Ontario Renal Network

Kidney Wise
Detect + Protect

Introduction to the KidneyWise Clinical Toolkit

The Ontario Renal Network (ORN), a division of Cancer Care Ontario (CCO) and an agency of the provincial government, is responsible for overseeing and funding the delivery of chronic kidney disease (CKD) services across Ontario. By establishing consistent standards and guidelines, based on the best available evidence, along with information systems that measure performance, the ORN supports a continuously improving kidney care system in Ontario.

The KidneyWise Clinical Toolkit, developed by the ORN for primary care providers (PCPs), is intended to help with the identification, detection, and management of CKD.

The Toolkit is designed to help PCPs determine which patients are at high risk of developing CKD, and provides recommendations on how to properly diagnose and best manage the disease in order to reduce the risk of further progression.

The KidneyWise Clinical Toolkit has three components:

1. An evidence-based **Clinical Algorithm** that helps with identification, detection, and management of CKD, and recommends which patients might benefit from referral to a nephrologist.
2. The **Evidence Summary** offers PCPs further clinical detail regarding the Algorithm content including references to clinical guidelines that were used in the development of the Toolkit.
3. The **Outpatient Nephrology Referral Form** provides PCPs with referral guidance by outlining clinical scenarios which would require consultation with a nephrologist, as well as the appropriate investigations that should accompany the referral.

How can I get it?

To access the KidneyWise Clinical Toolkit, please visit **kidneywise.ca**.

Also available for iPhone and Android.

Any questions?
Please contact us directly at **kidneywise@renalnetwork.on.ca**.

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Identification, Detection, and Management of CKD in Primary Care

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IDENTIFY

Identify patients in your practice with elevated risk of CKD based on the following:

- Hypertension
- Diabetes mellitus
- Age 60–75 with cardiovascular disease (CV)

DETECT

- CKD detection should be done in the absence of acute intercurrent illness. Low eGFR (estimated Glomerular Filtration Rate) in such scenarios may reflect acute kidney injury and require more rapid evaluation
- Test with eGFR and urine ACR (Albumin to Creatinine Ratio)
- Note: eGFR calculation needs to be adjusted for black patients (multiply eGFR by 1.21)
- If eGFR < 60ml/min/1.73m^2, repeat test in 3 months, or sooner if clinical concern dictates (i.e. rapid decline from previous eGFR result or very low eGFR)
- If urine ACR ≥ 3mg/mmol on initial testing, repeat 1 or 2 more times over the next 3 months (at least 2 out of 3 random urine ACRs must be elevated in order to be considered abnormal)
- Always consider reversible causes prior to re-testing (e.g. recent treatments with NSAIDs, recent use of contrast dye for diagnostic imaging, BPH/urinary retention)

Results after 3 months

Box A **eGFR < 30 or ACR > 60**

- Patient has CKD
- Based on above parameters, consider seeking consultation from nephrology

Work-up

- For low eGFR: Urine R+M, CBC, electrolytes, Ca, PO_4^{3-}, Albumin, PTH
- For albuminuria: Urine R+M, electrolytes

Box B **eGFR 30–59 and/or ACR 3–60**

- Patient has CKD
- See Manage box below for management
- Check urine R+M, electrolytes
- **Follow eGFR & urine ACR every 6 months**

- eGFR < 60 and decline ≥ 5ml/min within 6 months (confirmed on repeat testing within 2 to 4 weeks), or
- eGFR < 30 or ACR > 60, or
- eGFR < 45 and urine ACR between 30 and 60 on 2 occasions, at least 3 months apart
- Inability to achieve blood pressure targets, or
- Significant K^+ disorder, RBC casts or hematuria (> 20 RBC/hpf)

Box C **eGFR ≥ 60 and ACR < 3**

- Patient does **not** have CKD
- Re-test annually for patients with diabetes, less frequently otherwise, unless clinical circumstances dictate more frequent testing

- If eGFR stable for 2 years, **follow eGFR and urine ACR every 12 months**

REFER TO NEPHROLOGIST While waiting for consultation, see MANAGE box below for management

MANAGE

Implement measures to modify CV risk factors

- Lifestyle modification, smoking cessation
- Lipid management for patients with CKD (see KDIGO guidelines for further details):
  - **If with diabetes, age >18 → treat with a statin***
  - **If without diabetes, age ≥ 50 → treat with a statin***
  - **If without diabetes, age 18–49, has known coronary artery disease, prior stroke, or 10-year Framingham risk >10% → treat with a statin***
- For patients with diabetes, target HbA1c to appropriate level (see CDA guidelines)

*Contraindications: active liver disease, high alcohol consumption or pregnancy. Women with childbearing potential should only use a statin if there is reliable contraception.

Minimize further kidney injury

- If possible, avoid nephrotoxins such as NSAIDs, IV and intra-arterial contrast, etc. (if eGFR < 60)
- If contrast is necessary, consider oral hydration, withholding diuretics
- Refer to Sick Day Medication List (see Evidence Summary)

Implement measures to slow rate of CKD progression

BP and RAAS blockade (repeat creatinine and potassium 2 weeks after initiation of ACEI or ARB use):

- If with diabetes, target BP < 130/80, otherwise target BP < 140/90
- If with diabetes and with ACR > 3, start use of an ACEI or ARB as first-line therapy. If BP already < 130/80, use ACEI or ARB cautiously, monitoring for signs and symptoms of hypotension
- If without diabetes, ACR > 30 and BP > 140/90, start use of an ACEI or ARB as first-line therapy

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Evidence Summary for KidneyWise Clinical Algorithm

PURPOSE

The KidneyWise Clinical Algorithm was created as a resource for primary care providers to aid in the identification, detection, and management of chronic kidney disease (CKD). Note, the clinical algorithm may not apply in the following situations:

- Frail and elderly patients or those with a short life expectancy
- When clinical circumstances warrant investigation for suspected acute kidney injury (i.e. volume depletion, urinary obstruction, etc.)
- When an eGFR (estimated Glomerular Filtration Rate) is necessary in prescribing medications that require dose adjustment for reduced kidney function (e.g. new oral anticoagulants, certain antibiotics)

KEY ELEMENTS

IDENTIFY

Diabetes mellitus (DM) is the leading cause of CKD and end-stage renal disease (ESRD) in Canada. Hypertension (HTN) is an important risk factor for CKD and its progression, although it is uncommon as the sole cause if blood pressure is well controlled. Other risk factors listed for CKD are based on epidemiologic findings (e.g. age 60–75 with cardiovascular disease). First Nations, Inuit and Métis patients are at particularly high risk of developing ESRD, although this risk is primarily mediated through an increased risk for DM and HTN.

DETECT

Most relevant guidelines, including Kidney Disease Improving Global Outcomes (KDIGO)[1], recommend testing with both an eGFR and a urine ACR (Albumin to Creatinine Ratio), as both measures are independent risk factors for progression to ESRD. An eGFR with a value < 60[a] should be repeated if < 60[a], as many patients will have a value above on repeat testing. Consider the possibility of a reversible cause for a low eGFR, including dehydration (i.e. recent gastrointestinal illness or excess diuretic use), or the concomitant use of Non-Steroidal Anti-Inflammatory Drugs (NSAIDs). The diagnosis of CKD requires evidence of chronicity (i.e. at least 3 months with an eGFR < 60[a]). The urine ACR should be repeated if abnormal; confirmation requires at least 2 of 3 values to be elevated.

Patients with an eGFR ≥ 60[a] and an ACR < 3[b] can be re-screened at an interval commensurate with the underlying risk factor. Re-testing annually in patients with DM is reasonable. Patients with HTN may require less frequent testing, depending on patient age, the presence of other co-morbidities, and the degree of blood pressure control. It is important to note that a substantial proportion of otherwise healthy elderly individuals will have an eGFR < 60[a] due to normal aging (40% of women > 75 years of age and 30% of men > 80 years of age).

MANAGE

Review of the KDIGO Clinical Practice Guideline for Lipid Management in CKD[2], Canadian Hypertension Education Program (CHEP)[3], and Canadian Diabetes Association (CDA)[4] clinical practice guidelines is recommended for detailed advice regarding hyperlipidemia, hypertension, and glycemic control, respectively.

ACE inhibitors (ACEI) or angiotensin receptor blockers (ARB), but not both, are recommended as outlined for most CKD patients who also have albuminuria; for normotensive patients with diabetes with an elevated ACR (> 3[b]), an ACEI or ARB can be considered although careful monitoring for signs or symptoms of hypotension is advised. Most patients with DM and an elevated ACR will have hypertension in the absence of any anti-hypertensive therapy. For patients without diabetes with a blood pressure > 140/90 and an ACR > 30[b], an ACEI or ARB should be used as first-line therapy. CKD patients who require statin therapy should be treated regardless of baseline lipid status and do not routinely require follow-up measurement of lipid levels. Patients with a non-renal indication for one of these agents (i.e. heart failure) should be treated accordingly.

It is recommended that a serum potassium and creatinine be repeated approximately 2 weeks after any initiation or dose increase of an ACEI or ARB to monitor for the development of hyperkalemia and/or a substantial decrease in eGFR. An increase in serum creatinine of up to 30% after initiation of an ACEI or ARB is not associated with an increased risk of worsening long-term kidney function. Larger increases may suggest excessive diuretic use and/or underlying renovascular disease.

Note, given the high risk of influenza-related complications among CKD patients, primary care providers should recommend they receive the seasonal influenza vaccine on an annual basis[5].

SICK DAY MEDICATION LIST

If patients with CKD are unable to maintain adequate fluid intake during an illness, it is recommended that potentially nephrotoxic or renally excreted drugs should be withheld until the patient has recovered. As outlined in the CDA guidelines, this can be recalled by referring to the acronym **SADMAN** (**S**ulfonylureas, **A**CEI, **D**iuretics, **M**etformin, **A**RB, **N**SAIDs).

Adapted from: Change in appropriate referrals to nephrologists after the introduction of automatic reporting of the estimated glomerular filtration rate. Akbari A., Grimshaw J., Stacey D, et al. CMAJ 2012. DOI: 10.1503/cmaj.110678

[a] units for eGFR are ml/min/1.73m^2
[b] units for ACR are mg/mmol
[1] Kidney Disease Improving Global Outcomes CKD Guidelines 2012. **http://kdigo.org/home/guidelines/ckd-evaluation-management/**
[2] Kidney Disease Improving Global Outcomes Clinical Practice Guideline for Lipid Management in CKD 2013. **http://kdigo.org/home/guidelines/lipids/**
[3] Canadian Hypertension Education Program Guidelines 2014. **http://www.hypertension.ca/en/chep**
[4] Canadian Diabetes Association Clinical Practice Guidelines 2013. **http://guidelines.diabetes.ca/Browse.aspx**
[5] Public Health Agency of Canada 2013. **http://www.phac-aspc.gc.ca/index-eng.php**