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Improving care for CKD patients: One idea at a time

Dr. Monica Beaulieu, MD, FRCPC, MHA
Medical Lead, Projects & Initiatives, BC Renal Agency
on behalf of the Kidney Care Advisory Committee, BC Renal Agency

Overview

- Describe the current landscape of CKD care in BC
- Understand the role of the Kidney Care Advisory Committee (KCAC)
- Highlight select initiatives both recently completed and in progress
- Share CKD metrics and indicators used to guide practice
- Get your feedback to help shape next steps

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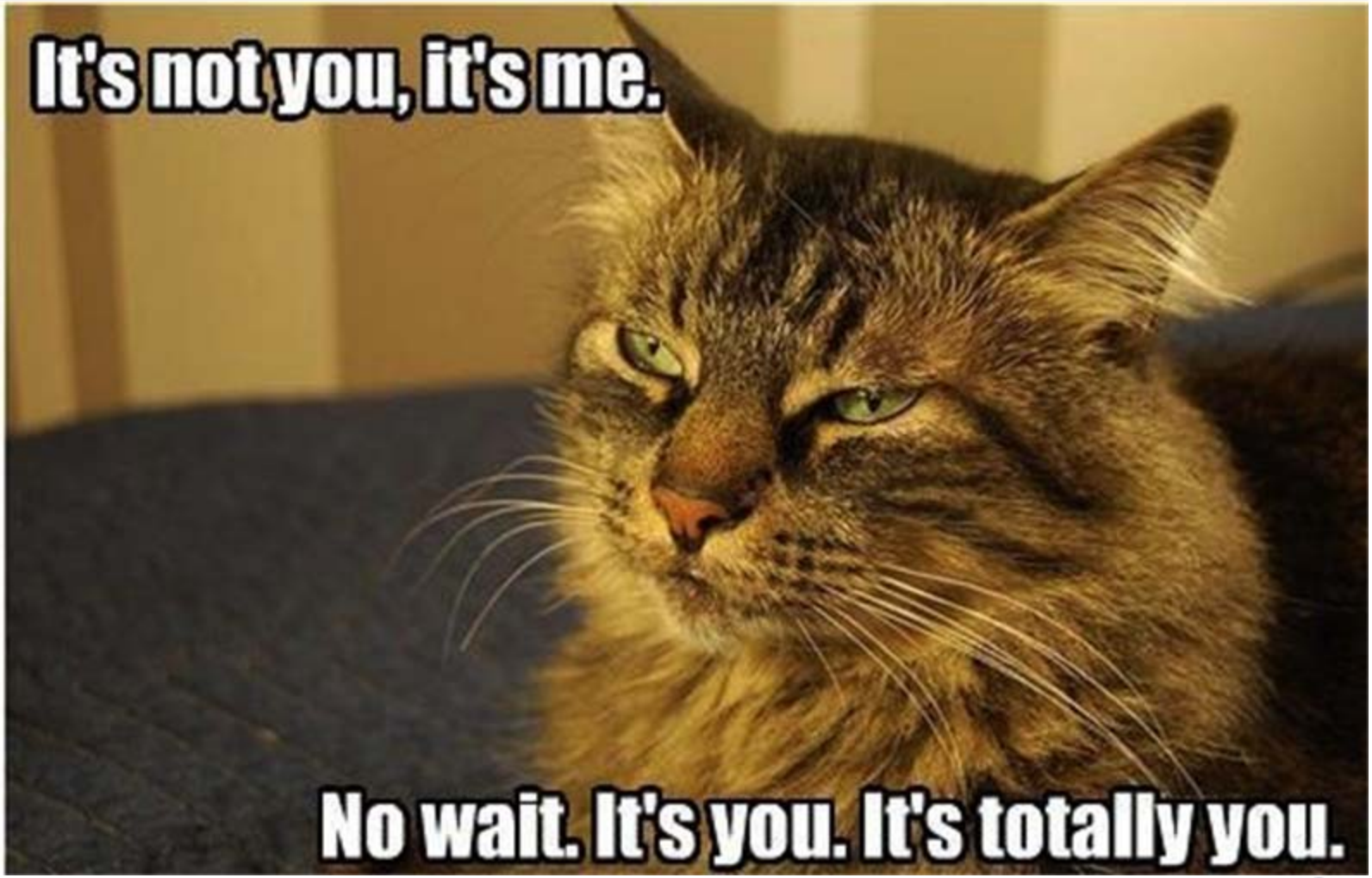
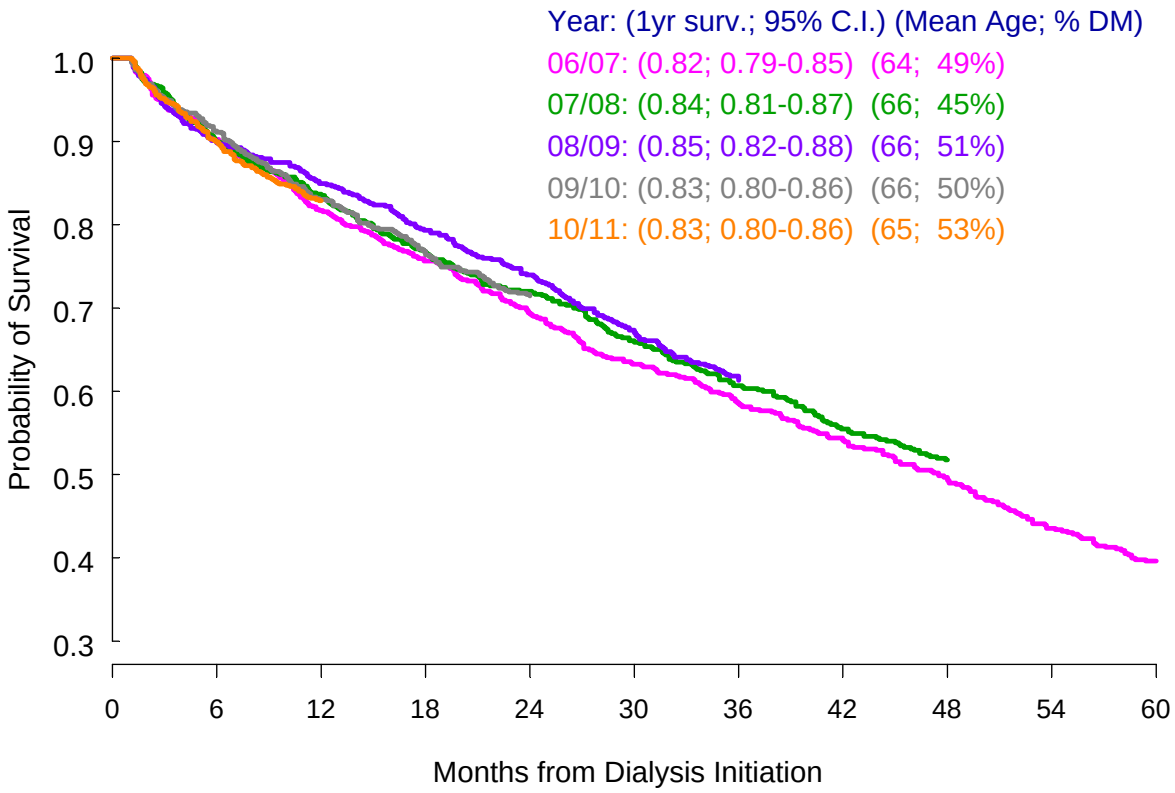
Disclosures



Describe the current landscape of CKD care in BC

Kidney patients in BC have the highest survival in Canada



Test for adjusted HR* for Year of Dialysis Initiation: Chi-sq=8.1325, p=0.087
*Adjusted for age, gender, diabetes, initial modality, HA at dialysis initiation, CKD follow-up

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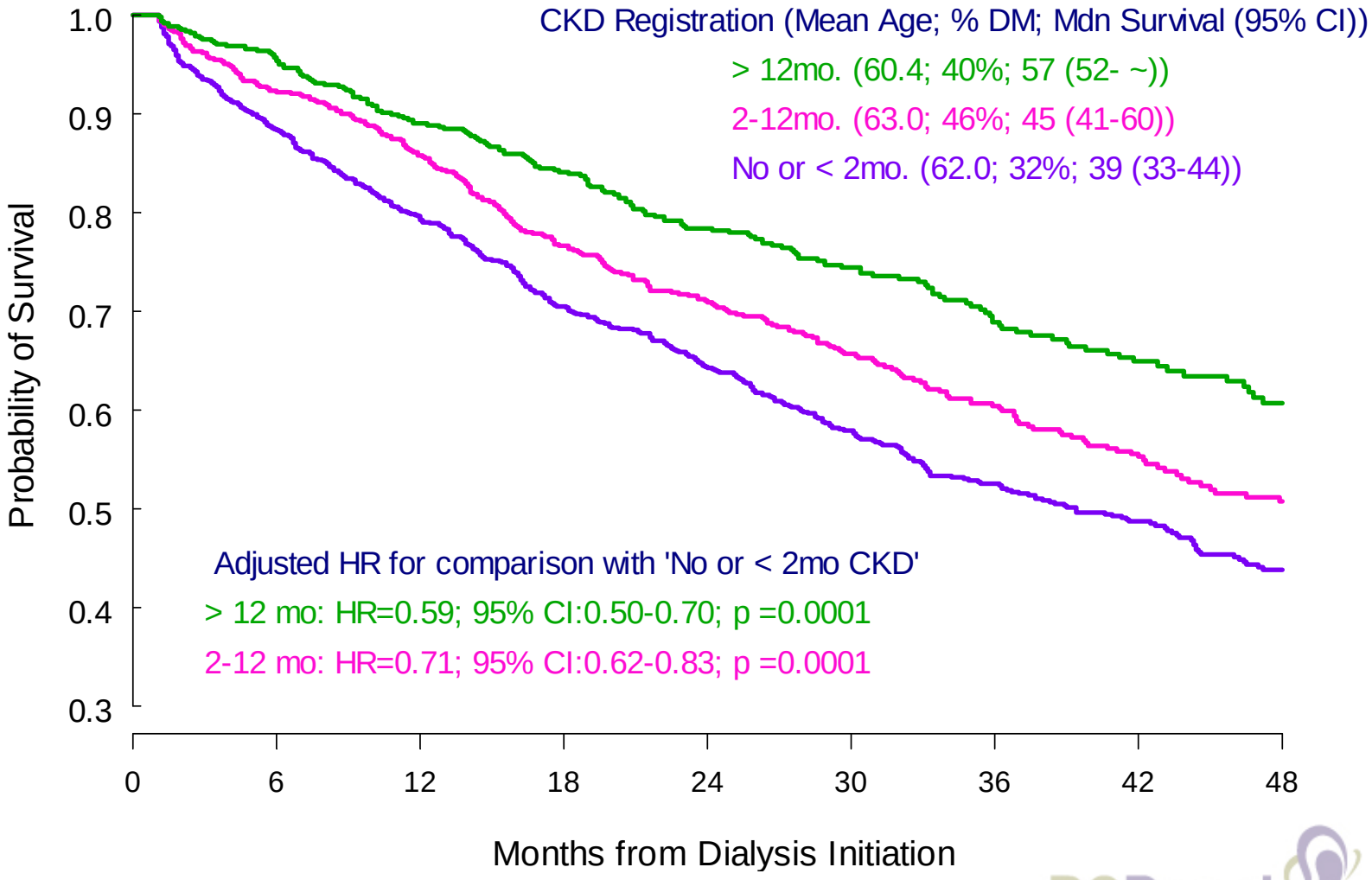
Early intervention associated with longer survival on dialysis (as measured by CKD registration)



British Columbia one of the first to report the benefits of multidisciplinary CKD clinics

The short- and long-term impact of multi-disciplinary clinics in addition to standard nephrology care on patient outcomes

Bryan M. Curtis[1], Pietro Ravani[2], F. Malberti[2], Fiona Kennett[3], Paul A. Taylor[3], Ognjenka Djurdjev[4] and Adeera Levin[3]

[1]Division of Nephrology, Patient Research Center, Memorial University of Newfoundland, Canada, [2]Divisione di Nefrologia e dialisi, Azienda Istituti Ospitalieri di Cremona, Italy, [3]Division of Nephrology and [4]Center for Health Evaluation and Outcome Sciences (CHEOS), St Paul's Hospital, University of British Columbia, Canada

Nephrol Dial Transplant (2005) 20: 147–154

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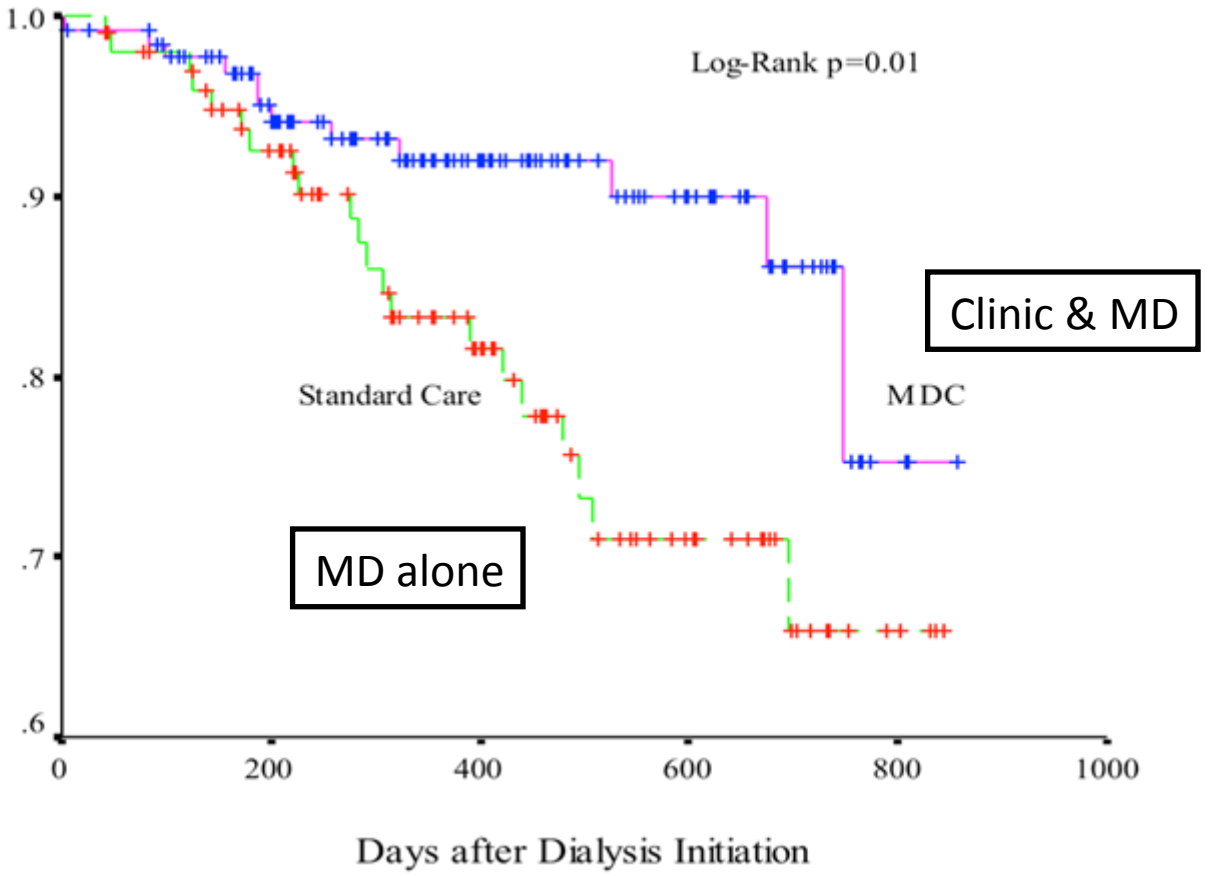
Patients who were followed by an multidisciplinary team survived longer



Nephrol Dial Transplant (2005) 20: 147–154

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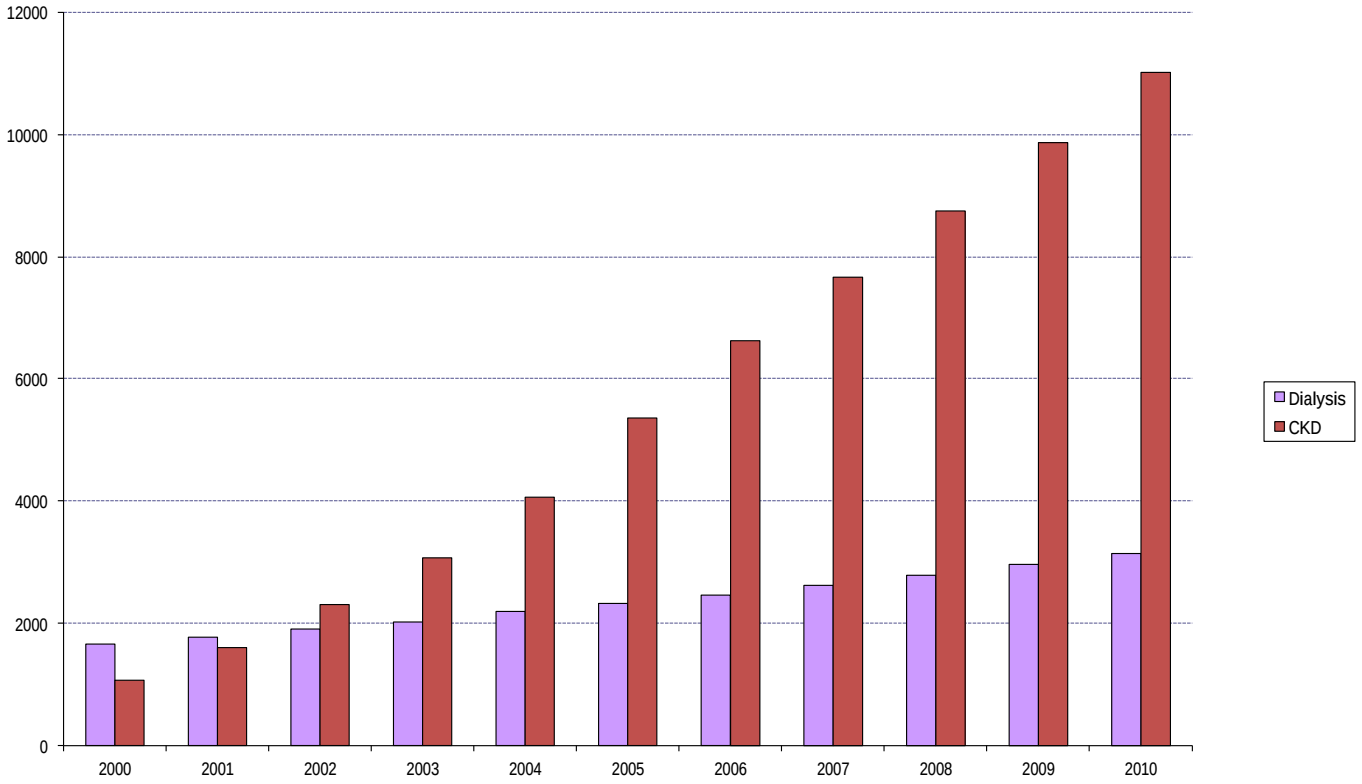
Despite exponential growth of CKD, dialysis growth remains relatively constant

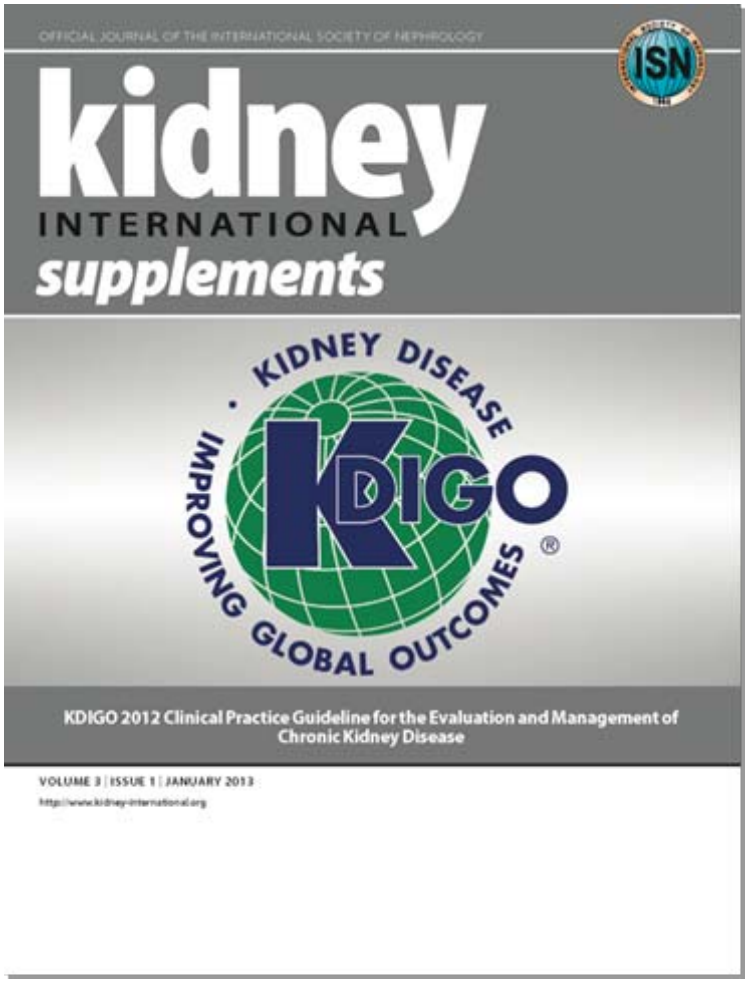


Data from BC Renal Agency, PROMIS information system

KDIGO 2012 CPG for Evaluation and Management of Chronic Kidney Disease

Follows a decade of focused research and clinical practice in CKD

For the first time, formally recommended multidisciplinary team based care for CKD



Children also benefit from multidisciplinary CKD care

Pediatr Nephrol (2012) 27:1921–1927
DOI 10.1007/s00467-012-2209-6

ORIGINAL ARTICLE

The effect of a multidisciplinary care clinic on the outcomes in pediatric chronic kidney disease

Salma Ajarmeh · Lee Er · Genevieve Brin · Ognjenka Djurdjev · Janis M. Dionne

BC recognized internationally for organizational structures and care models

EDITORIAL COMMENTARY

Why multidisciplinary clinics should be the standard for treating chronic kidney disease

Guido Filler · Steven E. Lipshultz

Dedicated additional funding was the key to establishing the multidisciplinary CKD clinic. Furthermore, the province of British Columbia provided an infrastructure with a centralized renal disease registry and a clinic data manager. It is

Transplant Cooperative Study cited above [21]. The government of the province of British Columbia and the Provincial Renal Agency should be congratulated for funding the Patient Records, Outcome and Management Information System (PROMIS). The impressive improvement in the eGFR

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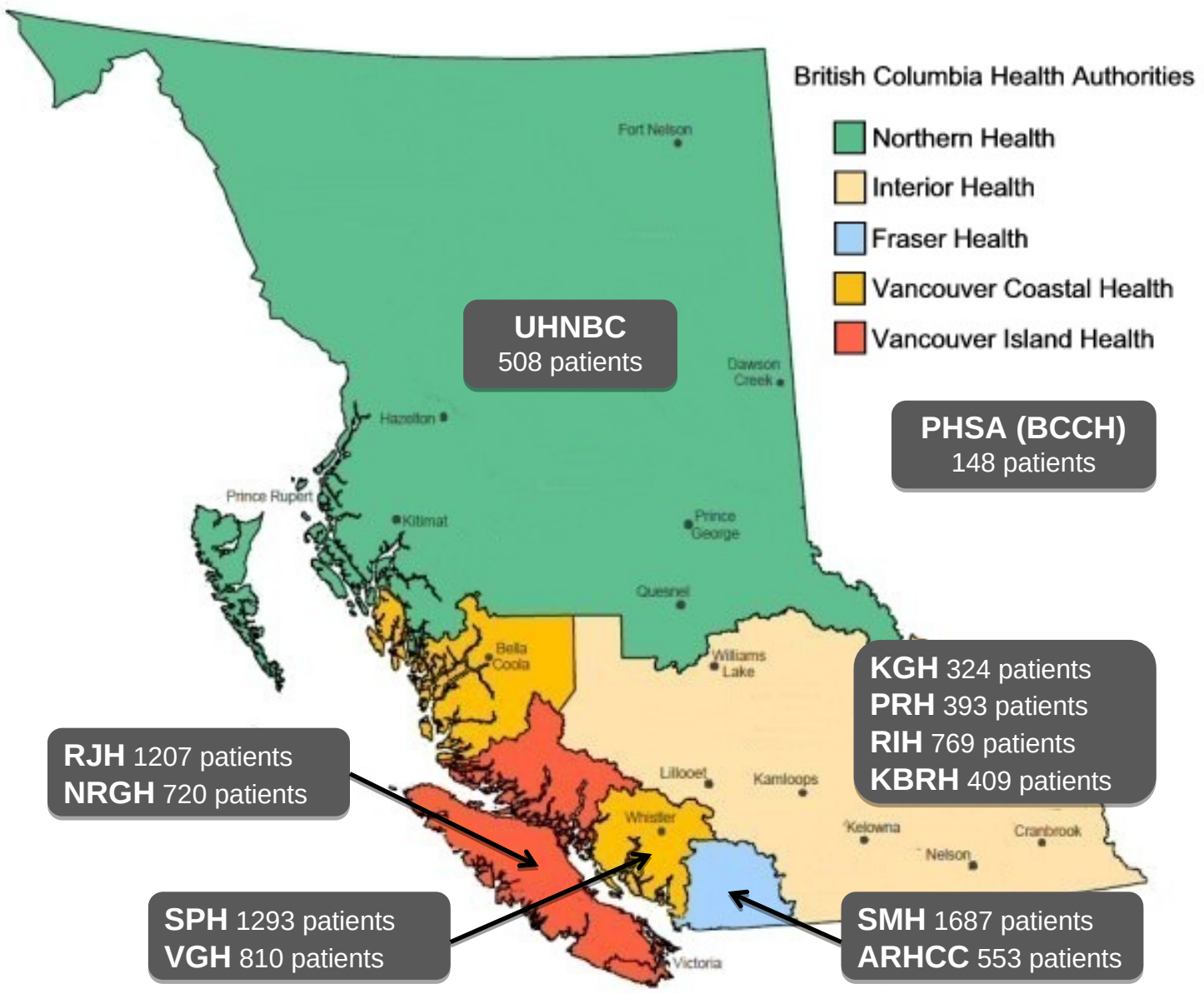
Number of patients followed in CKD clinics in BC



KCC inter-professional team members in BC

- Over 100 FTE positions for CKD patients funded by PRA in 2011/2012
  - Dieticians
  - Nurses
  - Pharmacists
  - Social workers
  - Unit clerks
- And a few nephrologists and NP's

Patients with CKD do not always receive care consistent with guidelines

- Complexities in CKD management
- Lack of randomized trial data to inform care
- A failure to disseminate best practice

"These quality problems occur typically not because of failure of good will, knowledge, effort or resources directed to health care, but because of fundamental shortcomings in the way care is organized"

"Crossing the Quality Chasm"
A New Health System for the 21st Century
Don Berwick

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The role of the Kidney Care Advisory Committee (KCAC)

The role of the Kidney Care Advisory Committee (KCAC)

To create an infrastructure and mechanism that will facilitate a provincial, inter-professional approach to improvements in CKD clinic based care including:

- Delaying/arresting chronic kidney disease progression
- Better preparing patients for appropriate transitions
- Increasing CKD clinic efficiencies

KCAC Advisory Group

Patient reps: Carol Morrison, Jan Uzick

Kidney Foundation: Heather Johnson

GP rep: John Pawlovich

BCPRA: Donna Murphy-Burke, Gloria Freeborn, Kevin Noel, Adeera Levin, Clifford Lo

BCCH: Kathleen Collin, Janis Dionne

NH: Fareen Din, Laurie Ledger, Maureen Paciejewski

IH: Lianne Berst, Stephanie Brydon, Marilyn Grandbois, Maureen Lewis, Lauren Kembel, Jean Gibson, Cara Magas, Teri Pentland, Christine Topley, Karen Forsberg, Julie Loverin, Sue Saunders, Susan Haskett

FHA: Vangie Cabezon, Sharn Hara, Bobbi Preston, Bradford Strijack, Gail Walker

VCHA: Anny Chan-Ng, Marianna Leung, Judith Marin, Nadia Zalunardo, Rea Flamer

VIHA: Anna-Marie Anderson, Linda Church, Christine Frohloff, Naomi Glick, Sara Himelstein, Jodi Jantzen, Julia Steel, Kiyomi Renville

Admin support: Alexis Whatley

Project team leads: Janet Williams, Monica Beaulieu

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KCAC Phase 1: Sept–Dec 2011

Current landscape and provincial priorities

- met with each KCC clinic
- gathered information on current state, what worked, what didn't, how a provincial initiative could help
- collected and collated all algorithms/teaching tools
- finalized and began role-out of work plan to address priority areas identified

Four priority areas identified

- “Best Practices in Organizing Kidney Care” consensus paper
- Provincial KCC clinical guidelines/protocols/algorithms
- Standardized and enhanced educational materials based on principles of adult education
- Common indicators/targets to measure the effectiveness and efficiency of CKD care

KCAC Phase 2: Jan 2012 – Jan 2015

- BC Kidney Care Workplan 2012/13 – 2014/15
- overarching advisory group established
- four working groups established
  - Consensus paper "Best Practices in Organizing Kidney Care"
  - Guidelines and Protocols
  - Educational Resources and Tools
  - Indicators and Evaluation

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A selection of the KCAC initiatives recently completed and in progress

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Working group 1 membership
"Best Practices: Kidney Care Clinics"

Patient reps: Jan Uzick, Carol Morrison

GP rep: John Pawlovich

NHA: Laurie Ledger, Fareen Din

IHA: Christine Topley, Sue Saunders, Brian Forzley, Lianne Berst

VCHA: Nadia Zalunardo, Rea Flamer, Anny Chan-Ng

FHA: Gail Walker, Sharn Hara, Bobbi Preston, Terry Satchwill

VIHA: Julia Steel, Kiyomi Renville, Kathleen O'Donoghue, Darlene Michl, Sara Himelstein, Naomi Glick, Greg Ganz, Christine Frohloff, Linda Church

Admin support: Alexis Whatley

Project team leads: Janet Williams, Monica Beaulieu

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Best Practices: Kidney Care Clinics

DRAFT October 16, 2013

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2.0 Kidney Care Clinic goals

Goals#

KCCs work collaboratively with patients ***with later stage CKD and/or at risk of rapidly progressing CKD*** and their families to provide evidence-based, interprofessional care which aims to:

1. Provide specific therapy based on diagnosis to slow/arrest CKD progression.

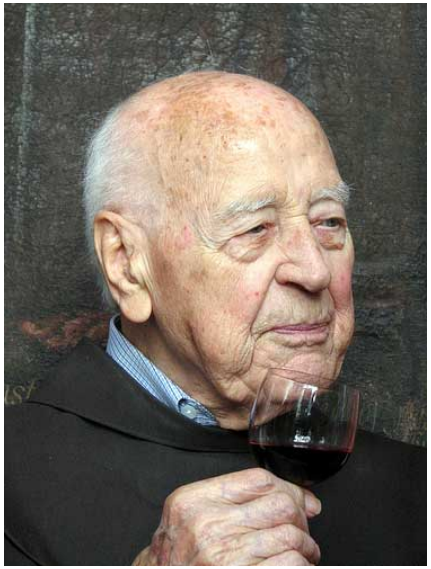
2. Prevent, evaluate and/or manage:
   a. Cardiovascular disease.
   b. CKD endocrine and metabolic complications (e.g. malnutrition, anaemia, bone disease, acidosis).
   c. Other co-morbid conditions.

3. Maximize the confidence and abilities of patients and families to:
   a. Adjust to and self-manage their disease.
   b. Actively participate in and optimize treatment decisions.

4. Support planning and preparation for:
   a. Renal replacement therapy (e.g. choice of modality, access-placement and care, pre-emptive transplantation).
   b. Conservative care and palliative care options where required.
   c. Advance care planning.

Consider the following patients

- 86 year old woman
- GFR 30 mL/min
- Urine ACR 1.0 mg/mmol
- Normal Ca, PO_4, bicarb, albumin



- 72 year old man
- GFR 30 mL/min
  - Urine ACR 70 mg/mmol
- Normal Ca, PO_4, bicarb, albumin

- 48 year old man
- GFR 30 mL/min
- Urine ACR 450 mg/mmol
- Normal Ca, bicarb, albumin, PO4 1.7

Appendix 1: Referral to nephrology based on GFR and Albuminuria

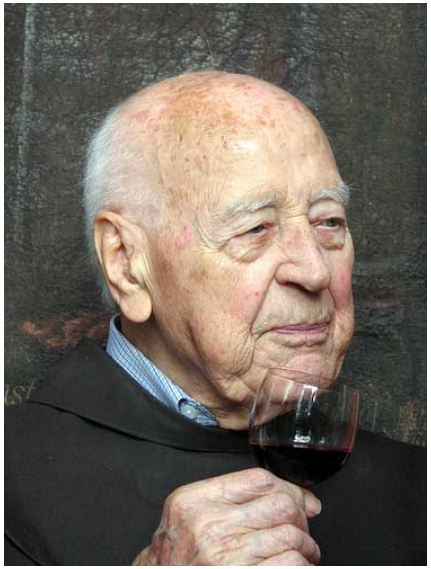
GFR categories (ml/min/ 1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal or high	≥90		Monitor	Refer*
	G2	Mildly decreased	60–89		Monitor	Refer*
	G3a	Mildly to moderately decreased	45–59	Monitor	Monitor	Refer
	G3b	Moderately to severely decreased	30–44	Monitor	Monitor	Refer
	G4	Severely decreased	15–29	Refer*	Refer*	Refer
	G5	Kidney failure	<15	Refer	Refer	Refer

!

* !Referring !clinicians !may !wish !to !discuss !with !their !nephrology !service !depending !on !local ! arrangements !regarding !monitoring !or !referring. !!

Translating to clinical practice

- 78 year old woman
- eGFR 33 mL/min
- Urine ACR 2.0
- Normal Ca, PO4, bicarb, albumin



- 82 year old man
- eGFR 30 mL/min
- Urine ACR 270
- Normal Ca, PO4, bicarb, albumin

- 48 year old man
- eGFR 30 mL/min
- Urine ACR 2450
- Normal Ca, PO4, albumin, PO4 1.7

- 78 year old woman
- eGFR 33 mL/min
- Urine ACR 2.0
- Normal Ca, PO4, bicarb, albumin
- 82 year old man
- eGFR 30 mL/min
- Urine ACR 270
- Normal Ca, PO4, bicarb, albumin
- 48 year old man
- eGFR 30 mL/min
- Urine ACR 2450
- Normal Ca, PO4, albumin, PO4 1.7

#Best#Practices:#Kidney#Care#Clinics#

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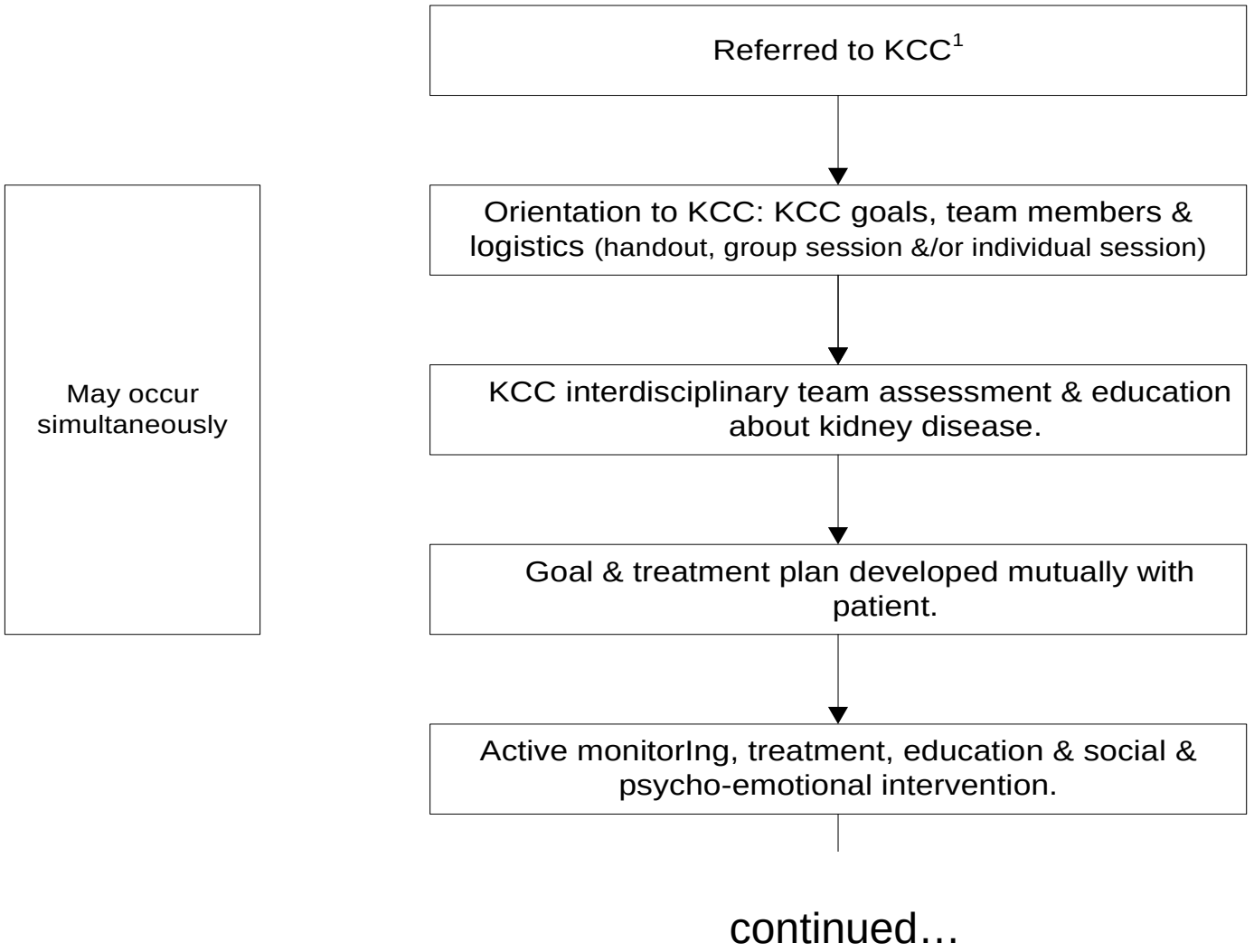
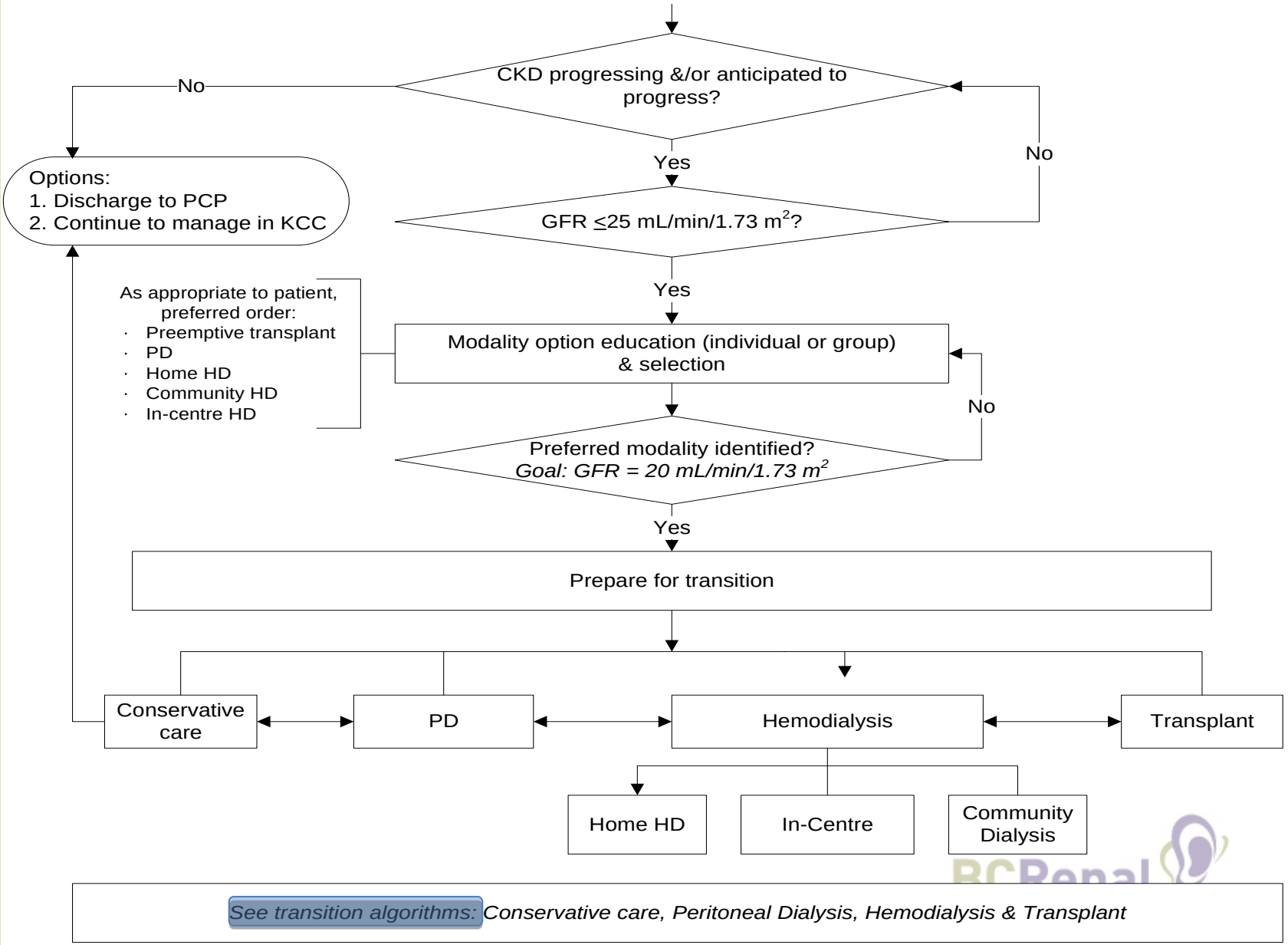
KCC Algorithm: tasks and timelines



KCC Algorithm: tasks and timelines



Best Practices: Kidney Care Clinics

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Why focus on transitions?

"A set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care in the same organization."

Why focus on transitions?

- Impacts
  - Patient safety
  - Patient experience
- Challenges
  - Many urgent and unplanned
  - Limited scope of practice
  - Lack of integration (of facilities, EHR's)
- Our responsibility and unique opportunity in nephrology
  - Communication, collaboration, documentation, funding

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Transition guidelines are being developed from KCC to dialysis modalities, transplant, conservative care

Appendix 5: Transition Guideline for KCC to Peritoneal Dialysis

*= tasks that may be performed by KCC or the PD team. Division of duties is arranged locally.
PD is done as self-care or care by companion/caregiver in a patient's home or care facility.

# Phase		Major Tasks		
		KCC Team		**PD Team**
1	KCC start date to date of PD tube insertion	Actively monitors, treats, educates & provides psycho-emotional & social support for kidney disease.		
		✂		
2	Modality education provided & preferred modality identified (goal: GFR = 20 mL/min).	Identifies patients eligible for PD (see Appendix 5a). PD is considered prior to HD.		
		✂		
		If eligible for PD, advises PD team.		Maintains list of patients eligible for PD. Prioritizes list for timing of assessment for PD suitability.
			✂	✂
		If ineligible or unsuitable, discusses other modality options & refers appropriately.		Assesses suitability for PD (refer to Appendix 5b).[12] Advises patient & KCC team of outcome. Updates PROMIS.

etc.

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Working group(s) 2: Guidelines, Protocols and Patient Education

- Guidelines for ordering and following of bloodwork
- Medication reconciliation
- Patient education initiatives
  - Get to know your kidney lab work
  - Over-the-counter meds and your kidney
  - Medication changes when you are sick

Working group 2 membership
Guidelines, Protocols and Patient Education

Kidney Foundation: Heather Johnson

UBC Faculty of Education: Shawna Faber

BCCH: Janis Dionne, Kathleen Collin, Marg Turik

VCHA: Nadia Zalunardo, Lynne Tomita, Marianna Leung, Anny Chan-Ng

NHA: Maureen Paciejewski, Lyn Johnson

VIHA: Kiyomi Renville, Dan Martinusen,

IH: Sue Saunders

FHA: Sharn Hara, Martin Duffy, Vangie Cabezon

Admin support: Alexis Whatley

Project team leads: Janet Williams, Monica Beaulieu


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Clinical Practice Guidelines for Physicians
Clinical Practice Standards and Guidelines for Dialysis Water Quality
Independent Hemodialysis Guidelines and Tools
Infectious Disease Guidelines
Kidney Care Guidelines (Non-Dialysis-Dependent CKD)
Pediatric Dialysis Policies and Procedures
Peritoneal Dialysis Guidelines
Pharmacy & Formulary Guidelines
Provincial Renal Program Guidelines
Vascular Access Provincial Guidelines & Tools
Other Guidelines
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BC KIDNEY CARE GUIDELINE

Ordering, Reviewing & Follow-Up of Lab Work

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Ordering, Reviewing and Follow-up of Lab work

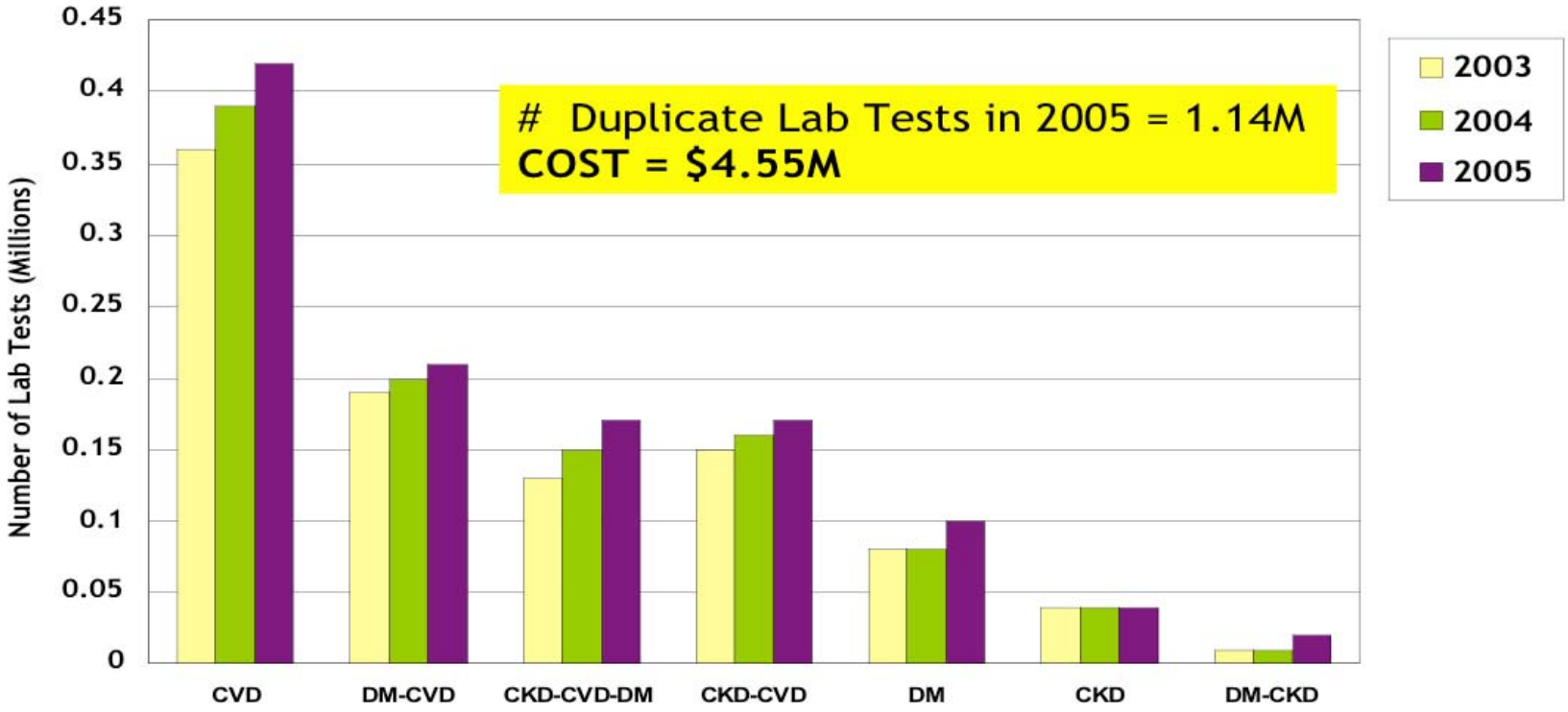
1.0 SCOPE

Lab work is a significant component of the management and monitoring of patients with chronic kidney disease (CKD). This guideline provides recommendations on:

(a) routine ordering of lab work;
(b) processes for review of lab work;
(c) protocols to follow up critical and out-of-range lab values; and
(d) written information to provide to patients on lab work.

This guideline applies to both adult and pediatric patient populations. The protocols for out-of-range lab values and written information for patients is only applicable to adult populations as normal/target ranges differ for pediatrics.

In patients with CKD, CVD or DM duplicate lab tests cost at least $4.5 million in 3 year period



*duplicate tests defined as same test ordered within 30 days

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Recommended adult CKD lab tests and frequency

BC KIDNEY CARE GUIDELINE

Ordering, Reviewing & Follow-Up of Lab Work

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TABLE 1: GUIDELINES FOR LAB TESTS AND FREQUENCY BY GFR

Adults				
GFR (mL/min/1.73 m^2)	G3a	G3b	G4	G5 (<15) &/or Unstable
	45-59	30-44	15-29	
Na+, K+, Cl-, HCO_3, Urea, Creat	Q6 mos	Q3 mos	Q2 mos	Monthly
CBC (No ESA)	Q6 mos	Q3 mos	Q2 mos	Monthly
CBC, Retic Count (On ESA)	Monthly	Monthly	Monthly	Monthly
Ferritin, Serum Iron, TIBC, Iron Saturation (no ESA)	Q6 mos	Q3 mos	Q4 mos	Q3 mos
Ferritin, Serum Iron, TIBC, Iron Saturation (on ESA)	Q3 mos	Q3 mos	Q4 mos	Q3 mos
Albumin, Ca^{2+}, PO_4	Q6 mos	Q3 mos	Q2 mos	Monthly
iPTH, Alk Phos	Q6 mos	Q6 mos	Q4 mos	Q3 mos
Uric Acid	Q6 mos	Q6 mos	Q4 mos	Q3 mos
ACR	Q3 mos	Q3 mos	Q4 mos	Q6 mos
Retic Count (No ESA)	As required	As required	As required	As required
Urinalysis: Routine & Micro	As required	As required	As required	As required
Hgb A1c	As required	As required	As required	As required
Other	As required	As required	As required	As required

Recommended paediatric CKD lab tests and frequency

Children (ages 0-18 years)

GFR (mL/min/1.73 m^2)	G3a	G3b	G4	G5 (<15) &/or Unstable
	45-59	30-44	15-29	
Na+. K+, Cl-, HCO_3, Urea, Creat	Q6 mos	Q3 mos	Q2 mos	Monthly
CBC (No ESA)	Q6 mos	Q3 mos	Q2 mos	Monthly
CBC, Retic Count (On ESA)	Monthly	Monthly	Monthly	Monthly
Ferritin, Serum Iron, TIBC, Iron Saturation (no ESA)	Q6 mos	Q3 mos	Q2 mos	Q2 mos
Ferritin, Serum Iron, TIBC, Iron Saturation (on ESA)	Q3 mos	Q3 mos	Q2 mos	Q2 mos
Albumin, Ca^{2+}, PO_4, Mg	Q6 mos	Q3 mos	Q2 mos	Monthly
iPTH, Alk Phos	Q6 mos	Q3 mos	Q2 mos	Q2 mos
PCR and/or Albumin Creatinine Ratio (ACR)	Q6 mos	Q3 mos	Q2 mos	Q2 mos
Urinalysis: Routine & Micro	As required	As required	As required	As required
24 Hour Urine for Volume, Protein, Sodium, Creatinine	Annual	Annual	Annual	Annual
Fasting Glucose, Chol, TG, CRP, 25-OH Vit D, TSH, AST, ALT, GGT, Bili, LDH, PT, PTT, INR, Uric Acid	Annual	Annual	Annual	Annual
Other	As required	As required	As required	As required

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HA Logo	Kidney Care Centre Address, Phone & Fax	Patient Label

STANDING LAB WORK ORDERS FOR ADULTS

Attention Labs/Phlebotomists: KIDNEY DISEASE PATIENT
NO blood draws on RIGHT/LEFT arm. Use hand veins or other arm.

Start Date:

Ordering Physicians		Billing #	Additional copies to:
Dr. D. Duck	☐	UUUUU	Kidney Clinic:
Dr. M. Mouse	☐	VVVVV	PROMIS
Dr. R. Runner	☐	WWWWW	GP:
Dr. Y. Bear	☐	XXXXX	
Dr. R. Ann	☐	YYYYY	
Dr. L. Mermaid	☐	ZZZZZ	

CKD Category:

This is a new standing order. This replaces the previous orders from the Kidney Clinic.
The duration of these orders is for 2 years unless replaced by new orders.

Tick appropriate box	Every Month	Every 2 Months	Every 3 Months	Every 4 Months	Every 6 Months
Na+, K+, Cl-, HCO_3, Urea, Creat	☐	☐	☐	☐	☐
CBC	☐	☐	☐	☐	☐
Retic Count	☐	☐	☐	☐	☐
Ferritin, Serum Iron, TIBC, Iron Saturation	☐	☐	☐	☐	☐
Albumin, CA^{2+}, PO_4	☐	☐	☐	☐	☐
iPTH, Alk Phos	☐	☐	☐	☐	☐
Uric Acid	☐	☐	☐	☐	☐
ACR	☐	☐	☐	☐	☐
Urinalysis: Routine & Micro	☐	☐	☐	☐	☐
Hgb A1c			☐	☐	☐
Other	☐	☐	☐	☐	☐

JAN	FEB	MAR	JAN	FEB	MAR	JAN	FEB	MAR	JAN	FEB	MAR
APR	MAY	JUN	APR	MAY	JUN	APR	MAY	JUN	APR	MAY	JUN
JUL	AUG	SEP	JUL	AUG	SEP	JUL	AUG	SEP	JUL	AUG	SEP

Ordering, Reviewing and Follow-up of Lab work

2.3 FOLLOW-UP OF ABNORMAL LAB RESULTS

RECOMMENDATIONS:

1. When reviewing lab results, look for out-of-range results and/or changes out of the patient's normal range. Bring concerns to the nephrologist's attention.

2. Utilize protocols for the follow-up of critical and out-of-range values for the following (see Appendix 2):
   a) Potassium (critical and out-of-range values)
   b) Bicarbonate (critical values)
   c) Calcium (critical values)
   d) Phosphate (critical and out-of-range values)
   e) Unexpected decline in kidney functioning (critical values).

3. Provide education to patients about lab tests and normal values (see Appendix 3 for written handout).

Appendix 2: Protocols for Follow-Up of Critical & Out-of-Range Values between KCC Visits

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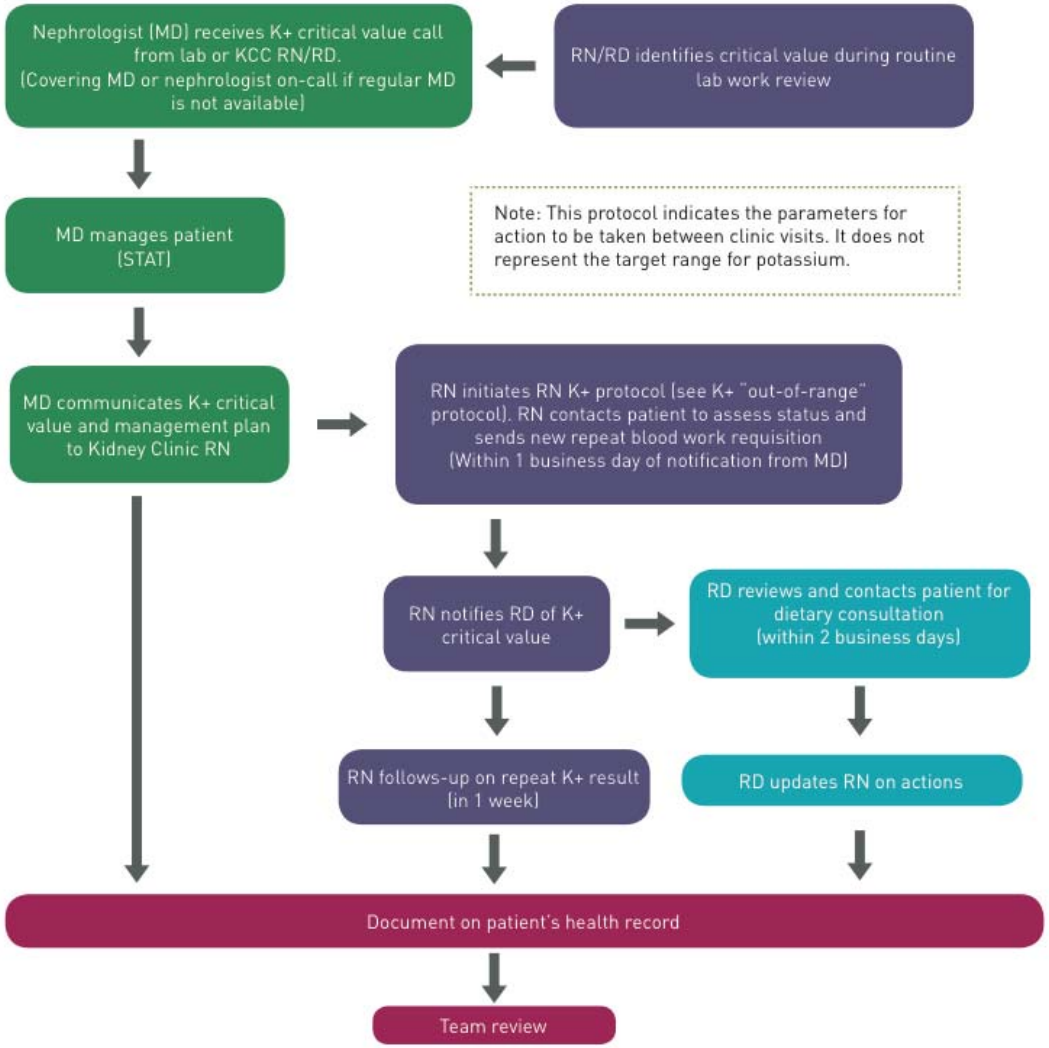
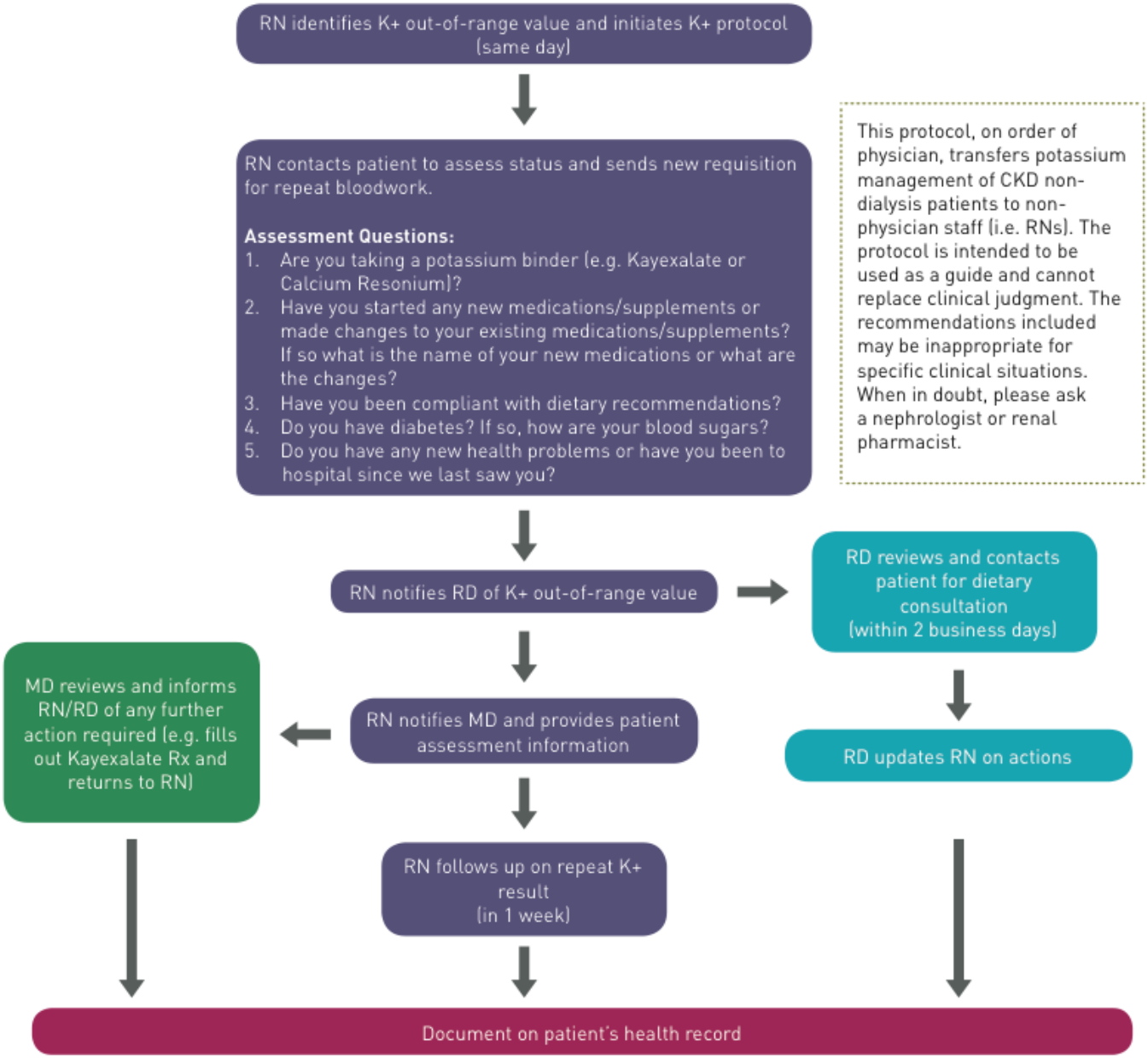
2 (a) (i) POTASSIUM Protocol: Follow-Up of Critical Values between KCC Visits
Critical Range: <3.0 or ≥ 6.0 mmol/L



2 (a) (ii) POTASSIUM Protocol: Follow-Up of Out-of-Range Values between KCC Visits
Out-of-Range: 5.5 – 5.9 mmol/L



BC KIDNEY CARE GUIDELINE

Appendix 3: Get to Know Your Kidney Lab Work (Information Sheet for Adult Patients)

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Test	Approximate Normal Values	What it is
Estimated Glomerular Filtration Rate (eGFR)	Greater than 60	• This is a guide to your kidney health. • It tells how well your kidneys are working. • The lower your eGFR, the less your kidneys are working. • Goal is to keep your eGFR stable and delay progression of the disease.
Creatinine	45 to 110	• Waste made by muscle activity. • Level goes up as kidney function goes down.
Urine Albumin to Creatinine Ratio (ACR)	Less than 3	• Amount of protein in the urine. • In some people, protein from the blood leaks into the urine. • Good blood pressure control helps slow the loss. • You may also need medication to control protein loss in the urine.
Urea	Less than 9	• Waste made by the body. • Level goes up as kidney function goes down.
Uric Acid	Less than 500	• Uric acid levels are sometimes high in kidney patients. Eating foods high in purine can also cause high levels. • If too high, ask your dietitian for help.
Hemoglobin (Hgb)	Greater than 115	• Part of your red blood cells that carry oxygen. • Level often goes down as kidney function goes down.
Iron Saturation	Greater than 0.20	• Tells how much iron you have available to make new red blood cells. • If low, you may need iron supplements.
Ferritin	100 to 500	• A form of stored iron.
Hemoglobin A1C (HgbA1C)	Less than 7.0	• Shows how your blood sugars have been over the past three months. • Good blood sugar control helps protect your kidneys.
Potassium (K+)	3.5 to 5.0	• Mineral found in most foods. • You may need diet changes or medication to keep levels safe.
Sodium (Na+)	135 to 145	• Mineral that helps balance water in your body. • Important in blood pressure control and fluid balance.
Calcium (Ca^{2+})	2.1 to 2.6	• Mineral found in food, such as dairy products. • Helps to keep bones healthy. • May go down with low kidney function. • You may need medication to help maintain normal levels.
Phosphate (PO_4)	0.8 to 1.5	• Mineral found in foods such as dairy products and in the form of phosphorous additives. • May go up with low kidney function • You may need diet changes or medication to help maintain normal levels

Medication reconciliation: making health care less hazardous

Medication reconciliation: making health care less hazardous

- Kidney patients are at high risk for medication errors:
  - Large percentage have more than one concurrent condition (e.g. diabetes, heart disease)
  - Average of 20 medications
  - Frequent prescription changes
  - Outpatient care, but with frequent hospitalizations

- Unintentional medication discrepancies occur frequently AND are often clinically important
  - 50% of complex medical patients have at least one documentation error at time of admission
  - 1/3 are clinically important

BC KIDNEY CARE GUIDELINE

Medication Reconciliation

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CONTENTS

1.0 SCOPE

Kidney patients have complicated medication regimens that change frequently, reflecting the acute and dynamic nature of their health status. The average chronic kidney disease (CKD) patient is on multiple medications, which often include medications to manage additional disease states such as heart disease or diabetes.

Medication reconciliation (med rec) is a structured process in which healthcare professionals partner with clients, families and caregivers for accurate and complete transfer of medication information at transitions of care (Accreditation Canada, 2012).

The med rec process involves generating a comprehensive list of all medications the client has been taking prior to a visit – the Best Possible Medication History (BPMH). The BPMH is compiled using a number of different sources and includes information about prescription medications, non-prescription medications, vitamins and supplements, along with detailed documentation of drug name, dose, frequency and route of administration. Any discrepancies identified between what the client is prescribed, and what they are actually taking, will be resolved at the clinic or referred to their provider of care (e.g., family physician). (Accreditation Canada, 2012).

TABLE 1: KIDNEY CARE CLINIC MEDICATION RECONCILIATION PROCESS

Timing	Step	Responsibility
Prior to KCC visit	1. Collect information about medications the patient is taking.	
	• Print a report from PROMIS listing the patient's medications (Medication Profile, Current Meds or Med Rec report).	Clerk, RN, pharmacist or pharm tech
	• Print the Pharmanet profile.	Clerk, RN, pharmacist or pharm tech
Prior to or day of KCC visit	2. Identify discrepancies between the PROMIS report and Pharmanet list (note: Pharmanet list only includes dispensed medications).	RN, pharmacist, pharm tech or nephrologist
Day of visit	3. Interview the patient/caregiver using the Best Possible Medication History Interview Guide (www.bcrenalagency.ca) to review the drug name, dose, route and frequency for each medication being taken.	RN, pharmacist, pharm tech or nephrologist
	4. Document discrepancies on the PROMIS report and/or progress notes.	RN, pharmacist, pharm tech or nephrologist
	5. Resolve and document resolution of appropriate discrepancies with the patient/family based on information gathered.	RN, pharmacist, pharm tech or nephrologist
	6. Make note if patient/caregiver would like a copy of their current medication list.	RN, pharmacist, pharm tech or nephrologist
Day of KCC visit or next day	7. Document communication of discrepancies requiring resolution by a physician (nephrologist, family physician or other medical specialist). Communication may be in-person, by phone, by fax or by hard copy to the appropriate physician. Communication with the GP may be via the post KCC visit typed consultation report.	RN or pharmacist
	8. If new orders are written during the clinic visit, provide the prescription to the patient and/or fax to the appropriate pharmacy.	Clerk, RN, pharmacist or pharm tech
	9. Update the medications in PROMIS.	Clerk, RN, pharmacist

Continued...

Over-the-Counter (Non-Prescription) Medications and Your Kidneys

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If you have chronic kidney disease, please check with your doctor or pharmacist BEFORE taking any medications, including the ones in this handout. Never take more than the recommended dose of any medication. Read the label carefully before buying over-the-counter (non-prescription) medications and follow the instructions.

WHY?
The kidneys work to get rid of many medications. If your kidneys are not working well, **medications might build up in your body and cause unwanted side effects.**

Here is a list of commonly used medications that are OK to take or not OK to take if you have kidney disease. This is not a complete list. When in doubt, consult your doctor, pharmacist or Kidney Care Clinic (bring this list with you).

OVER-THE-COUNTER (NON-PRESCRIPTION) MEDICATIONS			
Type	**OK to Take**	**Don't Take**	**Don't Take Because...**
Antacids (adults only; if <19 yrs old, check with pharmacist)	• One or two **TUMS** (calcium carbonate), ranitidine (**ZANTAC 75**) or famotidine (**PEPCID AC**) can be taken sometimes. • If you need something regularly, talk to your doctor or pharmacist.	• Antacids that contain aluminum, magnesium (**MAALOX, MYLANTA, GAVISCON**) or sodium (**ALKA-SELTZER**).	• Your kidneys may not be able to get rid of the extra aluminum, magnesium and sodium. A build-up may cause unwanted effects. • Extra sodium can increase your blood pressure.

Acute kidney injury: a potentially avoidable hazard in CKD?

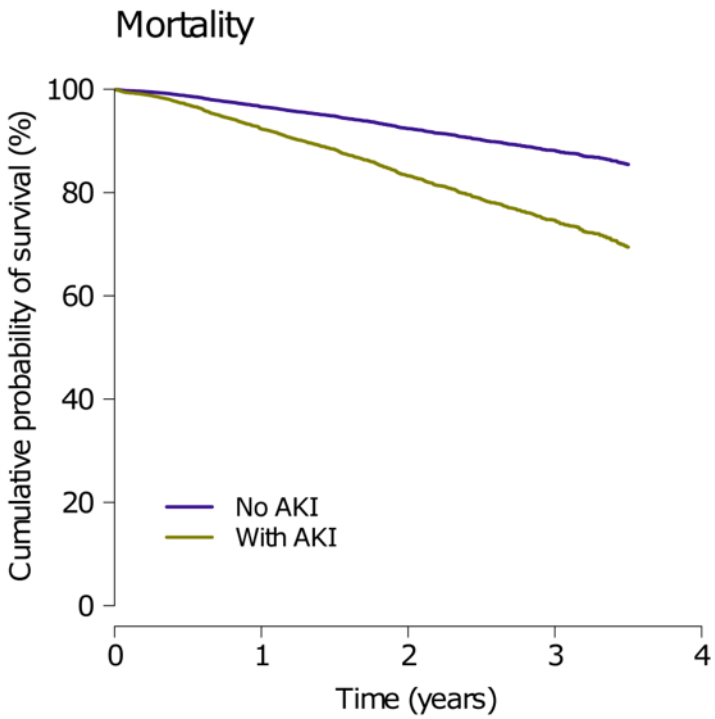
Nephrol Dial Transplant (2010) 1 of 7
doi: 10.1093/ndt/gfq011

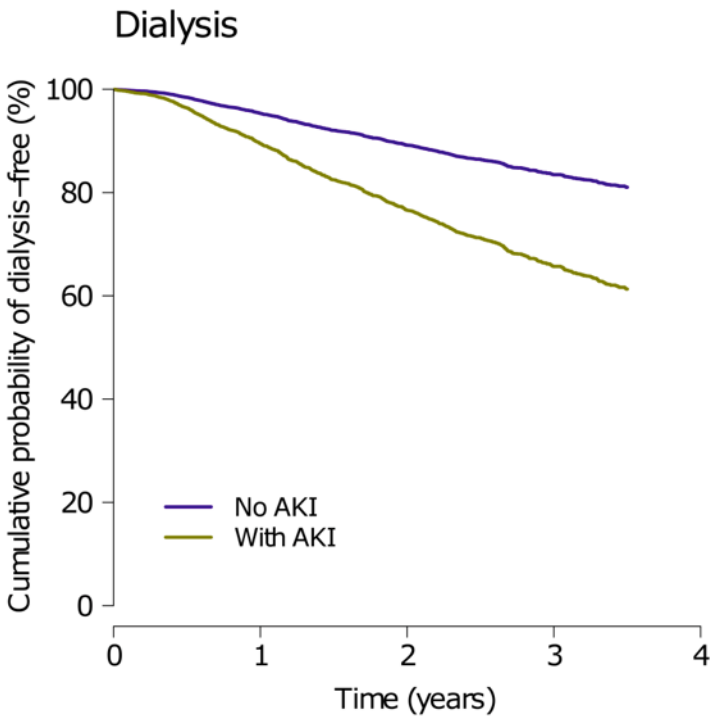
Original Article

Incidence and outcomes of acute kidney injury in a referred chronic kidney disease cohort

Jean-Philippe Lafrance[1,2], Ognjenka Djurdjev[3] and Adeera Levin[3,4]

Acute kidney injury: a small change in creatinine…. a profound impact on outcomes





Nephrol Dial Transplant(2010);25(7)2203-9

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PATIENT TEACHING TOOL

Medication Changes When You Are Sick

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If you have a bad flu or other illness which causes you to vomit or have diarrhea AND you cannot eat or drink normally, you may become dehydrated (dry). Dehydration can affect your kidney function and blood pressure.

If you are vomiting or have diarrhea or feel very sick:

- Try to drink fluids. It is best to drink fluids that do not have caffeine.

If you are so sick that you cannot drink your normal amount of fluids:

- Stop taking the medications listed below until you are able to start drinking fluids again.
- **Contact your doctor or nurse if you have to stop taking your medications for more than 2 days.**

- ☐ ACE inhibitor: _____
- ☐ Angiotensin receptor blocker: _____
- ☐ Anti-inflammatory: _____
- ☐ Metformin
- ☐ Water pill: _____
- ☐ _____

Work in progress

Modality education/treatment choices

Why focus on modality education?

- Consistent information to help make informed selection
- Encourage patients to select a preferred modality at the appropriate time
- If appropriate to their situation, encourage patients to receive a pre-emptive transplant, peritoneal dialysis or home hemodialysis
- Increase the involvement of patients in modality decisions

Working with members of the faculty of education at UBC

- Gathered and reviewed all education material currently used to assess key themes
- Attended education sessions in multiple KCC clinics
- Distilled a group of “need to know” items
- Working on developing provincial educational package with ability to customize locally as required
- Pre/post research study being developed including structured interview of patients province wide and in multiple languages

How will we know if we are improving? – CKD indicators to guide practice

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Working group 3 membership
Indicators and Evaluation

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Admin support: Alexis Whatley

Project team leads: Janet Williams, Monica Beaulieu

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KCC Demographic & Key Indicator Report

- Report distribution
  - First report circulated for period Oct 1, 2011
- Indicators included must be key areas of focus of KCC's **and** recorded and measurable in PROMIS
- Includes demographic data and key indicator data
- Establishing targets/thresholds a "work in progress"
- Initial targets established for:
  - Patients with eGFR < 20ml/min and planned modality identified (85%)
  - Patients starting on planned modality (85%)
  - Hemoglobin and Iron sat values within target range for pts on ESA (80%)

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Percent of CKD patients followed by clinic team

	BC	IH	FHA	VCHA	VIHA	NH	BCCH
CKD pts	**11,999**	1,955	2,424	3,223	3,527	516	154
KCC pts	**8,821 (75%)**	1,895 (97%)	2,240 (92%)	2,103 (65%)	1,927 (55%)	508 (98%)	148 (96%)
MD pts	**2,531 (21%)**	54 (2.8%)	124 (6%)	1,087 (34%)	1,263 (36%)	2 (0.4%)	0
Missing f/up loc	**448 (4%)**	6 (0.2%)	60 (2%)	33 (1%)	337 (9%)	6 (1.2%)	6 (4%)

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KCC demographics by health authority

	BC	IH	FHA	VCHA	VIHA	NH	BCCH
# KCC patients	**8,821**	1,895	2,240	2,103	1,927	508	148
Age (mean)	**71**	72	73	69	73	71	11
Male	**53%**	48%	54%	58%	52%	48%	64%
DM	**49%**	48%	55%	48%	46%	54%	6%
CVD	**59%**	64%	61%	59%	52%	61%	12%
Depression/ Anxiety	**22%**	30%	17%	16%	6%	25%	0

Renal function at KCC registration and dialysis start

	BC	IH	FHA	VCHA	VIHA	NH	BCCH
eGFR at CKD registration (ml/min)	**34 ± 14**	32	30	32	36	32	63.3
eGFR at dialysis start (ml/min)	**11 ± 6**	12.7	11.4	11.5	10.9	12.5	8.2

eGFR as of 31Mar 2012	BC
≥ 60	4%
45-59	9%
30-44	32%
15-29	37%
? 15	5%
Missing eGFR	13%

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KCC parameters demonstrate large clinic to clinic variability

	BC	Range between clinics
Rapid progression*	**15%**	12.3 – 20.4%
Pts on ACE/ARB	**63%**	46.2 – 85.6%
SBP > 140, DBP > 90	**4%**	1.4 – 6.6%
On ESA	**15%**	6.6 – 23.1%
Alb ≥ 36	**88%**	75.4 – 93.7%
Ca^{2+} ≥ 2.1 mmol/L	**95%**	88.8 – 97.5%
PO_4 ≤ 1.4 mmol/L	**82%**	78.9 – 85.9 %
HCO_3 ≥ 22 mmol/L	**89%**	67.1 – 94.8 %
3.5 ≤ K ≤ 5.5 mmol/L	**96%**	94.7 – 99%

* Rapid progression defined as > 7 ml/min in 12 months

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KCC parameters demonstrate large clinic to clinic variability

	BC	Range between clinics	Target
eGFR < 20 mL/min and planned modality	**81%**	64.3 - 100%	85%
Of those with planned modality:			
Missing	**11%**	2.6 - 33.3%	
Undecided	**7%**	0 - 15.6%	
Cons Care	**14%**	8.3 - 22.7%	
PD	**32%**	19.5 - 45.9%	
Preemp Tx	**5%**	0 - 11.7%	
HHD	**3%**	0 - 16.7%	
HD	**28%**	15.9 - 39.4%	

Of the patients who started dialysis in BC during the 6 month period, 70% started on their planned modality

	BC	Range between clinics	Target
KCC patients starting dialysis	**248**		
Had a planned modality	**200 (81%)**	64.3-100%	85%
Started on planned modality	**147 (70%)**	50-86.7%	85%
Started PD	**66 (27%)**	0-42.9%	
Started HHD	**6 (2%)**	0-16.7%	
Outpatient start	**128 (52%)**	25-66.7%	
Started with fistula*	**34 (28%)**	0-47.6%	
Preemptive transplant	**13**		

* 52% of patients with HD as their planned modality (but have not yet started HD) have a fistula created

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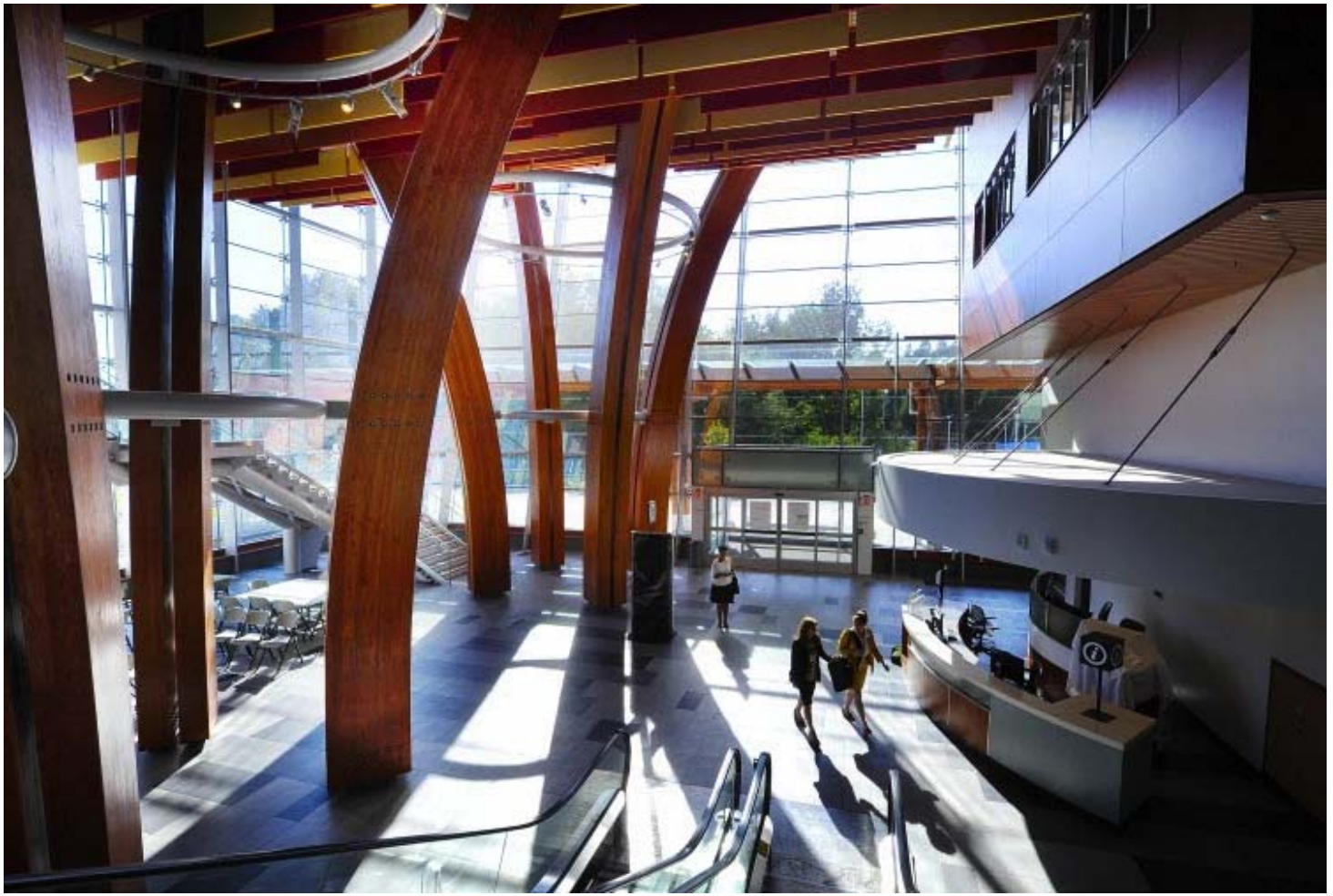
KCC Demographic & Key Indicator Report – Next steps

- Report distribution: next report for April 1 – Sep 30, 2013 in progress
- Continue to work on appropriate targets
- Assess variability and effect (or not) on outcomes
- Target interventions to improve important outcomes – measure and re-measure

Other studies under development

- Impact of patient education interventions on incidence of Acute Kidney Injury (AKI)
- Volume and type of lab work done pre/post lab work guideline implementation
- Patient/provider knowledge/satisfaction

Questions and feedback to help shape next steps



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KCAC Next steps

- Finish consensus paper
  - Transitions
- Finish modality education module
  - Role out and evaluation
- Guidelines to be developed next
  - Depression and anxiety screening
  - Implementing Advanced Care Planning
- Ongoing release of indicator report and associated studies

Thank you from the KCAC team

Please feel free to write down any comments, suggestions or general words of wisdom that you would like to share with the KCAC team

If there is anything that you have heard about that you would like to participate in, let us know as well

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