KidneyWise Clinical Toolkit

Presentation developed by the Ontario Renal Network

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Learning Objectives

At the conclusion of this activity, participants will be able to define and apply…

1. Definition of Chronic Kidney Disease
2. KidneyWise Clinical Toolkit Recommendations:
    a) Identification
    b) Detection and Confirmation
    c) Management
3. Additional Resources

What is Chronic Kidney Disease?

Definition:	Abnormalities of kidney structure or function, present for > 3 months, with implications for health
Main causes:	Diabetes, hypertension

Criteria for CKD (either of the following present for > 3 months):	• ACR ≥ 3 mg/mmol and/or decreased eGFR < 60 ml/min/1.73m^2 (G3a-G5)
	• Other criteria:
	  • Urine sediment abnormalities
	  • Electrolyte and other abnormalities due to tubular disorders
	  • Abnormalities detected by histology
	  • Structural abnormalities detected by imaging
	  • History of kidney transplantation

KDIGO CKD Guidelines, 2012

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Acronyms: AER, albumin excretion rate; ACR, albumin-to-creatinine ratio; eGFR, estimated glomerular filtration rate

Why Should CKD Be Important to Primary Care?

Early identification:

- 1.3 million Canadians estimated to have CKD[1]
- ~ 90% of CKD cases are at low risk of progression, PCPs are well positioned to care for these cases[1]
- Patients at increased risk of progression to advanced stages of CKD should be referred to nephrology[2]

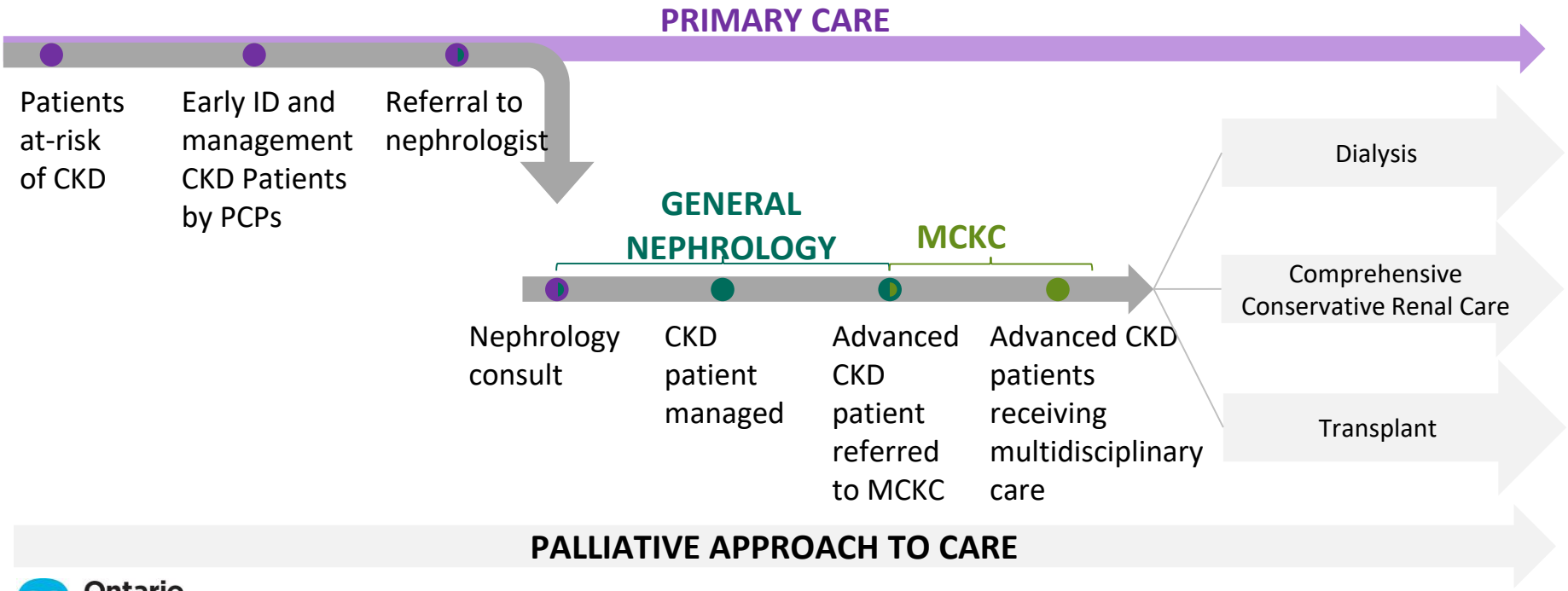
Prevention:

- Early identification and treatment can
  - Prevent/delay ESKD[1]
  - Reduce risk of comorbidities with associated ESKD and all-cause mortality (e.g., CVD, diabetes)[3,4]
- Medication reviews can prevent acute kidney injury

Acronyms: PCP, primary care practitioner; ESKD, end-stage kidney disease; CVD, cardiovascular disease

Simplified CKD Patient Pathway

Primary Care management of CKD doesn't stop after referral!



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Acronyms: ID, identification; MCKC, Multi-Care Kidney Clinic

KidneyWise Clinical Toolkit

www.kidneywise.ca

- Provides guidance on the identification, detection and management of people with CKD
- Helps inform which individuals would benefit from a referral to nephrology
- Comprised of 3 components

1. **Clinical Algorithm**
   Guide that can be used at point of care
2. **Evidence Summary**
   Background information and references used for the algorithm
3. **Outpatient Nephrology Referral Form**
   Guide for appropriate referral criteria

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Identify & Detect

Identify High Risk Groups:

- Hypertension (HTN)
- Diabetes mellitus (DM)
- Cardiovascular disease (CVD)
- First degree relative of someone with CKD
- First Nations, Inuit, Métis, or urban Indigenous people(s) ≥ 18 years of age

Units: eGFR ml/min/1.73m^2, ACR mg/mmol

Detect

Measure eGFR and urine ACR, repeat:

- In 3 months if eGFR < 60 and/or ACR ≥ 3
- Sooner if clinical concern (e.g., rapid decline from previous eGFR)

One test result is not enough to make the diagnosis of CKD.
CKD is defined as a persistent abnormality for at least 3 months.

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Summary of CKD Criteria

Criteria	CKD Status	Work-Up	Recommendation
eGFR ≥ 60 and ACR < 3	Person likely does not have CKD	• Retest annually if patient has diabetes, less frequently otherwise	Monitor in primary care
eGFR 30-59 and/or ACR 3-60	Person has CKD	• Serial following of eGFR and urine ACR • Urine R&M, electrolytes • CBC, serum calcium phosphate, albumin, PTH	Monitor in primary care Refer to nephrology if: • eGFR < 45 and decline ≥ 5ml/min within 6 months, or • eGFR < 30 or ACR > 60, or • 5-year KFRE is ≥ 5%
eGFR < 30 and/or ACR > 60	Person has CKD	• Urine R&M, electrolytes • CBC, serum calcium phosphate, albumin, PTH	Refer to nephrology

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Acronyms: CBC, complete blood count; PTH, parathyroid hormone; KFRE, Kidney Failure Risk Equation

Detect: KFRE

What?

Measures the 2-year and 5-year risk of ESKD in people with eGFR < 60

Uses urine ACR, eGFR, age and sex

Why?

Better predictor of ESKD as it includes eGFR and proteinuria[5]

Improved care, improved survival rates, reduced healthcare costs[6]

How?

Use a KFRE calculator

https://qxmd.com/calculate/kidney-failure-risk-equation-4-variable

www.kidneyfailurerisk.com

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Other Indications for Referral to Nephrology?

Additional Indications:

- Resistant or suspected secondary hypertension
- Suspected glomerulonephritis/renal vasculitis (RBC casts or hematuria > 20 RBC/hpf)
- Metabolic work-up for recurrent renal stones
- Clinically important electrolyte disorder

Special Red Flags:

- Rapid serum creatinine increase especially if accompanied by:
  1) Features suggestive of vasculitis – hematuria, petechial rash, weight loss, new lung disease
  2) Low platelets or hemolytic anemia
  3) Symptoms suggestive of urinary tract obstruction

Summary: BP Targets & RAS Blockade

Patient Population	Systolic BP Target	Diastolic BP Target	ACEI or ARB
People with CKD (without DM)	<120 mmHg	<90 mmHg	Use if ACR > 30 and BP not a target
People with CKD and DM	<130 mmHg	<80 mmHg	Use if ACR > 3 Use cautiously if BP already < 130/80, monitor for hypotension
People with CKD that have any one of the following characteristics: • Frail elderly • Resides in Long-Term Care/Nursing Home • Polypharmacy (>5 medications) • History of Stroke • Chronic illness likely to limit life expectancy to < 3 yrs.	<140 mmHg	<90 mmHg	Case-dependent

Electrolytes/Creatinine blood test
2 weeks after starting ACEI or ARB

Reduce CVD risk and/or slow CKD progression

- Lifestyle modification, smoking cessation
- For primary prevention, treat adult patients with the following conditions with a low dose statin*:
  - CKD with diabetes
  - CKD without diabetes, age ≥ 50
  - CKD with known coronary artery disease, prior stroke, or 10-year Framingham risk > 10%
- For people with diabetes, target HbA1c to appropriate level using recommended therapies as per Diabetes Canada guidelines

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

Managing Diabetes & CKD

- Treat with RAS inhibition (ACEIs or ARBs), provided BP not low and symptomatic
- Control Hypertension < 130/80 using RAS inhibition, salt restriction and other anti-hypertensives as required
- Treat with SGLT2 inhibitors if have type 2 diabetes and eGFR over 30

Minimize further kidney injury

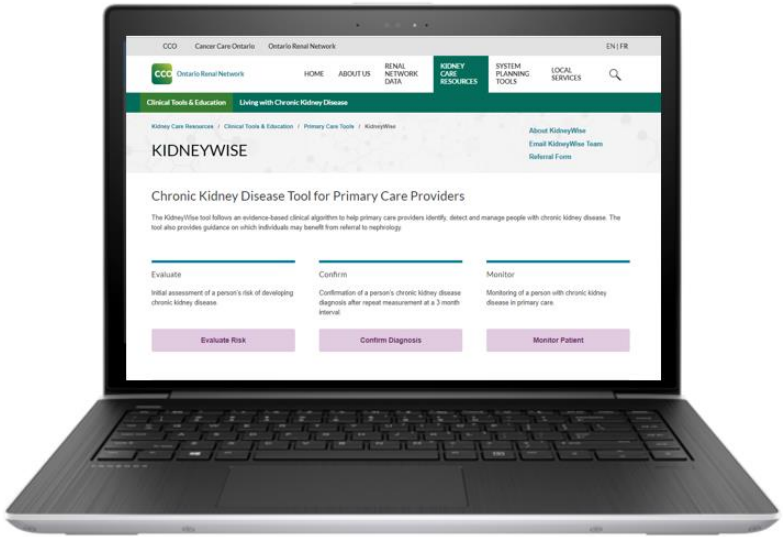
Actions to consider

- Avoid nephrotoxins such as NSAIDs, intravenous (IV) and intra-arterial contrast, etc. whenever possible (if eGFR < 60).
- If contrast necessary, consider oral hydration, withholding diuretics.

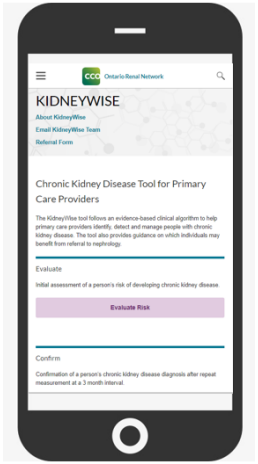
References to consult

- Refer to the ORN Medication Safety List consisting of 41 commonly prescribed medications that should be avoided or dose adjusted.
- Refer to Evidence Summary (PDF) for the Sick Day Medication List and list of renally excreted medications to adjust (SADMANS).

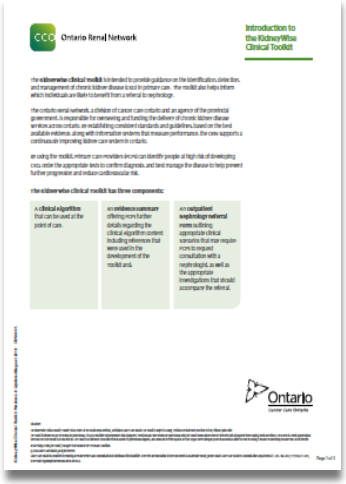
Accessing KidneyWise



Interactive Website



Mobile Compatible



Printable Documents (available on website)

www.Kidneywise.ca

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Resources for Primary Care

KFRE Webpage
https://www.ontariorenalnetwork.ca/en/kidney-care-resources/clinical-tools/primary-care/kfre

Outpatient Nephrology Referral Form

Referral Form

Medication Safety List
https://www.ontariorenalnetwork.ca/en/medicationsafety

Ontario eConsult Program
eConsultCOE@toh.ca

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Acknowledgements

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  - **Dr. Scott Brimble**, MD, MSc, FRCPC, Provincial Lead for Early Detection & Prevention of Progression
- Development of this presentation was led by:
  - **Dr. Peter Blake**, MD, FRCPC, Provincial Medical Director
  - The Early CKD team at the Ontario Renal Network

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Questions?

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Appendix

What tests should be ordered?

Creatinine/eGFR

- Measure of kidney function
- If eGFR < 60, repeat in 3 months or sooner if clinical concern

Urine ACR

- Measure of kidney damage/injury (protein excreted in urine)
- If urine ACR ≥ 3, repeat 1-2 more times over the next 3 months

One test result is not enough to make the diagnosis of CKD.

CKD: a persistent abnormality for at least 3 months.

CKD detection should be done in the absence of acute inter-current illness, otherwise low eGFR may reflect acute kidney injury (AKI) and require more rapid evaluation

Confirm Results 3 Months Later

eGFR ≥ 60 and ACR < 3

Person likely does not have CKD

Units: eGFR ml/min/1.73m^2, ACR mg/mmol

Follow-Up Recommendations:

- Re-test annually for individuals with diabetes, less frequently otherwise unless clinical circumstances dictate more frequent testing

Avoid labeling a person with CKD unless confirmed

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Confirm Results 3 Months Later

eGFR 30-59 and/or ACR 3-60

Person has CKD,
can be followed in primary care

Units: eGFR ml/min/1.73m^2, ACR mg/mmol

Work-up recommendations:

- Check urine R&M (inflammatory causes), electrolytes
- Monitor in primary care

Follow-up recommendations:

- Serial following of eGFR and urine ACR to monitor for progression:
  - Every 6 months once diagnosis made
  - Annually once eGFR is stable for 2 years

During follow-up, refer to a nephrologist if:

- eGFR < 45 and decline ≥ 5ml/min within 6 months, **or**
- eGFR < 30 or ACR > 60, **or**
- 5-year KFRE is ≥ 5%

Use a KFRE calculator!

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Confirm Results 3 Months Later

eGFR ≥ 60 and ACR < 3 → Person has CKD

Units: eGFR ml/min/1.73m^2, ACR mg/mmol

Refer individual to a nephrologist

Maintain relationship with your patient!

Work-Up Recommendations:

- Consider ordering & sending the following with referral:
  - Urine R&M, electrolytes (for albuminuria)
  - Complete blood count (CBC), serum calcium, phosphate, albumin, parathyroid hormone (PTH) blood test (for low eGFR)

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Referral to Nephrology

Recommended information to share with your referral:

- Referral details (e.g., date, name of previous nephrologist seen if this is a re-referral)
- Recommended reasons and indications for referral
- Co-morbid conditions
- Bloodwork lab values with dates where applicable
- Current medications being taken
- Contact info of referring practitioner

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Acronyms List

- ACEI – angiotensin-converting-enzyme inhibitor
- ACR – albumin-to-creatinine ratio
- AKI – acute kidney injury
- ARB – angiotensin II receptor blocker
- BP – blood pressure
- BPH – benign prostatic hyperplasia
- CBC – complete blood count
- CKD – chronic kidney disease
- CPG – clinical practice guidelines
- CVD – cardiovascular disease
- DM – diabetes mellitus
- eGFR – estimated glomerular filtration rate
- EMR – electronic medical record
- ESKD – end-stage kidney disease
- HTN – hypertension
- ICES – Institute for Clinical Evaluative Sciences
- IV – intravenous
- KFRE – Kidney Failure Risk Equation
- LTC – long-term care
- MCKC – Multi-Care Kidney Clinics
- NSAIDs – nonsteroidal anti-inflammatory drugs
- ORN – Ontario Renal Network
- ORP – Ontario Renal Plan
- PCP – primary care provider
- PTH – parathyroid hormone