

The Effects COVID-19 has on Chronic Kidney Disease (CKD) Patients at Stage II & III

Creation Of a Case Study

Lopa Patel, Juhi Patel,
Nalini V Broadbelt, & Michelle A. Young

Introduction

- COVID-19 infection have shown worse outcomes in individuals with pre-existing conditions
- COVID-19 linked to Increased mortality rate in adults with CKD

Methods

- Interviewed nephrologist who treated CKD patients with COVID-19
- Selected stages 2 and 3 patients as they were more likely to survive
- Eliminated stages 1, 4 and 5
 - Stage 1 patient, renal function not significantly different from normal
 - Stage 4 and 5 CKD patients least likely to survive
- Used consent forms to gather data – blood and urine tests

Results

Levels	Patient Data Stages II & III			
	Normal	CKD		CKD + COVID-19
Glomerular Filtration Rate (GFR)	90-120 mL/min	II 60-90 mL/min	III 30-60 mL/min	not indicated
Renal Blood Flow (RBF)	1,000 - 1,200 mL/min	not indicated	not indicated	not indicated
Tubular Function (TF)	makes urine	Concentrated urine. Low volume or none		
Urine Appearance protein present?	very low	above normal	above threshold (~ 3.5 g)	
Blood Plasma Creatine (BPC)	0.5 - 1.0 mg / dL	1.0 - 1.2 mg / dL	1.2 - 2.5 mg / dL	

Discussion

- Preliminary results indicate that CKD Stages II and III patients with COVID 19 renal functions are affected. Low GFR leads to decreased and / complete loss of urine production. As a result, there is a buildup of waste in the blood. This is indicated by increased protein in urine and BPC levels.

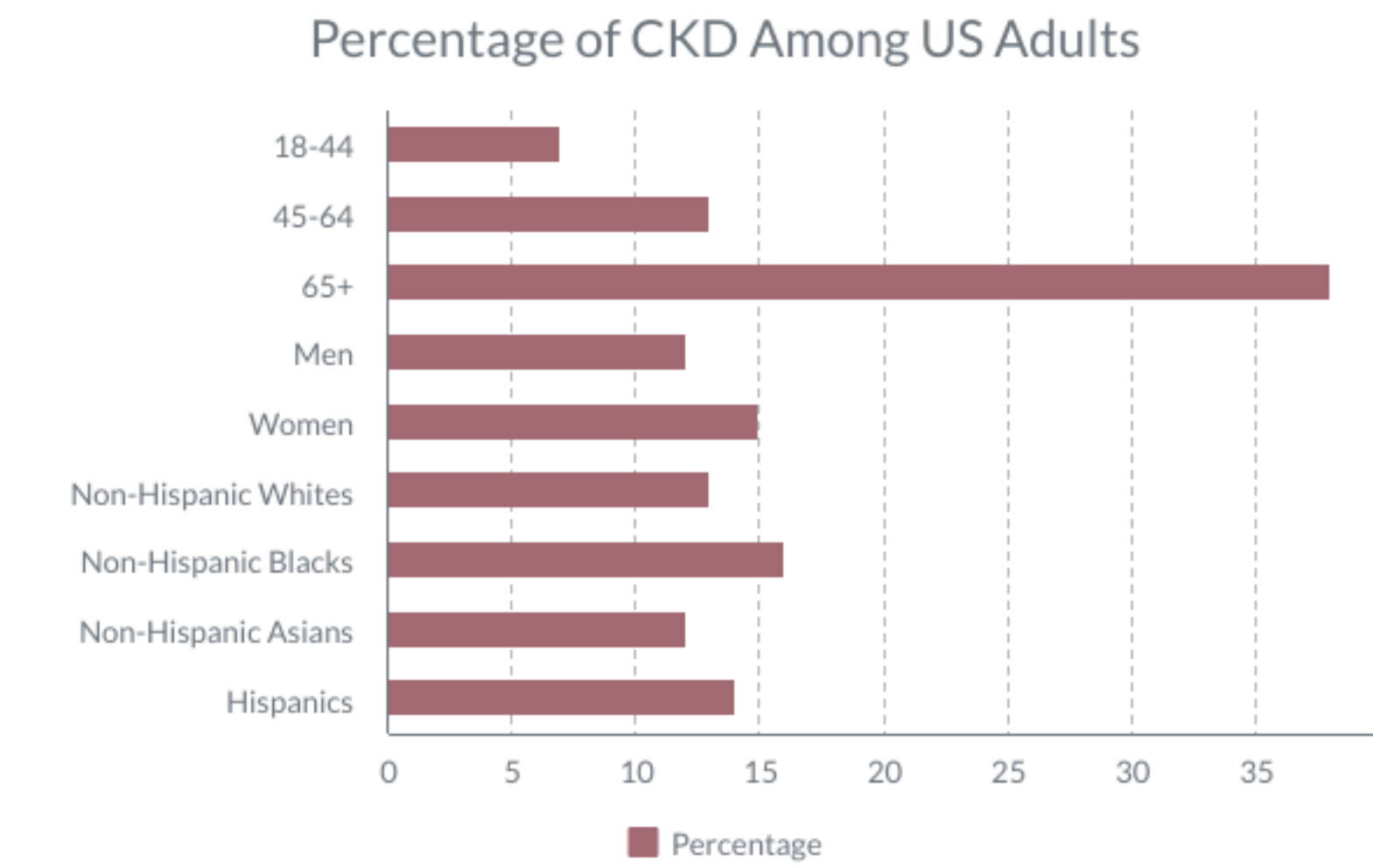


Renal Function is Affected in CKD Stages II and III Patients with COVID-19.

TO LEARN MORE, SCAN HERE



CKD is Common in US Adults, 15%



CKD Risk Factors

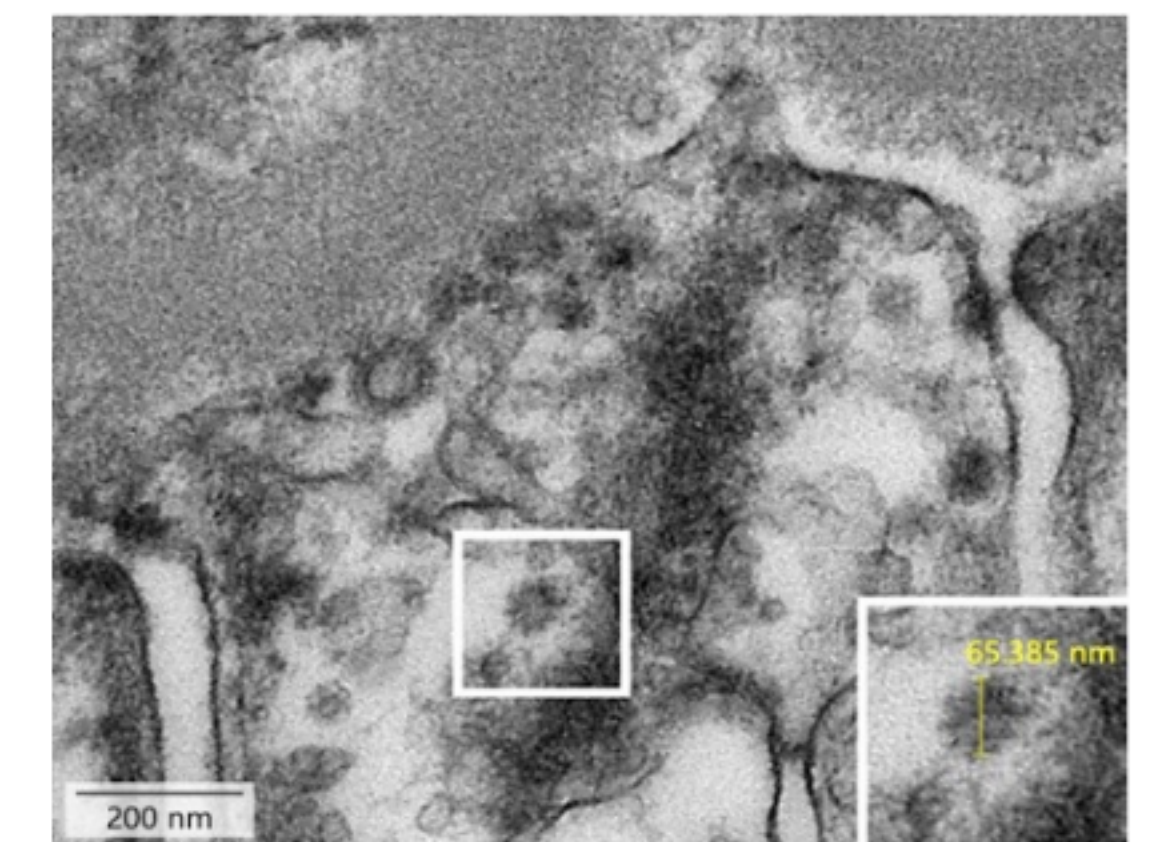
- Diabetes
- High Blood Pressure
- Cholesterol

Testing

- Blood Test – Creatinine
- Urine Test – Protein

Treatment

- Balance diet
 - good glycemic control
 - protein restrictions
- Hypertension Medication
 - ACEI (Angetension Converting Enzyme Inhibitors)
 - ARBS (Angeotension Receptor Blockers)



Recognizable spikes from coronavirus seen on podocyte cell, indicative of SARS-CoV-2.

References

- Interview with Dr. Kimathi Blackwood, nephrologist, Central Georgia Kidney Specialist
 - <https://www.cdc.gov/>
 - <https://www.webmd.com/a-to-z-guides/qa/what-is-chronic-kidney-disease>
- [COVID-19 Attacks the Kidney: Ultrastructural Evidence for the Presence of Virus in the Glomerular Epithelium](#)