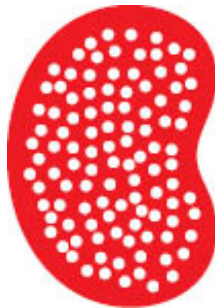


# Detecting and Managing Chronic Kidney Disease



Primary Care Education Workshop  
*This module was conceived and developed by PEAK\**

Presented By:



# Collaborators

**\*This Education was conceived and developed by the 'Primary Care Education Advisory Committee for KHA' (PEAK)**

*With special thanks to Prof Robyn Langham, Nephrologist; A/Professor Timothy Mathew, Nephrologist; and review by A/Prof Craig Nelson & Dr Sheena Wilmot*

*KHA's Primary Care Education program is proudly supported by unrestricted educational grants from:*



Boehringer  
Ingelheim

# Speaker Disclosure Statement

- **Kidney Health Australia** Primary Care Workshops are presented by **volunteer speakers** (Nephrologists, Renal Nurses & other Health Professionals).
- *Speaker to add any other disclosures*

# Learning outcomes

State the major risk factors for developing chronic kidney disease (CKD)

Recognise the importance of early detection and management for individuals at risk for CKD

Define the treatment options to delay progression of kidney disease

Implement a practice-based system, for patient safety, to identify patients at higher risk of CKD for a kidney health check

# What is CKD?

**Chronic kidney disease** is defined as:

Glomerular Filtration Rate (GFR)  $< 60$  mL/min/1.73m<sup>2</sup> for  $\geq 3$  months with or without evidence of kidney damage.

**OR**

Evidence of kidney damage (with or without decreased GFR) for  $\geq 3$  months:

- albuminuria
- haematuria after exclusion of urological causes
- pathological abnormalities
- anatomical abnormalities

# CKD is a major public health problem

- 1 in 10 Australian adults has CKD
- Less than 10% of people with CKD are aware they have the condition
- You can lose up to 90% of your kidney function before experiencing any symptoms
- Major independent risk factor for cardiovascular disease
- **Common, harmful & treatable**





# GP role in CKD

Reduce the impact of CKD



Early detection & initial assessment



Diagnosis



Management of CKD



Assessing and modifying cardiovascular risk factors



Treatment to slow or prevent progression to kidney failure

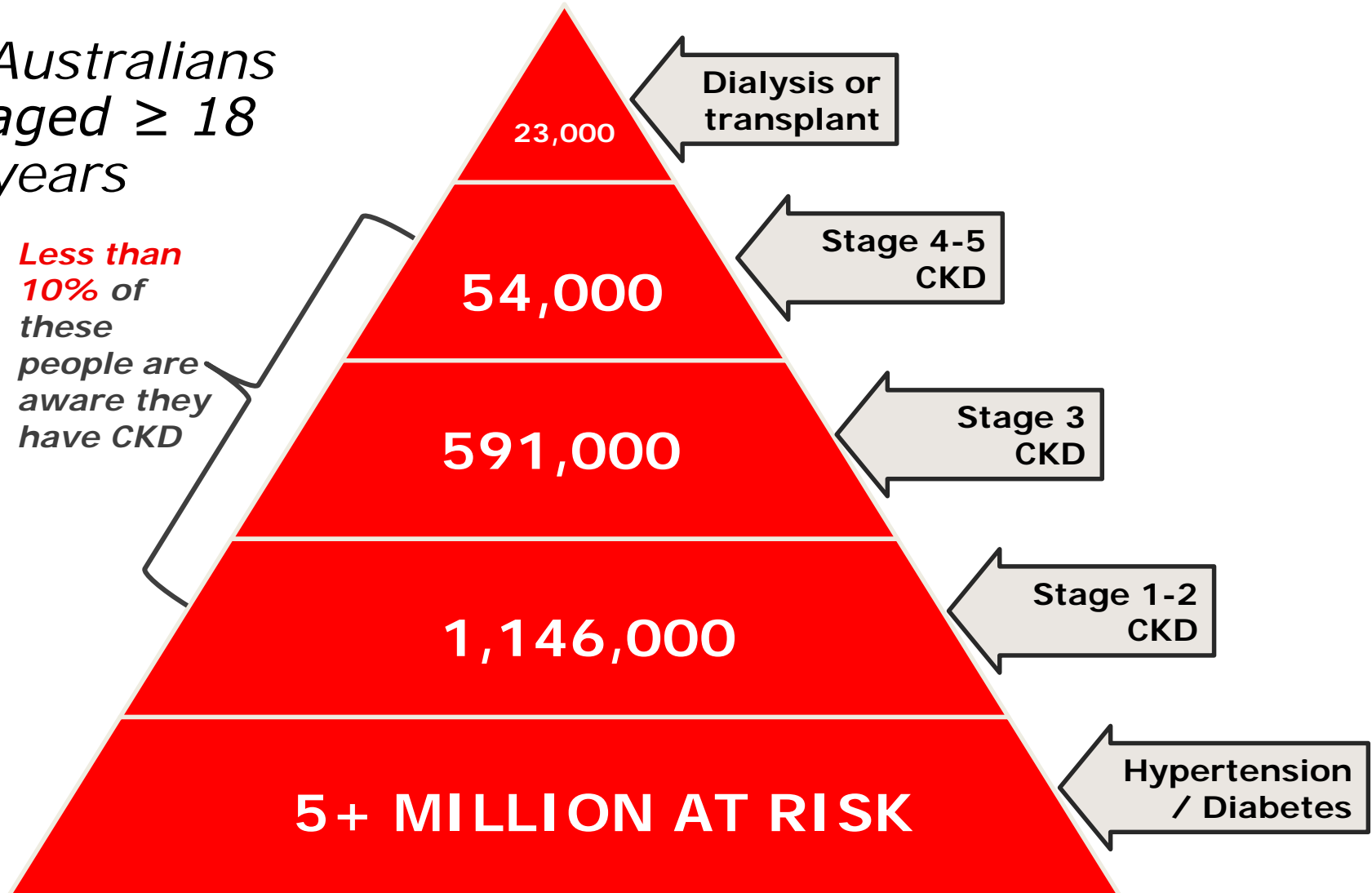


Avoiding nephrotoxic drugs

# Kidney disease in Australia

*Australians aged  $\geq 18$  years*

*Less than 10% of these people are aware they have CKD*





# Australians living with signs of CKD



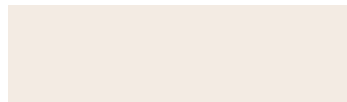
≥ 12% of population with signs of CKD



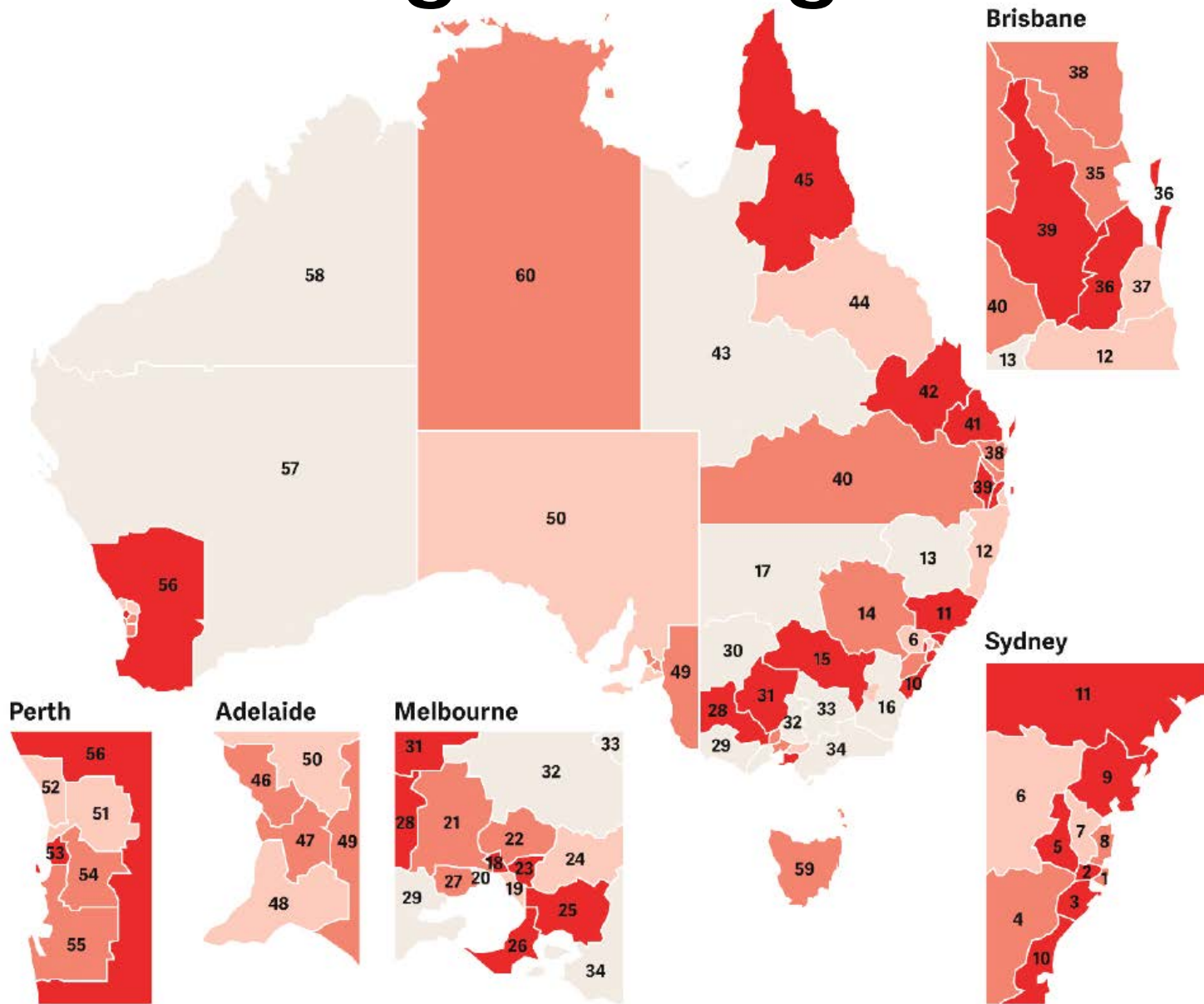
8-11% of population with signs of CKD



≤ 7% of population with signs of CKD



No data available



# State of the Nation

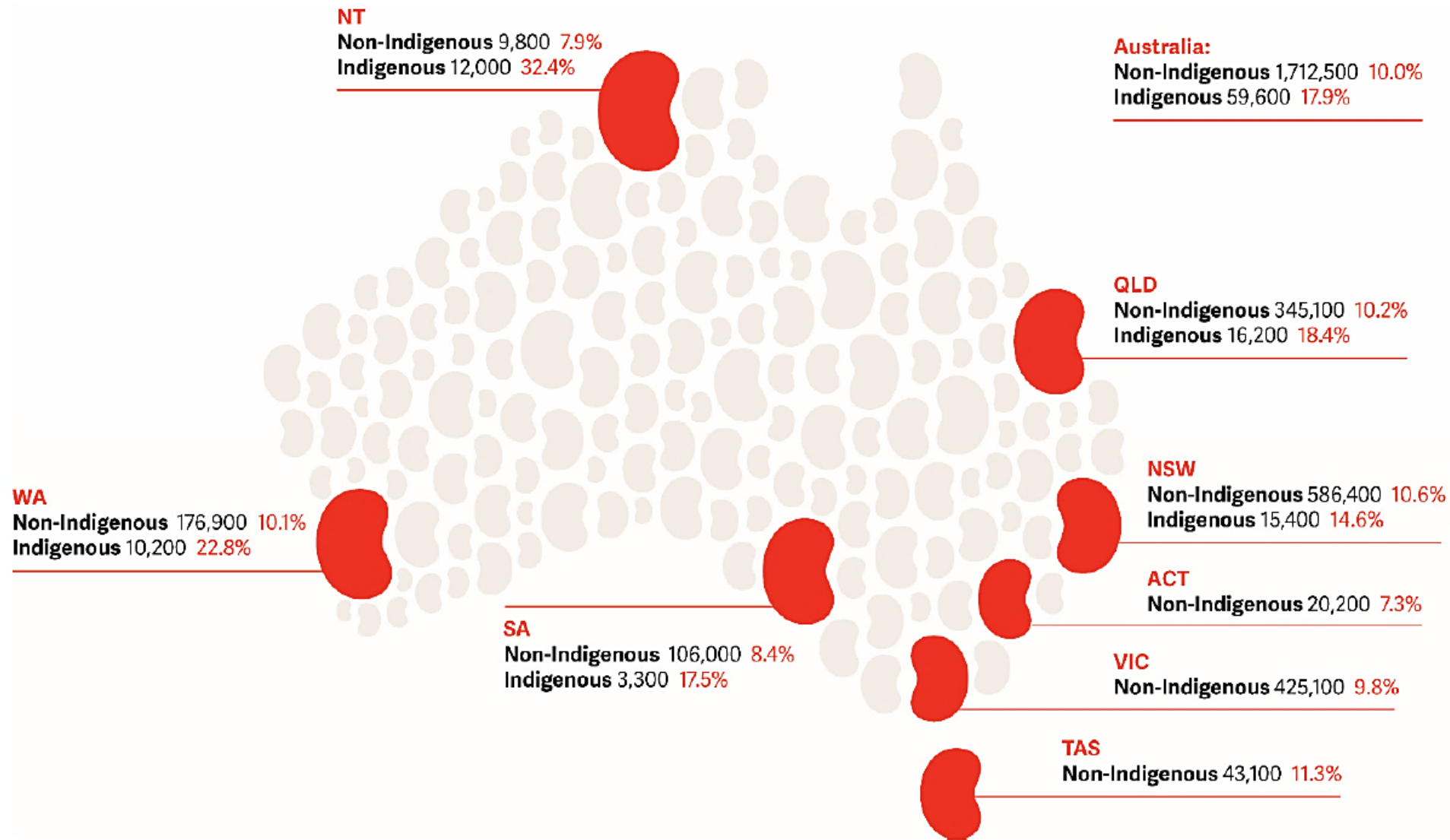
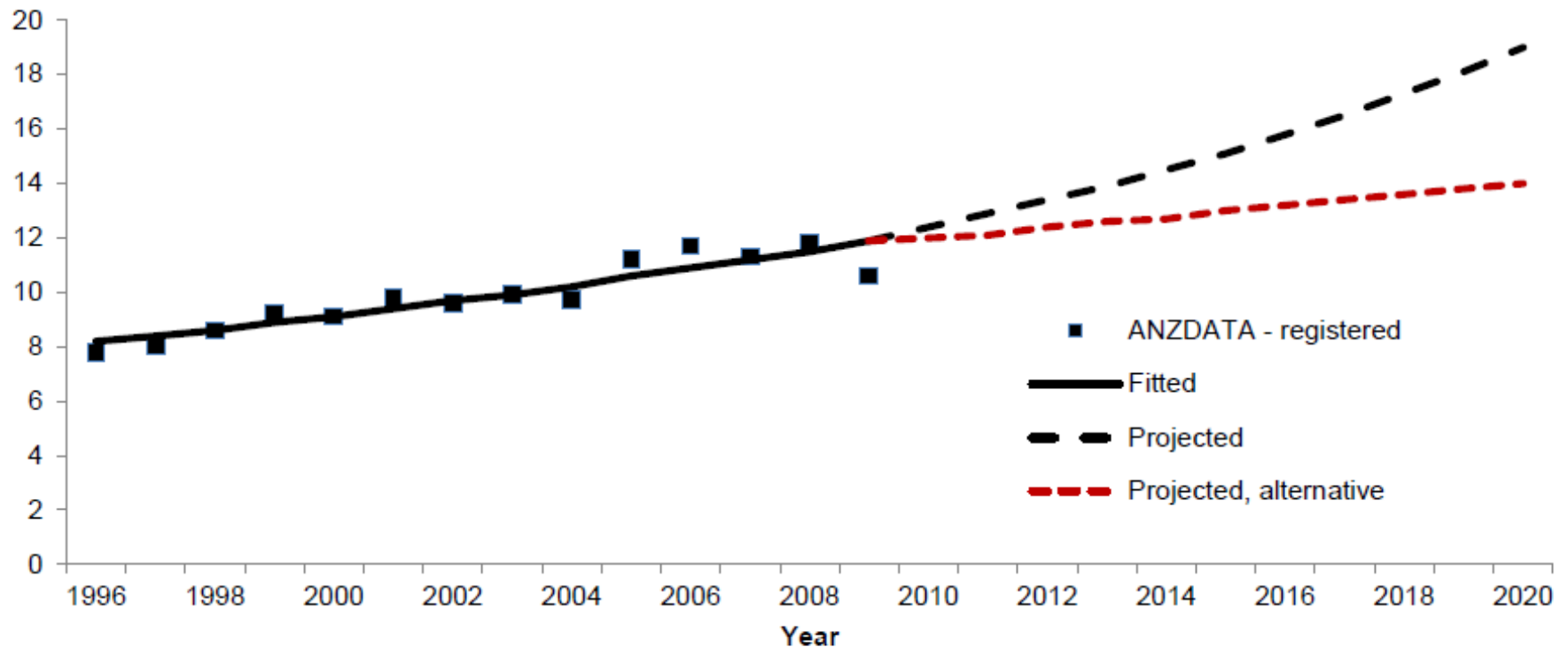


Figure 5. Living with signs of CKD – Number of people (proportion of population)<sup>8</sup>

# The future

## Growth in incidence rate of new treated ESKD and projections to 2020 (AIHW, 2011)

Number per 100,000 population



*Note:* The alternative projection results (lower dotted line) are derived by holding the average of incidence rates for years 2007–2009 for patients 70 years and over constant in projection years.

*Source:* Registered cases during 1996–2009 from ANZDATA .

# Costs of treating current and new ESKD cases to 2020

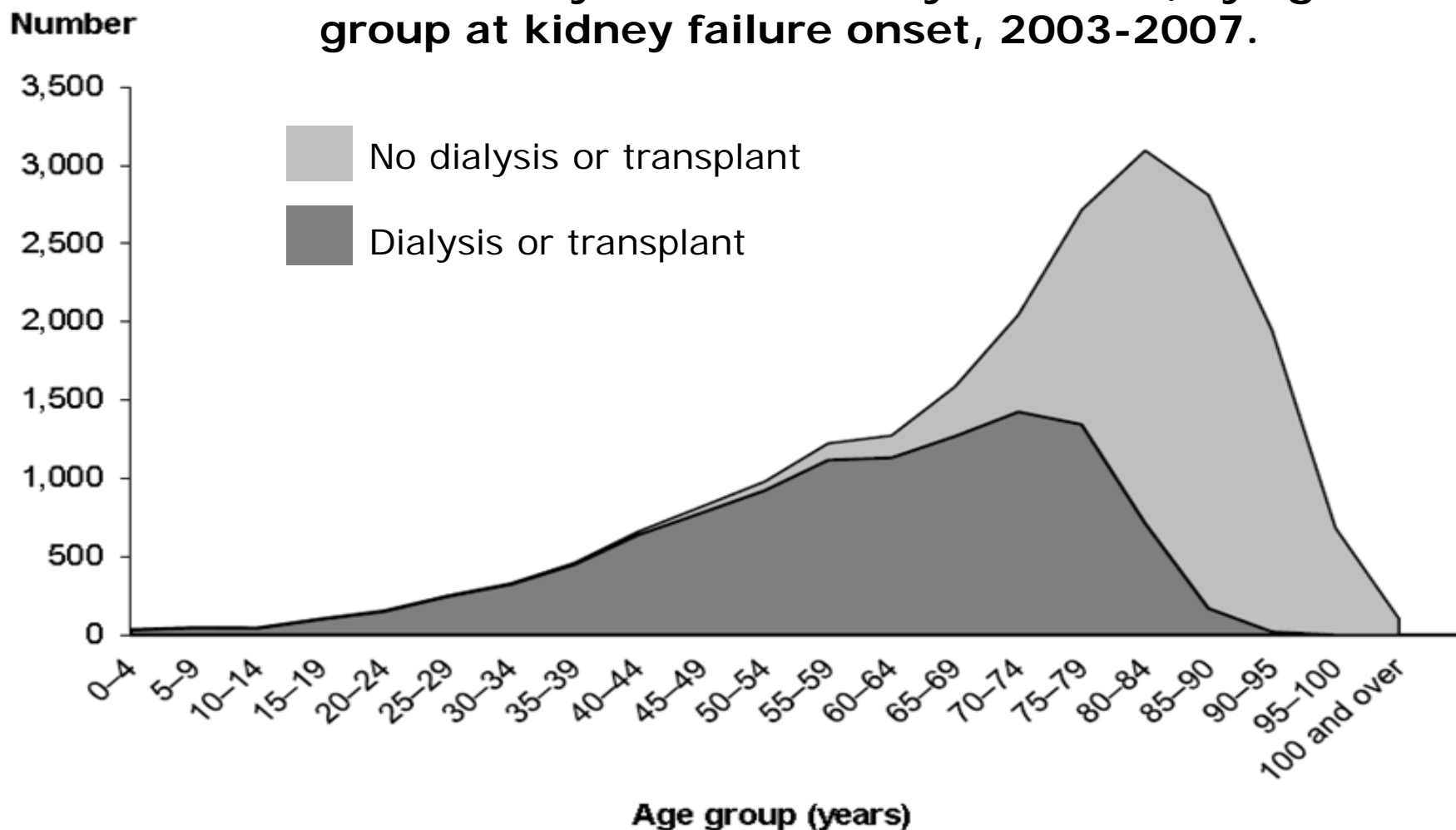
- The cost of treating ESKD from 2009 to 2020 is estimated to be around \$12 billion to the Australian government
- Kidney disease contributes approximately 15% of all hospitalisations in Australia



# Age and ESKD

## Relationship between age and treatment for ESKD

Number of dialysed and undialysed cases, by age group at kidney failure onset, 2003-2007.



# Staging CKD

Combine **eGFR** stage, **albuminuria** stage and **underlying diagnosis** to specify CKD stage e.g. stage 3b CKD with microalbuminuria secondary to diabetic kidney disease

GFR Stage	GFR mL/min/1.73m <sup>2</sup>	Albuminuria Stage		
		Normal urine ACR mg/mmol Male: < 2.5 Female: < 3.5	Microalbuminuria urine ACR mg/mmol Male: 2.5-25 Female: 3.5-35	Macroalbuminuria urine ACR mg/mmol Male: > 25 Female: > 35
1	≥90	Not CKD unless haematuria, structural or pathological abnormalities present	Yellow	Red
2	60-89		Yellow	Red
3a	45-59	Yellow	Orange	Red
3b	30-44	Orange	X	Red
4	15-29	Red	Red	Red
5	<15 or on dialysis	Red	Red	Red

Colour-coded Clinical Action Plans in handbook and on CKD-Go! App



**ACTION PLANS**

Below are the Clinical Action Plans for the three stages of Chronic Kidney Disease (measured using eGFR and urine ACR) compiled from Kidney Health Australia Guidelines. They are categorised yellow, orange and red indicating the overall risk of progression of CKD and cardiovascular events.

**YELLOW** >

**ORANGE** >

**RED** >

**Chronic Kidney Disease (CKD) Management in General Practice**

Guidance and clinical tips to help identify, manage and refer patients with CKD in your practice

Present, Detect, Support. **KCAT**

# Staging CKD

'CKD management in General Practice' handbook uses colour-coded action plans indicating the overall risk of

- Progression of CKD
- Cardiovascular events

Normal

Low

Moderate

High

## Chronic Kidney Disease (CKD) Management in General Practice



Guidance and clinical tips to help identify, manage and refer patients with CKD in your practice



3rd Edition 2015 • www.kcat.org.au

Prevent, Detect, Support.

KCAT

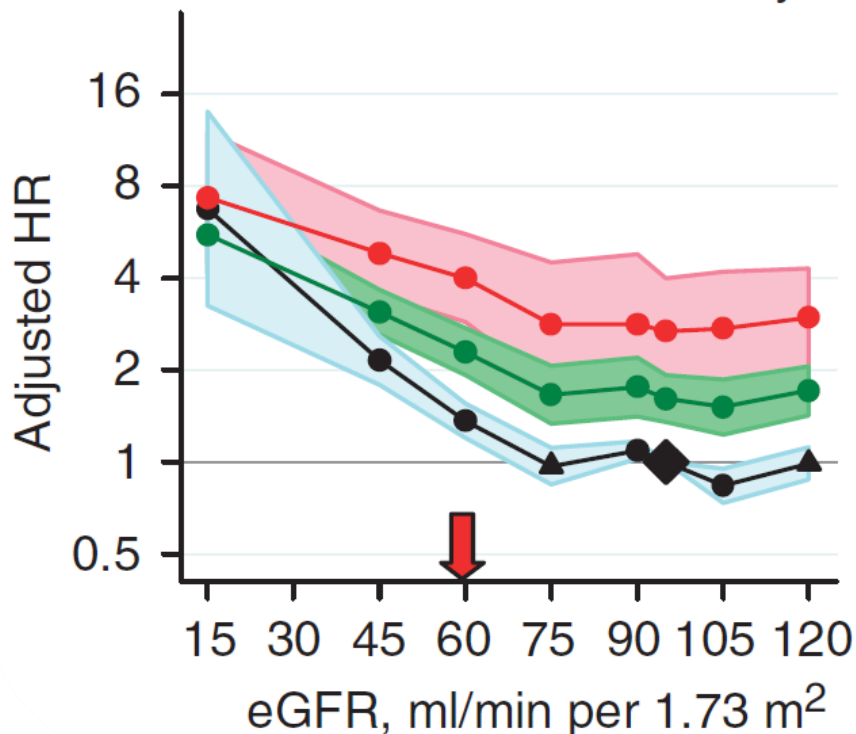




# CKD and CVD risk

## CKD prognosis consortium

Cardiovascular mortality



N.B.

- As GFR decreases CV mortality increases
- The presence of albumin (micro and macro) increases CV mortality at the 'normal' range of GFR

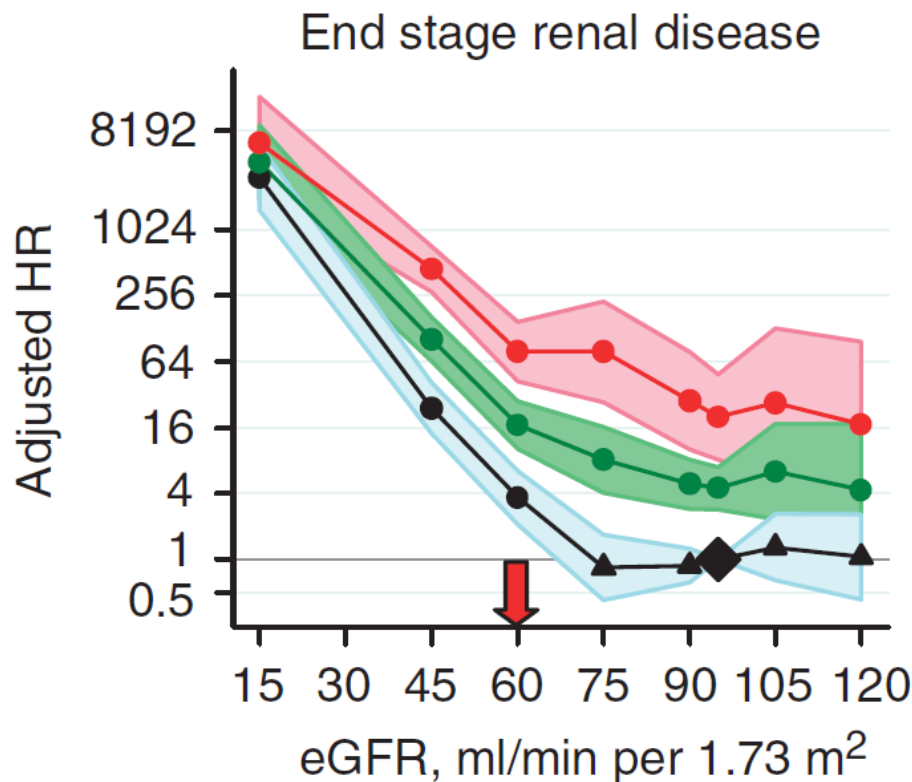
Note log scale on Y axis for Hazard Ratio

Blue – normal ACR, Green – microalbuminuria, Red - macroalbuminuria



# CKD and CVD risk

## CKD prognosis consortium



N.B.

- The risk of CV mortality increases for GFR <60mL/min/1.73m<sup>2</sup> this is the same across all conditions and all levels of albuminuria

Note log scale on Y axis for Hazard Ratio

Blue – normal ACR, Green – microalbuminuria, Red - macroalbuminuria

# Screening for CKD

Indications for assessment*	Recommended assessments	Frequency
Diabetes	Urine ACR, eGFR, blood pressure  If urine ACR positive repeat twice over 3 months (preferably first morning void)  If eGFR < 60mL/min/1.73m <sup>2</sup> repeat within 7 days	Every 1-2 years†
Hypertension		
Established cardiovascular disease**		
Family history of kidney failure		
Obesity (BMI ≥30 kg/m <sup>2</sup> )		
Smoker		
Aboriginal or Torres Strait Islander origin aged ≥ 30 years‡		
History of acute kidney injury	See recommendations in booklet	

*1 in 3  
Australia  
n adults  
is at  
increased  
risk of  
CKD due  
to these  
risk  
factors*

\*Whilst being aged 60 years of age or over is considered to be a risk factor for CKD, in the absence of other risk factors it is not necessary to routinely assess these individuals for kidney disease.

\*\*Established cardiovascular disease is defined as a previous diagnosis of coronary heart disease, cerebrovascular disease or peripheral vascular disease.

† Annually for individuals with diabetes or hypertension.

‡ Refer to booklet for more details regarding recommendations for testing in Aboriginal and Torres Strait Islander peoples.

# Kidney Health Check

## Kidney Health Check

Blood  
Test

**eGFR**  
*calculated  
from serum  
creatinine*

Urine  
Test

**Albumin /  
Creatinine  
Ratio (ACR)**  
*to check for  
albuminuria*

BP  
Check

**Blood  
pressure**  
*\*maintain  
consistently  
below BP goals*



An eGFR < 60 mL/min/1.73m<sup>2</sup> = increased risk of adverse renal, cardiovascular and other clinical outcomes, IRRESPECTIVE OF AGE

N.B. Dipstick testing is not a sufficient test for CKD screening

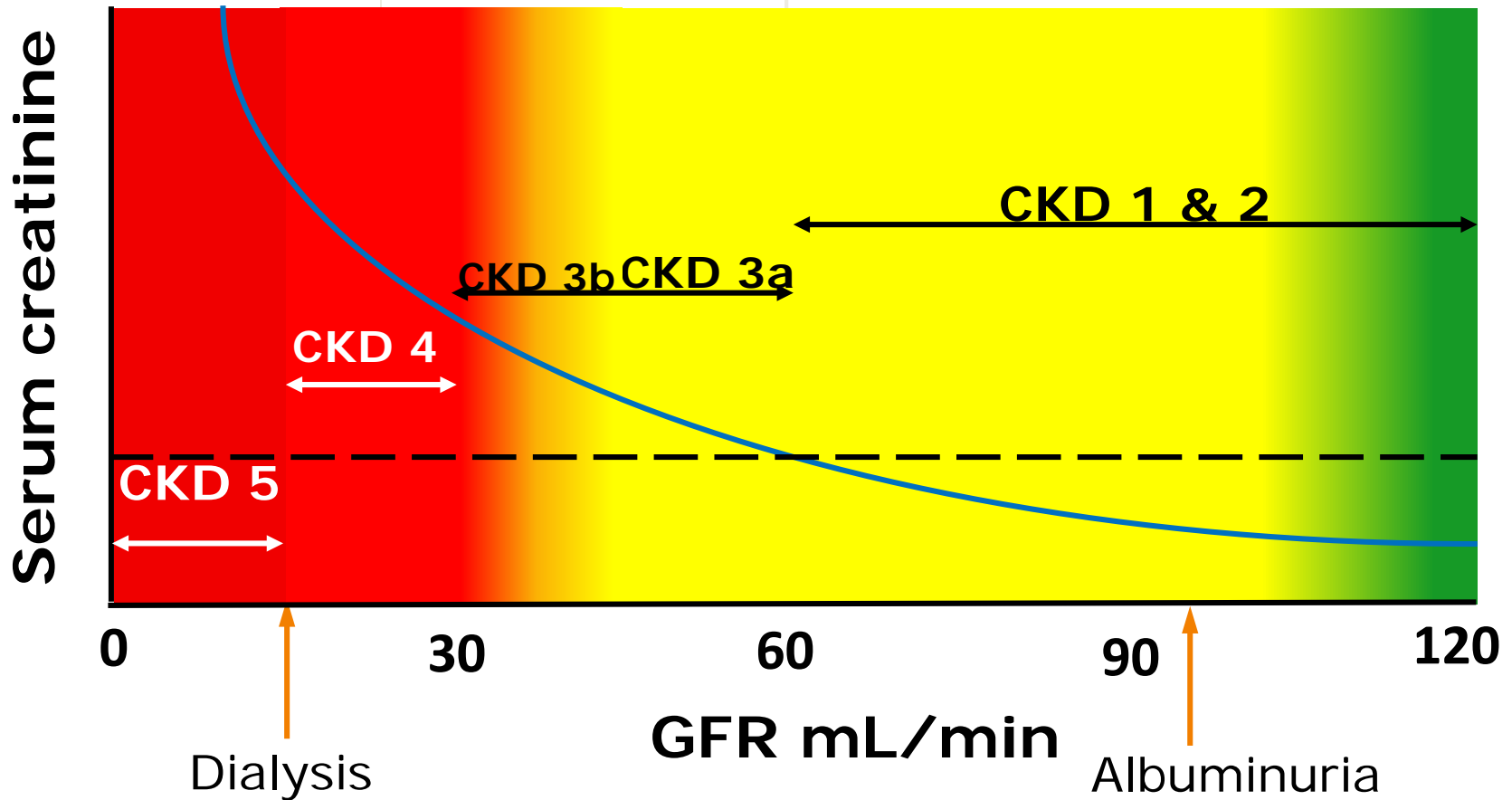
# What is GFR?

GFR = Glomerular Filtration Rate

- is accepted as the best measure of kidney function
- can be estimated from serum creatinine using prediction equations
- there is no direct way of measuring
- may fall substantially before serum creatinine is outside the normal range

eGFR	Indicates...
>90 mL/min/1.73m <sup>2</sup>	<b>Normal GFR</b> in healthy adults ( <i>declines with age</i> )
60-90 mL/min/1.73m <sup>2</sup>	should not be considered abnormal unless there is evidence of kidney damage.
Consistently <60 mL/min/1.73m <sup>2</sup>	indicates CKD

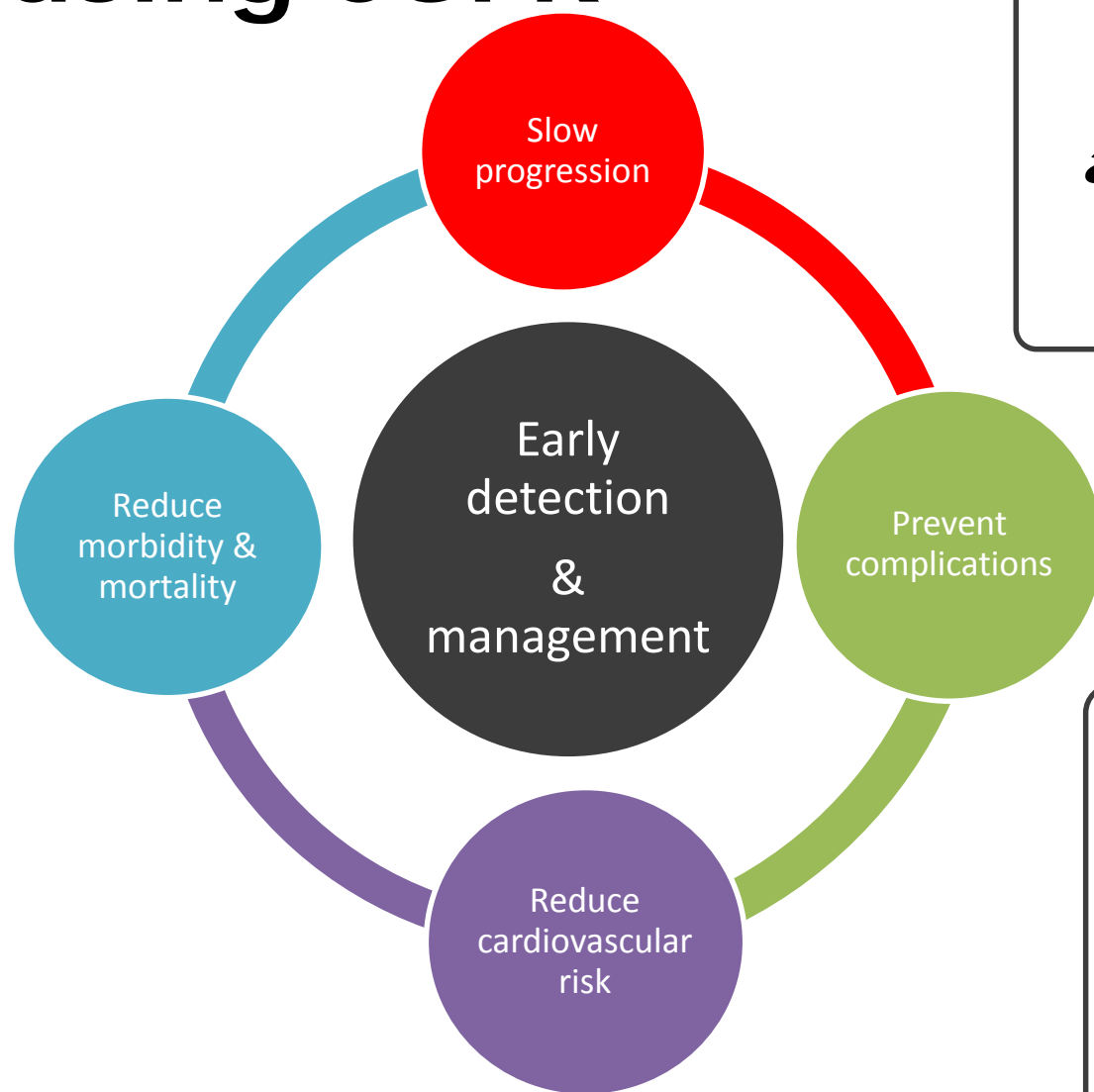
# Comparing creatinine and eGFR



----- Normal Serum Creatinine level

————— Actual Serum Creatinine level

# The significance of CKD staging using eGFR

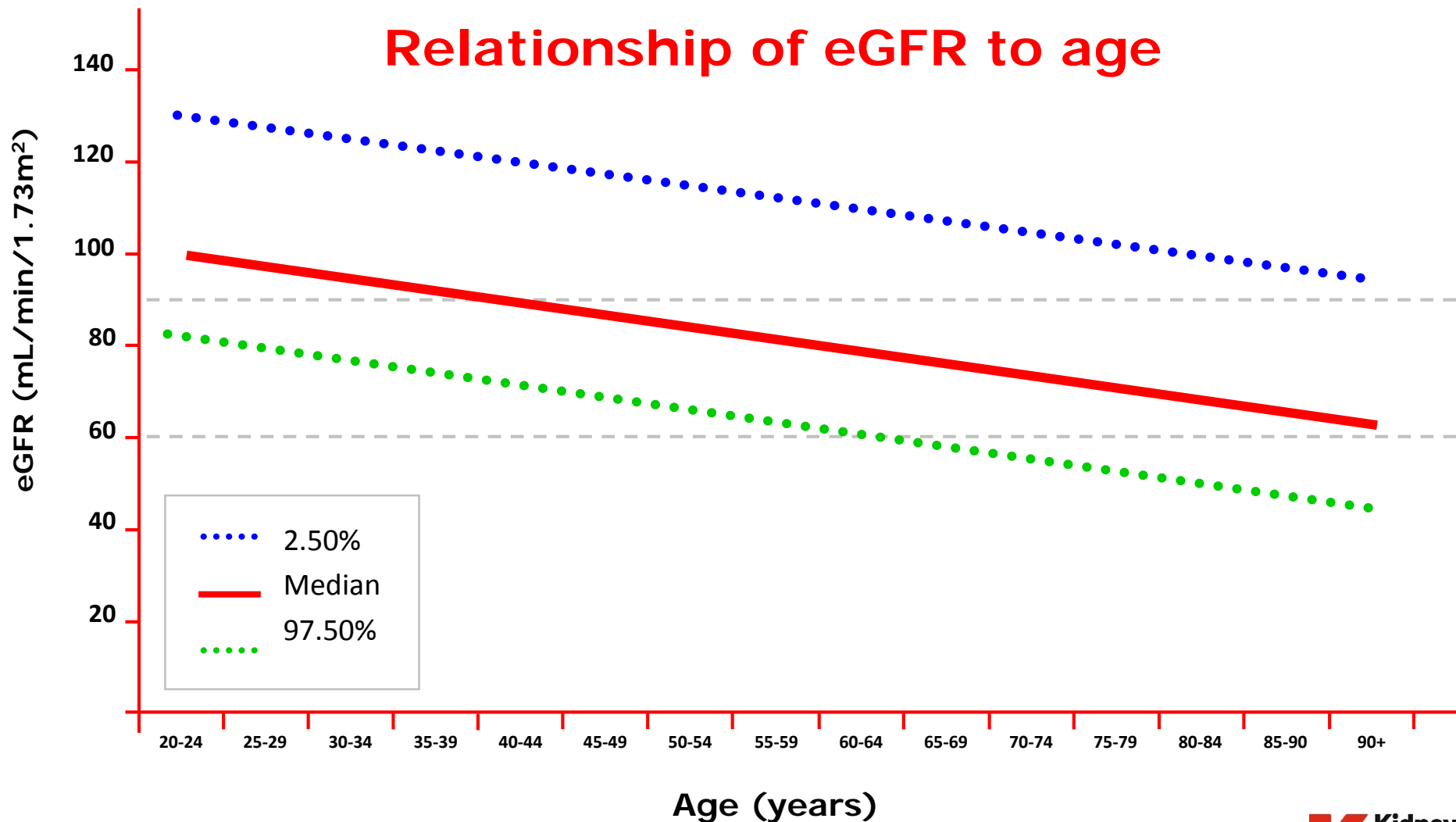


*Staging CKD using eGFR will assist with goals of management of CKD*

*Early detection and treatment may reduce the rate of progression of kidney failure and cardiovascular risk by 20 – 50%*

# Age and kidneys

## Relationship between age and kidney function





# Interpreting eGFR results

## Clinical situations where eGFR results may be misleading

- acute changes in kidney function
- people on dialysis
- exceptional dietary intake (e.g. vegetarian diet, high protein diet, recent consumption of cooked meat, creatinine supplements)
- extremes of body size
- diseases of skeletal muscle, paraplegia or amputees (*may overestimate eGFR*) or high muscle mass (*may underestimate eGFR*)
- children under the age of 18 years
- severe liver disease present
- eGFR values above 90mL/min/1.73m<sup>2</sup>
- drugs interacting with creatinine excretion (e.g. trimethoprim)



# eGFR and drug dosing



Where an eGFR (using CKD-EPI) is on hand it is clinically appropriate to use this to assist drug dosing decision making

## Recommendation:

- Dose reduction of some drugs is recommended for patients with reduced kidney function
- Both eGFR (mL/min/1.73m<sup>2</sup>) and estimated CrCl (mL/min) provide an estimate of relative renal drug clearance
- If using eGFR for drug dosing, body size should be considered, in addition to referring to the approved Product Information
- For drugs with a narrow therapeutic index, therapeutic drug monitoring or a valid marker of drug effect should be used to individualise dosing



# Urine testing recommendations

Urine testing for proteinuria

Urine Albumin/ Creatinine ratio (ACR) recommended for everyone

## Clinical tip

The preferred method for assessment of albuminuria in both diabetes and non-diabetes is urinary ACR measurement in a first void spot specimen

Where a first void specimen is not possible or practical, a random spot urine specimen for urine ACR is acceptable

# Urine tests

## Albumin / Creatinine Ratio (ACR)

- Association between albuminuria and progressive kidney disease in population studies
- Severity of albuminuria is predictive of outcome
- Therapeutic intervention can delay progression of disease and is most effective where there is significant albuminuria
- Microalbuminuria is predictive of progressive renal disease
- Urine ACR accurately predicts renal and cardiovascular risks in population studies and reduction in urine ACR predicts renoprotective benefit in intervention trials

# Urine tests

## Albumin / Creatinine Ratio (ACR)



- An **initial ACR** test should be **repeated** on a first void sample if the results are positive for CKD
- Initial ACR testing can be done utilising **point of care testing** (Siemens machine or similar). A positive result is best confirmed by the pathology laboratory.
- Albuminuria is present if at least **2 out of 3 ACR tests** are positive (including initial test)
- CKD is present if **albuminuria** persists for **at least 3 months**
- **Dipsticks** for protein in the urine are now **no longer recommended** for this purpose as their sensitivity and specificity is not optimal

# Urine ACR

## Approximate equivalents between urine ACR & other measures of albumin & protein

	Urine ACR (mg/mmol)	24h urine albumin (mg/day)	Urine PCR (mg/mmol)	24 h urine protein (mg/day)
Microalbuminuria	Male: 2.5-25 Female: 3.5-35	30-300	Male: 4-40 Female: 6-60	50-500
Macroalbuminuria	Male: >25 Female: >35	>300	Male: >40 Female: >60	>500

# Target blood pressure in adults



People with....

Maintain BP consistently  
**BELOW** (mmHg)

**Albuminuria**

< 130/80

**Diabetes**

< 130/80

**Chronic Kidney  
Disease**

< 140/90



# Case study - Rita

## Background

- 63 years old
- Accountant
- History of mild asthma

Rita is a new patient to your practice



# Case study - Rita

## Past medical history

- Overweight (BMI 31kg/m<sup>2</sup>)
- Mild intermittent asthma
- Chronic low back pain
- Mild hypertension

## Family history

- Maternal grandmother died of a heart attack in her 60's but also had a history of 'kidney problems'
- Mother has type 2 diabetes
- Father has angina and hypertension





# Case study - Rita



**Smoker:**

20-25 cigarettes per day (25 pack-year history)



**Alcohol:**

1-2 glasses of wine  
3-4 nights per week



**Allergies:**

Nil known



**Medications:**

Salbutamol  
100mcg/dose  
as needed



# Case study - Question

Q1: Does Rita have an increased risk of CKD?

# Risk factors for kidney disease

- ✗ Diabetes
- ✓ Hypertension
- ✗ Established cardiovascular disease
- ✗ Family history of kidney failure
- ✓ Obesity, BMI >30kg/m<sup>2</sup>
- ✓ Smoker
- ✗ Aboriginal or Torres Strait Islander origin
- ✗ History of acute kidney injury
- ✓ Age over 60 years

Rita has 4  
of the risk  
factors for  
CKD

1 in 3  
Australian  
adults is at  
increased  
risk of CKD  
due to  
these risk  
factors

# Risk factor - diabetes

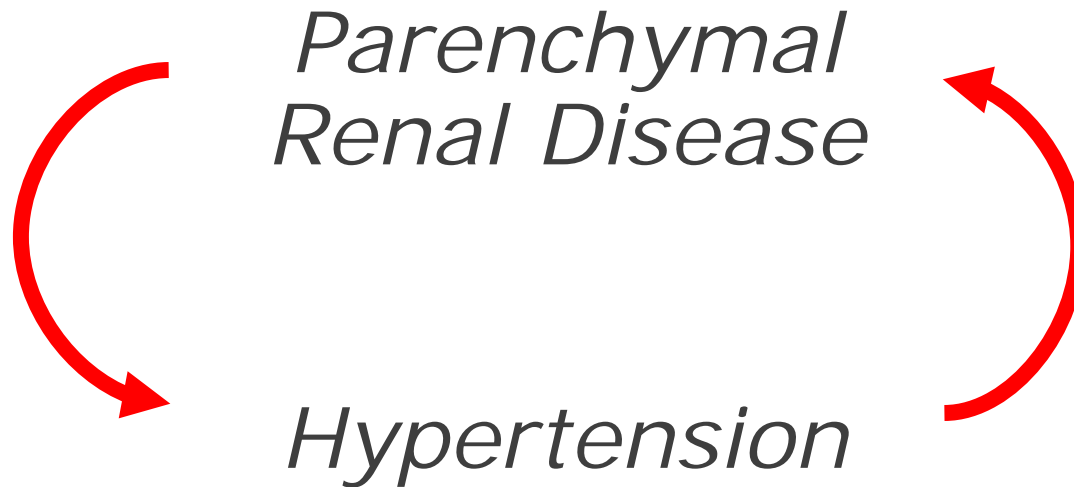
- Patients who have diabetes develop CKD in up to 30% of cases.<sup>1</sup>
- 1% of adult Australians develop diabetes each year.<sup>2</sup>

1. Chadban et al. 2009 National Evidence Based Guideline for Diagnosis, Prevention and Management of Chronic Kidney Disease in Type 2 Diabetes, Diabetes Australia and the National Health and Medical Research Council (NHMRC), Canberra.

2. Barr et al. 2006, Int. Diab Institute

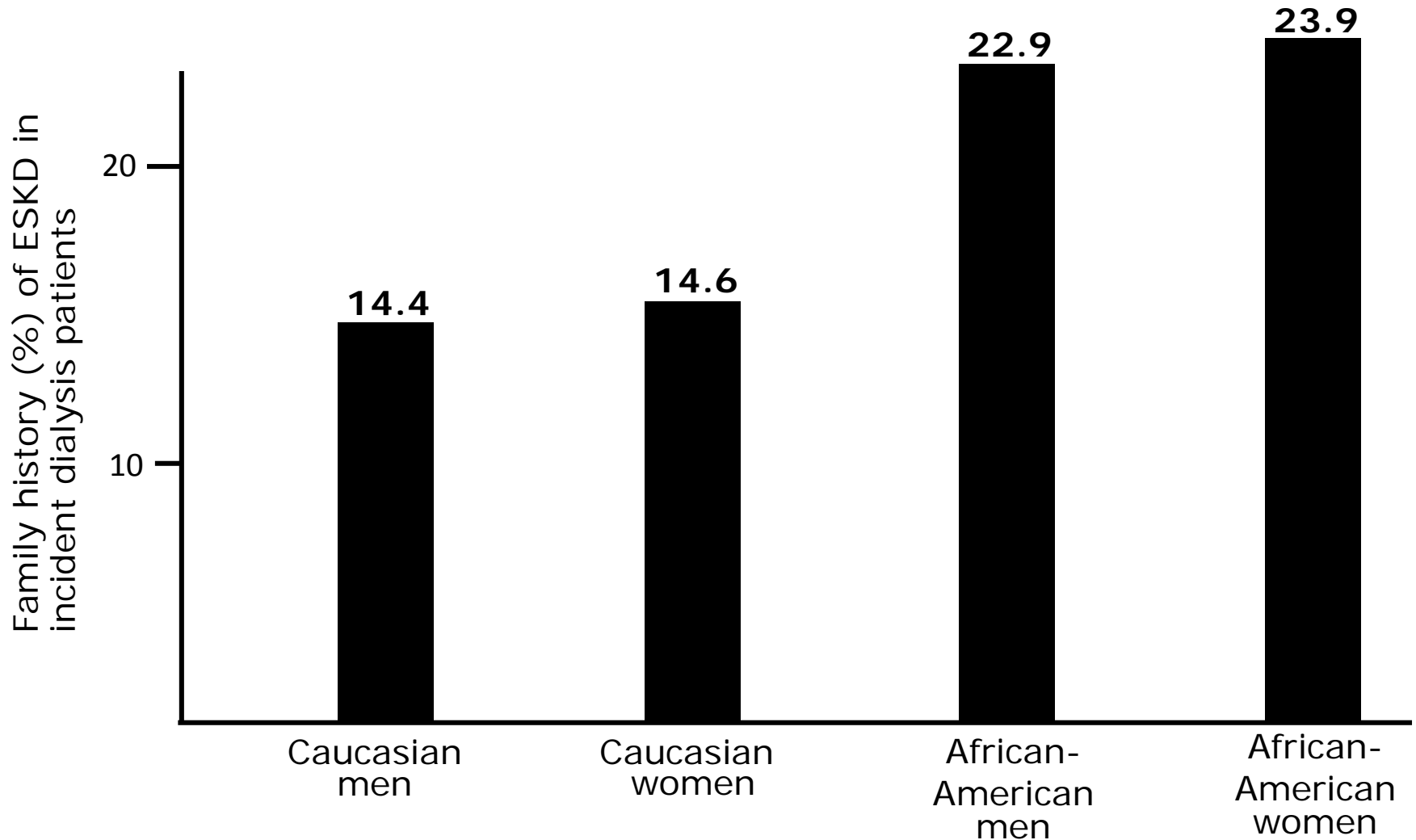
# High blood pressure

High blood pressure can damage the small blood vessels in the kidneys. The damaged vessels cannot filter waste products from the blood the way they should.



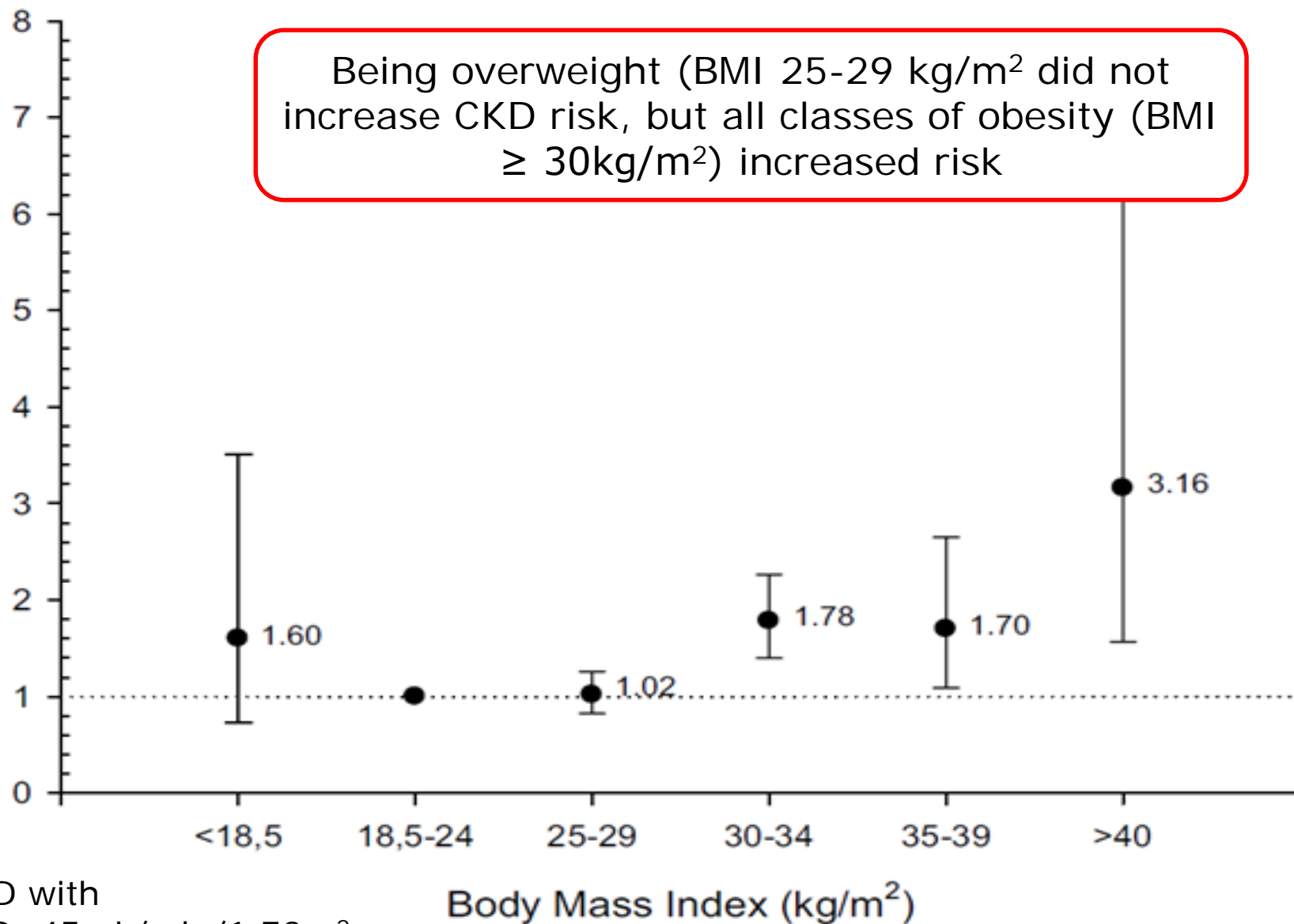
Or.....damaged kidneys cause high blood pressure and high blood pressure damages kidneys

# Risk factor - family history of kidney failure



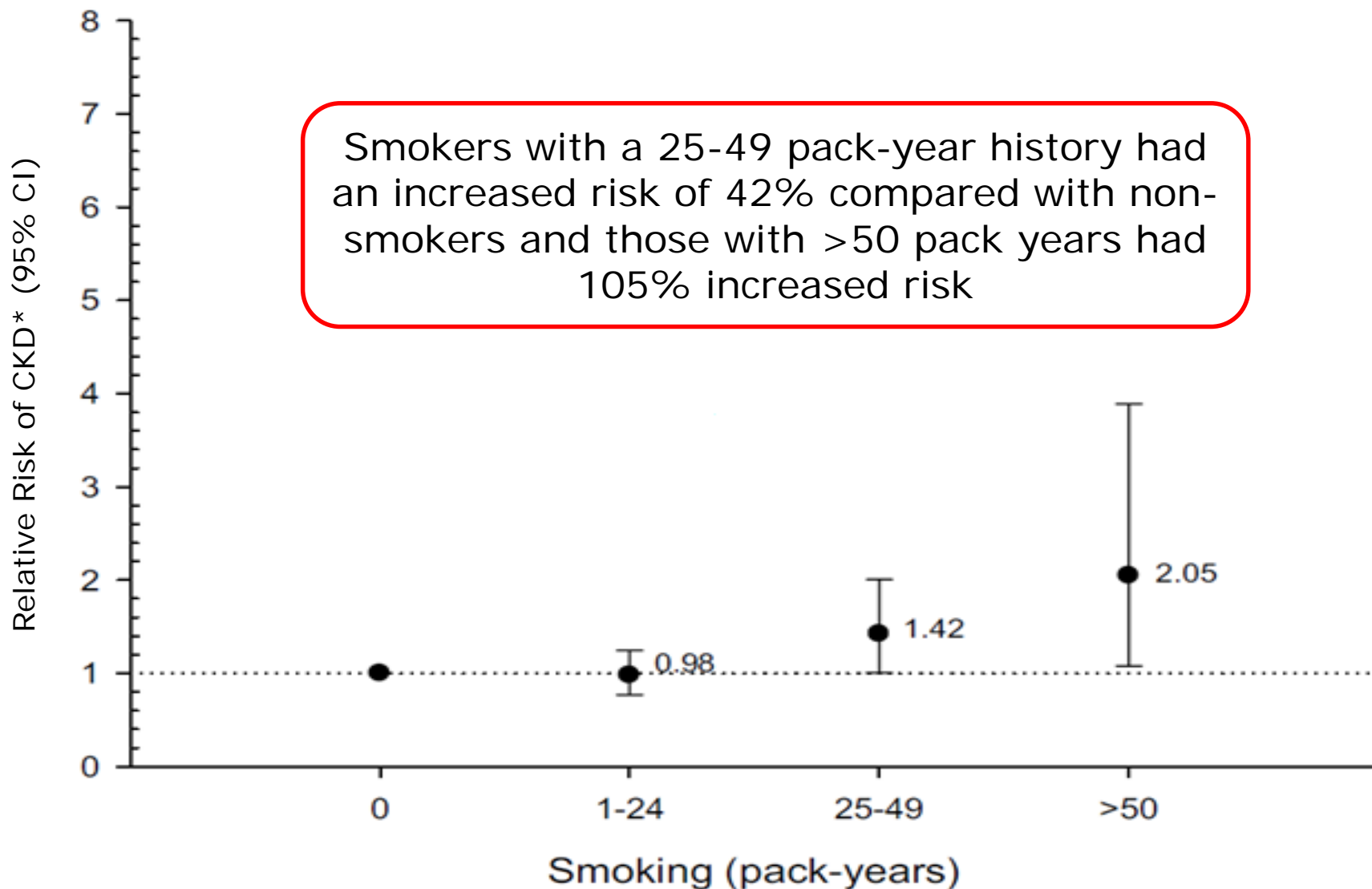
# Risk factor - obesity

Being overweight (BMI 25-29 kg/m<sup>2</sup>) did not increase CKD risk, but all classes of obesity (BMI ≥ 30kg/m<sup>2</sup>) increased risk



\*CKD with  
eGFR < 45 mL/min/1.73 m<sup>2</sup>

# Risk factor - smoking



\*CKD with eGFR < 45 mL/min/1.73 m<sup>2</sup>



# CKD risk factors: Aboriginal or Torres Strait Islander Origin

Number per 100,000 population

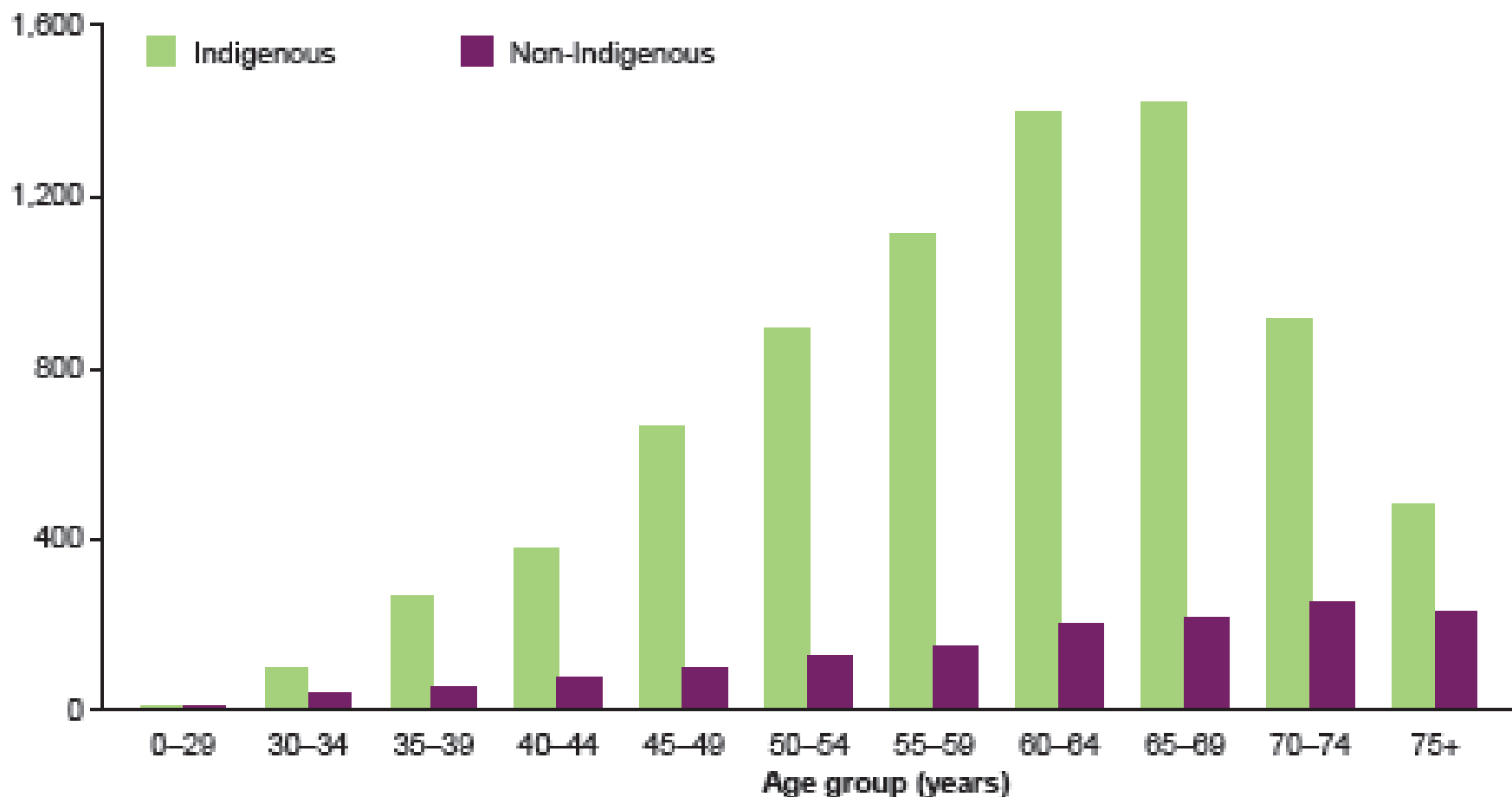
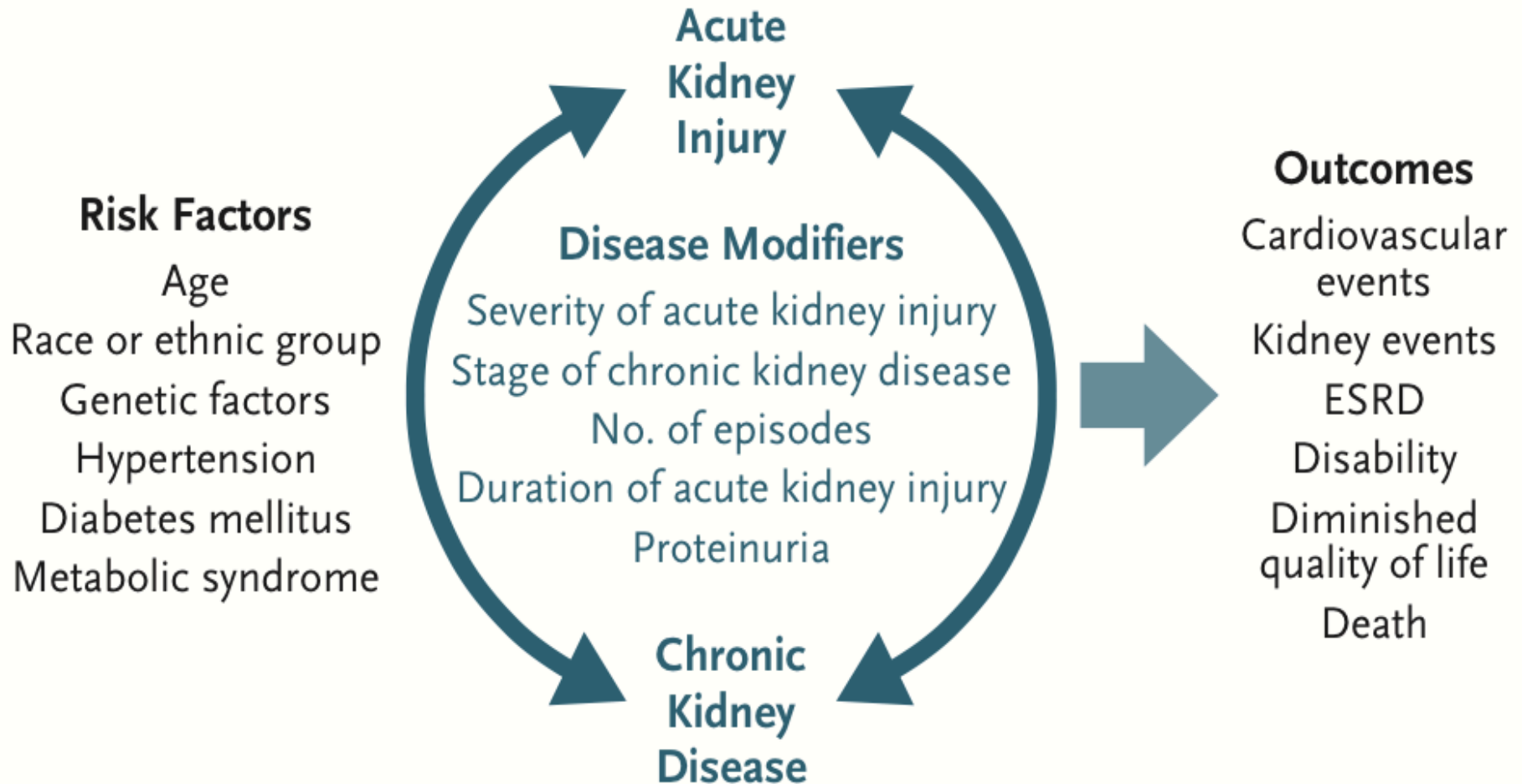


Figure 5.4: Prevalence of treated ESKD, by Indigenous status and age, 2013

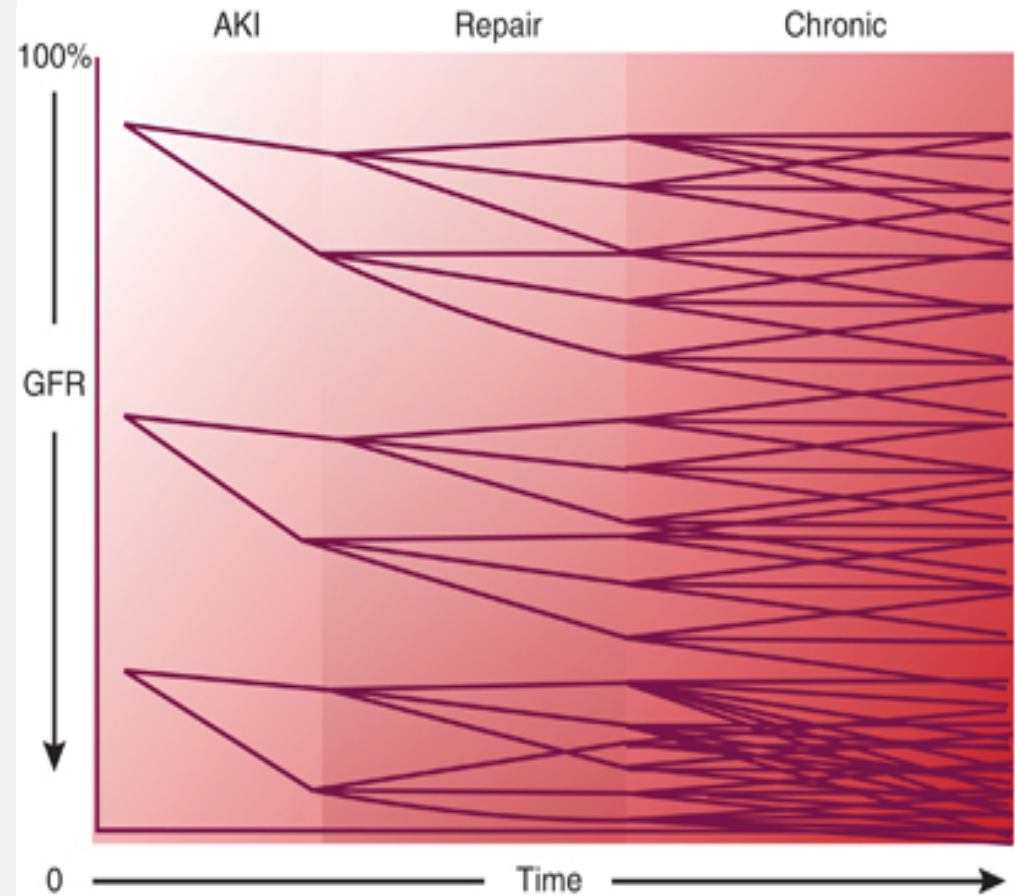
Source: Australian Institute of Health and Welfare 2015.

# AKI & CKD: interconnected syndrome



# AKI as an accelerant of CKD

- CKD is a risk for AKI but the problem is bidirectional
- Risk of developing ESRD was enhanced ~4x by superimposition of AKI in CKD patients.
- Severity & frequency of AKI appear to be important predictors of poorer outcomes.



Theoretical range of outcomes after acute kidney injury (AKI).

1. Chawla LS, Amdur RL, Amid S et al. The severity of acute kidney injury predicts progression to chronic kidney disease. *Kidney Int* 2011; 79: 1361–1369

43 2. 2. Thakar CV, Christianson A, Himmelfarb J et al. Acute kidney injury episodes and chronic kidney disease risk in diabetes mellitus. *Clin J Am Soc Nephrol* 2011

# Screening and assessments

Screening - search\* for patients at risk and invite patients for a health check **Health assessment (Items 701, 703, 705, 707, 715)**

## Screen those at risk

- Diabetes
- Hypertension
- Established CVD
- Family history of kidney failure
- Obesity (BMI >30kg/m<sup>2</sup>)
- Smoker
- Aboriginal or Torres Strait Islander origin
- History of acute kidney injury

## Assessments

- 701
- 703
- 705
- 707
- 715

## Health checks

- A type 2 diabetes risk evaluation for people aged 40-49 years (inclusive) with a high risk of developing type 2 diabetes as determined by the Australian Type 2 Diabetes Risk Assessment Tool – once every 3 years to eligible patients
- A health assessment for people aged 45-49 years (inclusive) who are at risk of developing chronic disease – once only to an eligible patient

For more information visit [www.mbsonline.gov.au](http://www.mbsonline.gov.au)

\*data management tools such as 'PEN CAT' can be useful to find patients



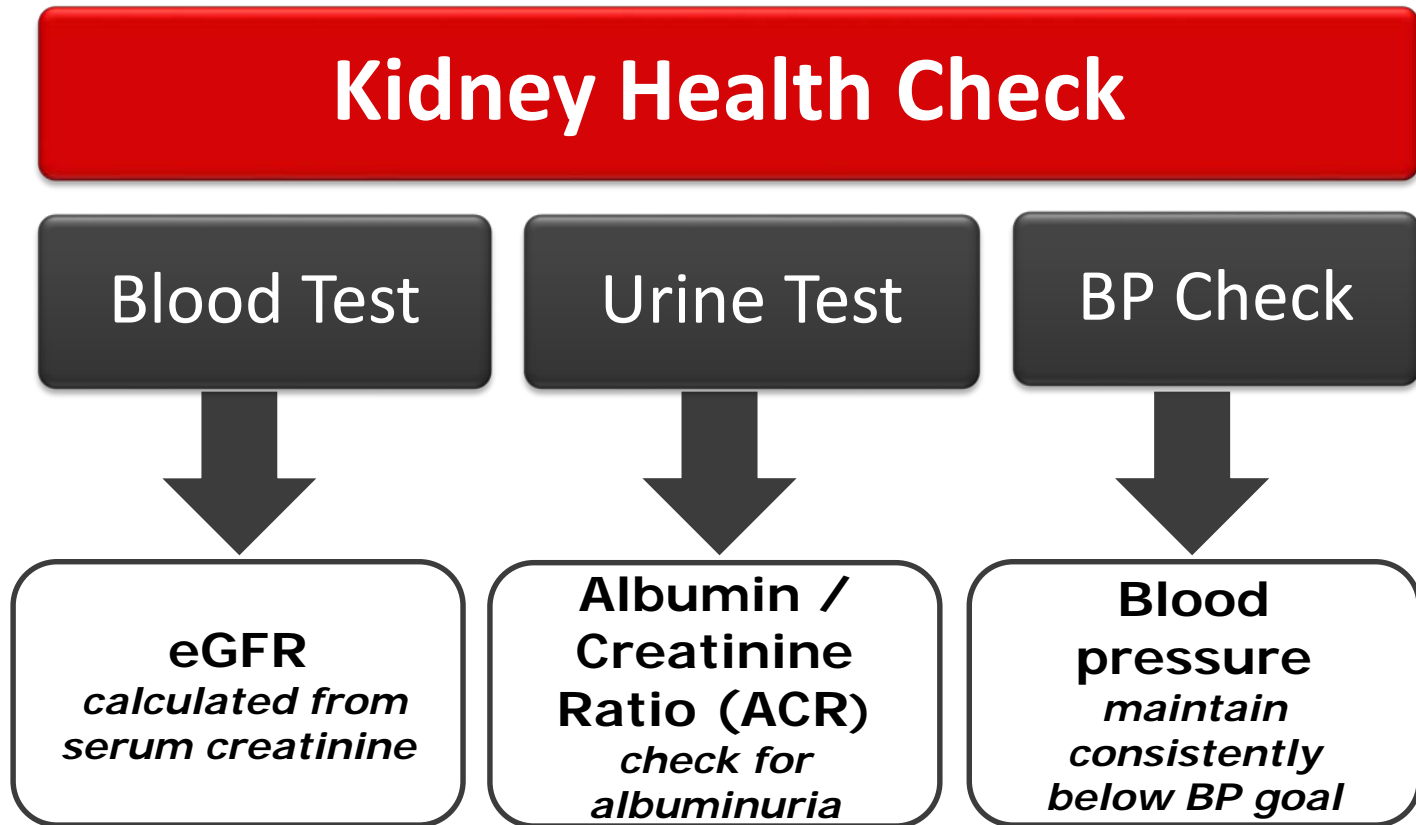
# Case study - Question

Q2: What would you do next?



# Case study - Rita

You determine that Rita should have a kidney health check every year





# Case study - Rita

## Rita's Kidney Health Check results

Creatinine	118 $\mu\text{mol/L}$
eGFR	55 mL/min/1.73m <sup>2</sup>
Urine ACR	5.7 mg/mmol
Blood pressure	155 / 95 mmHg



# Case study - Rita

		Albuminuria Stage		
GFR Stage	GFR (mL/min/1.73m <sup>2</sup> )	Normal (urine ACR mg/mmol) Male: < 2.5 Female: < 3.5	Microalbuminuria (urine ACR mg/mmol) Male: 2.5-25 Female: 3.5-35	Macroalbuminuria (urine ACR mg/mmol) Male: > 25 Female: > 35
1	≥90	Not CKD unless haematuria, structural or pathological abnormalities present		
2	60-89			
3a	45-59		<b>RITA'S RESULTS STAGE HER HERE</b>	
3b	30-44			
4	15-29			
5	<15 or on dialysis			





# Case study - Question

Q3: Do Rita's Kidney Health Check results mean she has Chronic Kidney Disease?

**Not yet**

To diagnose Rita with CKD, her urine ACR & eGFR needs to be repeated and results must be consistent over 3 months or more.



# Case study - Rita

- If the first ACR is a random spot, then repeat tests should ideally be first morning void specimens
- **CKD is present if at least 2 out of 3 ACR tests (including the initial test) in the next three months are positive**
- When initial eGFR is  $<60 \text{ mL/min/1.73m}^2$  consider clinical situations where eGFR results may be unreliable/misleading
- To confirm CKD, the repeat eGFR in 3 months time should also be below  $60 \text{ mL/min/1.73m}^2$



# Repeating the urine ACR

*Factors other than CKD known to increase urine albumin excretion...*

- Urinary Tract Infection
- High dietary protein intake
- Congestive cardiac failure
- Acute febrile illness
- Heavy exercise within 24 hours
- Menstruation or vaginal discharge
- Drugs (especially NSAIDs)



# Case study - Question

*Rita comes back to see you three months later and you repeat her urine ACR, eGFR and blood pressure...*

Test	1 <sup>st</sup> visit	This visit
eGFR	55 mL/min/1.73m <sup>2</sup>	52 mL/min/1.73m <sup>2</sup>
Urine ACR	5.7 mg/mmol	8.4 mg/mmol
BP	155/95 mmHg	160/95 mmHg

Q4: What is your next step?



# Case study - Rita

You can now diagnose Rita as having CKD stage 3a with microalbuminuria

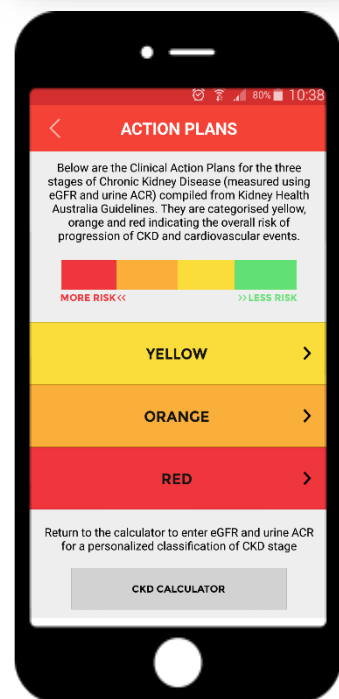
		Albuminuria Stage		
GFR Stage	GFR (mL/min/1.73 m <sup>2</sup> )	Normal (urine ACR mg/mmol) Male: < 2.5 Female: < 3.5	Microalbuminuria (urine ACR mg/mmol) Male: 2.5-25 Female: 3.5-35	Macroalbuminuria (urine ACR mg/mmol) Male: > 25 Female: > 35
1	≥90	Not CKD unless haematuria, structural or pathological abnormalities present		
2	60-89			
3a	45-59		<b>RITA'S RESULTS STAGE HER HERE</b>	
3b	30-44			
4	15-29			
5	<15 or on dialysis			

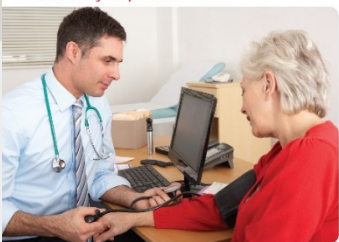
# Orange Clinical Action Plan

**eGFR 30-59 mL/min/1.73m<sup>2</sup> with microalbuminuria  
OR eGFR 30-44 mL/min/1.73m<sup>2</sup> with  
normoalbuminuria**

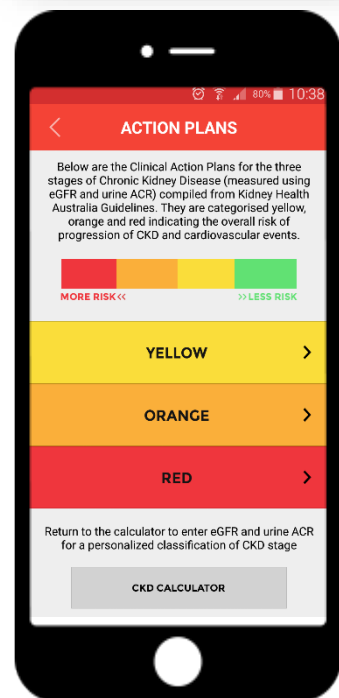
## Goals of management

- Investigations to determine underlying cause
- Reduce progression of kidney disease
- Assessment of Absolute Cardiovascular Risk
- Avoidance of nephrotoxic medications or volume depletion
- Early detection and management of complications
- Adjustment of medication doses to levels appropriate for kidney function
- Appropriate referral to a nephrologist when indicated

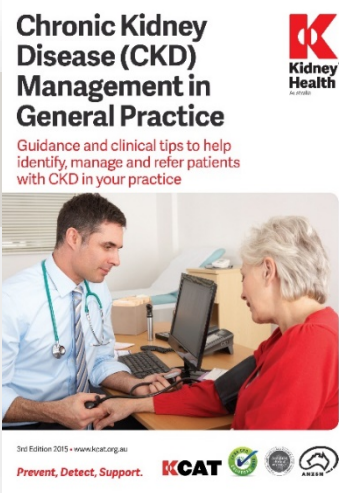




# Orange Clinical Action Plan



<b>Frequency of monitoring</b>	3 to 6 months
<b>Clinical assessment</b>	Blood pressure Weight
<b>Laboratory assessment</b>	Urine ACR eGFR Biochemical profile including urea, creatinine, electrolytes HbA1c (for people with diabetes) Fasting lipids Full blood count Calcium and phosphate Parathyroid hormone (6-12 monthly if eGFR < 45 mL/min/1.73m <sup>2</sup> )

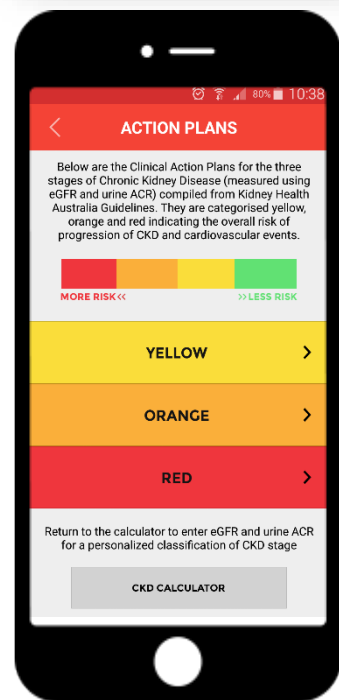


# Orange Clinical Action Plan

eGFR 30-59 mL/min/1.73m<sup>2</sup> with microalbuminuria OR eGFR 30-44 mL/min/1.73m<sup>2</sup> with normoalbuminuria

## It is also important to consider...

- Absolute Cardiovascular Risk Assessment ([www.cvdcheck.org.au](http://www.cvdcheck.org.au))
- Lifestyle modification
- Blood pressure reduction
- Lipid lowering treatments
- Glycaemic control







# Case study - Question

Q5: As Rita's general practitioner, how do you reduce her risks of cardiovascular disease?

# Cardiovascular risk reduction in CKD

- CKD is one of the most potent known risk factors for cardiovascular disease
- It is essential to clinically determine the risk of CKD before using the Australian absolute cardiovascular risk tool ([www.cvdcheck.org.au](http://www.cvdcheck.org.au)) to accurately calculate cardiovascular risk
- Individuals with CKD have a 2-3 fold greater risk of cardiac death than individuals without CKD
- People with CKD are at least 20 times more likely to die from cardiovascular disease than survive to need dialysis or transplant

# CVD risk

## Australian Absolute Cardiovascular Disease Risk Calculator

www.cvdcheck.org.au

The screenshot displays two risk assessment panels. The left panel, labeled 'Result 2', shows a yellow thermometer with a score of 10%. The right panel, labeled 'Result 1', shows a red thermometer with a score of 18%. A red circular callout bubble on the right side of the screenshot contains the text: 'If Rita stops smoking her CV risk is reduced to 9%'. The calculator interface includes a 'RESTART' button and a 'View guidelines and resources' link.

- The tool is approved by NH&MRC
- If Rita had moderate to severe CKD defined as eGFR  $<45$  mL/min/1.73m<sup>2</sup> or macroalbuminuria (ACR  $>25$ mg/mmol men;  $>35$ mg/mmol women) she would be at the highest CVD risk and in this case the tool should not be applied

# CVD risk anyone with...

- **eGFR < 45 mL/min/1.73m<sup>2</sup> or persistent proteinuria**
- Diabetes and microalbuminuria
- Diabetes and age > 60 years
- Established cardiovascular disease
- Familial hypercholesterolemia or total cholesterol above 7.5
- Severe hypertension
  - Systolic 180 mmHg or greater
  - Diastolic 110 mmHg or greater

is already at the **highest** risk of a cardiovascular event,

*therefore the calculator should not be used*

# Blood pressure reduction

- CKD can cause and aggravate hypertension and hypertension can contribute to the progression of CKD
- Reducing blood pressure to below target levels is one of the most important goals of CKD management
- ACE inhibitor or ARB is recommended first line therapy
- Combined therapy of ACE & ARB is not recommended
- Maximal tolerated doses of ACE inhibitor or ARB is recommended
- Hypertension may be difficult to control and multiple (3-4) medications are frequently required

Rita has stage 3a CKD with microalbuminuria so her blood pressure needs to be maintained consistently below 130/80 mmHg

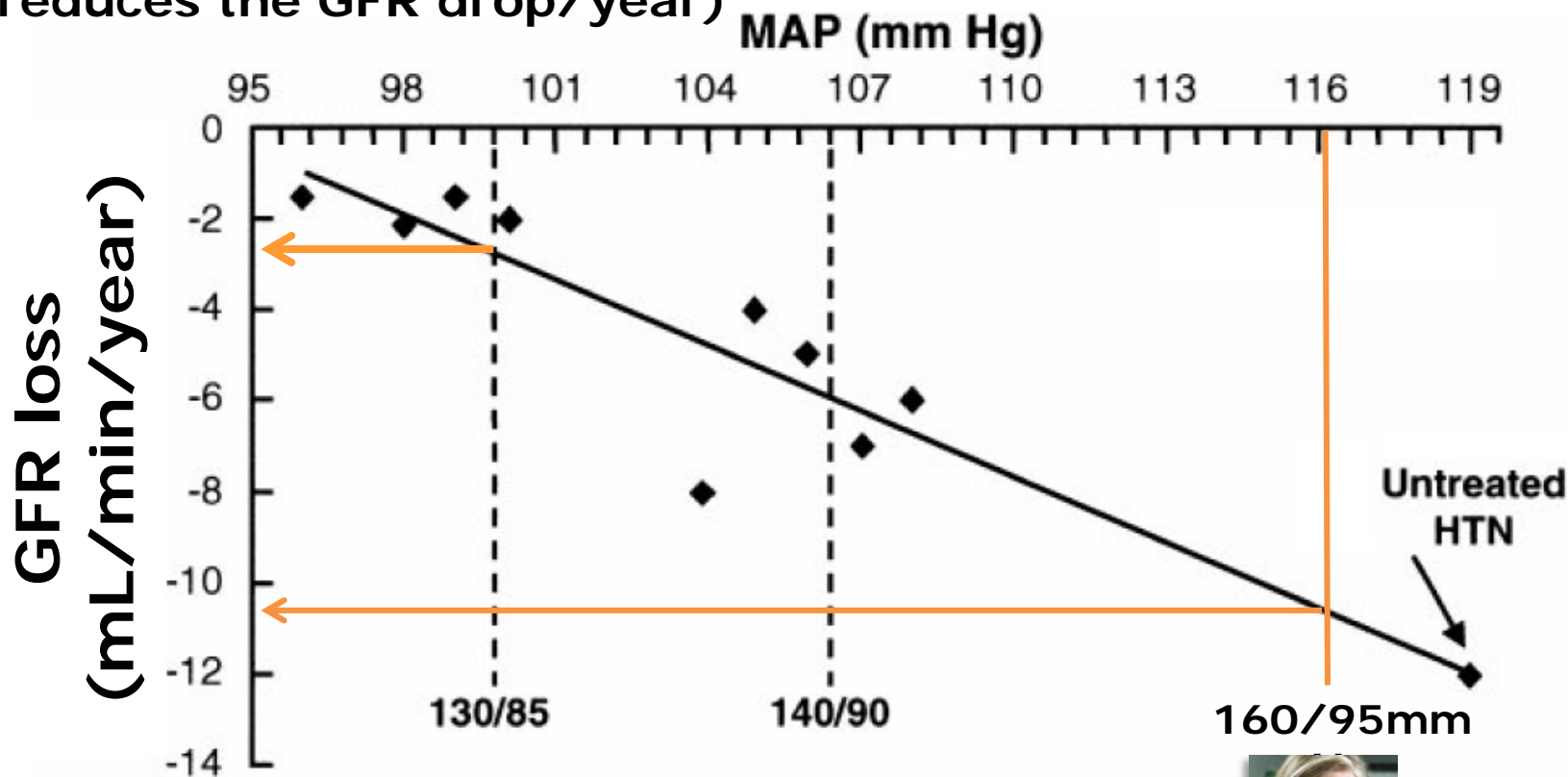
# Blood pressure reduction

## Clinical tips

- ACE inhibitors and ARBs can cause a reversible reduction in GFR when treatment initiated
- If the reduction is less than 25% and stabilises within two months of starting therapy...  
*the ACE inhibitor or ARB should be continued*
- If the reduction in GFR exceeds 25% below the baseline value...  
*the ACE inhibitor or ARB should be ceased and consideration given to referral to a Nephrologist for bilateral renal artery stenosis*

# Hypertension

Adequate BP management delays the progression of CKD (reduces the GFR drop/year)



MAP = mean arterial pressure

If Rita's blood pressure was consistently below target, the GFR loss per year would be reduced by 80%

# Lifestyle modification



**Lifestyle approaches are essential in reducing the overall cardiovascular risk - the key elements are:**

- ‘SNAP’ (smoking, nutrition, alcohol, physical activity)
- Stop smoking
  - A low calorie diet to reduce BMI
  - A low salt diet
  - A reduction in alcohol intake
  - Physical activity
  - Weight reduction

Lifestyle modification presents an opportunity to engage the patient in self-management



# Lifestyle effects on BP

Modification	Recommendation	
Weight reduction	BMI 18-24.9 kg/m <sup>2</sup>	4.4mmHg (for 5.1kg weight lost)
Dietary sodium restriction	Reduce dietary sodium intake to no more than 2.4g sodium (or 6g salt)	4-7mmHg (for reduction by 6g in daily salt intake)
DASH diet	Fruit, vegies, low saturated and total fat	5.5-11.4mmHg (5.5 for normotensives 11.4 for hypertensives)
Physical activity	Aerobic activity for 30-60mins/day, 3-5 days/week	5mmHg
Moderate alcohol consumption only	No more than 2 drinks per day (men) or 1 drink per day (women)	3mmHg (for 67% reduction from baseline of 3-6 drinks per day)



# Self management

## Key self management principles include:

- Engaging the patient in decision making and management of their illness
- Allowing the patient to set appropriate and achievable goals
- Using evidence based, planned care
- Improving patient self management support (*e.g. enlisting other health professionals and supports, and better linkages with community resources such as seniors centres, self help groups, skills and support programs*)
- A team approach to managing care

# Lipid lowering & glycaemic control



## Lipids

- Rita's lipids should be assessed
- Lipid-lowering treatment should be considered for CVD risk reduction

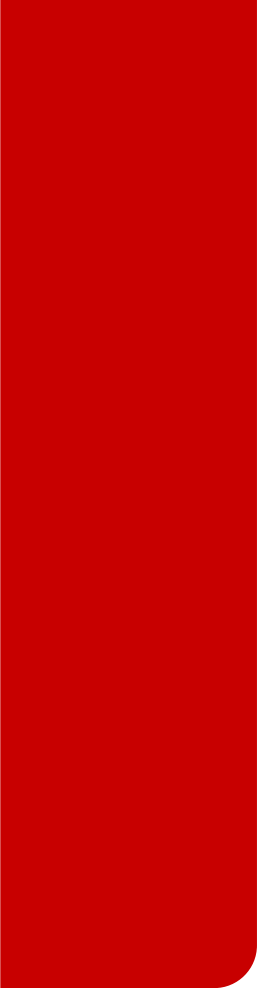
## Glycaemic control

- Rita's glycaemic control should be assessed
- For people with diabetes, blood glucose control significantly reduces the risk of developing CKD, and in those with CKD reduces the rate of progression



# Case study - Question

Q6: Should Rita be referred to a nephrologist?





# Referral is recommended if:

- **eGFR  $< 30\text{mL}/\text{min}/1.73\text{m}^2$**  (stage 4 or 5 of any cause)
- **Persistent significant albuminuria** (urine ACR  $\geq 30\text{mg}/\text{mmol}$ )
- A **sustained decrease in eGFR** of 25% or more OR a sustained decrease in eGFR of  $15\text{mL}/\text{min}/1.73\text{m}^2$ , per year
- **Uncontrolled hypertension** with at least three anti-hypertensive agents



## Clinical tip

Anyone with rapidly declining eGFR and/or signs of acute nephritis (oliguria, haematuria, acute hypertension and oedema) should be regarded as a medical emergency and referred with out delay

Current blood chemistry and haematology

Urine ACR and urine microscopy for red cell morphology and casts

Current and historical blood pressure

Urinary tract ultrasound



# Unnecessary referral if:

- eGFR  $\geq 30$  mL/min/1.73m<sup>2</sup> is stable
- Urine ACR < 30mg/mmol (with no haematuria)
- Controlled blood pressure

The decision to refer or not must **always be individualised**, and particularly in younger individuals the indications for referral may be less stringent.

## Useful tips

- ✓ Pay attention to CVD risk reduction
- ✓ Consider discussing management issues with a nephrologist in cases where uncertainty regarding referral exists.
- ✗ Don't refer to a nephrologist if targets of therapy are achieved
- ✗ Spiral CT angiogram for hypertension is not recommended without specialty advice



## Chronic Kidney Disease (CKD) Management in General Practice

Guidance and clinical tips to help identify, manage and refer patients with CKD in your practice



3rd Edition 2015 • www.kidney.org.au

Prevent, Detect, Support.



# Orange Clinical Action Plan

**eGFR 30-59 mL/min/1.73m<sup>2</sup> with microalbuminuria OR eGFR 30-44 mL/min/1.73m<sup>2</sup> with normoalbuminuria**

- Follow the 'Orange' clinical action plan (found in 'CKD management in General Practice' 3rd ed)
- Cardiovascular risk reduction
- Blood pressure should be consistently below 130/80 mmHg – use of ACE or ARB as appropriate
- Lifestyle modification
- Avoid nephrotoxic medications
- Adjust dose of other medications to levels appropriate for her kidney function
- **No need for Nephrology referral at this stage**
- **Continue to monitor 3-6 monthly**

# Treatment targets for people with CKD

## Clinical factors

Parameter	Target	Treatment
Blood pressure	$\leq 140/90$ mmHg or $\leq 130/80$ mmHg if albuminuria is present (ACR $> 2.5$ mg/mmol males; $> 3.5$ mg/mmol females)	Lifestyle modification ACE inhibitor or ARB
Albuminuria	$> 50\%$ reduction of baseline value	ACE inhibitor or ARB
*Cholesterol	Total $< 4.0$ mmol/L LDL $< 2.0$ mmol/L	Dietary advice statins
Blood glucose (for people with diabetes)	HbA1c $< 7.0\%$ / 53 mmol/mol	Lifestyle modification Oral hypoglycaemic Insulin

\*Clinical guidelines now advise all people with CKD, over the age of 50 years to be prescribed a statin regardless of cholesterol level.





# Case study - Question

Q7: What difference does a CKD diagnosis make if I already manage my patients well?

# CKD diagnosis, management & patient outcomes



The diagnosis of CKD brings with it the need to identify risk reduction measures both for kidney and cardiovascular diseases

- treatment targets and therapy choices may differ with a CKD diagnosis
- early detection and management of CKD complications for better prognosis
- Ensure dosages of all prescribed drugs are appropriate for kidney function and avoid of nephrotoxic medications
- timely referral of CKD patients to a nephrologist



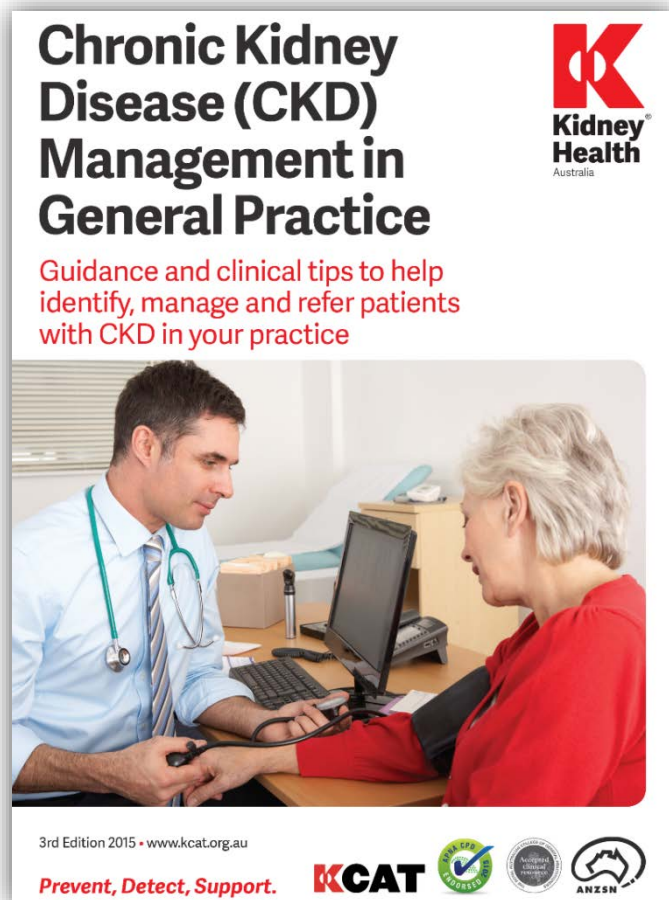
# Summary

- CKD is common, harmful and treatable
- Early detection is beneficial
- Systematically identify patients at high risk of CKD (the 8 risk factors)
- Perform a Kidney Health Check (urine ACR, eGFR, blood pressure) for at risk patients
- Maintain blood pressure consistently below the relevant threshold
- Refer to the CKD staging table and clinical action plans in 'CKD Management in General Practice' booklet
- Most CKD patients can be managed in general practice

# Resources

## CKD management in General Practice

2015 guidelines handbook

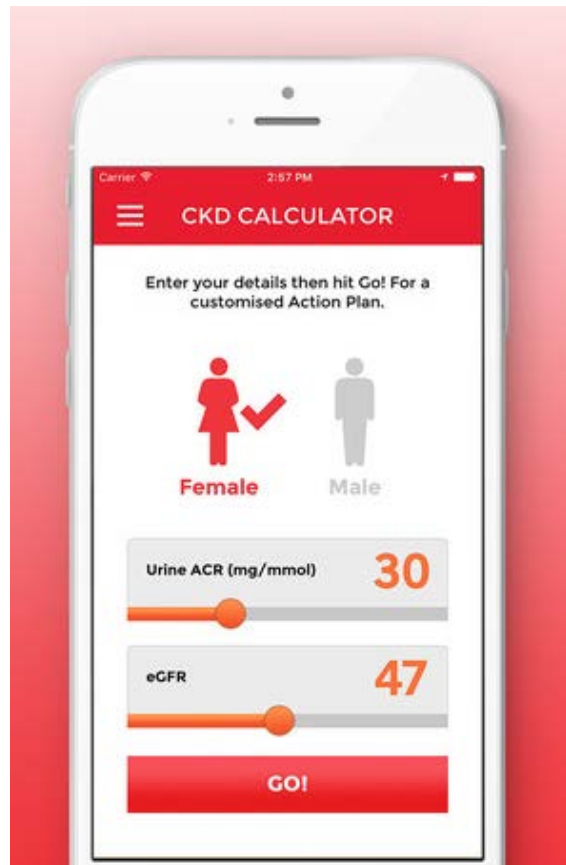


Available at

[www.kidney.org.au/health-professionals](http://www.kidney.org.au/health-professionals)

# Resources

## CKD-GO! Phone App



Rated a  
**'must have' App**  
by Medical  
Observer

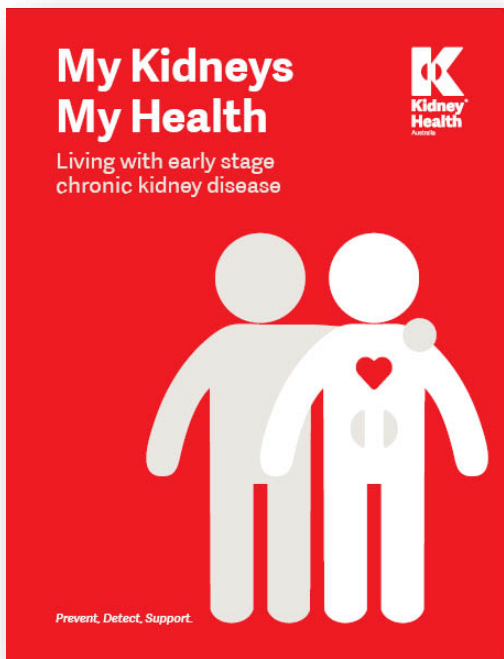
Available on  
iTunes and Google  
Play app stores

All the best bits of the  
*'CKD Management in  
General Practice'* handbook  
now in a handy app!

# Resources

## My Kidneys, My Health Handbook & App

Free resource for patients newly diagnosed with early stage CKD



App available on  
iTunes and  
Google Play app  
stores



Hardcopy books available  
to order visit

[www.kidney.org.au](http://www.kidney.org.au)

# Resources

## CKD patient fact sheets

Available along with more kidney health fact sheets at [www.kidney.org.au](http://www.kidney.org.au)

### HOW TO LOOK AFTER YOUR KIDNEYS

Page 1/4



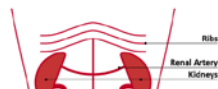
#### WHAT ARE THE KIDNEYS?

The role of the kidneys is often underrated when we think about our health. In fact, the kidneys play an important role in the daily workings of our body. They are so important that nature gave us two kidneys to cover the possibility that one might be lost to an injury. They are so important that with no kidney function death occurs within a few days.

The kidneys play a major role in maintaining your general health and wellbeing. Think of them as a very sophisticated, environmentally friendly waste disposal system, which sorts non-recyclable waste from recyclable waste, 24 hours a day, seven days a week, while also cleaning your blood.

Most people are born with two kidneys, each one about the size of an adult fist, bean-shaped, and weighing around 150 grams. The kidneys are located at both sides of your backbone, just under the rib cage or above the small of your back, and are protected from injury by a large padding of fat, lower ribs and several muscles.

In each kidney, blood is filtered through millions of mini-filters called 'nephrons'. The excess fluid and unwanted chemicals from this filtering process become urine and are passed from the kidneys to your bladder.



### CARDIOVASCULAR DISEASE AND CHRONIC KIDNEY DISEASE

Page 1/4



Cardiovascular disease includes all diseases and conditions of the heart and blood vessels, such as arteries and veins. The most common diseases and conditions include heart attack, heart failure, stroke, blockages in the blood vessels and, vascular kidney disease.

#### RISK FACTORS FOR CARDIOVASCULAR DISEASE

- Age - your risk increases with age. Women are more at risk after menopause as their cholesterol levels increase
- Gender - men are at increased risk
- Family history of CVD
- Hereditary factors such as race - people of Aboriginal and Torres Strait Islander origin are at higher risk
- Depression
- Chronic health conditions (e.g. kidney disease, high blood



Last updated July 2015

#### Fact sheet

### Blood Pressure and Chronic Kidney Disease



#### What is blood pressure?

Blood pressure is the pressure of the blood in the arteries as it is pumped around the body by the heart. Blood pressure does not stay the same all the time. It changes to meet the demands of your body. It is usually at its highest when we exercise and lowest when we sleep. It can also rise due to anxiety, excitement, activity or nervousness.

#### How is blood pressure measured?

Blood pressure is usually measured by wrapping an inflatable pressure cuff around the upper arm. Blood pressure is recorded as two numbers, for example 140/90 mmHg.

The larger number indicates the pressure in the arteries as the heart squeezes out blood during each beat. This is called the systolic blood pressure. The lower number indicates the pressure as the heart relaxes before the next beat. This is called the diastolic blood pressure.



# Resources

## Healthshare fact sheets

Chronic Kidney Disease fact sheets for patients. Available for Medical Director and Best Practice software



### Factsheet

Urinary tract infections

How to look after your kidneys

Kidney Health Check up

GP only – Chronic Kidney Disease

All about Chronic Kidney Disease

Looking after yourself with CKD

Kidney stones

Kidney transplant

Peritoneal dialysis

Consent and kidney tests

Kidney health tests

Kidney cysts

Access for dialysis

Kidney cancer

Treating kidney disease

Homes haemodialysis

Haemodialysis

Life with a single kidney

All about GFR





# Resources

## Kidney Health Information Service

Free call information service  
for people living with kidney  
disease and their families





# Kidney Community...

**KIDNEY COMMUNITY** members receive a **monthly newsletter** from KHA allowing you to access:

- Information and invitations to KHA's education and support activities
- Updates on medical research in kidney disease
- Information on advocacy opportunities and government relations issues
- Information on community and corporate events held by Kidney Health Australia

To join the kidney community,  
email [community@kidney.org.au](mailto:community@kidney.org.au)



# Questions?

**Thankyou for  
participating in this  
workshop**

***Please complete your  
evaluation form before  
leaving.***