

Chronic Kidney Disease (CKD)

A guide for South East London Primary Care (Adult)

Key messages

1. Check urinary ACR (albumin : creatinine ratio) in all patients at risk of CKD
2. Manage risk factors for patients with CKD: optimise blood pressure and diabetes control, offer statin
3. Up-titrate ACE inhibitors/ARBs (if indicated) to maximum tolerated dose
4. Offer SGLT2 inhibitors to eligible patients

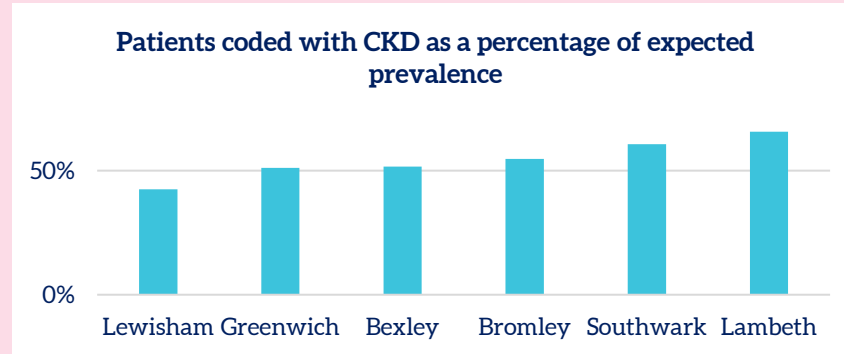
Always work within your knowledge and competency

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CKD is not being diagnosed enough

In South East London (SEL), our CKD registers are **half** their expected size^{1,2}



Patients who have CKD but are **not coded**, have **double the mortality rate** and **double the risk of being prescribed nephrotoxic drugs** compared to correctly coded patients³

CKD is not being managed well enough¹¹

Urine ACR

2/3 of patients with CKD in SEL have **not had Urine ACR checked** in the past year

ACE-I/ARB

1/3 of patients with CKD who have proteinuria are **not on an ACE-I/ARB**

Hypertension

1/3 of patients with CKD have **uncontrolled blood pressure**

Lipid lowering therapy

1/4 of patients with CKD are not on lipid lowering therapy

Impact of CKD

CKD is associated with **reduced life expectancy**, even at early stages⁴

CKD is a stronger **risk factor for cardiovascular** events than diabetes⁴

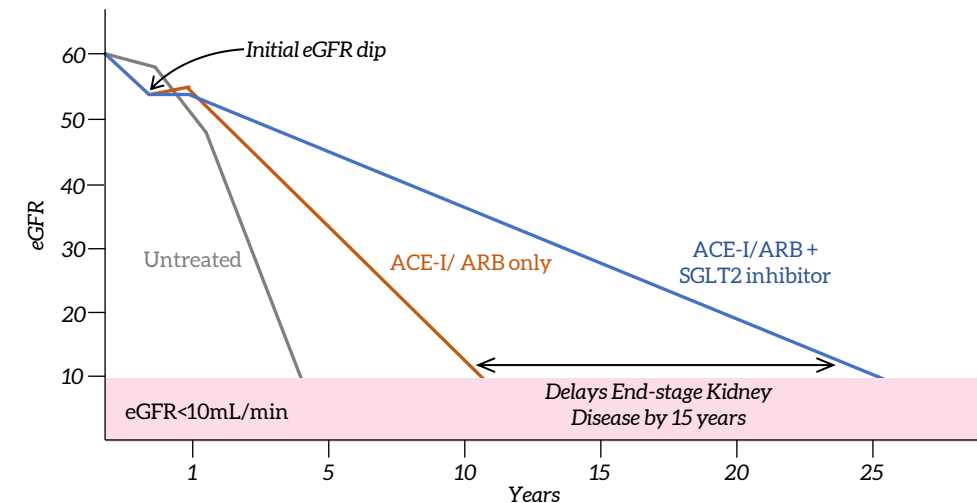
End-stage kidney disease has **worse survival rates than colorectal and breast cancer**⁵

Better treatment is now available for CKD

Dapagliflozin **reduces all cause mortality by 30%** in patients with CKD, and a 37% reduction in significant renal or cardiovascular morbidity⁷

Adding an SGLT2i for patients with diabetes and established nephropathy may **delay their progression** to end-stage kidney disease by 15 years⁶

eGFR fall over time for patients with diabetes and established nephropathy⁶

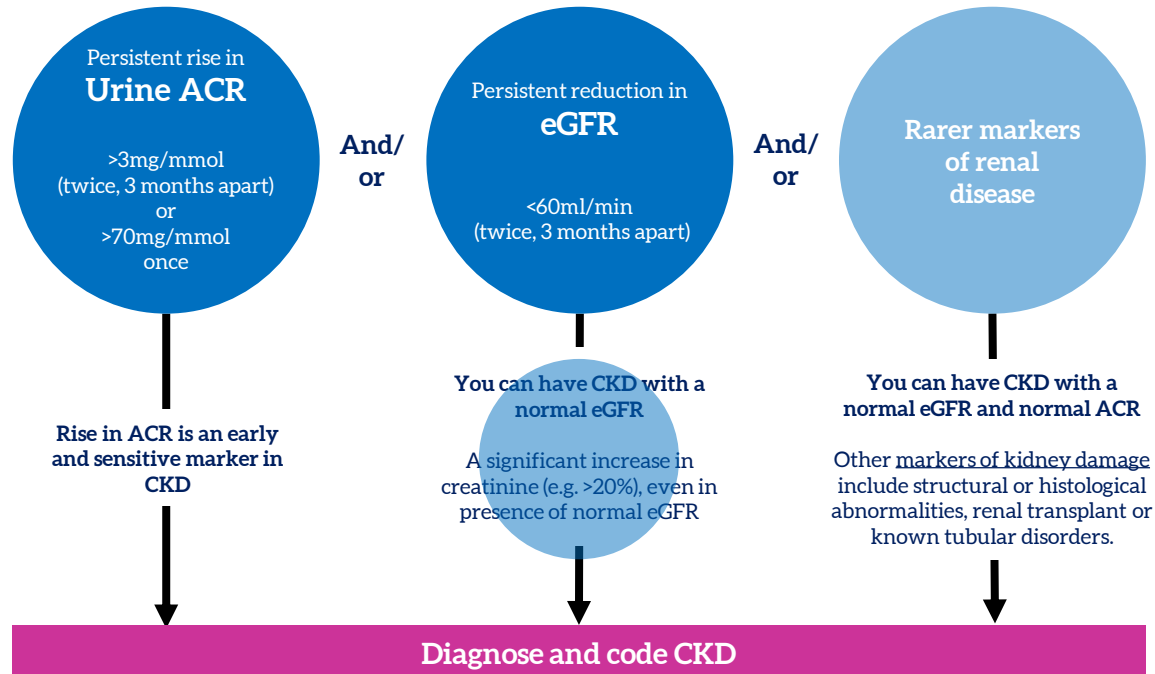


What is CKD?

Definition

Abnormalities of kidney structure or function
present for >3 months
with associated health implications^{8,9}

Diagnosis⁹



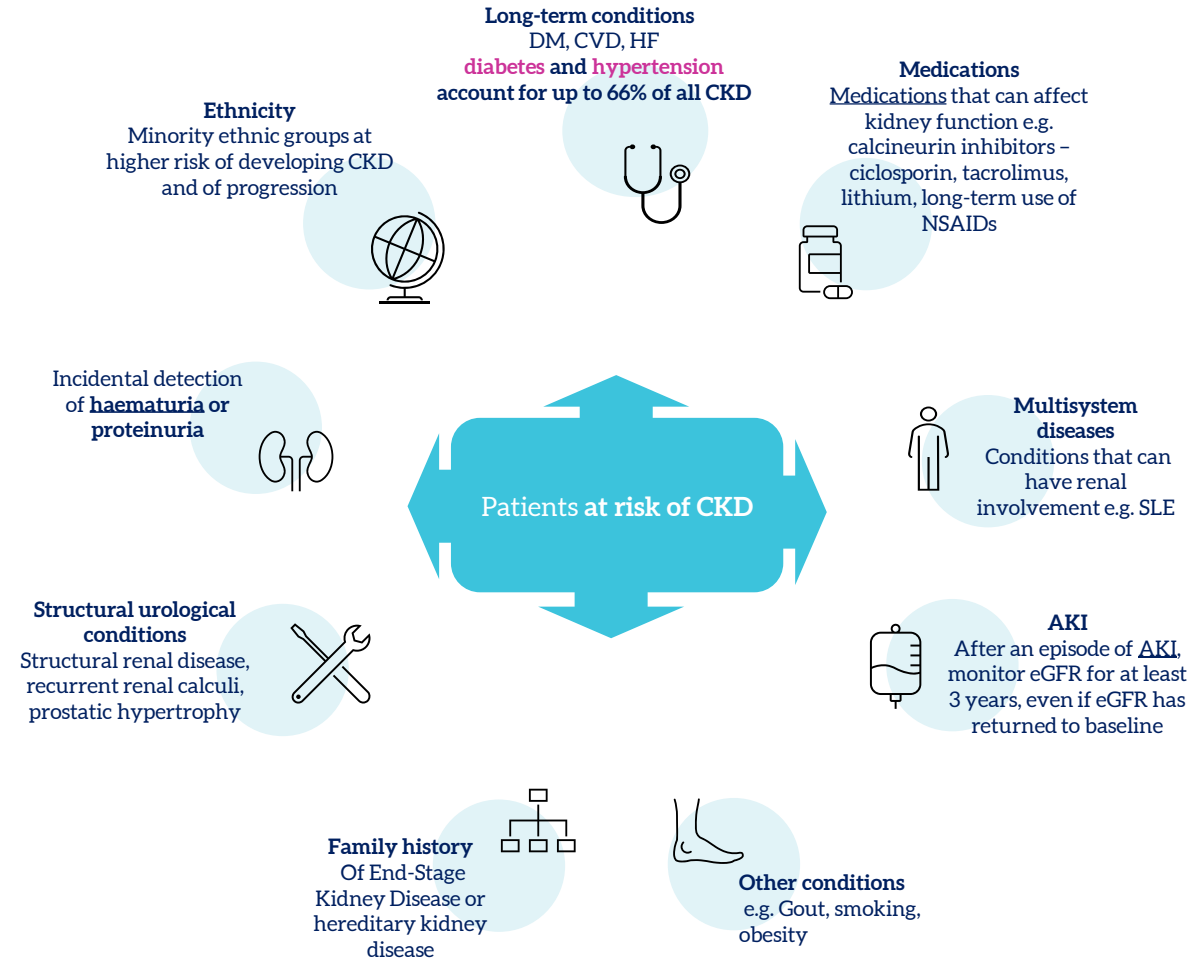
Identify cause to guide treatment

Potential causes include:

- Cardiovascular disease
- HTN
- DM
- Increasing age
- Medications (NSAIDs, lithium, ciclosporin, tacrolimus)
- Glomerulonephritis
- Renal artery stenosis
- ADPKD

Patients at risk of CKD^{9,10}

All these patients should be offered a **Kidney Health Check**

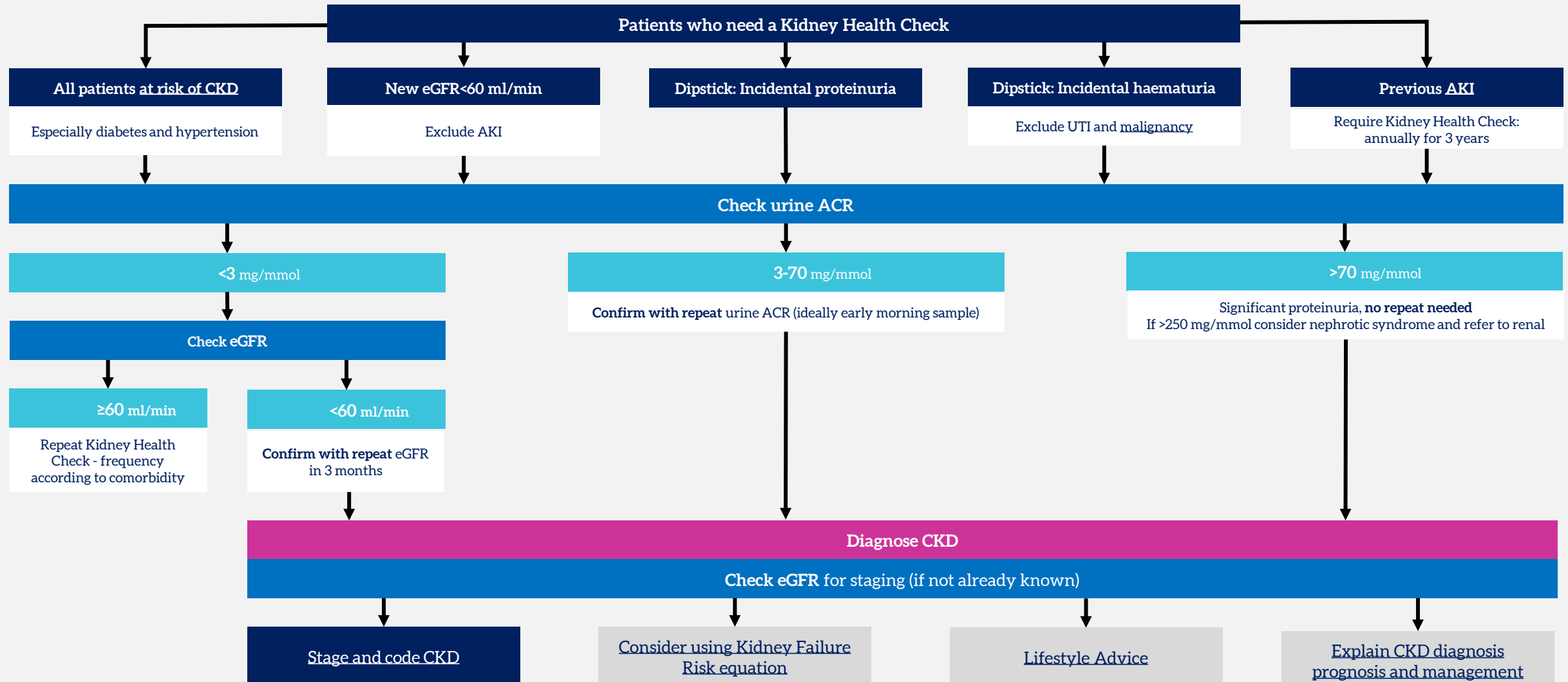


What is Kidney Health Check?

A kidney health check consists of having:
both a urine ACR test and an eGFR

Frequency of kidney health checks

Patients with diabetes - at least annually
Hypertensive patients - Poorly controlled at least annually; well controlled at least 5 yearly
Other risk factors - Use clinical judgement or discuss with renal team



	Urine ACR	eGFR	HbA1c/Lipids	Urine dipstick	BP	Ultrasound (US)	FBC/ Bone Profile/Vit D/PTH
For diagnosis	YES	YES					
To investigate causes and assess risk factors			YES	YES	YES	CONSIDER- see below	
To include in annual review	YES	YES	YES	YES	YES		CONSIDER - see below

Notes on the investigations	<p>If urine ACR result:</p> <ul style="list-style-type: none"> Between 3-70mg/mmol repeat sample to confirm. An early morning sample is ideal but not essential. >70mg/mmol - no repeat needed. The patient has CKD. <p>Albuminuria is an early and key marker of glomerular damage.</p> <p>Factors that may transiently affect ACR:</p> <ul style="list-style-type: none"> Menstruation Strenuous exercise Genital discharge UTI (rarely - always recheck when infection resolved) 	<p>Do not adjust for ethnicity</p> <p>Interpret eGFRs as a trend over time</p> <p>eGFR may be less reliable in:</p> <ul style="list-style-type: none"> AKI Pregnancy Malnutrition Protein supplementation Eating meat 12h before the test High muscle mass Oedematous states, muscle wasting disorders, those with amputation <p>If eGFR is >90ml/min/1.73m², use an increase in serum creatinine concentration of >20% to infer significant reduction in kidney function.</p> <p>Creatinine clearance should be used in patients >75 years and those with a BMI <18 or >40.</p>	<p>Statins are recommended for all patients with CKD – no need for QRISK.</p> <p>HbA1c and lipid blood tests help to assess cardiovascular risk factors which could contribute to CKD progression.</p> <p>If HbA1c or Lipids are raised see relevant section in CESEL Diabetes guides.</p> <p>Atorvastatin is first line.</p> <p>SEL Lipid Management contains more detailed advice.</p>	<p>Incidental haematuria on urine dipstick must be followed up.</p> <p>Non-visible haematuria (NVH) or microscopic haematuria is when there is at least 1+ of blood on dipstick.</p> <p>Visible haematuria (VH) or macroscopic haematuria is commonly caused by UTI, renal calculi, prostatic disease, menstrual contamination, renal tract trauma (e.g. catheterisation), post-surgical or urinary tumours (<5%).²⁵</p> <p>See haematuria outline for further advice, investigations and referrals.</p> <p>Incidental proteinuria- check Urine ACR</p>	<p>NICE targets:</p> <p>If ACR <70mg/mmol 120-139/90mmHg</p> <p>If ACR ≥70mg/mmol or co-existent diabetes 120-129/80mmHg</p> <p>Maintaining BP within target range reduces the progression of CKD and reduces the risk of CVD and mortality.</p> <p>CESEL Hypertension guides</p>	<p>Offer renal tract US in patients with any of:</p> <ul style="list-style-type: none"> <u>Accelerated progression</u> of CKD VH/persistent NVH Symptoms of urinary tract obstruction Family history of Polycystic Kidney Disease (PCKD) eGFR <30 ml/min/1.73m² 	<p>Check FBC regularly in patients with eGFR <45ml/min/1.73m² or if symptomatic. If renal anaemia is suspected then refer to specialist (exclude iron deficiency anaemia first).</p> <p>Calcium/Phosphate/ Vit D/PTH should be monitored if eGFR <30ml/min/1.73m² or if bone disease is suspected.</p> <p>NICE guidance on frequency of monitoring</p>
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Why stage CKD?

CKD should be staged using “CGA” based on cause of CKD (C), GFR category (G) and albuminuria category (A). The higher the stage, the more ‘severe’ the CKD

Staging helps inform:

1. Prognosis (risk of progression): the higher the stage the higher the risk of progression
2. Cardiovascular risk
3. Required frequency of monitoring
4. Management – targets and choice of medications

Risk	Minimum number of eGFR checks per year
Low	0-1
Moderate	1
High	1-2
Very High	2
Very High	2-3
Very High	4-4+

		ACR categories (mg/mmol), description and range		
		<3 Normal to mildly increased	3-30 Moderately increased	>30 Severely increased
		A1	A2	A3
eGFR categories (ml/min/1.73 m ²), description and range	>90 Normal and high	G1 No CKD in the absence of any other markers of kidney damage		
	60-89 Mild reduction related to normal range for a young adult			
	45-59 Mild – moderate reduction	G3a		
	30-44 Moderate - severe reduction	G3b		
	15-29 Severe reduction	G4		
	<15 Kidney failure	G5		

Increasing risk →

↑ Increasing risk

What to tell newly diagnosed patients

If CKD stage 3-5, consider advising patients of their **5-year risk of needing renal replacement therapy** using the **Kidney Failure Risk Equation**, which is equivalent to a ‘QRISK tool’ for the kidneys.

Refer to renal if 5-year risk of needing renal replacement is >5%

Overview of CKD

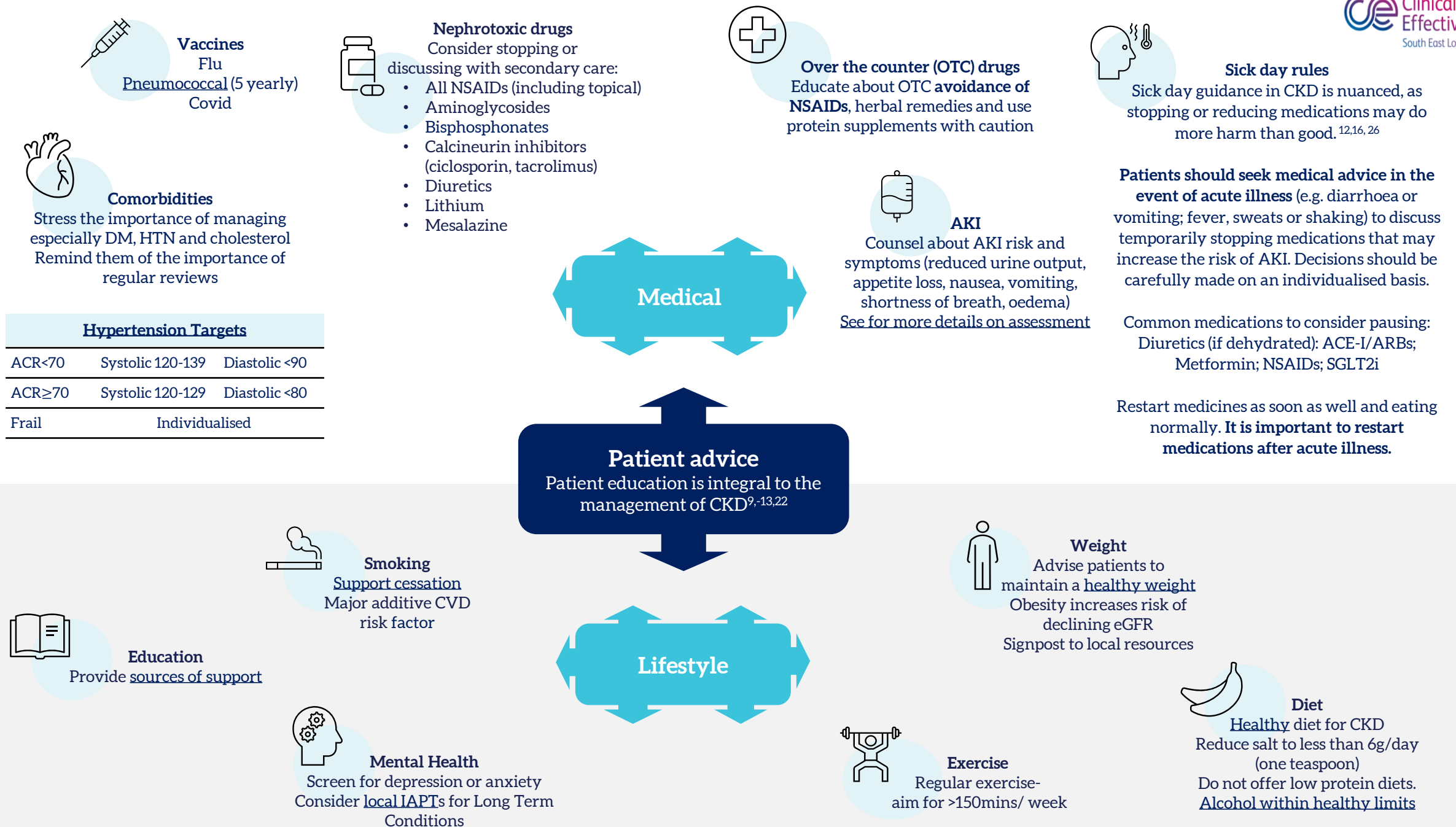
- What kidneys are and their function ([Kidney Care UK](#))
- How kidney function is tested ([Kidney Research UK](#))
- **Know your numbers** – encourage patients to know their urine ACR, eGFR, BP and HbA1c (if relevant)
- The patient’s CKD stage and prognosis
- **CKD is common in the UK - 10% prevalence. Most people are asymptomatic and monitored by the GP**
- **Prognosis: <2% of people with CKD progress to renal replacement therapy (dialysis/kidney transplantation) in 5 years.**
- **Lifestyle advice** – connect them with support services
- Explain medical treatment of CKD
- Importance of regular testing/annual review ([NHS UK – Living with kidney disease](#))

Patient resources

- [Think Kidneys](#) - range of PILS such as [explanation of CKD](#) and [at risk of AKI](#) (including sick day rules)
- [Kidney Care UK](#) – range of PILS with information on medication, grants, travel, dialysis and more
- [Patient.info](#) – PILS
- [Living with CKD](#) (nhs.uk)
- [Kidney Care UK’s National Advocacy Service](#) 01420 541 424 or [online community](#)
- [National Kidney Federation](#) offer a [Free National Kidney Patient’s Helpline](#) 0800 169 09 36
- [Patient information for SGLT2is](#)

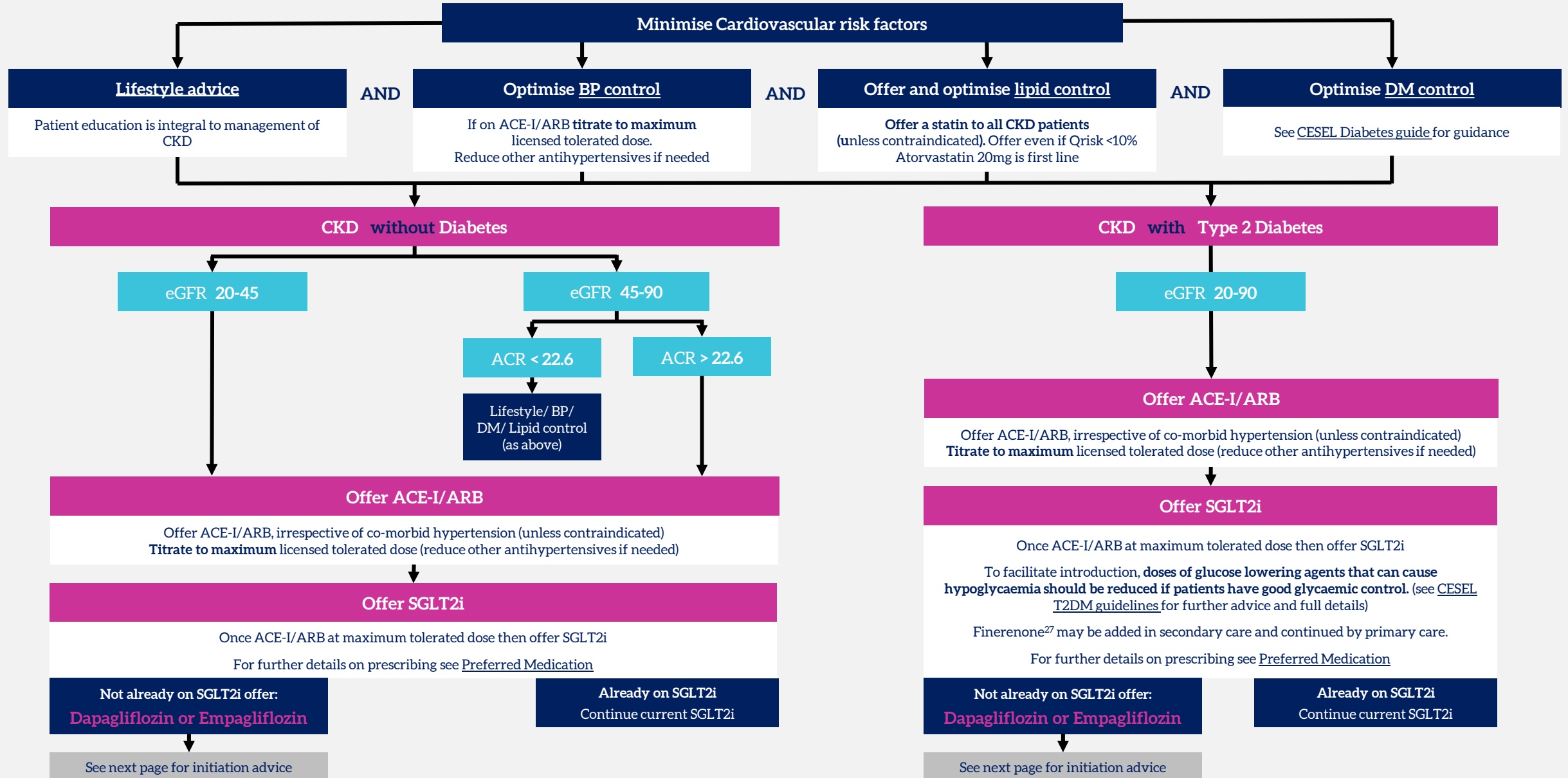
How to code CKD

The [London Kidney Network \(LKN\) Coding in Primary Care](#) guidance highlights the importance of accurate and consistent coding of eGFR, Urine ACR and CKD stage to aid appropriate diagnosis and management of CKD. Expert consensus is that CKD stage should be coded in the format **CKD G(x)A(y)** – e.g. a patient with eGFR 74ml/min and ACR 5.5mg/mol should be coded as ‘**CKD G2A2**.’ The appropriate CKD codes are available in the Ardens’ CKD template.



CKD management outline^{9,15-19, 27, 28}

This management outline does **not** apply to patients with **structural or genetic causes of CKD**, or **Type 1 Diabetes**
This management should be part of a shared decision making process



How to successfully prescribe SGLT2is ^{9,27, 28}

1

1. Check the indication

If initiating an SGLT2i- prescribe **Dapagliflozin or Empagliflozin**

If patient is **already** on an SGLT2i- **continue on current SGLT2i**

To ensure SGLT2i indicated plot your patient's ACR and eGFR on the figures below

For dosing see [preferred medication section](#). For fuller SGLT2i prescribing information see [IMOC guidance](#)

Key:

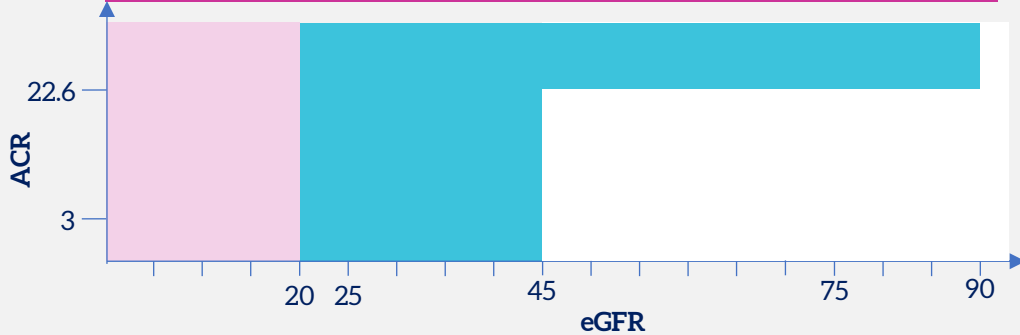
Already on SGLT2i: Continue current SGLT2i

Recommend secondary care support ([detailed criteria](#))

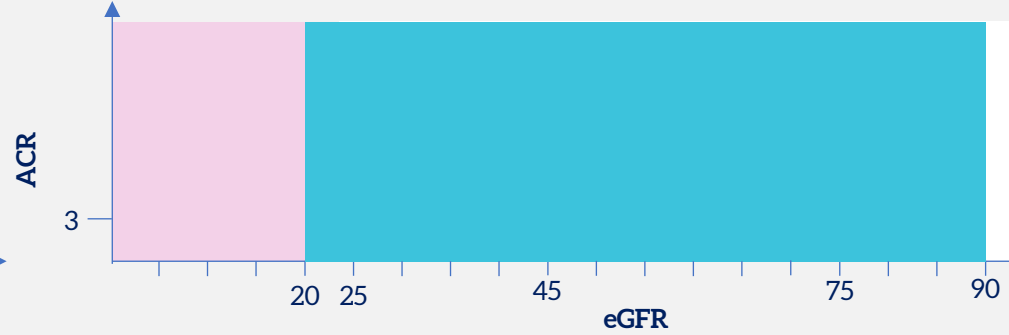
ACE-I + **Dapagliflozin**
or
ACE-I + Empagliflozin

SGLT2i not recommended specifically for CKD

CKD without Type 2 Diabetes



CKD with Type 2 Diabetes



2

2. Check the patient

Cautions

- At risk of volume depletion:
 - Will therefore be at higher risk of DKA
 - For instance: > 85 years old, frail, high dose diuretics
- Recent unexplained weight loss
- BMI < 25
- Recurrent UTIs or genital infections
- History of diabetes for more than 10 years
 - Patients might require insulin before SGLT2i due to reduced insulin reserve. Consider discussion with DM team
- HbA1c > 86 mmol/mol
 - Increased DKA risk and high blood sugars = high urinary sugars. SGLT2i will worsen this so starting will increase risk of UTIs and groin infections
- History of foot disease or ulceration or peripheral arterial disease
- At risk of hypoglycaemia (on insulin or sulphonylurea)

Contraindications

- Active foot disease or foot ulcer
- T1DM (or suspected T1DM)
- History of DKA
- Ketosis prone DM (this is likely clear from history or clinic letters)
- Currently unwell
- Recent major illness or surgery
- Pregnant/ breast feeding
- Excessive alcohol consumption
- Pancreatic disease
- Organ transplant (can still be initiated in secondary care)

3

3. Have an informed discussion

- Benefits of treatment**
 - Slows CKD progression, reduces CVD risk, longer healthier life,
 - Delays progression to end stage renal failure (which has worse prognosis than colorectal cancer) by 15 years
- How to minimize complications**
 - Stay hydrated (caution in HF), avoid hypoglycemia, follow sick day rules, discuss major diet or medication changes, practice good foot care. Reduce DKA risk: avoid very low-carb/ ketogenic diets and alcohol excess
- Side effects- Common**
 - Increased urination. Risk of **urine infections** and **fungal genital infections**. Dehydration. Hypoglycaemia (with insulin/ SU)
- Side effects- Rare**
 - DKA**- Symptoms: sickness, fast pulse, rapid breathing, sweet-smelling breath or urine, confusion, drowsiness, dizziness. Seek urgent medical advice if these occurs
 - Fournier's gangrene** Seek urgent medical advice if you develop genital area pain, swelling or redness
- Sick day rules PILS**
 - Pause SGLT2i if unwell, especially: vomiting, diarrhea, fever, or unable to eat or drink normally. Restart after 48 hours of recovery and eating/drinking normally. Consult a clinician if symptoms last >2 days.

Troubleshooting side effects

- Increased urination: Adjust time taken (eg take in morning if nocturia is problem, take at night if impacting daily activities)
- UTIs/ thrush: Improve hydration, hygiene and DM control; pause when treating UTI/thrush, if recurrent consider stopping
- Non specific: Try alternative SGLT2i

	Drug	Starting dose	Daily Range	Notes (This information is not exhaustive, please refer to the SEL Joint Medicines Formulary for further details and the BNF for additional information especially titration increments/cautions/contraindications)
ACE-I	Ramipril	5mg OD (or 2.5mg OD if 5mg clinically inappropriate**) (1.25mg OD in frail/elderly or CrCl <30ml/min)	1.25mg-10mg OD (max 5mg if CrCl <60ml/min)	<ul style="list-style-type: none"> For people of Black African or African-Caribbean family origin, use ARB instead of ACE-I (as increased risk of angioedema with ACE-I) Check base line U&Es and renal profile (Na/K/Cr/eGFR). Hyperkalemia may occur; therefore close monitoring of serum potassium is required. If serum potassium is greater than 5 mmol/L, do not start treatment with an ACE-I/ARB and seek renal advice Re-check renal profile within 2 weeks of initiation or dose increase and then at least annually Creatine clearance ought to be calculated using Cockcroft and Gault calculator for these medicines, refer to BNF and SPC for further information regarding dosing Titrate ACE-I/ARB up at 2-4 weekly intervals to achieve optimal BP control If eGFR decreases by >25% or creatinine increases by >30%, investigate for other causes of a deterioration in renal function and if no additional cause is found then stop ACE-I/ARB or reduce to a previously tolerated lower dose and recheck levels in 5-7 days. See CKS guidance for further formation
	Lisinopril	10mg OD 2.5mg-5mg OD if CrCl <30ml/min	2.5mg-80mg OD (20mg for HTN maintenance)	
ARBs	Losartan	50mg OD (25mg OD in frail/ elderly or those taking diuretics)	25mg-100mg OD	<ul style="list-style-type: none"> ACE-I/ARB dose should be optimised before the addition of a second agent Side effects: symptomatic hypotension can occur on first dosing – suggest take at night. Dry cough with ACE-I, consider switch to ARB Caution: Do not combine ACE-I and ARB without specialist advice ACE-I and ARBs should be avoided in pregnancy unless essential. See BNF and SPC for further information on pregnancy/breastfeeding and hepatic impairment Multiple drug interactions, refer to BNF before initiating treatment To start at Ramipril 5mg dose patients need to have low falls risk, normal or high BP, be clinically stable and have few or no comorbidities. Advise to stay well hydrated and review if dizzy or unwell. Use clinical judgement.
	Candesartan	8mg OD (4mg OD in frail/ elderly or those taking diuretics)	4mg-32mg OD	
	Irbesartan	150mg OD 75mg OD for >75 years	75mg – 300mg OD	
SGLT2i	Dapagliflozin Indicated for CKD	10mg OD	10mg OD	<p>For full information please see SEL Guide for Prescribing SGLT2i in HbA1c Management in Adults with T2DM and CESEL Diabetes Guide</p> <ul style="list-style-type: none"> Recommended in line with individual NICE TAs. Dapagliflozin: (NICE TA1075), Empagliflozin: (NICE TA942) Dapagliflozin can be taken orally, once daily, at any time of day, with or without food. Canagliflozin can be taken orally, once daily, preferably before breakfast. Empagliflozin can be taken orally, once daily with or without food. Contraindications: Hypersensitivity to the active substance or excipients and DKA. Active foot disease or foot ulcer, T1DM (or suspected T1DM), History of DKA, Ketosis prone DM (this is likely clear from history or clinic letters), Currently unwell, Recent major illness or surgery, Pregnant/ breast feeding, Excessive alcohol consumption, Pancreatic disease and Organ transplant. Refer to the SPC and BNF Caution: DKA, Elderly, hypotension, risk of volume depletion. Refer to BNF and SPC Use in caution in patients for: <ul style="list-style-type: none"> Whom SGLT2i induced drop in blood pressure could pose a risk (SPC) BMI <25 People diagnosed with, or at risk of frailty DKA- review DKA risk factors and address modifiable risk factors. Note DKA can occur with normal glucose levels with SGLT2i (euglycemic ketoacidosis) MHRA/CHM advice: <ul style="list-style-type: none"> SGLT2i: Risk of diabetic ketoacidosis (April 2016), Fournier's gangrene (necrotising fasciitis of the genitalia or perineum) (Feb 2019), monitor ketones in blood during treatment interruption for surgical procedures or acute serious medical illness (March 2020), increased risk of lower-limb amputation (mainly toes) (March 2017) particularly with canagliflozin Common side effects: Increased risk of UTI and genital infections. For full side effect profile refer to the BNF, and SPC Interactions: Multiple drug interactions. Risk of hypotension and hypoglycaemia. See BNF before initiating treatment, currently no severe interactions known. Hepatic impairment: Dapagliflozin: use with caution in severe impairment (BNF). Canagliflozin and Empagliflozin: not recommended for patients with severe hepatic impairment (BNF) Renal impairment: Dapagliflozin: eGFR <25ml/min- do not initiate (SPC). eGFR <25ml/min- seek specialist advice (BNF). Canagliflozin: Do not initiate if eGFR <30ml/min. Empagliflozin: Avoid initiation if eGFR <20ml/min (BNF) Pregnancy and breastfeeding: Avoid- toxicity reported in animal studies (BNF) Sick day rules for T2DM: Please refer to Trend T2DM sick day rules
	Empagliflozin Indicated for CKD	10mg OD	10mg OD	
	Canagliflozin Continue if patient already taking, not recommended for initiation. Approved for use for diabetic kidney disease as per NICE guideline NG28	100mg OD	Initiate with 100 mg OD. Patients tolerating 100 mg and requiring additional glycaemic control, dose can be increased to 300 mg OD 100mg – 300mg OD (max 100 mg once daily when eGFR less than 60ml/min)	

	Drug	Starting dose	Daily Range	Notes (This information is not exhaustive, please refer to the SEL Joint Medicines Formulary for further details and the BNF for additional information especially titration increments/cautions/contra-indications)
Statin	Atorvastatin	20mg OD	20-80mg OD	<ul style="list-style-type: none"> • Increase up to 80mg to achieve target cholesterol (max dose 40mg if eGFR<30ml/min). NICE recommend aiming for a 40% fall in non-HDL cholesterol levels • Seek specialist advice if eGFR <30ml/min, liver disease, untreated hypothyroidism, heavy drinker • CI in pregnancy, breast feeding, avoid or address contraceptive needs for women of childbearing age. Advise patient to stop treatment, 3 months before conception • Multiple drug interactions refer to BNF before initiating treatment- avoid grapefruit juice • Advise patient to visit GP if they experience unexplained muscle pains • Refer to SELIMOC Guidelines on Lipid Management if Atorvastatin contraindicated or not tolerated.
Non-steroidal mineralocorticoid receptor (MR) antagonist	Finerenone Indicated for CKD (stage 3&4 with albuminuria) associated with T2DM in adults.	Serum potassium and eGFR have to be measured to determine if finerenone treatment can be initiated and to determine the starting dose. Refer to BNF and SPC If serum-potassium ≤5 mmol/L and eGFR ≥60 mL/min: 20mg OD If serum-potassium ≤5 mmol/L and eGFR 25 to 59 mL/min: 10mg OD If serum-potassium >5 mmol/L or eGFR <25 mL/min: Not recommended	10mg to 20mg OD	<ul style="list-style-type: none"> • Finerenone is indicated for CKD (stage 3 & 4 with albuminuria - ACR that is persistently 3 mg/mmol or more) associated with T2DM in adults. It should be prescribed in line with the NICE [TA 877]- March 2023. • Finerenone is currently RAG rated as Amber 2 and will be started in secondary care. Primary care may be asked to continue prescribing after 6 months. • Initiation of treatment: Serum potassium and eGFR have to be measured to determine if finerenone treatment can be initiated and to determine the starting dose. Dose to be adjusted based on serum potassium and eGFR; refer to the SPC for guidance on dose adjustments, interruption, or discontinuation • Continuation of treatment: Serum potassium and eGFR should be remeasured 4 weeks after initiation or re-start of finerenone treatment or increase in dose, Refer to SPC for further information. • Missed Dose: A missed dose should be taken as soon as the patient notices, but only on the same day. The patient should not take 2 doses to make up for a missed dose. • Elderly: No dose adjustment needed. • CI: Addison's disease; strong inhibitors of CYP3A4 and hyperkalaemia. Do not initiate treatment if serum-potassium > 5 mmol/L and withhold if serum-potassium increases to > 5.5 mmol/L during treatment. Refer to BNF and SPC for further information. • Common side effects: hyperkalaemia; electrolyte imbalance; hypotension; pruritus. For full side effect profile refer to the BNF and SPC • Interactions: Multiple drug interactions, refer to BNF before initiating treatment- avoid grapefruit and grapefruit juice. Consider temporary discontinuation of finerenone if the patient is prescribed trimethoprim or co-trimoxazole until treatment course complete due to risk of hyperkalaemia • Hepatic Impairment: Avoid in severe impairment. Consider additional serum-potassium monitoring in moderate impairment. Refer to SPC • Renal Impairment: Serum potassium and eGFR should be remeasured 4 weeks after initiation or re-start of finerenone treatment or increase in dose. The risk of hyperkalaemia increases with decreasing renal function. Ongoing monitoring of renal function should be performed as needed according to standard practice. Finerenone treatment should be discontinued in patients who have progressed to end-stage renal disease (eGFR < 15 mL/min. Refer to SPC • Contraception in females: Women of childbearing potential should use effective contraception during treatment with finerenone • Pregnancy and breastfeeding: Avoid • Swallowing difficulties: Kerendia® tablets may be crushed and mixed with water or soft foods, such as apple sauce, immediately before oral use.

Acute kidney injury (AKI)^{12,13,22}

AKI Definition

- A rise in serum creatinine of ≥ 26 mmol/L within 48 hours **OR**
- A $\geq 50\%$ rise in serum creatinine (>1.5 times baseline) within the past 7 days **OR**
- A fall in urine output < 0.5 ml/kg/hour for more than 6 hours in adults

Why is early AKI detection important? AKI is associated with high inpatient mortality rates (20-35%), incomplete recovery of kidney function and poor long-term outcomes (reduced life expectancy and increased CVD risk)

Who is at risk of AKI? Those with:

- Evidence of sepsis, dehydration, other symptoms such as nausea, vomiting, confusion, fatigue
- Prior history of AKI or CKD
- Long-term conditions such as heart failure, liver disease, diabetes
- Recent iodine contrast or nephrotoxic drug use (includes DAMN drugs: Diuretics, ACE-I/ARBs, Metformin, NSAIDs)

How to assess and manage AKI (see RCGP AKI toolkit for advice)

- Respond to AKI warning stage test results within an appropriate timescale as per [NICE advice](#)
- Identify the cause of AKI and treat as appropriate
- Review medications: use the [BNE](#) for dosing advice in patients with AKI or CKD
 - Consider withholding DAMN drugs (see above). [List of potentially problematic drugs](#).
 - Consider reducing dose of medicines which need renal adjustment
- Add **EMIS AKI code** and consider adding warning to notes
- Repeat blood tests and reassess U&Es: frequency depending on clinical need but certainly at 3 months
- Counsel patient: which medications to restart and to avoid, provide a [patient information leaflet](#)

After an episode of AKI, **monitor eGFR for at least 3 years** (at least annually), even if eGFR has returned to baseline
Ensure regular medications are restarted

Hyperkalaemia (Potassium > 5.5 mmol/l)²¹

Mild hyperkalaemia	5.5 – 5.9 mmol/l	If clinically well, → repeat renal profile within 3 days If unwell or suspected AKI → urgent hospital assessment
Moderate hyperkalaemia	6.0 – 6.4 mmol/l	If clinically well → repeat renal profile within 1 day If unwell or suspected AKI → urgent hospital assessment
Severe hyperkalaemia	≥ 6.5 mmol/l	Refer to A&E for urgent assessment

Monitoring: Patients at risk of hyperkalaemia should be monitored 2-4 times/year, especially those with CKD, previous AKI, diabetes or HF

Interventions (See Renal association hyperkalaemia guidance for more detailed advice)

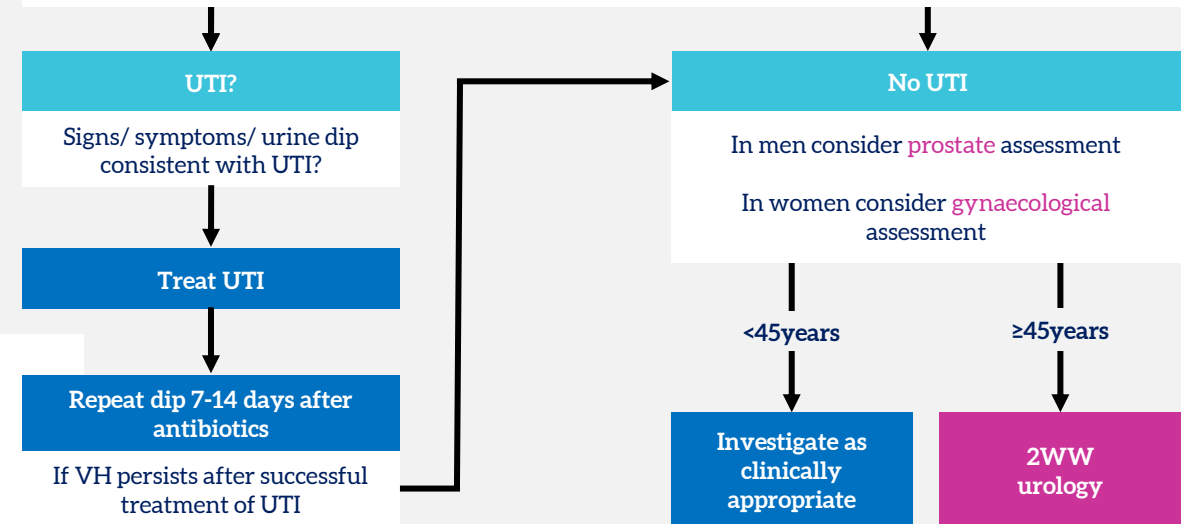
- Low Potassium (K^+) diet → offer [dietary advice](#) in those with a $K^+ > 5.5$ mmol/l
- Medication review → ACE-I/ARB, K^+ sparing diuretics, K^+ supplements, Trimethoprim, NSAIDs and non-selective beta-blockers are commonly implicated in hyperkalaemia
 - Hyperkalaemia in patients with ACE-I/ARB:** increase frequency of monitoring if $K^+ 5.5 - 5.9$ mmol/l and consider dose reduction of implicated drugs. **Stop** ACE-I/ARB if $K^+ \geq 6.0$.
 - Withhold ACE-I/ARB during acute illnesses at **all severities of hyperkalaemia**
- Consider initiating loop diuretics in chronic hyperkalaemia to promote urinary K^+ excretion
- Whilst currently not common practice, expert guidance is to check sodium bicarbonate level to assess for [metabolic acidosis](#) and treat if sodium bicarbonate is < 22 mmol/l. See section 6.1 in [Renal association guidance](#).

If ongoing hyperkalaemia despite interventions, refer to renal team

Haematuria outline¹⁴

Visible haematuria (VH)

This is a simplified overview
See [NICE NG12](#) for full details



Non-Visible haematuria (NVH)

There are no nationally or locally agreed guidelines on the investigation or management of [NVH](#) beyond NG12 which advises **2WW urology** referral if patient is:

- over 60 years** old with
- unexplained NVH** and with
- Dysuria **OR** raised white cell count

In patients with NVH: Assess fully for UTI. Ensure follow up in place. Consider checking **BP, renal profile and urinary ACR**.

Consider the need for **urological, renal or gynaecological investigations and/or referral**

Consider **urgent** renal referral (or discussion)

ACR >250 mg/mmol- consider nephrotic syndrome

eGFR < 15 ml/min (G5)

AKI (without an obvious cause manageable in primary care)

Multisystem disease suspected with evidence of renal involvement

Hypertension accelerated/ malignant

Severe hyperkalaemia > 6.5 mmol/l

Consider routine renal referral

ACR >30 mg/mmol with haematuria (follow [haematuria outline](#) in addition)

>70 mg/mmol (unless known to be caused by diabetes and already appropriately treated)

eGFR 15-29 ml/min, (G4) particularly if new

ACE-I/ARB induced fall in eGFR > 25%, or >30% rise in creatinine

Accelerated progression of CKD (eGFR 30-59 ml/min):

- Persistent decrease in eGFR of ≥25% and a change in CKD category within 12 months
- Or a persistent decrease in eGFR of 15ml/min within 12 months

Normal eGFR but evidence of kidney disease (e.g. genetic diagnosis, associated urinary abnormalities) or rapidly progressive renal impairment

Uncontrolled BP >150/90 mmHg on 4 agents at therapeutic doses

Unexplained anaemia – Hb <110 g/L or symptomatic

Renal bone disease suspected - abnormal potassium, calcium or phosphate

Non-visible haematuria unexplained (not meeting 2WW criteria or negative urological investigations)

5-year risk of needing renal replacement therapy > 5% (measured using the [4-variable Kidney Failure Risk Equation](#))

Rare or genetic causes of CKD (known or suspected)

Consider Advice & Guidance or Consultant Connect

Unclear cause of CKD

Difficulty interpreting investigations

Renal Advice and Referrals

All **urgent referrals** should be discussed with the renal registrar on-call

- Guy's: 07789 505 184 (Direct) / 0207 188 3026 (via Switchboard) for renal SPR on call
- King's: 0203 299 9000 and ask for Bleep 622 or Renal SPR on call
- UHL: does not accept urgent referrals

Consultant connect GSTT/KCH- Renal Medicine, UHL- Ambulatory Care

Non-urgent advice: eRS 'Advice & Guidance' or Refer to the following clinics via eRS

GSTT

Chronic Kidney Disease (CKD)

Nephrology – GSTT

General Nephrology and Renal Medicine – UHL

KCH

Nephrology clinic – Queen Elizabeth Woolwich

Nephrology CAS – Renal KCH

Nephrology CAS – Renal PRUH

Referral form (on DXS): 'SEL Nephrology and CKD Referral Form Final

Bromley: use Referrals Optimisation Protocol: Nephrology/referrals

For Diabetes team contact information see [CESEL guides](#). For Heart failure contacts see local resources.

When to refer to Urology

Urology 2ww criteria (see [haematuria section](#) and [NICE NG12](#))

Obstructive uropathy/renal outflow obstruction - Should usually be referred to urology unless urgent medical intervention is needed for the metabolic effects of renal failure e.g. hyperkalaemia, symptomatic uraemia or fluid overload

Dialysis information

List of dialysis units at GSTT [Kidney dialysis - Dialysis units | Guy's and St Thomas' NHS Foundation Trust](#) (guysandstthomas.nhs.uk)

List of dialysis units at KCH [Renal - King's College Hospital NHS Foundation Trust](#) (kch.nhs.uk)

The following tasks may be done by administrators, social prescribers, care co-ordinators, HCAs, nurses, pharmacists, physician associates or GPs – depending on practice pathways and staff availability
Contact CESEL team for advice and information on searches and quality improvement support

Tasks		Tools/support
1. Maintaining the CKD register (prevalence improvement)	Unknown CKD Patients at risk of CKD without a recent Urine ACR/ eGFR	<ul style="list-style-type: none"> EMIS searches e.g. QOF/Ardens
	Uncoded CKD Ensure CKD is coded [Coding TBC]	
	How to get renal profile and Urine ACR	<ul style="list-style-type: none"> During consultations Send text with request Medication reviews/note on prescription Secondary care resources: Cerner, clinic letters
	How to get BP readings	<ul style="list-style-type: none"> HBPM: AccuRx florey, eConsult hypertension review Secondary care sources: Cerner, London Care Record, clinic letters Hypertension Check Service by Community Pharmacy
2. Call/Recall	Prioritise high risk patients	<ul style="list-style-type: none"> EMIS searches e.g. Ardens Text messaging service e.g. AccuRx, Mjog, iPLATO Patient letters Telephone call
	Pre-patient review <ul style="list-style-type: none"> Arrange bloods (renal profile, lipids + HbA1c to assess for CVD risk factors , FBC for renal anaemia and bone profile/Vit D/PTH for renal metabolic disease – depending on CKD stage or clinical suspicion) Arrange urine ACR Arrange BP measurement and pulse check (in practice/machine at home/pharmacy) Book appointment for annual review 	
3. CKD review (at least annually)	<ul style="list-style-type: none"> History: patient concerns Review investigations: BP*, blood and urine results. Urine dipstick to check for haematuria, if present <u>follow pathway</u> Ensure correct CKD stage is coded Discuss risk-reduction and offer lifestyle advice: BMI*, smoking*, alcohol*, diet, activity. Advise on increased risk of AKI if unwell Mind and body: consider screening for mental health conditions* Medications review: concerns, side-effects, adherence. Identify potential nephrotoxic drugs and adjust doses of medications according to renal profile. Caution use of NSAIDs. Ensure medications are appropriately reconciled and titrated after hospital admissions. Immunisations: ensure up to date with influenza, pneumococcal (5 yearly) and Covid 19 Refer to secondary care if eGFR<30 mL/min/1.73 m² or accelerated CKD progression Check for other long-term conditions e.g. diabetes and hypertension * These indicators make up the Vital5 which are key factors to improve individual and population health outcomes. 	In practice consultations <ul style="list-style-type: none"> F2F or remote consultation using a CKD template e.g. Ardens Structured medication review with pharmacist Out of practice consultations <ul style="list-style-type: none"> Home visiting team Out of hours primary care services Secondary care
	Follow-up The frequency of monitoring depends on their <u>CKD stage</u> .	Set up recall with EMIS template or text messaging service

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SEL Approval: July 2025. Visit <https://www.selondonics.org/icb/healthcare-professionals/> for future details of the CESEL support offer.

Abbreviations

2WW – 2 week wait

A&E – Accident and Emergency

ACE-I– Angiotensin converting enzyme inhibitor

ACR – Albumin-Creatinine Ratio- Units mg/mmol throughout guide

ADPKD – Autosomal Dominant Polycystic Kidney Disease

AKI – Acute Kidney Injury

ARB – Angiotensin II Receptor Blocker

BMI – Body Mass Index

BNF – British National Formulary

BP – Blood Pressure

CESEL – Clinical Effectiveness South East London

CGA - CKD should be staged using “CGA” based on Cause of CKD (C), GFR category (G) and albuminuria category (A).

CI - Contraindication

CKD – Chronic Kidney Disease

CHM – Commission on Human Medicines

CV - Cardiovascular

CVD – Cardiovascular Disease

DKA –Diabetic Ketoacidosis

DM – Diabetes Mellitus

ECG - Electrocardiogram

eGFR – Estimated Glomerular Filtration Rate- Units ml/min throughout guide

EMIS – Electronic patient record system used in general practice

ESKD – End-Stage Kidney Disease

F2F – Face to Face

FBC – Full Blood Count

FH – Family History

GP – General Practitioner/ Practice

GPEA – GP Extended Access

GSTT – Guy’s and St Thomas’ NHS Trust

Hb - Haemoglobin

HbA1c – Haemoglobin A1c

HF – Heart Failure

HTN - Hypertension

IAPT – Improving Access to Psychological Therapies programme

K⁺ – Potassium

KCH – King’s College Hospital NHS Trust

MHRA – Medicines and Healthcare products Regulation Authority

NICE – National Institute for Health and Care Excellence

NSAIDs – Non-Steroidal Anti-Inflammatory Drug

NVH – Non Visible Haematuria

OD – Once Daily dosing

OTC – Over The Counter

PCKD – Polycystic Kidney Disease

PILS – Patient Information Leaflets

PRUH – Princess Royal University Hospital

PTH – Parathyroid Hormone

QOF – Quality and Outcomes Framework (contract)

QRISK – an algorithm that predicts 10-year CVD risk. EMIS is currently using QRISK2 (although QRISK3 was released in 2017)

SEL – South East London

SGLT2i – Sodium/Glucose Cotransporter 2 inhibitor

SLE – Systemic Lupus Erythematosus

SPC – Summary of Product Characteristics

SPR – Specialist Registrar

U&E – urea and electrolytes

UHL – University Hospital Lewisham

US – Ultrasound

UHL- University Hospital Lewisham

UTI – Urinary Tract Infection

VH – Visible Haematuria

Vit D – Vitamin D

Making the right thing to do
the easy thing to do.