

Chronic Kidney Disease

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Definition

- Defined by the presence of kidney damage **or** decreased kidney function **for three or more months**, irrespective of the cause

Causes of CKD

- HYPERTENSION
- DIABETES
- PCKD

Staging

• Stage 1	Kidney Damage with normal/increase eGFR	>90
• Stage 2	Kidney Damage with mildly reduced eGFR	60-89
• Stage 3	Moderately reduced eGFR	30-59
• Stage 4	Severely reduced eGFR	15-29
• Stage 5	Kidney Failure	<15

KIDNEY DAMAGE

Persistent Proteinuria/Microalbuminuria
Persistent Haematuria
Changes on Renal Imaging (Structural Abnormalities)

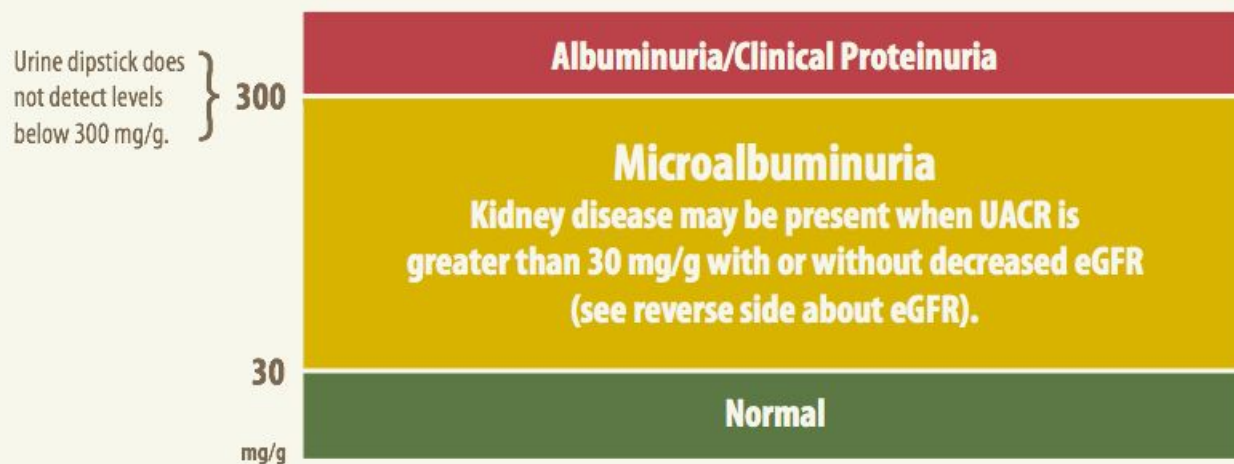
Detecting early CKD

- Spot Urine Albumin Creatinine Ratio >30mg/g

$$\frac{\text{Urine albumin (mg/dL)}}{\text{Urine creatinine (g/dL)}} = \text{UACR in mg/g} \approx \text{Albumin excretion in mg/day}$$

UACR is a ratio between two measured substances. Unlike a dipstick test for albumin, it is unaffected by variation in urine concentration.

Interpreting UACR Results



If kidney disease is detected, it should be addressed as part of a comprehensive approach to the treatment of diabetes.

Presentation of CKD

- **Urea:** Anorexia, Fatigue, Gout, Pruritis, Confusion, N/V,
Restless leg, Chest pain (pericarditis)

- **Fluid:** Oedema, Weight gain

- **Acid:** SOB

- **Potassium:** Palpitations, Syncope

- **Vitamin D:** Bony pains, Fractures

- **EPO:** Fatigue, SOB, Pallor

- **B2 microglob:** Peripheral neuropathy

Anorexia
Fatigue
Pruritis
Oedema
Pains
Numb feet
N/V

Investigations

Bloods: FBC

U+E

eGFR

Bone

Urate

PTH

Urine: Dipstick

MC+S

ACR

Urinalysis

Imaging: USS

X-ray KUB

2nd Line Investigations

CT Abdomen

Angiography

Renal Biopsy

Management

- **CONSERVATIVE**

- Education (leaflet and BKPA)

- Renal diet

- Low fluid, sodium, potassium and phosphate

- Avoid renotoxic drugs (but keep ACEi)

- Cardiovascular Risk Factor addressing

- **MEDICAL**

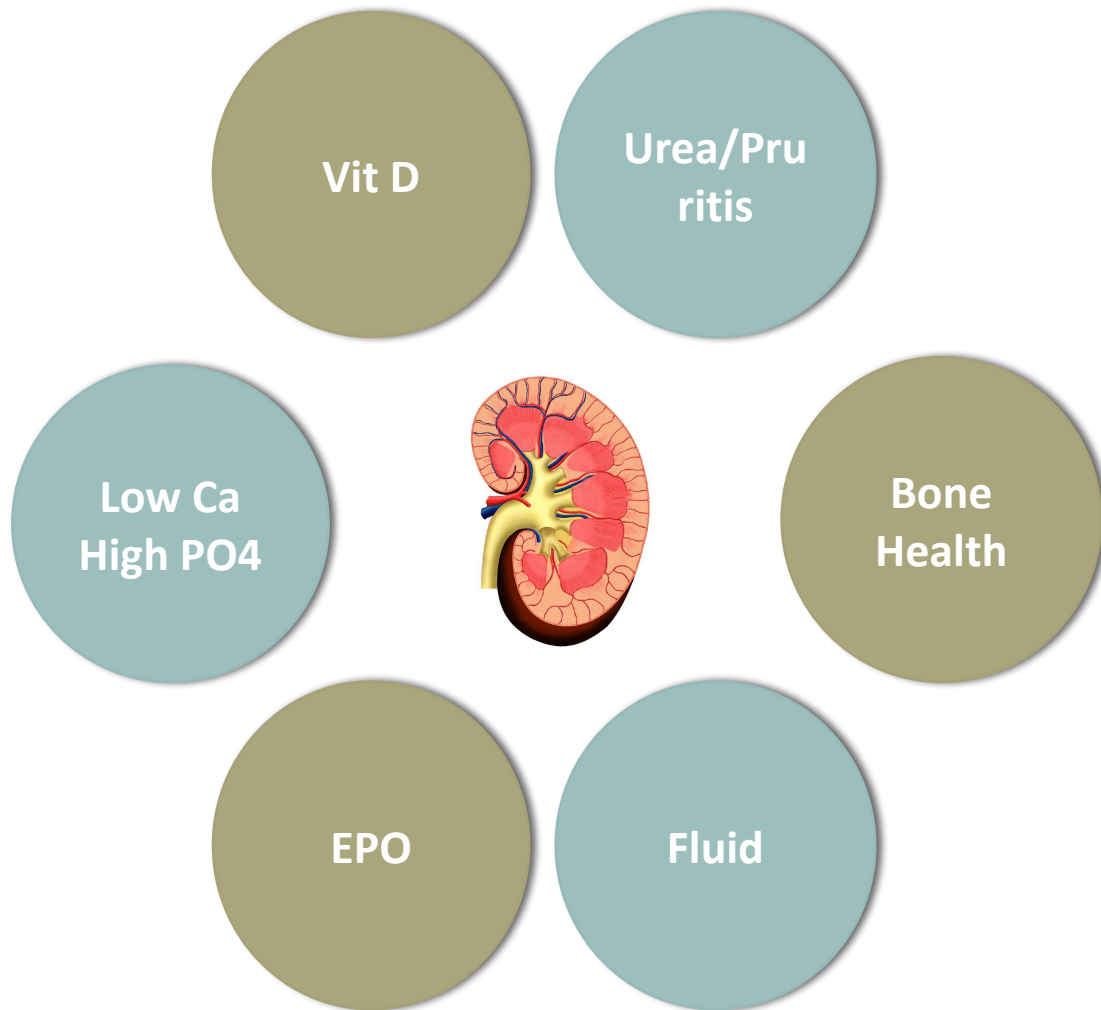
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- **ESRF**

- Haemodialysis

- Continuous Ambulatory Peritoneal Dialysis

- Transplant



DON'T FORGET CARDIOVASCULAR RISK FACTORS

Specific Treatments to Rote Learn

- **CARDIOVASCULAR RISK +++** Statins, ACEi, Advice
- ANAEMIA EPO
- BP CONTROL ACEi (not in RAS)
- OSTEOPOROSIS Bisphosphonates
- **VITAMIN D** alfacalcidol/Calcitriol
- **HYPOCA++** Ca++ Supplements
- **HYPERPO4-** Calcium Carbonate
- OEDEMA Diuretics, Fluid/Na restrict
- PRURITIS Cholestyramine
- RESTLESS LEG Clonazepam

Note these factors together lead to the parathyroid response responsible for renal bone disease

Renal Replacement Therapy

CAPD

“Peritoneum is used as a semi-permeable membrane”

Instill 3L isotonic fluid 4x/day and allow 30mins for exchange

NB: Infrequently add glucose to dialysate to remove water

PRO's	COMPLICATIONS
Cheaper	SBP
More Convenient	Psychosocial issues
Easy to teach	Hernia
	Infection

Haemodialysis

NB: Uses serial weights to measure water removal

PRO's	COMPLICATIONS
Less frequent	A-V fistula needed
Not DIY	Transport to hospital
Meet other CKD - support	Dysequilibrium Syndrome

