



Care and referral of adult patients with reduced renal function

Recommendations from the Canadian Society of Nephrology (CSN)

Who should be tested for kidney disease?

The following characteristics identify individuals at high-risk of chronic kidney disease:

- Hypertension
- Diabetes mellitus
- Heart failure
- Atherosclerotic coronary, cerebral or peripheral vascular disease
- Unexplained anemia
- Family history of end stage renal disease (ESRD)
- First nation's peoples

Population screening for chronic kidney disease (CKD) is not endorsed.

What tests to order?

eGFR is endorsed as a measure of kidney function as serum creatinine tends to be ineffective as a marker of early kidney injury.

eGFR may be reported by the laboratory based on conventional mathematical formulas
Calculators and tables are available to calculate eGFR using measured serum creatinine

Web-based calculators: <http://www.ukidney.com/page32/page32.html>
http://www.kidney.org/professionals/kdoqi/gfr_calculator.cfm
<http://www.renal.org/eGFRcalc/GFR.pl>

Downloadable calculators and PDA formats: <http://www.pcel.info/gfr/>
<http://www.medcalc.com/>

A random urine sample can identify kidney injury. Urine albumin or protein excretion should be quantified with an albumin to creatinine ratio (ACR) or a protein to creatinine ratio (PCR).

24 hour urine collections are not routinely required to assess creatinine clearance or protein excretion as they are cumbersome and often inaccurate.

What to do with the results?

Decisions about investigation, treatment or referral should not be made based on a single isolated test of kidney function.

Serial testing of abnormal results should be performed within 1-3 months.

Most patients with non-progressive CKD can be managed by non-nephrologists (see reverse of page for management tips). Referral to a nephrologist is recommended in the following situations:

- Acute kidney failure
- eGFR <30 ml/min/1.73m² (CKD stages 4 and 5)
- Progressive decline of eGFR
- Persistent significant proteinuria (2 out of 3 samples showing positive urine dipstick or ACR>60 mg/mmol or PCR >100 mg/mmol)
- Inability to achieve treatment targets or other difficulties in the management of the CKD patient

Quick Tips on Referral and Management of Chronic Kidney Disease

Most patients with non-progressive CKD can be managed without referral to a nephrologist. The goals of therapy are listed below:

- 1) **Consider reversible factors**, such as medications, intercurrent illness, volume depletion, or obstruction. An abdominal ultrasound may be indicated when eGFR < 60 ml/min/1.73m².
- 2) **Minimize further kidney injury** by avoiding, if possible, nephrotoxins such as NSAID's, aminoglycoside antibiotics, IV contrast (if eGFR < 60 ml/min/1.73m²), etc.
- 3) **Remember to adjust dosages of renally excreted medications.**
- 4) **Implement measures to slow the rate of progression of CKD:**
 - a. Target BP is < 130/80 mmHg. Most patients will need 3 or more medications. Diuretics and salt restriction are very useful, and if needed, consider furosemide BID dosing when eGFR < 30 ml/min/1.73m²
 - b. Target urine protein/creatinine ratio (mg/mmol) is < 60 (< ~ 500 mg/day) or target urine albumin/creatinine ratio (mg/mmol) is < 40. ACEI and/or ARB are first line therapies in patients with albuminuria or proteinuria.
 - c. Control blood sugar in diabetes, target HbA1C < 7%.
- 5) **Implement measures to modify CV risk factors (NB: CV risk >> ESRD risk).**

Follow the Canadian Hypertension Education Program, the Canadian Diabetes Association, and the Canadian Cardiovascular Society guidelines as per groups at highest risk for CV disease.
- 6) **Referral to a nephrologist is recommended for:**
 - a. acute kidney failure
 - b. eGFR < 30 ml/min/1.73m². (CKD stage 4 and 5)
 - c. progressive decline of eGFR
 - d. urine protein/creatinine ratio (PCR) > 100 mg/mmol (~900 mg/24 hours) or urine albumin to creatinine ratio (ACR) > 60 mg/mmol (~500 mg/24 hr)
 - e. inability to achieve treatment targets

NOTE: detailed CSN CKD management guidelines are under development, these quick tips should be considered as an interim approach.