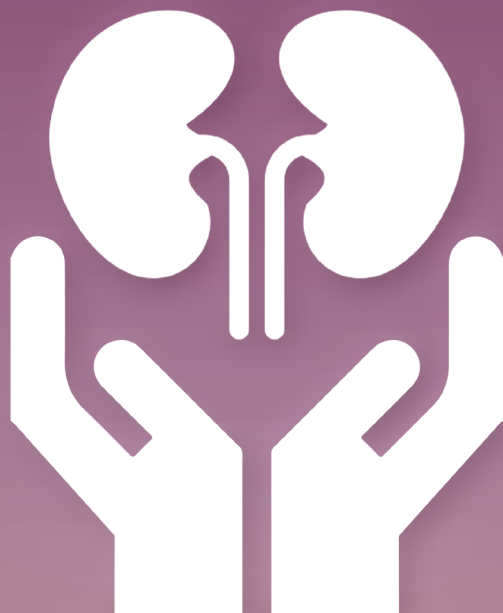


# Protecting your kidneys



The all-in-one booklet

**KING'S**  
*College*  
**LONDON**



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# **Your kidneys explained and chronic kidney disease**

# What do your kidneys do?



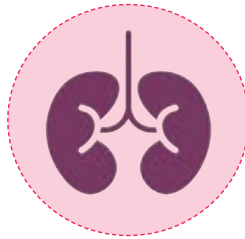
Filter your blood



Balance your salt and mineral levels



Produce hormones  
(which make red blood cells)



Naturally remove medications



Regulate your blood pressure



Make urine



Protect your bone health

# What is Chronic Kidney Disease?



“Chronic” meaning long-term or irreversible



“Kidney disease” meaning damage to your kidneys over time (i.e. they do not work as well as they should do)



Affects 10% of the population (up to 20% in the elderly)



Often people have no symptoms in the early to middle stages



Most common causes are high blood pressure and/or diabetes



Other risk factors include: Smoking, obesity (BMI>30), heart disease, family history of kidney disease



↑ risk of heart attacks and strokes, high blood pressure, kidney failure, high potassium



Your risk of these conditions increases with more advanced disease







# **How we check your kidney health**

# Testing for kidney health: What to expect

## Single blood test

- **Creatinine**
- **Potassium**
- **eGFR**

## Urine test

- Urinary albumin: creatinine ratio (uACR)



— Lower than 3 mg/mmol

— 3-30 mg/mmol

— > 30 mg/mmol

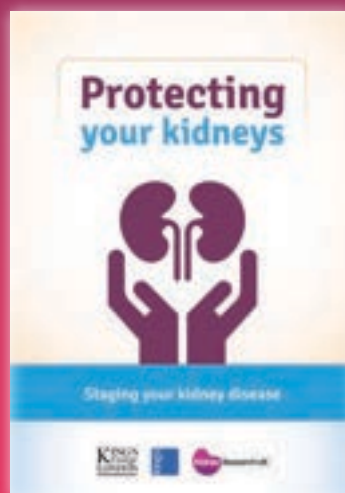
## Additional tests

- Most people will need require a urine dipstick (looking for blood or infection in your urine)
- Some people may require a kidney scan (ultrasound or CT scan)

## For CKD stage 3 or greater

These tests should be done at least once per year (either by your GP or kidney team).

See the '*Staging your kidney disease*' leaflet for more information on CKD stages





## Creatinine:

Creatinine, a waste product from muscle breakdown, is measured by a blood test to assess kidney function. Healthy kidneys filter creatinine out of the blood, so  $\uparrow$  creatinine =  $\downarrow$  kidney function



## Estimated Glomerular Filtration Rate (eGFR):

eGFR estimates how well your kidneys filter blood, measured in mL/min/1.73m<sup>2</sup>. We may refer to it to as your percentage kidney function (e.g. 60mL/min/1.73m<sup>2</sup> = 60%). It decreases slightly with age due to fewer functioning filters in the kidneys (roughly 1% per year).



## Potassium:

Potassium is a vital mineral. Most people with early to middle-stage kidney disease have normal potassium levels, but it can become dangerously high with advanced kidney damage or certain medications.









## Urinary Albumin:Creatinine Ratio (uACR):

UACR, calculated from a urine sample, measures albumin leakage from kidney filters due to damage. High albumin in urine often does not present any symptoms and is linked to faster decline in kidney function and increased heart attack or stroke risk.



# Staging your kidney disease

# Staging your chronic kidney disease

Stages of chronic kidney disease	Combined Kidney Function %	Symptom/implication
<b>STAGE 1</b> kidney conditions with <b>normal</b> kidney function	100 - 90 % 	In the early stages people often have no symptoms. At these stage, CKD is only diagnosed with a kidney-specific condition.
<b>STAGE 2</b> <b>Mild to moderate</b>	89 - 60% 	
<b>STAGE 3a</b> <b>Moderate</b>	59-45% 	Many people have no symptoms at this stage as well. You may only notice an increase in blood pressure.
<b>STAGE 3b</b> <b>No change</b>	44-30% 	
<b>STAGE 4</b> <b>No change</b>	29-15% 	You will likely be referred to a kidney specialist to help manage.
<b>STAGE 5</b> <b>Advanced kidney disease</b>	Less than 15% 	People will be seen in the advanced kidney care clinics to discuss next steps. Some people will choose dialysis and/or a kidney transplant (usually when <10%) or receive supportive care to manage the symptoms comfortably.

Only 1 in 50 people with CKD end up requiring dialysis.

# Symptoms to look out for

Most people have no symptoms until at least CKD stage 4 (less than 30% function).

These symptoms are common and may also be related to a different condition. If concerned please speak to your doctor.



**Fatigue = Tiredness /  
Lack of energy**



**Shortness of breath  
Decreased appetite**



**Leg swelling**



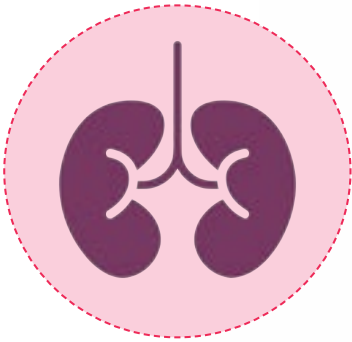
**Muscle cramps**



**Heartburn**



**Itching**



**Poor sleep**



**Bone joint**



**Reduced mobility**





# **Diet and lifestyle recommendations**

# Here are 6 ways YOU can manage living with kidney disease

# Diet and lifestyle tips



## Diet

- Low salt (sodium) intake; maximum 6g
- Hydration (at least 1.5 – 2L per day)



## Exercise

- 150 mins per week – e.g. walking 5 times/ week for 30mins, swimming or anything that is fun and active for you!
- Healthy weight



## Medications

- Taking prescribed medications



## Other lifestyle changes

- No smoking

**i** We realise this can be a lot, so start with 1-3 goals and take it from there!



# Recommended medications

Having well controlled blood pressure and blood sugars (if you have diabetes), helps reduce further kidney damage.

This can be best achieved with lifestyle change and medications.

## Angiotensin-converting enzyme (ACE) inhibitor:

Angiotensin-converting enzyme inhibitors (ACEi) or Angiotensin receptor blockers (ARB) i.e. Drugs ending in “pril” or “sartan” e.g. Ramipril / Lisinopril OR Losartan / Candesartan.

### Aim:

To get you on the maximum dose, as this has been shown to give the greatest protective effects.

### Why:

- Reduce your urine protein (albumin) leak
- Reduce your risk of heart attacks and strokes by up to 30%
- Reduce kidney damage

### Who:

- If you have a urine protein (albumin) leak with reduced kidney function.
- If you have high blood pressure.

### How:

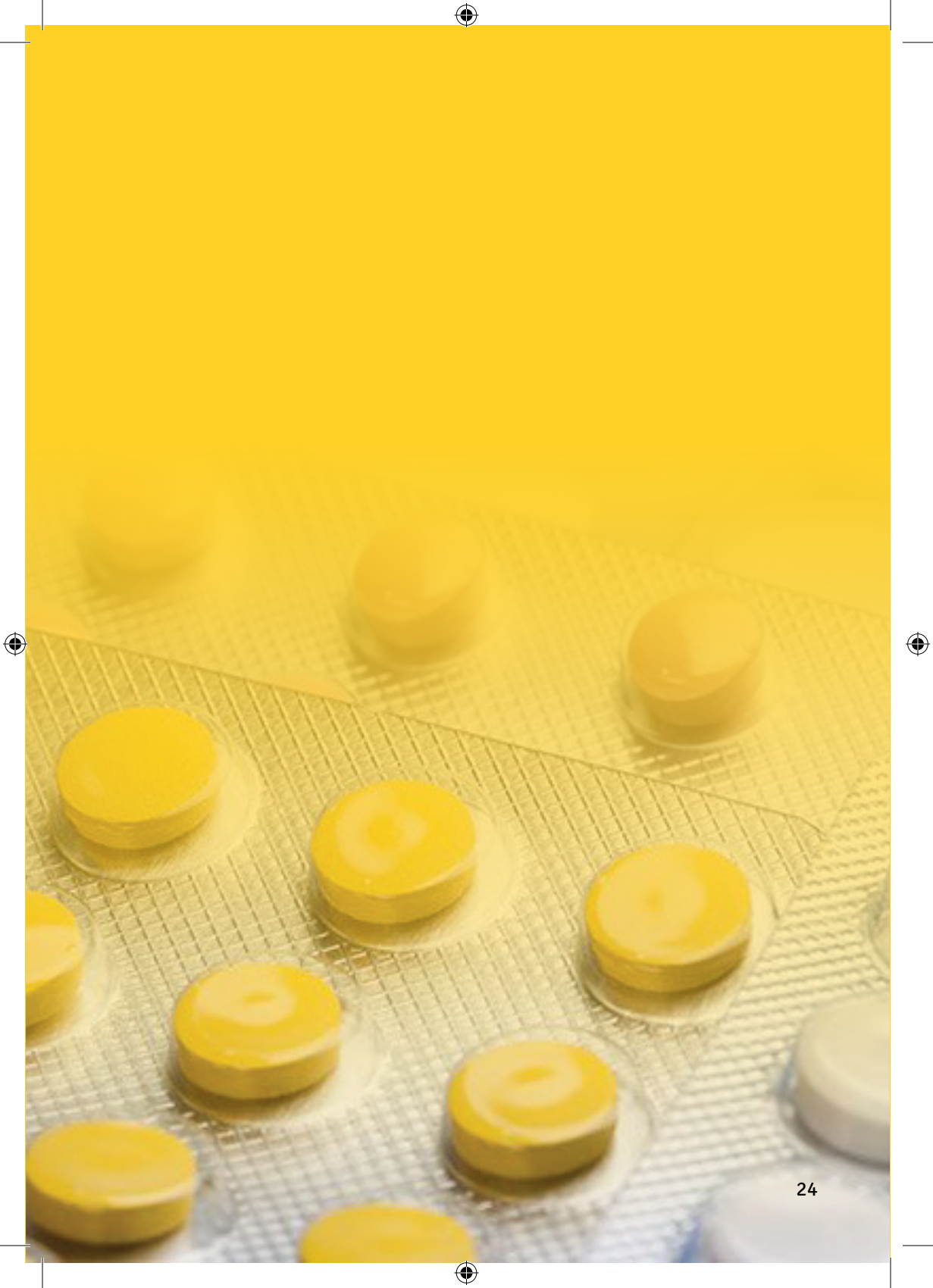
They reduce the pressure in your kidneys. Due to this, sometimes your kidney function initially drops a little at first, so we check your kidney function after 2 – 4 weeks. In the longer term, they have been proven to protect your kidneys.

### Main side effects:

- Dry, tickly cough
- Headaches
- Vomiting or diarrhoea
- Feeling dizzy
- RARELY: Allergic reaction (swelling of your face, mouth or tongue, difficulty breathing)

### Sick day rules

If you have an illness or infection, stop this medication until you feel better!





## Sodium Glucose Co-transporter Receptor 2 Inhibitors (SGLT2i):

i.e. Drugs ending in “flozin” e.g. Dapagliflozin or Empagliflozin.

### Aim:

Works best when added on to an ACEi or ARB at maximum dose.

### Why:

- Reduces urine protein (albumin) leak.
- Further reduces damage to the kidneys
- Reduces the risk of life-threatening heart attacks and strokes

### Who:

- People with a urine protein (albumin) leak, with kidney function between 25-75%

### How:

It reduces pressure in the kidneys. This can help to reduce protein leak and slow kidney damage.

### Main side effects:

- Peeing more than normal
- Feeling thirsty
- Feeling dizzy
- Back pain
- Increased chance of urine infections
- Mild skin rash

low on insulin. It can make you feel sick, thirsty and tired

- Allergic reaction
- **Very Rare (roughly 1 in 100,000 people):** Fournier’s gangrene: You may experience severe pain, tenderness, redness, or swelling. This may be in the groin or area between the legs. You may also have a high fever or feel very unwell.

### Rare:

- Diabetic ketoacidosis (if you have diabetes): your blood becomes more acidic as you run

### Sick day rules

If you have an illness or infection, stop the ‘flozin’ until you feel better!

STATIN  
Tablets

28  
Tablets

STATIN 40 mg

## Statin:

e.g. Atorvastatin or Simvastatin

### Aim:

For everyone with less than 60% kidney function to be on a statin.

### Why:

- Statins Lower the risk of cardiovascular disease when taken for a long time.

### Who:

- All people with kidney function less than 60%.
- Statins may lower your risk of cardiovascular disease even if your cholesterol is normal.
- AND People with greater risk of cardiovascular disease.

### How:

They reduce the amount of 'bad' cholesterol in your blood. This reduces the risk of plaque building up in your blood vessels. They reduce inflammation in some of your arteries.

### Main side effects:

#### Common:

- Headache
- Feeling tired
- Feeling sick
- Dizziness
- Indigestion
- Affected sleep

#### Rare:

- Irritation of the liver (hepatitis)
- Muscle weakness
- Numbness in hands or feet
- Skin problems
- Muscle pain: Muscle swelling and damage

### Sick day rules

If you have an illness or infection, stop the 'flozin' until you feel better!



# Point-of-care Kidney Clinic

# What is Kidney Function Point of Care Testing?



These are **finger-prick (capillary)**  
OR **blood test (venous)**



They are performed using a **portable device**



Capillary samples – requires **5 – 8 blood drops**  
from a single finger-prick



You will get a creatinine, potassium and eGFR  
result **within 5 minutes**

## Why use it?

- ✔ You and the healthcare practitioner see your results straight away.
- ✔ Allows for instant decision making.
- ✔ Keeps you informed on your current kidney function.

# The Point-of-Care Kidney Clinic EXPLAINED

## What is it for?

**We can quickly and safely get you on the maximum dose of your ACE inhibitor or ARB.**

This lets us start you on a flozin (SGLT2 inhibitor). This will protect the health of your kidneys and your heart.

## What does it involve?

1. **Blood pressure check**
2. **Blood test:**
  - a. This can be a finger-prick test
  - b. OR a venous blood test. In both cases, we will get the result within 5 minutes.

## How often should I attend?

- ① **You will need 1 – 5 clinic appointments.**  
Most people will have 2 -3.
- ① The clinics occur every 2 – 4 weeks.

## I feel fine, why should I attend?

**Often with mild to moderate kidney disease you have no symptoms.** With advanced kidney disease (less than 30%) you may develop symptoms and have a higher risk of cardiovascular disease. These medications slow down kidney damage, so you remain feeling well for longer.



2 – 4 week gap in between the 2<sup>nd</sup> appt.



2-4 week gap



You will need to have routine kidney function tests (blood test and urine test) done at least once a year.



## 1<sup>st</sup> clinic:

- You will be met by an advanced nurse practitioner, pharmacist or doctor
- They will explain the clinic process and will give you a 'My Kidney Health' Book
- They will check your blood pressure and check your kidney function (finger-prick or venous blood test)
- Your results will be explained to you and written in your 'My Kidney Health' Book
- Your medication may be changed or you may be started on a new medication depending on your results

## 2<sup>nd</sup> clinic:

- We will repeat the same tests.
- Based on your results we may change or start you on a new medication

## 3<sup>rd</sup> clinic:

- The process is repeated until you have been optimised
- For most people this will involve 2 – 3 appointments. The maximum is 5 (this is uncommon)
- Please remember to bring your 'My Kidney Health' Book to each appointment
- Once completed, you will be discharged from the clinic

# Useful links

## Your kidneys explained and chronic kidney disease

### Facts about your kidneys

Kidney Care UK

<https://kidneycareuk.org/kidney-disease-information/about-kidney-health/facts-about-kidneys/>



### For more detailed information about your kidneys (available in 40 languages)

<https://www.kidneyeducation.com/English/diagnosis-of-kidney-disease/4#High-risk-for-kidney-problems>



## How do we check kidney health

### CKD Health Check

Kidney Care UK

<https://kidneycareuk.org/get-support/free-resources/patient-information-booklets/ckd-health-check-look-after-your-kidneys-and-keep-yourself-well/>



### Kidney Tests

National Kidney Foundation

<https://www.kidney.org/kidney-topics/tests-to-check-your-kidney-health>



## Staging your kidney disease

### Kidney disease stage

Kidney Care UK

<https://kidneycareuk.org/kidney-disease-information/stages-of-kidney-disease/stages-of-chronic-kidney-disease-ckd/>



## Useful links

### Diet and lifestyle recommendations

#### **African & Caribbean Eatwell Guide**

London Kidney Network

<https://kidneycareuk.org/get-support/free-resources/patient-information-booklets/ckd-health-check-look-after-your-kidneys-and-keep-yourself-well/>



#### **South Asian - Kidney Kitchen Magazine**

Kidney Care UK

<https://kidneycareuk.org/get-support/free-resources/patient-information-booklets/ckd-health-check-look-after-your-kidneys-and-keep-yourself-well/>



### Medication recommendations

#### **ACE Inhibitors**

National Kidney Foundation

<https://www.kidney.org/kidney-topics/ace-inhibitors-and-arbs>



#### **SGLT2 inhibitors**

National Kidney Foundation

<https://www.kidney.org/kidney-topics/sodium-glucose-cotransporter-2-sglt2-inhibitors>



#### **What are statins?**

National Kidney Foundation

<https://www.kidney.org.uk/what-are-statins>



# The Point-of-Care (POC) Kidney Clinic



Well done! You've read everything.

**Need a refresh?** Revisit the sections below

