

# Sheffield Chronic Kidney Disease Management in Adults a Guideline for Primary Care

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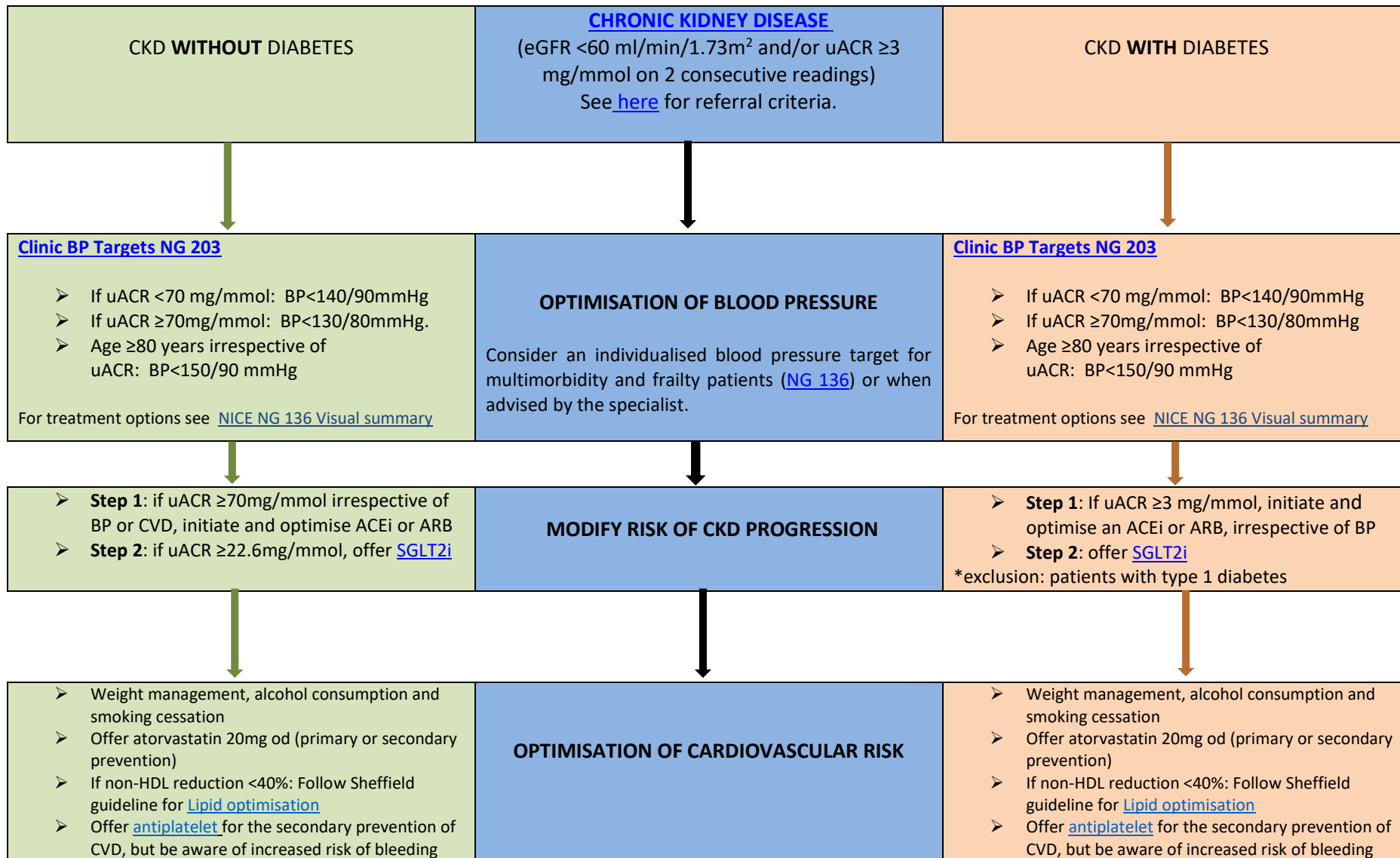
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**eGFR** = estimated glomerular filtration rate. **uACR** = urine albumin creatinine ratio. **ACEi** = angiotensin -converting enzyme inhibitor eg ramipril. **ARB**= angiotensin receptor blocker eg. Losartan. **SGLT2i**=Sodium-glucose transport protein 2 inhibitors, currently only dapagliflozin and empagliflozin are licensed for CKD

### **NICE CKD Referral Criteria:**

Taking into account individual's preferences and other health conditions refer to a nephrologist as per NICE [NG 203](#):

- with a 5-year Kidney Failure Risk Equation [KFRE](#) predicted risk over 5%
- an ACR of 70 mg/mmol or more, unless known to be caused by diabetes and already appropriately treated
- an ACR of more than 30 mg/mmol ([ACR category A3](#)), together with haematuria
- a sustained decrease in eGFR of 25% or more and a change in eGFR category within 12 months
- a sustained decrease in eGFR of 15 ml/min/1.73 m<sup>2</sup> or more per year
- hypertension that remains poorly controlled (above the person's individual target) despite the use of at least 4 antihypertensive medicines at therapeutic doses
- known or suspected rare or genetic causes of CKD
- suspected renal artery stenosis.

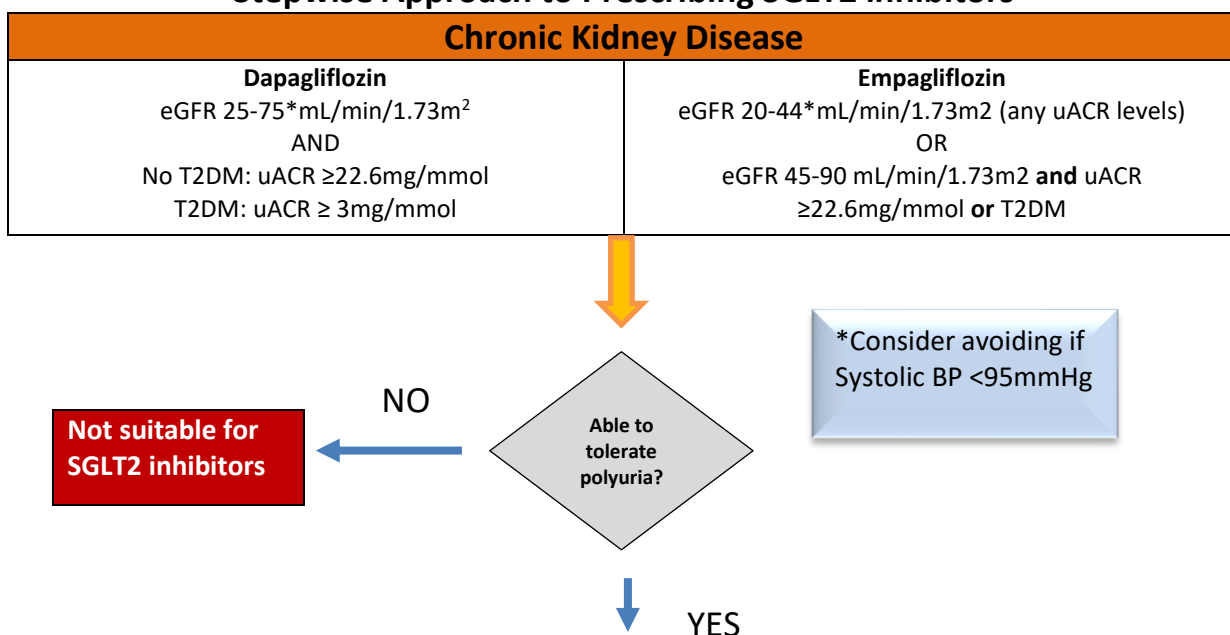
### **Self-management advice for patients with CKD:**

- Provide sources of information, advice, and support. For more details see NICE CKS for [Management of chronic kidney disease](#).
  - Kidney Care UK (website available at [www.kidneycareuk.org](http://www.kidneycareuk.org)) a national kidney charity which has a telephone support helpline (telephone 01420 541424) and several [leaflets](#) on CKD and associated conditions
  - The NHS patient information leaflet [Chronic kidney disease](#)
  - The patient information leaflet [Chronic kidney disease](#) available on the [www.patient.info](http://www.patient.info) website
- Advise on healthy lifestyle measures such as [stop smoking](#); drinking alcohol in moderation; maintaining a healthy body weight; eating a healthy diet and taking regular exercise
- Advise the person to avoid the use of over-the-counter nonsteroidal anti-inflammatory drugs (NSAIDs) where possible and avoid herbal remedies, and use protein supplements with caution.
- Advise on the increased risk of acute kidney injury (AKI) if there is severe, intercurrent illness.

**Table 1. Classification of CKD using eGFR and urinary ACR categories**

<b>Prognosis of CKD by GFR and Albuminuria Categories</b>				Albuminuria categories		
				Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30-299 mg/g 3-29 mg/mmol	≥300 mg/g ≥30 mg/mmol
GFR categories (ml/min/1.73 m <sup>2</sup> ) Description and range	G1	Normal or high	≥90			
	G2	Mildly decreased	60-90			
	G3a	Mildly to moderately decreased	45-59			
	G3b	Moderately to severely decreased	30-44			
	G4	Severely decreased	15-29			
	G5	Kidney failure	<15			
Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red, very high risk. KDIGO 2012						

## Stepwise Approach to Prescribing SGLT2 inhibitors



Cautions and Contraindications for SGLT2 inhibitors (High Risk)	
Diabetes contraindications	Non-diabetes contraindications/ cautions
<ul style="list-style-type: none"> <li>History of DKA</li> <li>Rapid progression to insulin (&lt;1 year from diagnosis)</li> <li>Latent autoimmune diabetes of adulthood</li> <li>Ketosis-prone T2DM</li> <li>T1DM (diagnosed or suspected)</li> <li>Genetic diabetes</li> <li>Diabetes due to pancreatic disease</li> <li>Previous lower limb amputation</li> <li>Existing diabetes foot ulcers</li> <li>eGFR&lt;15 mL/min/1.73m<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Cognitive impairment</li> <li>Alcoholism likely to increase the risk of falls and metabolic disturbance</li> <li>Severe hepatic impairment</li> <li>Acute illness</li> <li>Recent major surgery</li> <li>Pregnancy, planning pregnancy or breastfeeding</li> <li>History of Fournier's gangrene</li> <li>Recurrent genitourinary infections requiring hospitalisation</li> <li>Eating disorder</li> <li>eGFR&lt;15 mL/min/1.73m<sup>2</sup></li> </ul>

Caution required for those who are frail and/or >75 years

SGLT2is initiation and <u>monitoring</u>	
<b>Dapagliflozin</b> 10mg OD  <b>Empagliflozin</b> 10mg OD  <b>Document CKD as indication</b>	<p>If patient is on insulin +/-or sulfonylureas (SU eg gliclazide) referral can be made to DSNs for <a href="#">support with glycaemic control</a></p> <p>For T2DM with: eGFR&gt;45mL/min/1.73m<sup>2</sup>&amp;HbA1c&lt;58mmol/mol</p> <p>Consider dose titration:  <b>SGLT2i + insulin:</b> ↓ insulin dose 20%  <b>SGLT2i + Sulfonylureas:</b> ↓ SU dose 50%</p>

Patient counselling on:
<p><b>Genital thrush or UTI</b></p> <p><b>Diabetic ketoacidosis (DKA)</b> and symptoms to look out for: nausea (feeling sick) or vomiting, new sudden worsening of shortness of breath, new sudden stomach pain.</p> <p><b>Necrotising fasciitis of the perineum</b> (Fournier's gangrene) and symptoms to look out for: pain and redness of the genitals or the area around the genitals and the buttocks; a fever or high temperature.</p> <p><b>Patient information letter:</b> <a href="#">Getting the most from your SGLT2 inhibitors</a>  <a href="#">Sick day rules</a></p>

### **SGLT2 inhibitors considerations and monitoring in CKD**

1. Prior to initiation, assess the patient's renal function, BP, volume status and blood glucose control. Consider avoiding initiation if systolic blood pressure is persistently below 95 mm Hg
2. Anticipate an acute drop in eGFR of up to 30% in the first 3-4 weeks of treatment (reversible on cessation), likely due to reduction in intra-glomerular pressure. The acute decline will reflect in sustained renovascular benefits over time with reduction to progression to end-stage CKD. In the absence of haemodynamic instability, SGLT2is do not increase risk of AKI.
3. Conduct regular electrolyte and renal function measurements, as appropriate for individual circumstances, comorbidities and concomitant medications which will be determined by clinical judgement on a case-by-case basis (see [NG203](#)). For those on additional agents including angiotensin converting enzyme inhibitors (ACEi eg ramipril), angiotensin receptor blockers (ARB eg losartan), mineralocorticoid receptor antagonists (MRAs eg spironolactone) and sacubitril/valsartan (Entresto), renal function and electrolytes need to be assessed on a 3-monthly interval.
4. Stop SGLT2is at time of dialysis.
5. There is an increased risk of hypoglycaemia when SGLT2i is used alongside sulfonylureas (SU eg gliclazide) and/or insulin, monitor glycaemic control and adjust doses of SU and/or insulin as per below or a referral can be made to the community diabetes team to advise on any dose adjustments;
  - For patients with T2DM and  $eGFR >45 \text{ ml/min/1.73m}^2$  +  $HbA1c <58 \text{ mmol/mol}$  on SGLT2i and insulin consider reducing the insulin dose by 20%;
  - For patients with T2DM and  $eGFR >45 \text{ ml/min/1.73m}^2$  +  $HbA1c <58 \text{ mmol/mol}$  on SGLT2i and SU consider reducing the SU dose by 50%.
6. Due to its mechanism of action, patients on SGLT2is will test positive for glucose in their urine.
7. All patients should be counselled appropriately and provided with the STH Patient Information Leaflet: [Sodium Glucose Co-transporter 2 inhibitors \(SGLT2is\), Getting the most from your medication](#)

**Sick day rules:** Always offer advice on sick day rules when introducing these agents and reiterate this at every opportunity.

- Always offer counselling on signs and symptoms of DKA.
- Stop SGLT2is if unwell or restricted food intake or dehydration.
- Stop SGLT2is in patients who are hospitalised for major surgery or acute medical illnesses and measure blood ketones.
- Stop taking the following medicines, until you are feeling well again and are eating and drinking normally: diuretics/"water pills"; ACEi medicines ending in "pril" eg ramipril, lisinopril, perindopril; ARBs - names ending in 'sartan' eg losartan, candesartan, irbesartan; NSAIDs - anti-inflammatory pain killers eg ibuprofen, naproxen, diclofenac
- Never stop insulin; adjust the dose as advised, then change the dose gradually back to normal when recovered.
- Drink regularly, to avoid dehydration - half a glass (150ml) of milk or fruit juice, or calorie rich soup or yoghurt every hour.
- Restart SGLT2is when the patient is well and eating and drinking normally. If a patient remains unwell 48h after re-initiation, advise them to seek immediate medical help.

**Documentation:** It must be clearly documented on the patient's medical record that the primary indication for SGLT2i is CKD and not T2DM or HF to ensure follow up and monitoring is appropriate. Though it should be noted some patients may have multiple conditions for which SGLT2is will be of benefit.

## References

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