



Ontario Renal Network



Family & Community Medicine
UNIVERSITY OF TORONTO



Sunnybrook
DEPARTMENT OF FAMILY
AND COMMUNITY MEDICINE



**Kidney
Wise**

Detect + Protect

A CHRONIC KIDNEY DISEASE (CKD) CLINICAL TOOLKIT FOR PRIMARY CARE

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Faculty/Presenter Disclosure

Faculty: Dr. Allan Grill

I have the following relevant financial relationships to disclose:

- Consultant for: CCO – Ontario Renal Network

Relationships with commercial interests:

- **Not Applicable**



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Disclosure of Commercial Support

- **This program has received NO Commercial support**
- **This program has received NO in-kind support**
- **Potential for conflict(s) of interest:**
 - **Not Applicable**



Tweet Tweet



- @allan_k_grillMD



Objective

- To recognize which patients in a typical family practice are at highest risk for chronic kidney disease (CKD) and are most appropriate for screening - **Identification**
- To clarify which investigations to order when screening for CKD and how to interpret the results – **Detection**
- To describe the role of the primary care provider (PCP) in managing patients with CKD and the criteria for appropriate referral to nephrology – **Management**
- To introduce the KidneyWise Clinical Toolkit that summarizes the above and promotes a model of shared care
- To review common medication prescribing challenges in patients with decreased renal function and advise on dose adjustments for safer use to prevent AKI (acute kidney injury)



About the Ontario Renal Network

- Responsible for overseeing and funding the delivery of chronic kidney disease (CKD) services across Ontario
- A 'network' of all the kidney care programs in Ontario
- Early detection and prevention of progression of CKD in the primary care setting is a main priority
- Ontario Renal Plan II is a roadmap that outlines how the Ontario Renal Network (ORN) will try to improve the lives of those living with CKD



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What is Chronic Kidney Disease?

According to KDIGO CKD Guidelines, 2012

1.1: Definition of CKD

1.1.1: CKD is defined as abnormalities of kidney structure or function, present for >3 months, with implications for health. (*Not Graded*)

Criteria for CKD (either of the following present for >3 months)

Albuminuria (AER \geq 30 mg/24 hours; ACR \geq 3 mg/mmol)

Urine sediment abnormalities

Electrolyte and other abnormalities due to tubular disorders

Abnormalities detected by histology

Structural abnormalities detected by imaging

History of kidney transplantation

Decreased GFR

GFR $<$ 60 ml/min/1.73m² (GFR categories G3a-G5)

Abbreviations: CKD, chronic kidney disease; GFR, glomerular filtration rate



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GFR Categories in CKD

1.2.3: Assign GFR categories as follows (*Not Graded*):

GFR categories in CKD

GFR category	GRF (ml/min/1.73m ²)	Terms
G1	≥ 90	Normal or high
G2	60 - 89	Mildly decreased*
G3a	45 - 59	Mildly to moderately decreased
G3b	30 - 44	Moderately to severely decreased
G4	15 - 29	Severely decreased
G5	<15	Kidney failure

*Relative to young adult level.

In the absence of evidence of kidney damage, neither GFR category G1 nor G2 fulfill the criteria for CKD.

KDIGO CKD Guidelines, 2012

Albuminuria Categories in CKD

1.2.4: Assign albuminuria* categories as follows (*Not Graded*):

* note that where albuminuria measurement is not available, urine reagent strip results can be substituted

Albuminuria categories in CKD

Category	AER (mg/ 24 hours)	ACR (approximate equivalent)		Terms
		(mg/mmol)	(mg/g)	
A1	<30	<3	<30	Normal to mildly increased
A2	30 - 300	3 - 30	30 - 300	Moderately increased*
A3	>300	>30	>300	Severely increased**

*Relative to young adult level.

**Including nephrotic syndrome (albumin excretion usually > 2200 mg/24hours [ACR >220 mg/mmol])

Prevalence of CKD

- 10% of North Americans have CKD
 - 26 million people
- 25% of North Americans > age 65 have CKD
- Only 3% of CKD patients progress to ESRD



Why Should CKD Be Important to Primary Care/LTC?

- ~ 90% of CKD cases are at low risk of progression and can be followed by a Primary Care Provider (e.g. family physician, nurse practitioner)
- Early identification and treatment can prevent/delay End Stage Renal Disease (ESRD)
 - Medication reviews can prevent AKI
- Comorbid cardiovascular disease risk reduction/management (e.g. DM, CAD/CHF)
- Referral of patients at increased risk of progression to advanced stages of CKD to nephrology

Why Develop a CKD Clinical Tool for Primary Care?

- CKD resources required based on feedback from:
 - 2012 Primary Care Provider (PCP) needs assessment
 - 340 respondents were interested in improving their CKD knowledge
 - Access to reference tools/ decision aids centered on evidence-based clinical practice guidelines was ranked highly
 - 2013 environmental scan
 - Completed to review clinical toolkits available to PCPs
 - As a result, a gap in CKD resources for PCPs became apparent



Why Develop a CKD Clinical Tool for Primary Care?

- Feedback from nephrologists suggests a gap in CKD knowledge
 - Suboptimal medication, CKD testing, # of referrals (Manns B et al. Clin J Am Soc Nephrol. 2012 Apr;7(4):565-72)
 - Anecdotal evidence
- In response, the ORN KidneyWise Clinical Toolkit was created

KidneyWise Clinical Toolkit

- **Clinical Algorithm** that helps with identification, detection, and management of patients with CKD and guidance on which patients may benefit from referral to a nephrologist
- **Evidence Summary** that offers further clinical detail regarding the algorithm content, including references to clinical guidelines that were used in the development of the toolkit
- **Outpatient Nephrology Referral Form** that provides referral guidance by outlining clinical scenarios that would require consultation with a nephrologist along with the appropriate investigations that should accompany the referral



Guidelines Referenced

- Kidney Disease Improving Global Outcomes CKD Guidelines 2012
- Canadian Hypertension Education Program Guidelines 2014
- Canadian Cardiovascular Society Dyslipidemia Guidelines 2012
- Canadian Diabetes Association Clinical Practice Guidelines 2013



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Identification, Detection, and Management of CKD in Primary Care

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/1.73m², 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, PO₄³⁻, 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

Clinical Algorithm – Identify

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)

Do not screen if life expectancy is less than 10 years (e.g. frail elderly population)



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Clinical Algorithm – Detect

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/1.73m², repeat test in 3 months or sooner if clinical concern (i.e. rapid decline from previous eGFR result or very low eGFR)
- If urine ACR ≥ 3mg/mmol on initial testing, repeat 1-2 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)



What Tests Should Be Ordered? - Detect

- Creatinine/ eGFR
 - **Measure of kidney function**
- Urine for ACR (albumin to creatinine ratio)
 - **Measure of kidney damage/injury (protein excreted in urine)**
 - **Do not order a 24hr. urine collection**
- Important Note: CKD detection should be done in the absence of acute inter-current illness
 - Low eGFR in such scenarios may reflect AKI (acute kidney injury) and require more rapid evaluation



If The Results Are Abnormal, When Should One Repeat The CKD Screening Tests? - Detect

Assuming no inter-current illness:

- If eGFR < 60 , repeat in 3 months or sooner if clinical concern
- 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 is defined as a persistent abnormality for at least 3 months



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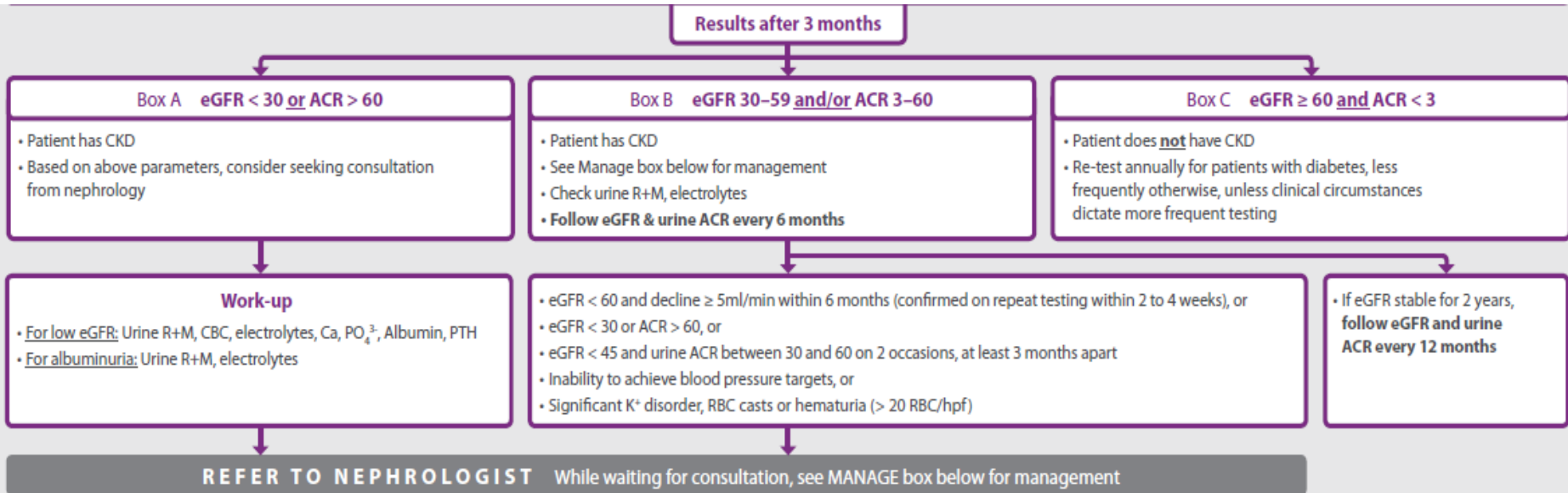


What if Initial Test Results Create Clinical Concern?

- **Clinical Concern** = rapid decline/rise from previous eGFR/Cr or unexpected eGFR/urine ACR result
- Repeat eGFR & urine ACR sooner (e.g. 2 weeks)
- Always consider reversible causes prior to re-testing:
 - Recent treatments with NSAIDs
 - Herbal remedies
 - Use of contrast dye for diagnostic imaging
 - Obstruction (e.g. BPH/renal stones/urinary retention)
 - Volume depletion (e.g. dehydration due to illness; diuretics)
- Renal ultrasound not recommended as part of routine CKD screening, but can be ordered to rule out a cause of AKI!



Clinical Algorithm – Detect



Interpreting The Results Three Months Later - Detect

Box C **eGFR \geq 60 and ACR $<$ 3**

- Patient does **not** have CKD

Follow-Up Recommendations:

- Re-test annually for patients with diabetes, less frequently otherwise unless clinical circumstances dictate more frequent testing
- **Avoid labeling a patient with CKD unless confirmed**



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Interpreting The Results Three Months Later - Detect

Box B eGFR 30-59 and/or ACR 3-60

- Patient has CKD
- Work-Up: Check urine R&M (inflammatory causes), electrolytes

Follow-Up Recommendations:

- How often do you follow-up?



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KDIGO CKD Follow-up Advice

Guide to Frequency of Monitoring (number of times per year) for GFR and Albuminuria

			Persistent albuminuria categories		
			Description and range		
			A1	A2	A3
			<30 mg/g <3 mg/mmol	Moderately increased 30–299 mg/g 3–29 mg/mmol	Severely increased >300 mg/g >30mg/mmol
GFR categories (ml/min/1.73 m ²) Description and range	G1	High	if CKD	2	2
	G2	Decreased	60–89	2	2
	G3a	Moderately decreased	45–59	3	3
	G3b	Moderately to severely decreased	30–44	3	3
	G4	Severely decreased	15–29	3	4+
	G5	Kidney failure	<15	4+	4+



Interpreting The Results Three Months Later - Detect

Box B eGFR 30-59 and/or ACR 3-60

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**



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Follow-Up Recommendations - Detect

Box B eGFR 30-59 and/or ACR 3-60

During 6-12 month follow-up, refer to a nephrologist if:

- eGFR < 60 and decline \geq 5ml/min within 6 months (confirmed on repeat testing within 2-4 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

Interpreting The Results Three Months Later - Detect

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

- Patient has CKD
- Refer patient to a nephrologist

Work-Up Recommendations:

- Consider ordering & sending the following with referral:
 - Urine R&M, electrolytes (for albuminuria)
 - Urine R&M, electrolytes, CBC, serum calcium, phosphate, albumin, PTH (for low eGFR)
- Don't lose relationship with your patient!



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Clinical Algorithm – Manage

MANAGE

Implement measures to modify CV risk factors

- Lifestyle modification, smoking cessation
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 - 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)

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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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Clinical Algorithm – Manage

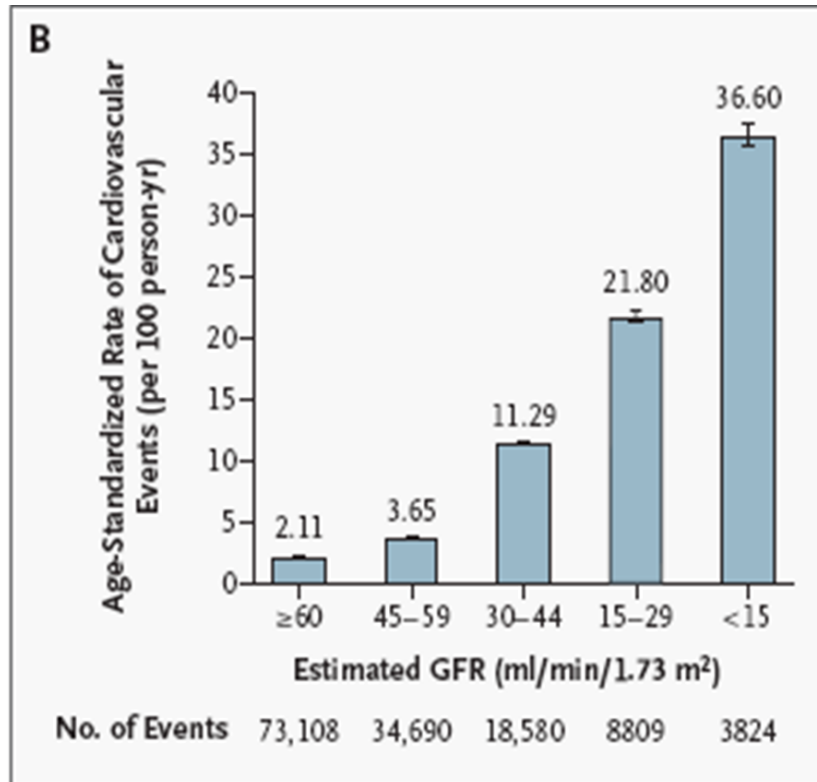
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- For patients with diabetes, target HbA1c to appropriate level (see [CDA guidelines](#))

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



Correlation between CKD and CVD



Go, A et al. NEJM 2004;351:1291-1305



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Clinical Algorithm – Manage

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)

Sulfonylureas/ACEIs/Diuretics/Metformin/ARBs/NSAIDs/SGLT2s

Don't forget to adjust dose of renally excreted medications!

Cockcroft-Gault equation is validated for the purpose of drug adjustment



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Clinical Algorithm – Manage

	Blood Pressure	Urine ACR/albuminuria
DM	If > 130/80 – treat HTN based on CHEP	If > 3 - Treat with ACEI or ARB (but watch for hypotension)
Non-DM	If > 140/90 – treat HTN based on CHEP	If > 30 AND BP > 140/90 – Treat with ACEI or ARB

Lytes/Cr 2 weeks after starting ACEI or ARB



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Recommended Reasons for Referral

- eGFR < 30 ml/min/1.73m² on 2 occasions, at least 3 months apart
 - eGFR < 45 ml/min/1.73m² and urine ACR between 30 and 60 mg/mmol on 2 occasions, at least 3 months apart
 - Rapid deterioration in renal function (eGFR < 60 and decline 5 ml/min within 6 months, confirmed on repeat testing within 2-4 weeks on 2 occasions)
 - Proteinuria (urine ACR > 60 mg/mmol on at least 2 of 3 occasions)
 - Hematuria (> 20 RBC/hpf or RBC casts)
 - Resistant or suspected secondary hypertension
 - Suspected glomerulonephritis/renal vasculitis
 - Metabolic work-up for recurrent renal stones
 - Other: _____
-

Most patients with non-progressive/ low-risk CKD can be managed by primary care providers!



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Outpatient Nephrology Referral Form

Patient Information (please fill in or affix label):

NAME: _____ DOB: ____ / ____ / ____
 ADDRESS: _____
 PHONE #: _____ HC #: _____
 ALT. CONTACT INFO: _____

Outpatient Nephrology Referral Form

Date of referral: ____ / ____ / ____
DD MM YY

Is this a re-referral? Yes Name of previously seen nephrologist: _____

Recommended Reason for Referral:

- eGFR < 30 ml/min/1.73m² on 2 occasions, at least 3 months apart
- eGFR < 45 ml/min/1.73m² and urine ACR between 30 and 60 mg/mmol on 2 occasions, at least 3 months apart
- Rapid deterioration in renal function (eGFR < 60 and decline 5 ml/min within 6 months, confirmed on repeat testing within 2-4 weeks on 2 occasions)
- Proteinuria (urine ACR > 60 mg/mmol on at least 2 of 3 occasions)
- Hematuria (> 20 RBC/hpf or RBC casts)
- Resistant or suspected secondary hypertension
- Suspected glomerulonephritis/renal vasculitis
- Metabolic work-up for recurrent renal stones
- Other: _____

Additional comments:

Co-morbid Conditions:

- Diabetes mellitus
- Coronary artery disease
- Hypertension
- Frailty
- Peripheral vascular disease
- Previous stroke
- Cognitive impairment

Lab Values:

Please fill out below if applicable; refer to the ORN KidneyWise Clinical Algorithm for suggested investigations

Date #1: <small>mo/day/yr</small>	eGFR:	Creatinine:	Urine ACR:
Date #2: <small>mo/day/yr</small>	eGFR:	Creatinine:	Urine ACR:
HbA1c:	Hgb:	K ⁺ :	Ca ²⁺ :
PO ₄ ³⁻ :	Albumin:	PTH:	Hematuria (dipstick):

Other (or attach): _____

Current Medications:

Referring practitioner/address/phone/fax:

Referring billing #:

Signature:



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Accessing KidneyWise

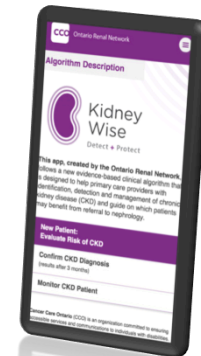
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Print



Online



App



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Next Steps

EMR Integration

- Integration of the ORN Outpatient Nephrology Referral Form into primary care EMRs
- Collaboration with eHealth Centre of Excellence (Telus Practice Solutions)

AKI medication project – coming soon!

Adverse Drug Reaction (ADR)



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Adverse Drug Reaction (ADR)

- An undesirable effect of a drug beyond its **anticipated** therapeutic effects occurring during clinical use (WHO definition)
- 3-6% of all hospital admissions relate to medication adverse events
- 1 in 200 seniors hospitalized for a drug adverse reaction (Canada, 2010-2011)
 - 5x the rate of younger adults
 - Cost implications - \$\$\$
- 5% prescribing error in primary care (UK data)



Case Example

- 75 y.o. male – new patient
- PMHx: HTN, OA, DM, Afib, CKD, OP, constipation; recent UTI
- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs
- O/E: 105/65, 48 irreg irreg, 20, 96% RA. Chest: clear; GAEB. CVS: N HS, no obvious M. Abdo: benign. PVS: 1+ pitting edema from feet to distal shins. Skin: multiple bruises seen on UEs/LEs. CNS: grossly N motor exam.
- Labs (OLIS): Hgb 115, eGFR 28, K+ 3.7, HbA1c 0.072, urine ACR 20, LDL 1.40, urine R&M unremarkable, urine C&S: E. Coli 10-100 CFU



Case Example – Meds List

- Bisoprolol 5mg od
- Ramipril 10mg od,
- tylenol #3 i-ii po tid prn
- lasix 40mg od
- metformin 500mg tid,
- insulin (lantus) 10u qhs,
- atorvastatin 40mg qhs,
- Ezetimibe 10mg qhs,
- ASA 81mg od,
- dabigatran 150mg bid,
- digoxin 0.125mg od,
- macrobid 100mg bid (7 day course – started 2 days ago),
- alendronate 70mg q weekly,
- vit. D 2,000U daily,
- Aleve prn,
- lansoprazole 30mg 30acb,
- MOM 30ml qhs

Case Example

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Stop digoxin (risk of toxicity with eGFR < 30); consider lowering bisoprolol dose (bradycardia)



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Discontinue lasix (hypotension, risk of dehydration/volume depletion); consider trial of compression stockings



Case Example

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- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs

Decrease ramipril dose – BP target: 130/80; monitor urine ACR



Case Example

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- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs

Discontinue tylenol #3 (CrCl <30), & Aleve (OA); consider regular dose tylenol, topical NSAIDs, PT referral



Case Example

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Discontinue metformin (risk of lactic acidosis with eGFR < 30); consider lowering insulin dose; replace with linagliptin (DPP-4 inhibitor); adjust diet (less stringent HbA1c target)



Case Example

- 75 y.o. male – new patient
- PMHx: HTN, OA, DM, Afib, CKD, OP, constipation; recent UTI
- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs

Discontinue ezetimibe; lower dose of statin or discontinue (if started for primary prevention – STOP at age 75)



Case Example

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- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs

Lower dose of dabigatran to 110mg bid or switch to apixaban (CrCl <15); STOP ASA (bleeding risk; no indication for dual therapy); consider switching to warfarin if INR program available



Case Example

- 75 y.o. male – new patient
- PMHx: HTN, OA, DM, Afib, CKD, OP, constipation; recent UTI
- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs

Stop macrobid (eGFR < 30); obtain history as to reason for initiating therapy



Case Example

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- Meds: Bisoprolol 5mg od, Ramipril 10mg od, tylenol #3 i-ii po tid prn, lasix 40mg od, metformin 500mg tid, insulin (lantus) 10u qhs, atorvastatin 40mg qhs, Ezetimibe 10mg qhs, ASA 81mg od, dabigatran 150mg bid, digoxin 0.125mg od, macrobid 100mg bid (7 day course – started 2 days ago), alendronate 70mg q weekly, vit. D 2,000U daily, Aleve prn, lansoprazole 30mg 30acb, MOM 30ml qhs

Discontinue alendronate (eGFR < 30ml/min.)



Case Example

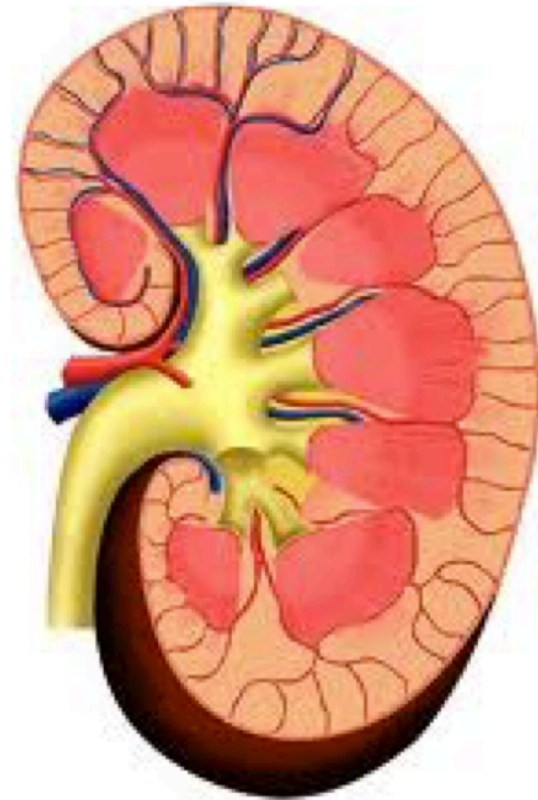
- 75 y.o. male – new patient
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Discontinue lansoprazole (?indication; risk of C. diff colitis, #s, pneumonia, low Mg/B12)



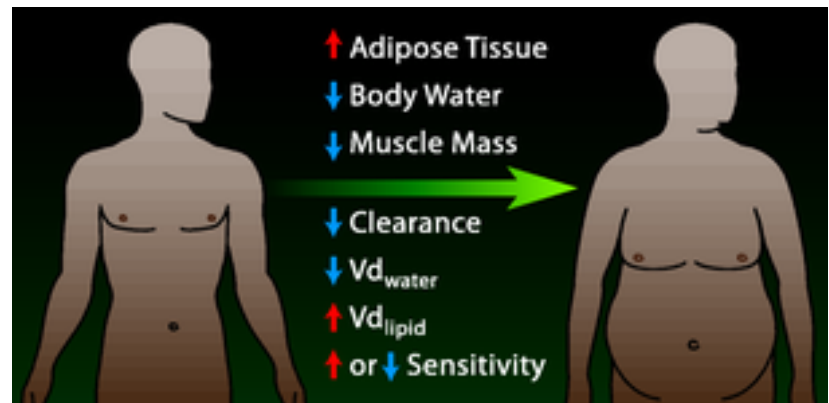
ADRs – Causes/Considerations

- Decreased renal function
 - Calculate CrCl
 - Drug index
- Allergies



ADRs – Causes/Considerations

- Frailty
 - Physiological changes (liver; body mass)
 - Progressive decline involving multiple body systems
 - Chronological age may not accurately reflect function



ADRs – Causes/Considerations

- RCTs may not be generalizable to all (e.g. elderly patients; advanced CKD)
 - ‘Treat to target’ may cause more harm than benefit



ADRs – Causes/Considerations

- Polypharmacy →
prescribing cascade



**“Each capsule contains your medication,
plus a treatment for each of its side effects.”**

ADRs – Causes/Considerations

- Quality of Life
- Time to benefit (T2B) > estimated life expectancy
- Goals of Care (e.g. dementia)
 - Shared decision making
- Individual patient preference
- Is QOL improving?





Med Reviews - Essential

- Annual CPX
- New patients/
admissions
- Support meetings
with pharmacy
- Cross reference
diagnosis list and
medication list
 - Deprescribe



Choosing Wisely Canada



BYE-BYE, PPI.

A toolkit for deprescribing proton pump inhibitors in EMR-enabled primary care settings



LESS SEDATIVES FOR YOUR OLDER RELATIVES.

A toolkit for reducing inappropriate use of benzodiazepines and sedative-hypnotics among older adults in hospitals

version 1.1

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Ontario Renal Network



**Kidney
Wise**
Detect + Protect

Conclusions

- CKD testing should only be applied to patients at high risk of CKD and in the absence of acute intercurrent illness; avoid in elderly patients with limited life expectancy – **Identification**
- eGFR and urine ACR are the tests of choice - **Detection**
 - eGFR should be done at least annually in some situations (e.g. med reviews; flu season - LTC)
- Most cases of CKD in primary care are low-risk and can be managed by PCPs – **Management**
 - Refer to nephrology as appropriate
- The KidneyWise Clinical Toolkit will make CKD care easier for PCPs and empower us to improve patient outcomes
- Medication reviews should be performed at regular intervals with particular attention to dose adjustments in patients with renal impairment to prevent AKIs



Acknowledgments

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Dr. Allan Grill	Provincial Medical Lead, Primary Care, ORN
Dr. Scott Brimble	Provincial Medical Lead, Early Detection & Prevention of Progression
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Kidney
Wise
Detect + Protect

Questions ?

Thank you

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