Africa-PaCT South African pilot study

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CKD is defined as:

GFR ≤60 ml/min/1.73 m^2

or

proteinuria ≥ 0.3 mg/mg creatinine

How common is CKD?

More than 500 million people, or **about one adult in ten**, have some form of chronic kidney disease.

Table 3. Prevalence of Chronic Kidney Disease (CKD) Stages in US Adults Aged 20 Years or Older Based on NHANES 1988-1994 and NHANES 1999-2004

CKD Stage[a]	Prevalence, % (95% CI)		Prevalence Ratio for NHANES 1999-2004 to 1988-1994 (95% CI)	Estimated No. of US Adults in 2000, No. in Millions (95% CI)
	NHANES 1988-1994	NHANES 1999-2004		
1	1.71 (1.28-2.18)	1.78 (1.35-2.25)	1.05 (0.85-1.30)	3.6 (2.7-4.5)
2	2.70 (2.17-3.24)	3.24 (2.61-3.88)	1.21 (1.03-1.41)	6.5 (5.2-7.8)
3	5.42 (4.89-5.95)	7.69 (7.02-8.36)	1.42 (1.25-1.62)	15.5 (14.1-16.8)
4	0.21 (0.15-0.27)	0.35 (0.25-0.45)	1.70 (1.11-2.51)	0.7 (0.5-0.9)
5	NA	NA	NA	NA
Total	10.03 (9.16-10.91)	13.07 (12.04-14.10)	1.30 (1.19-1.43)	26.3 (24.2-28.3)

Abbreviations: CI, confidence interval; NA, data not included because patients with CKD stage 5 were excluded; NHANES, National Health and Nutrition Examination Surveys.
[a] Defined based on standard criteria[1]: stage 1, persistent albuminuria with glomerular filtration rate (GFR) higher than 90 mL/min/1.73 m^2; stage 2, persistent albuminuria with GFR of 60 to 89 mL/min/1.73 m^2; stage 3, GFR of 30 to 59 mL/min/1.73 m^2; stage 4, GFR of 15 to 29 mL/min/1.73 m^2. The age-adjusted prevalence rates for CKD stages 1, 2, 3, and 4 in 1988-1994 adjusted to the 1999-2004 age distribution in Table 1 are 1.7%, 2.8%, 5.6%, and 0.2%, respectively, for a total of 10.3%.

Figure 2. Prevalence of Chronic Kidney Disease (CKD) Stages by Age Group in NHANES 1988-1994 and 1999-2004

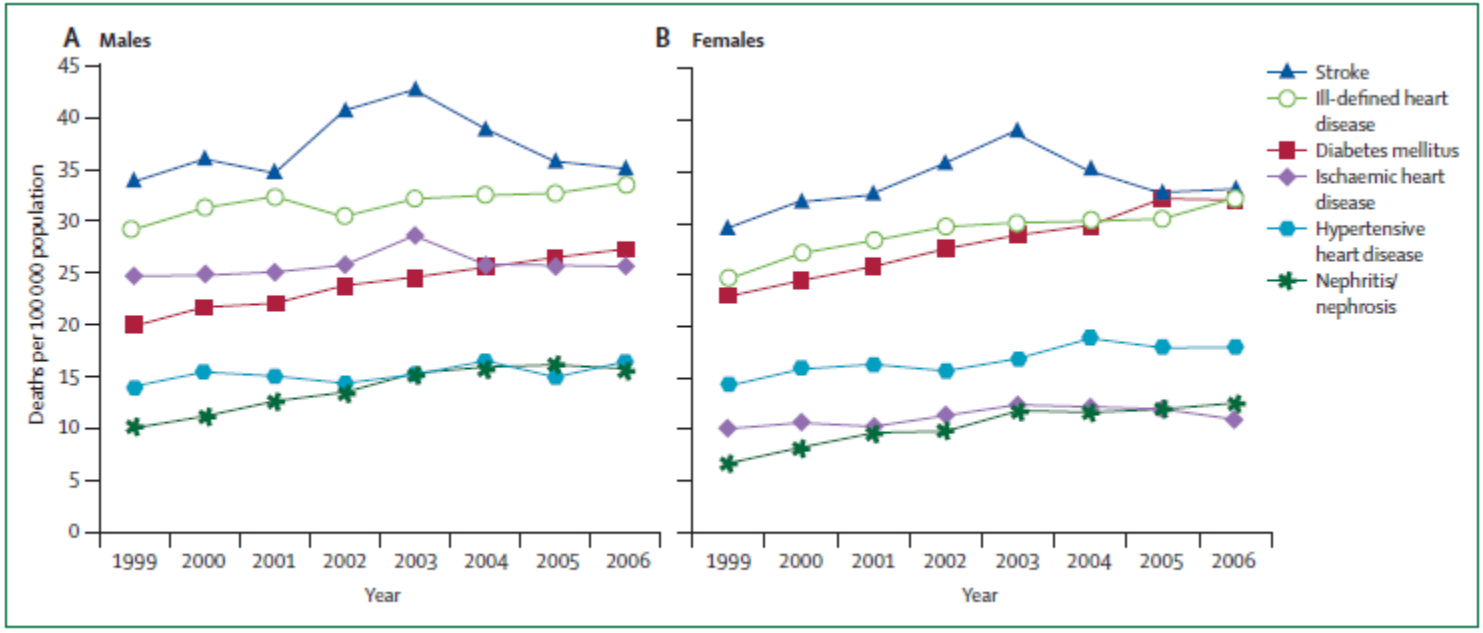


Figure 3: Death rate per 100 000 population from cardiovascular and related diseases in 15–64-year-old male (A) and female (B) South Africans, 1999–2006

Consequences of CKD

End-stage kidney failure

Heart attacks

Strokes

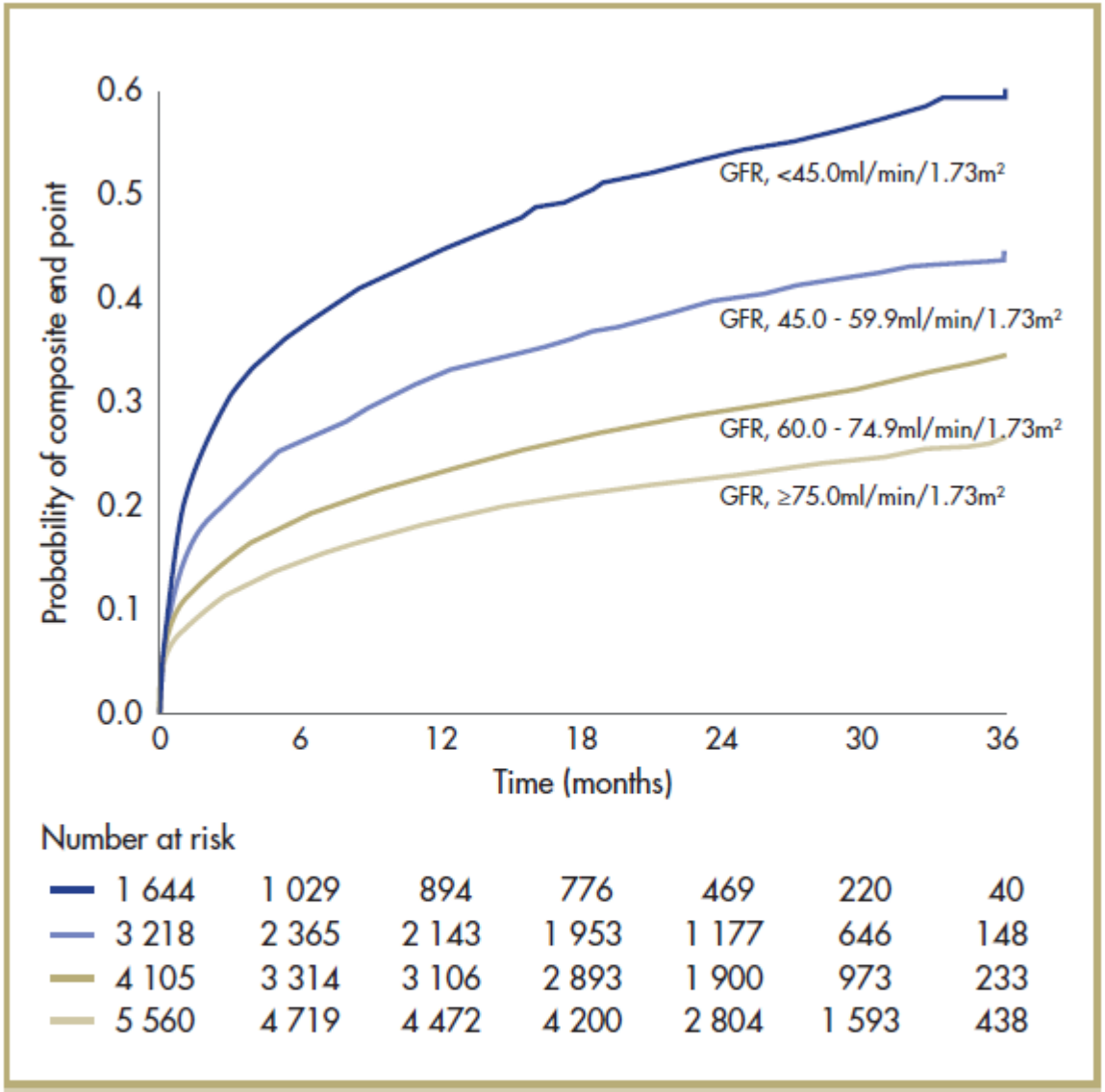


FIGURE 1: Cardiovascular composite end points according to the estimated GFR at baseline

Modified from N Engl J Med 351:1285-95 Anavekar et al[10]

Screening for kidney disease

Who should be screened?

Over 50

Diabetes or hypertensive

Heart disease or stroke

Obese or smoking

Family with diabetes, HT or CKD

HIV

Preventing kidney failure

Healthy weight

Physical fitness

Stop smoking!

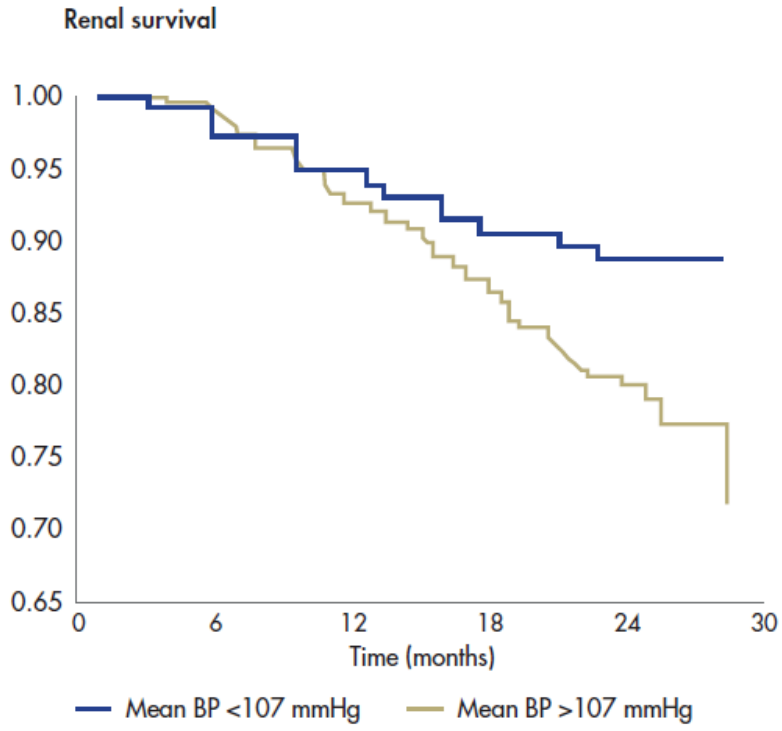
Eat less salt

Control blood pressure

Reduce protein in urine

Treat high cholesterol

What's good for the kidney is good for the heart!!



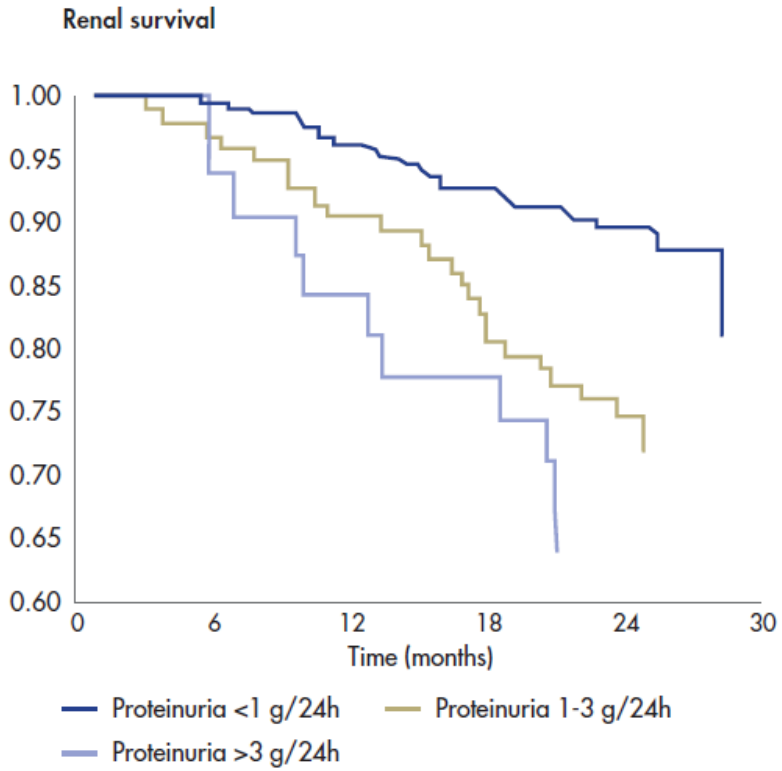
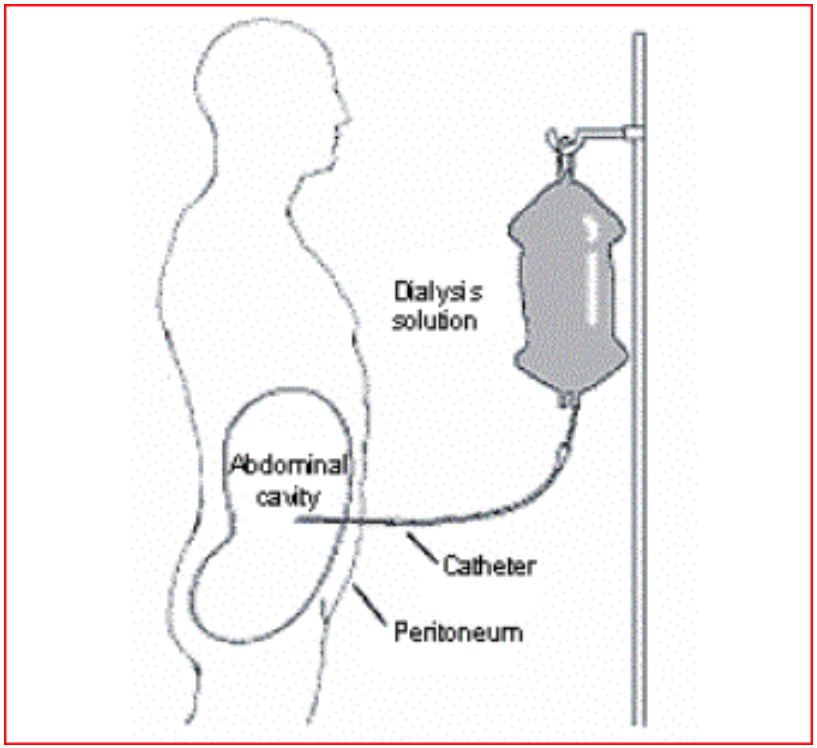


FIGURE 2: Effect of BP and proteinuria on renal survival

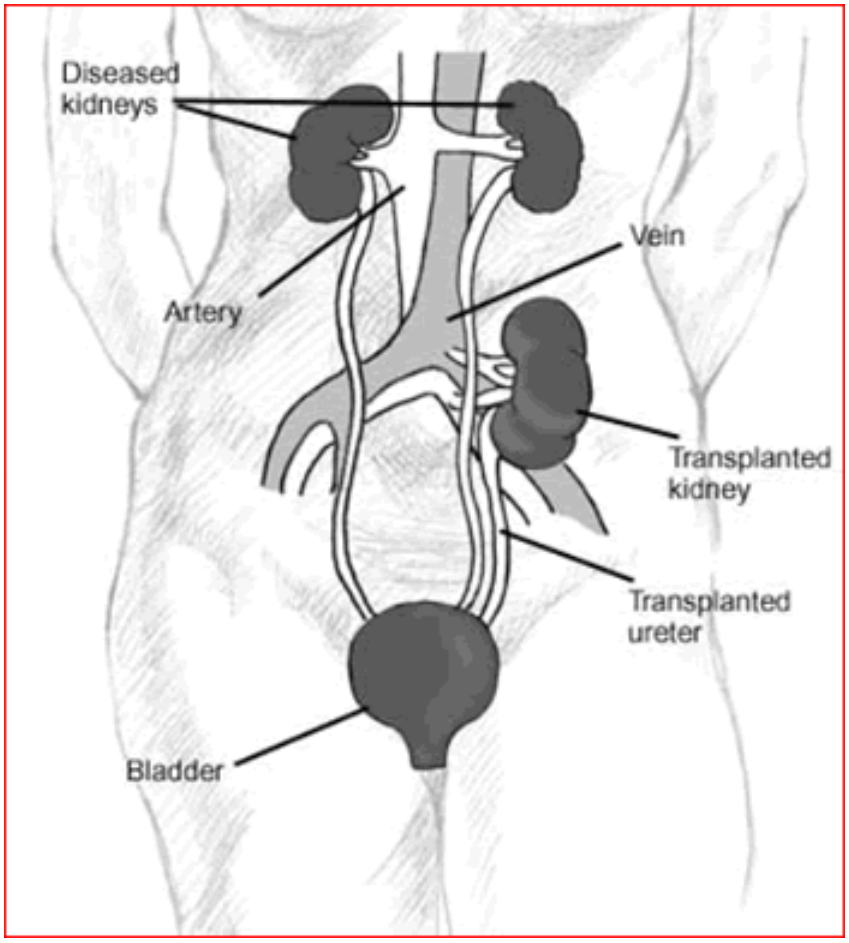
Reprinted from Nephrol Dial Transplant 11:461-7 Locatelli et al. 23 (1996) with permission.

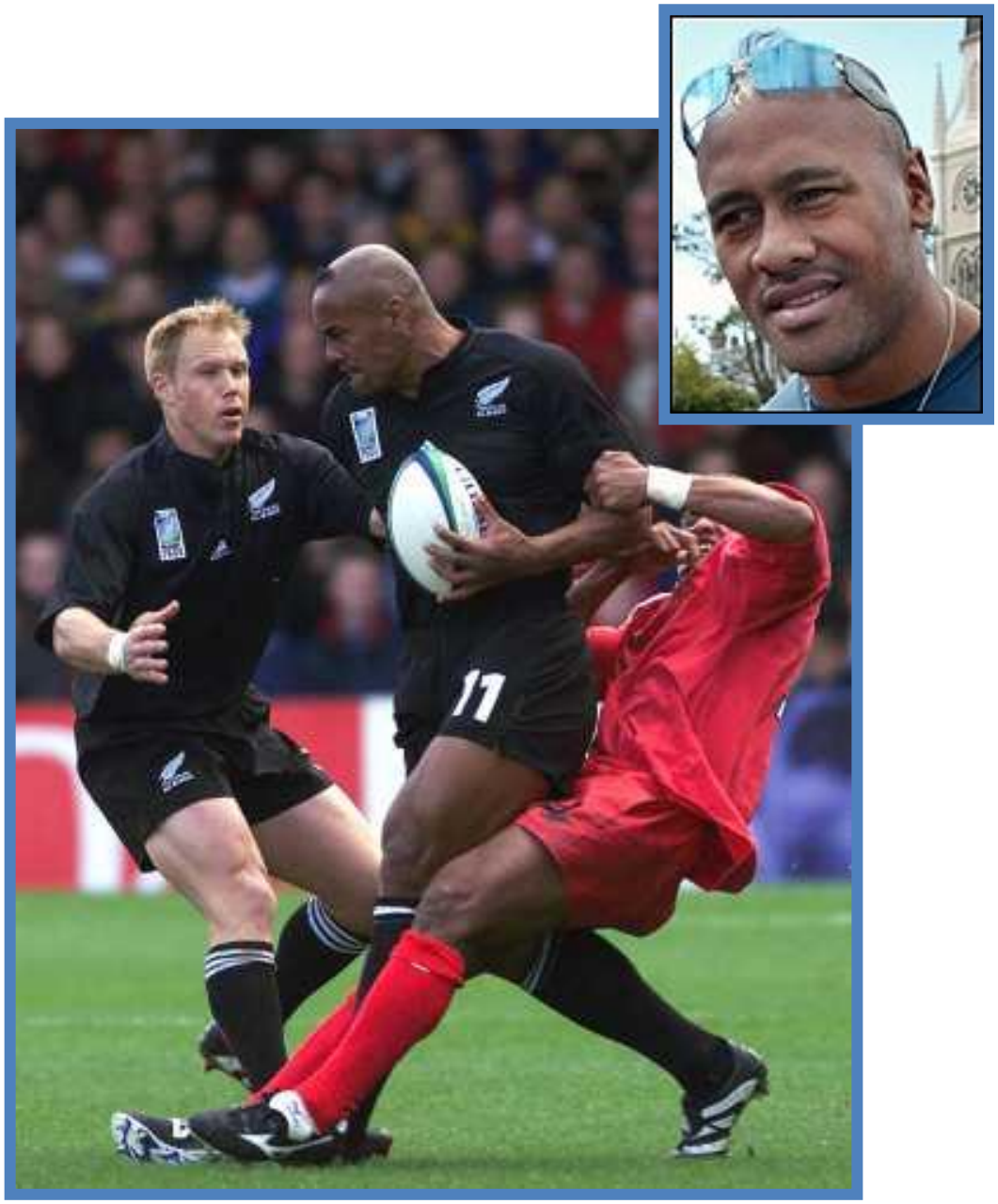
Haemodialysis

Peritoneal dialysis



Kidney transplantation





Limited access to dialysis and transplantation

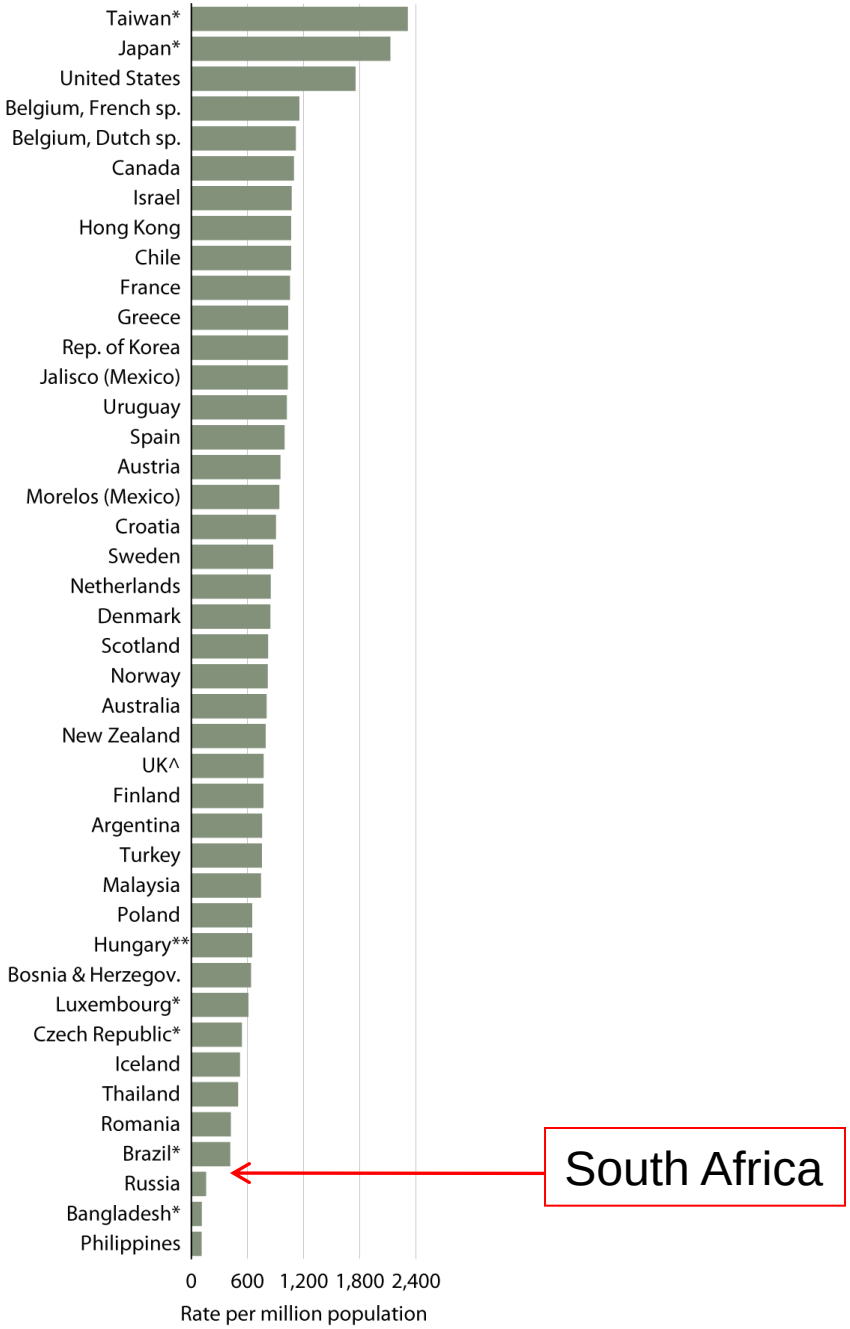
52% of dialysis patients in 4 countries

Japan, USA, Brazil, Germany

Near zero in many African countries

Prevalence of ESRD, 2008

Rate per million population



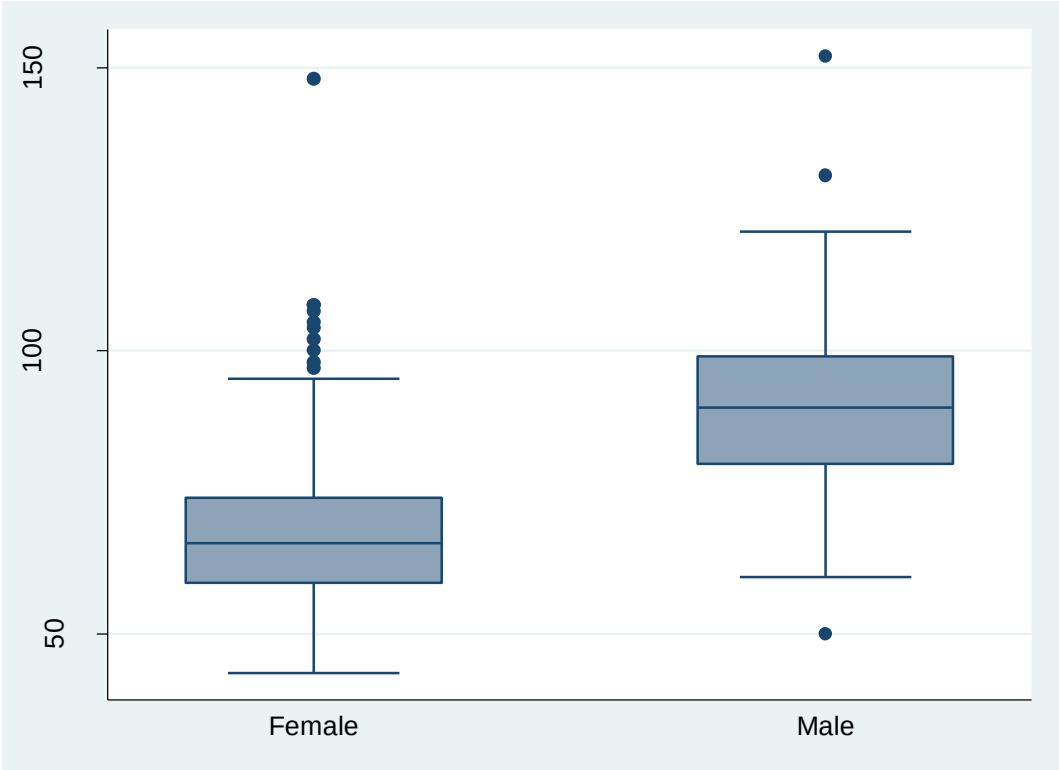
Preliminary PaCT data

Main objectives of PCT pilot study:

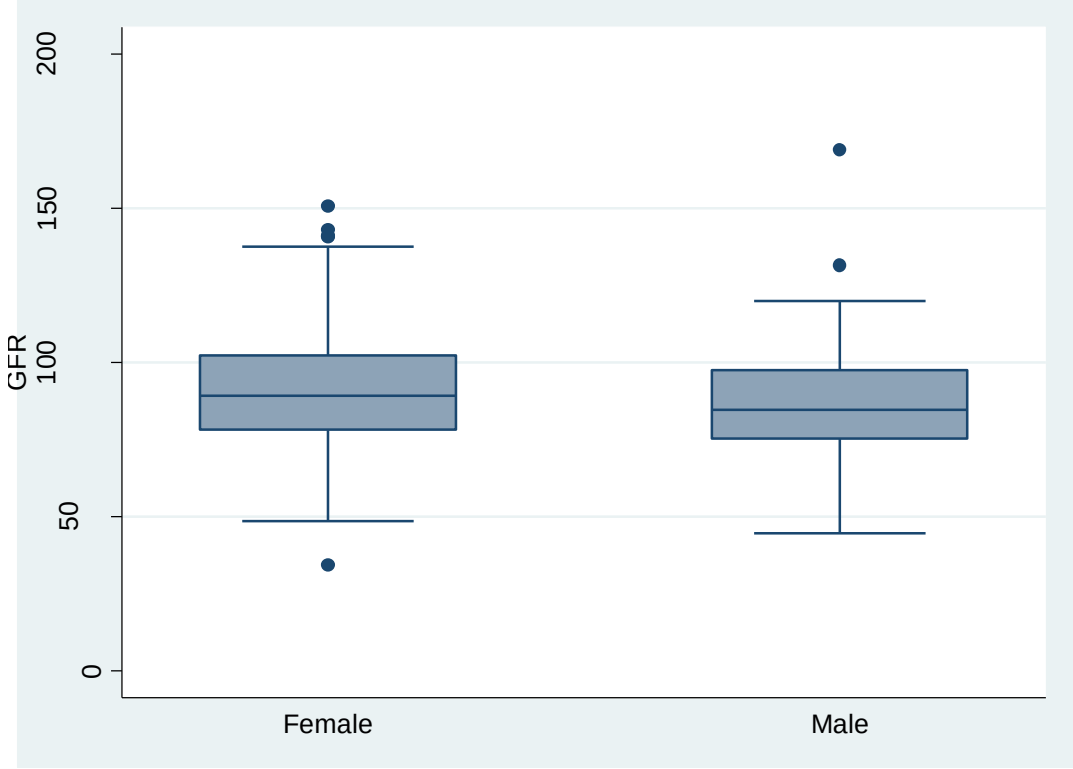
1) Determine **feasibility** of conducting a cohort study on NCDs among SA teachers

2) Investigate the **prevalence of CVD and CVD risk factors** among teachers in the Cape metropole

S-Creatinine (n=443)



GFR (n=443)



Prevalence of CKD

	Normal	CKD	Total	(%)
GFR data	416	19	**435**	**4.4**
uProtein data	452	22	**474**	**4.6**
GFR + uProtein data	393	40	**433**	**9.2**
All data	436	40	**476**	**8.4**

Prevalence = 8.4%

CKD stage	eGFR (ml/min/1.73 m^2, n=435)	n (%)	Proteinuria
1	≥90 (normal)	195 (44.8%)	9 (2.1%)
2	60-90 (mild decrease)	221 (50.8%)	8 (1.8%)
3	30-59.9 (moderate decrease)	19 (4.4%)	1 (0.2%)
4	15-29.9 (severe decrease)	0	
5	<15 (kidney failure)	0	

Next steps…

- Correlation with CVS risk factors
- Genetic studies – APOL1
- Combining & comparing data with others

- Another pilot? Other population?