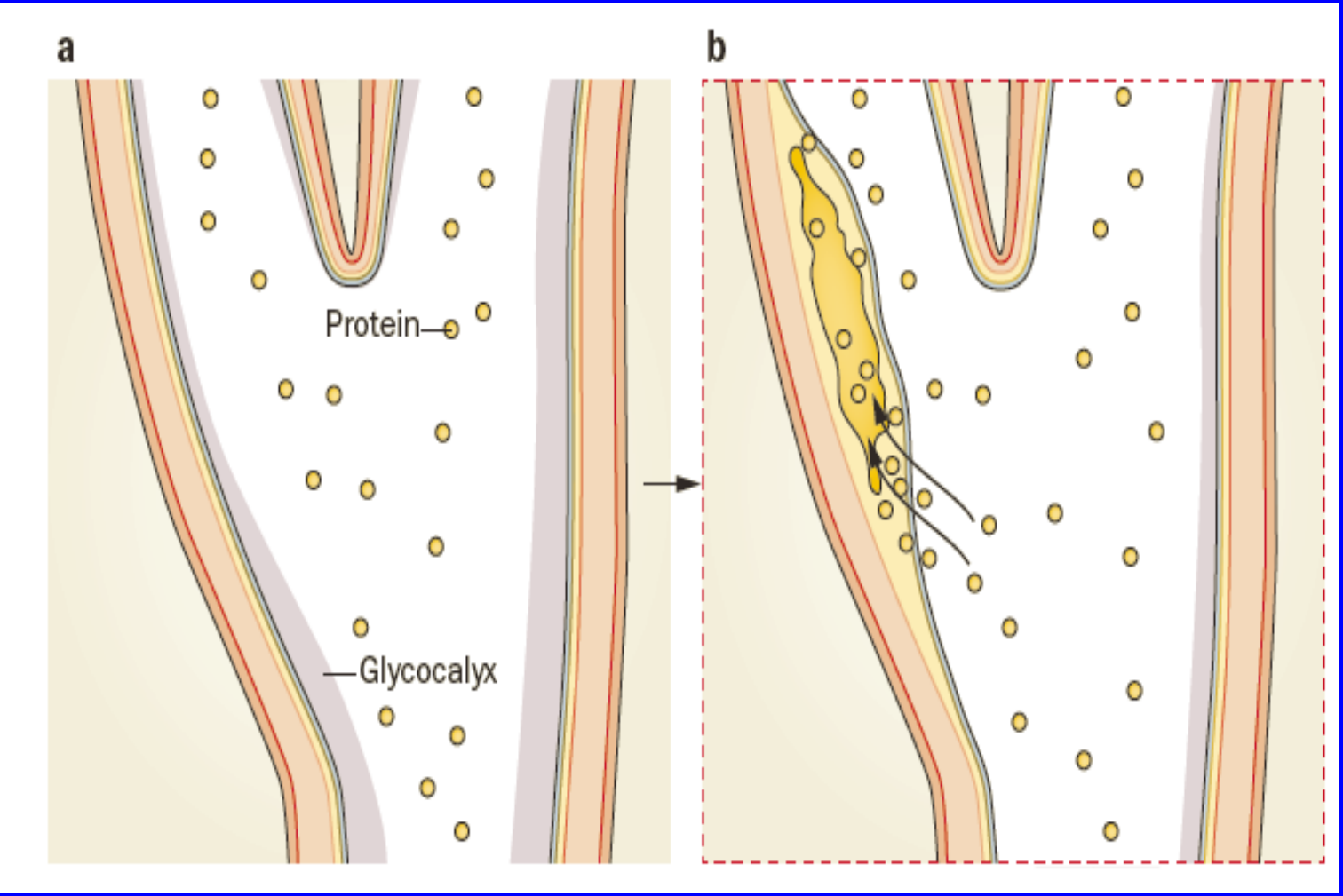
Glycocalyx Loss—
Podocyte and Kidney Injury Induces Albuminuria



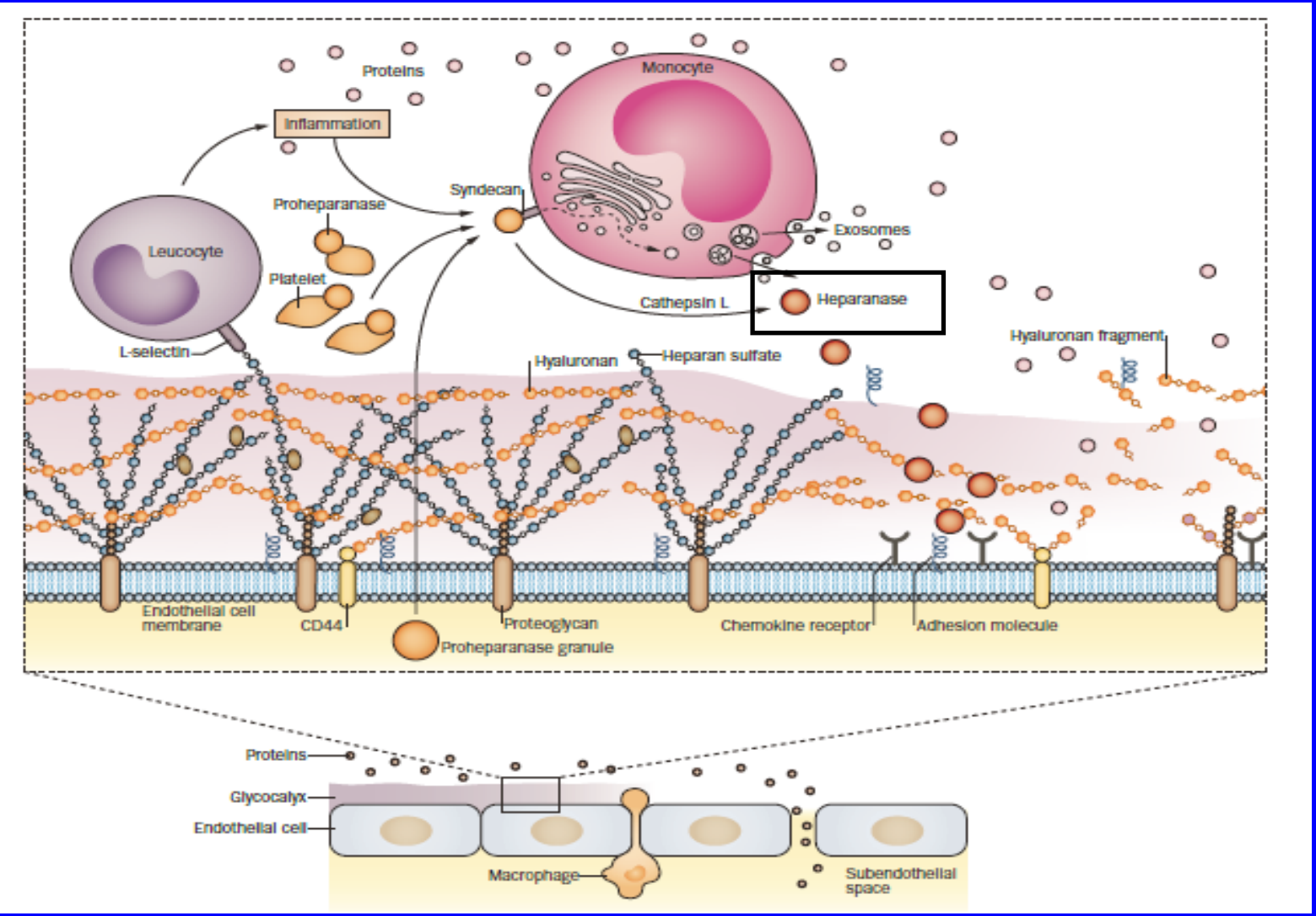
Nat Rev Nephrol 2015;11:667-676

Atherosclerotic Lesions Develop After Glycocalyx Loss



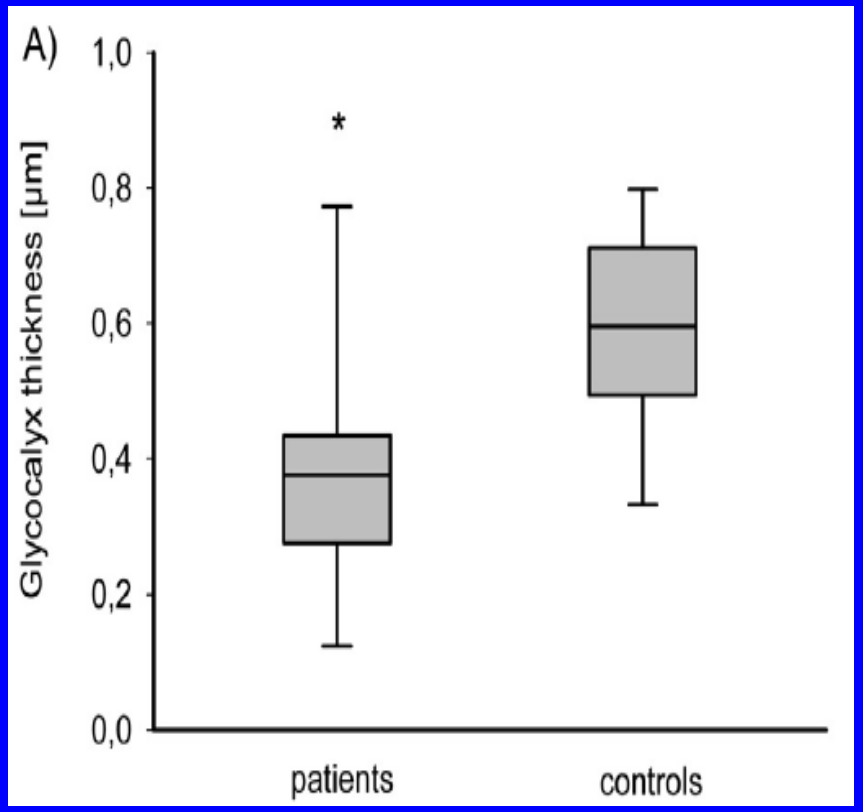
Nat Rev Nephrol 2015;11:667-676

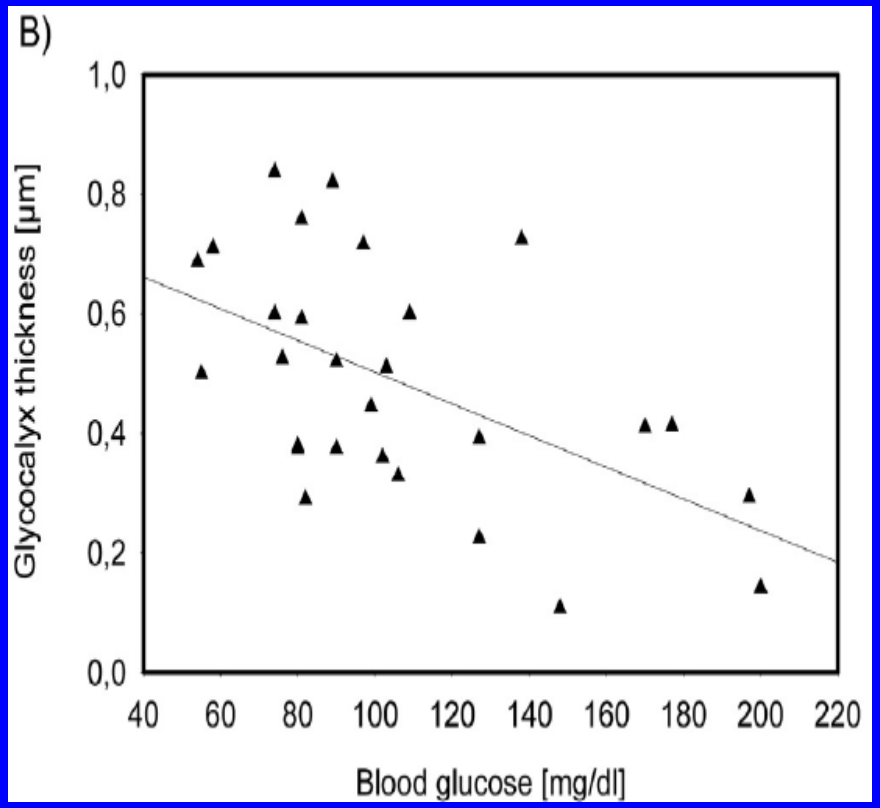
Mechanism of Glycocalyx Degradation



Nat Rev Nephrol 2015;11:667-676

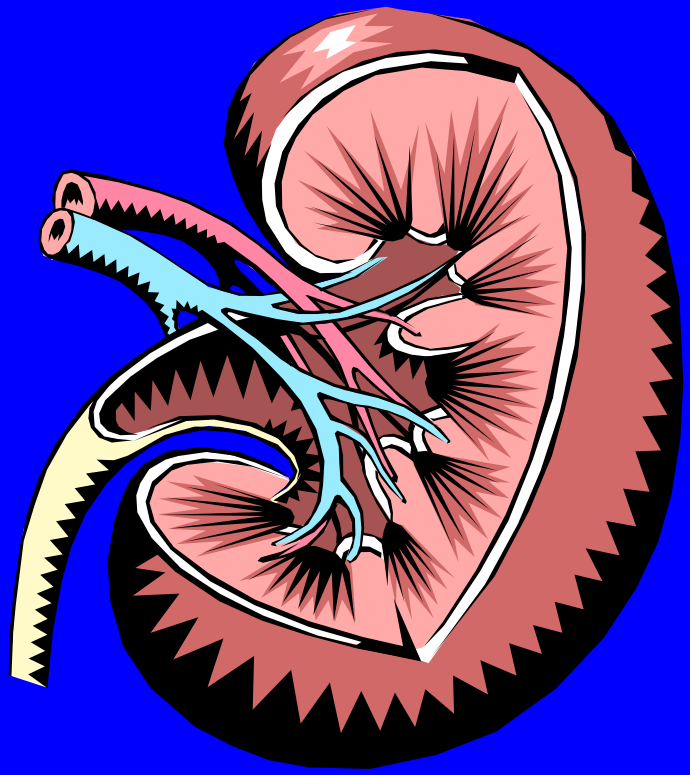
Glycocalyx Thickness is Lower in Children with Type 1 Diabetes





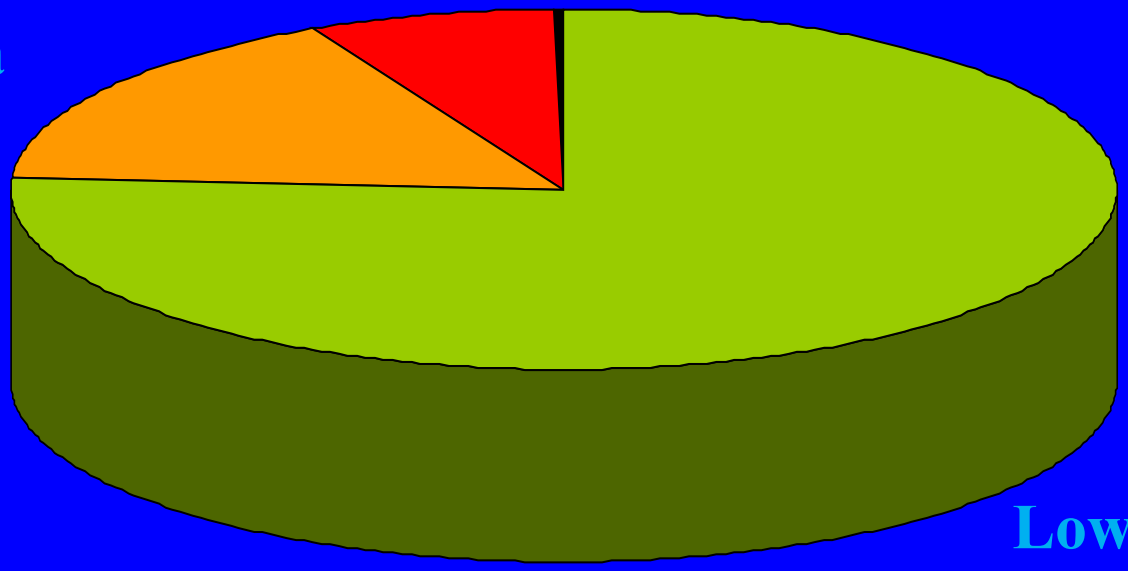
J Pediatr 2014;164:584-589

So what is albuminuria?



An elevated urinary albumin excretion is a marker of endothelial dysfunction; it symbolizes the kidney's way of translating the existence of vascular damage.

Prevalence of Albuminuria in the General Population



N = 40,856

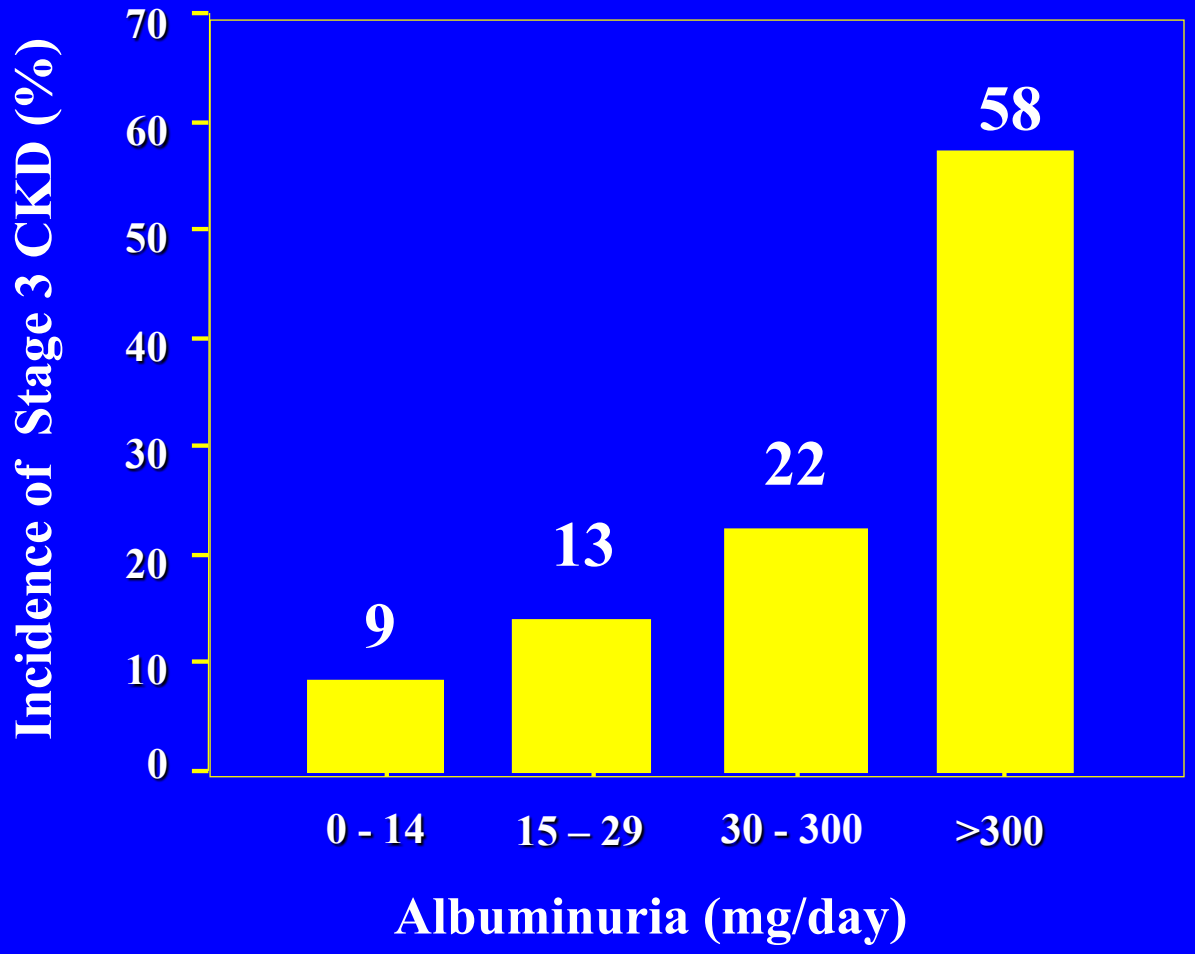
J Int Med 2001;249:519-526

The Significance of Albuminuria

- Results from injury to systemic and glomerular circulation (loss of glycocalyx)
- When increased, associated with progressive decline in renal function
- Predicts new onset diabetes risk
- When increased, associated with greater risk of cardiovascular, cerebrovascular, and peripheral vascular disease

N Engl J Med 2000;342:145-153; Am J Kidney Dis 2000;36:646-661; Am J Kidney Dis 2000;35(4suppl1):S97-S105

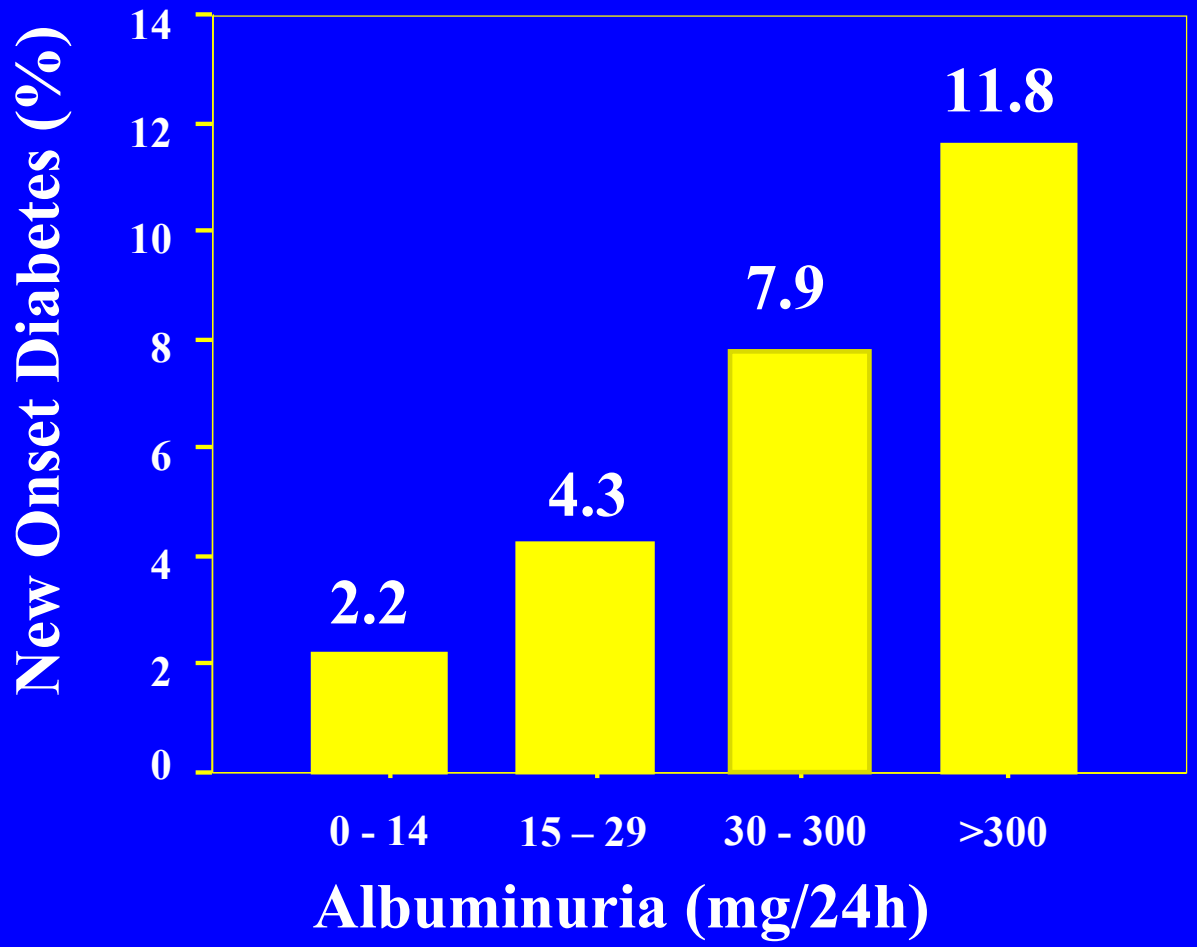
Albuminuria Predicts Chronic Kidney Disease in the Non-Diabetes General Population



Stage 3 CKD = creatinine clearance < 60 mL/min

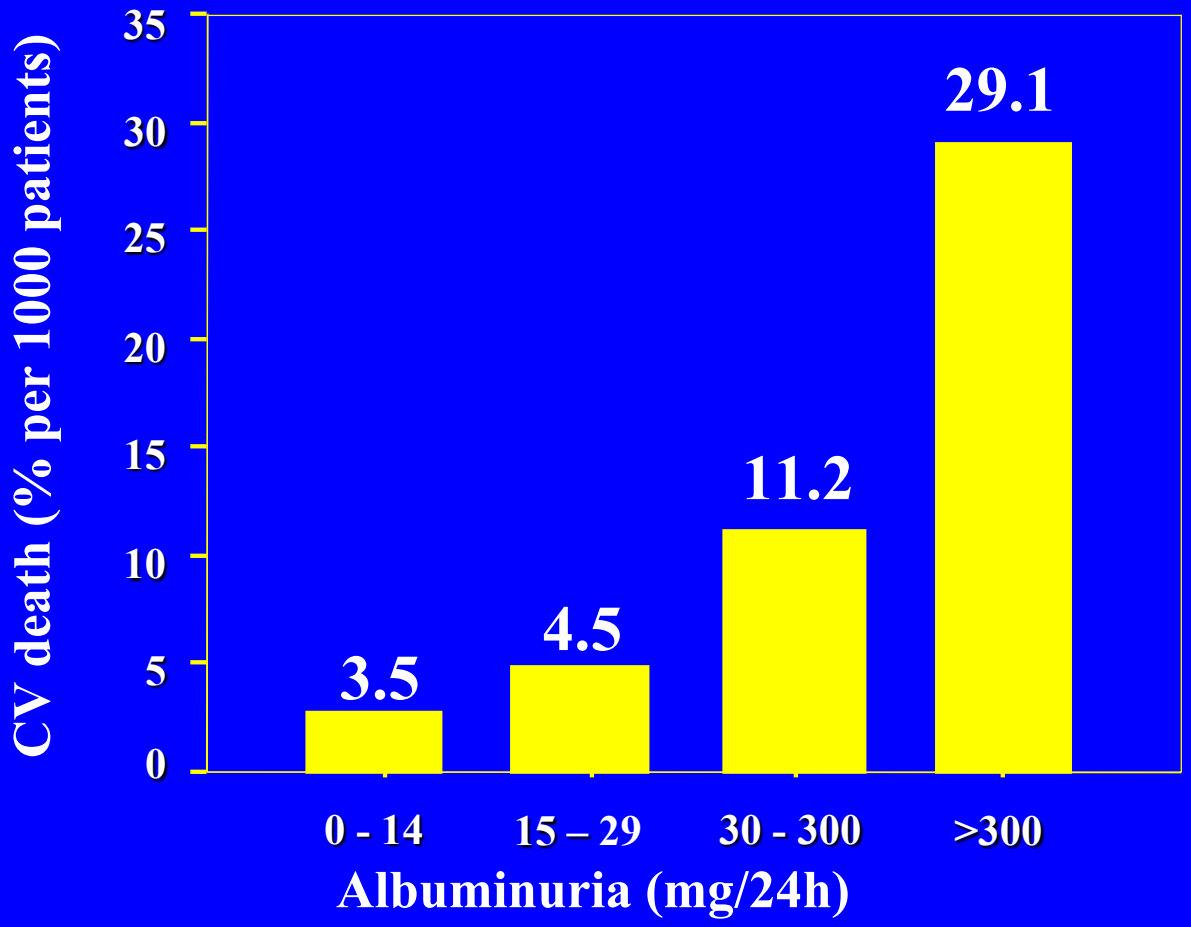
Kidney Int 2004;66(suppl 92):1-4

Albuminuria Predicts New Onset Diabetes Risk in General Population



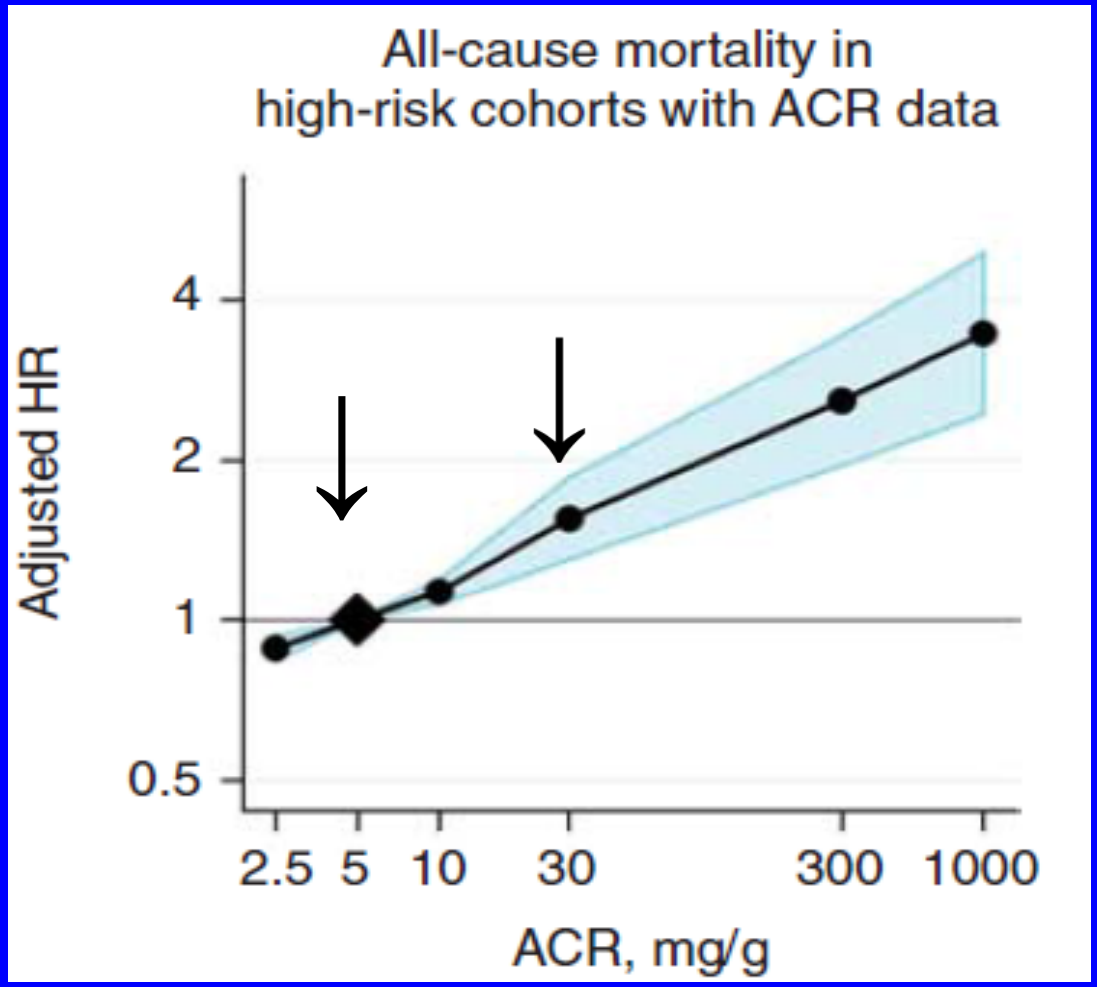
Diabetes Care 2005;28:2525-2530

Albuminuria Predicts Cardiovascular Death in General Population



Circulation 2002;106:1777-1782

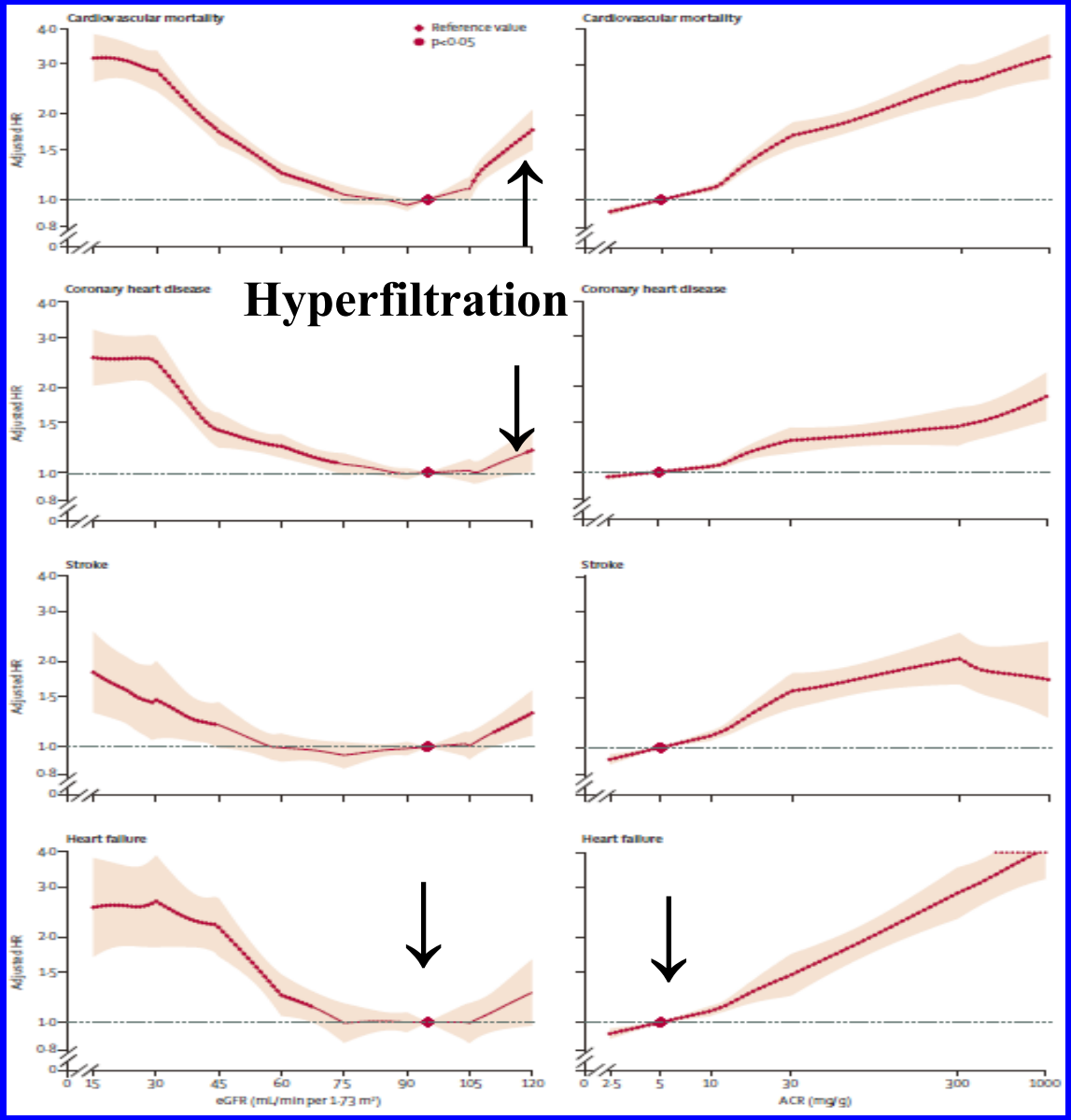
Increased All-Cause Morality when the Albumin Creatinine Ratio is > 5



Kidney Int 2011;79:1341-1352

eGFR and UACR: CVD, Stroke, and CHF Risks

HR: 1.0
eGFR
95 mL/min



HR: 1.0
UACR
5 mg/g
creatinine

Lancet Diabetes Endocrinol 2015;3:514-525