How to change physician, health system and patient behavior: the knowledge to action cycle and guideline implementation

KDIGO

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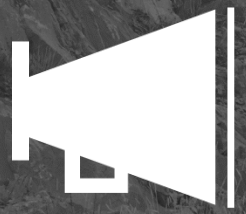
Outline:



Describe the Knowledge to Action Cycle and Guideline implementation

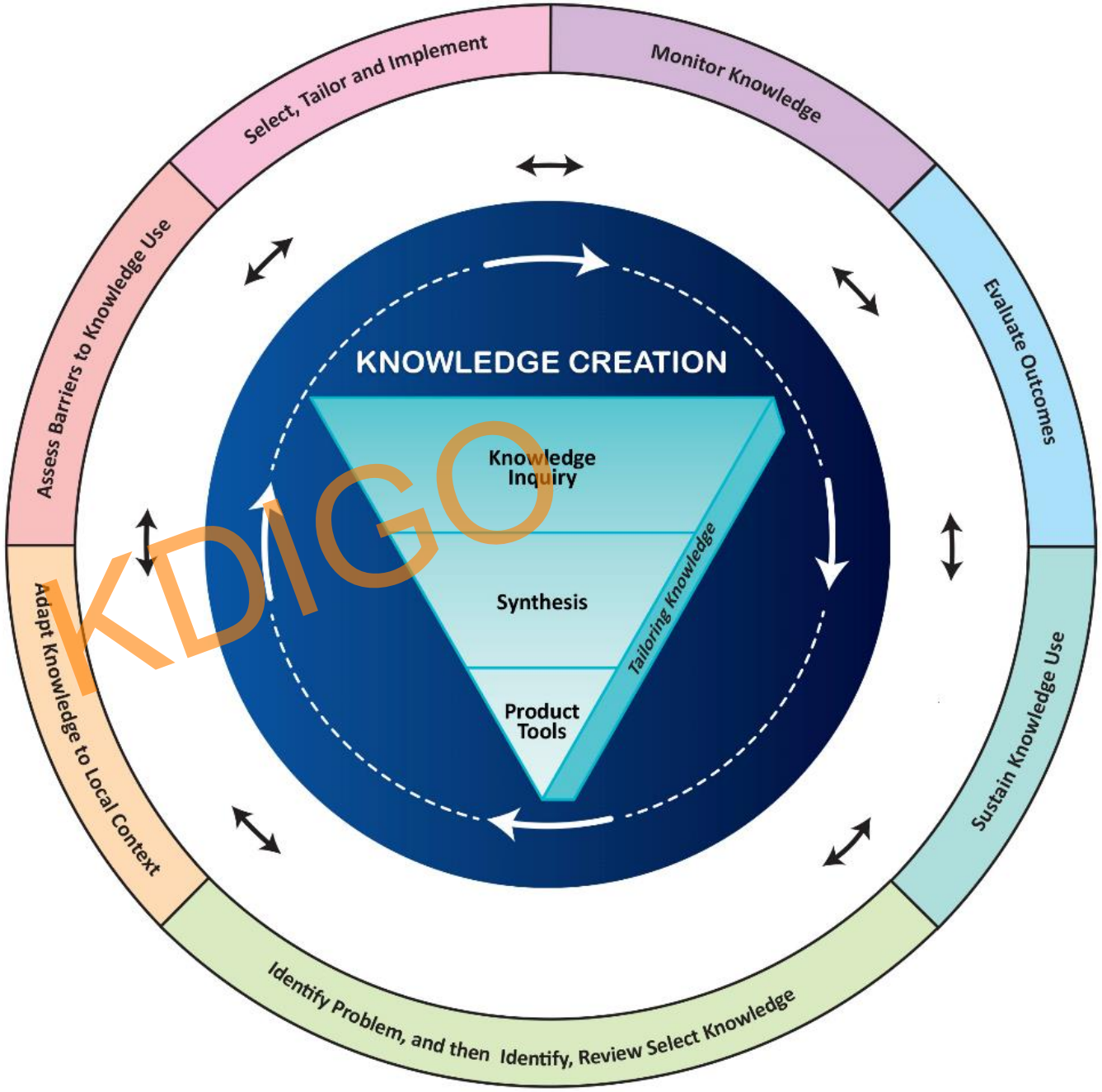
Overview of how to change physician behavior

Examples of Cluster RCTs testing different guideline implementation strategies

Knowledge translation is getting evidence into practice……

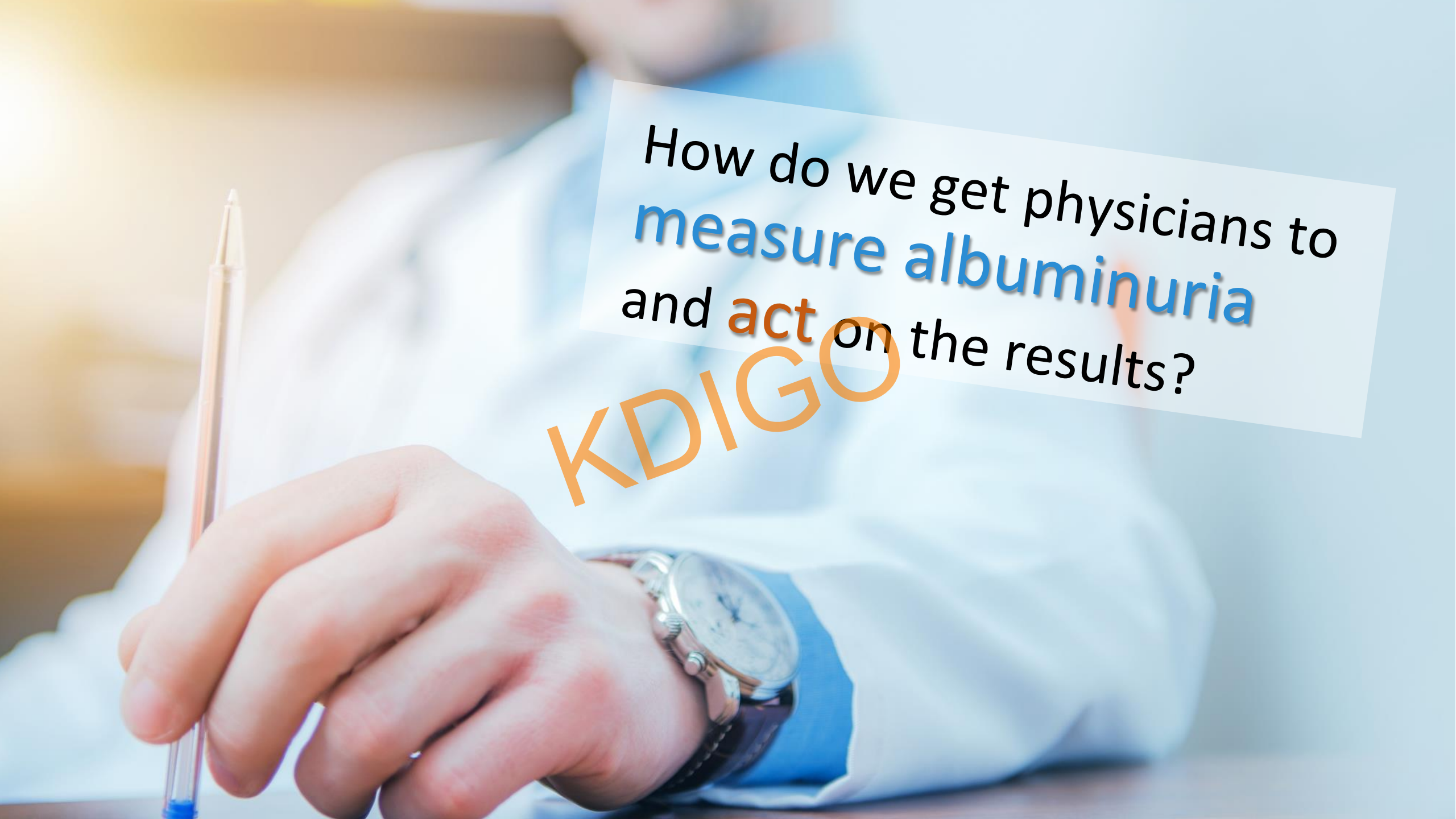
Canadian Institutes of Health Research

Knowledge to Action Cycle



1. Using albuminuria to assess risk and guide treatment in CKD-KDIGO CKD Guidelines

- Albuminuria increases the risk of death, cardiovascular disease and ESRD
- Patients with albuminuria are the ones who benefit from angiotensin blockade
  - **But only 20% of people with nondiabetic CKD have a measure of albu/proteinuria within one year**


How do we get physicians to
measure albuminuria
and act on the results?
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2. Timely initiation of dialysis

- Initiation of dialysis is the raison d'être of Nephrology
- Prior guidelines recommended initiating dialysis at mean eGFR of 10.5mls/min
- Between 2001 and 2010, “early start dialysis” increased from 27 to 41%

- IDEAL study suggests no difference in mortality, hospitalization or quality of life for patients initiating at lower eGFR

How do we prepare our system for smooth (later) initiation of Dialysis?

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How do you change Health care practitioner behavior?

“ I don’t do requests,
It’s chopsticks or
nuttin ”

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Canadian Society of Nephrology/
Société canadienne de néphrologie
CSN/SCN

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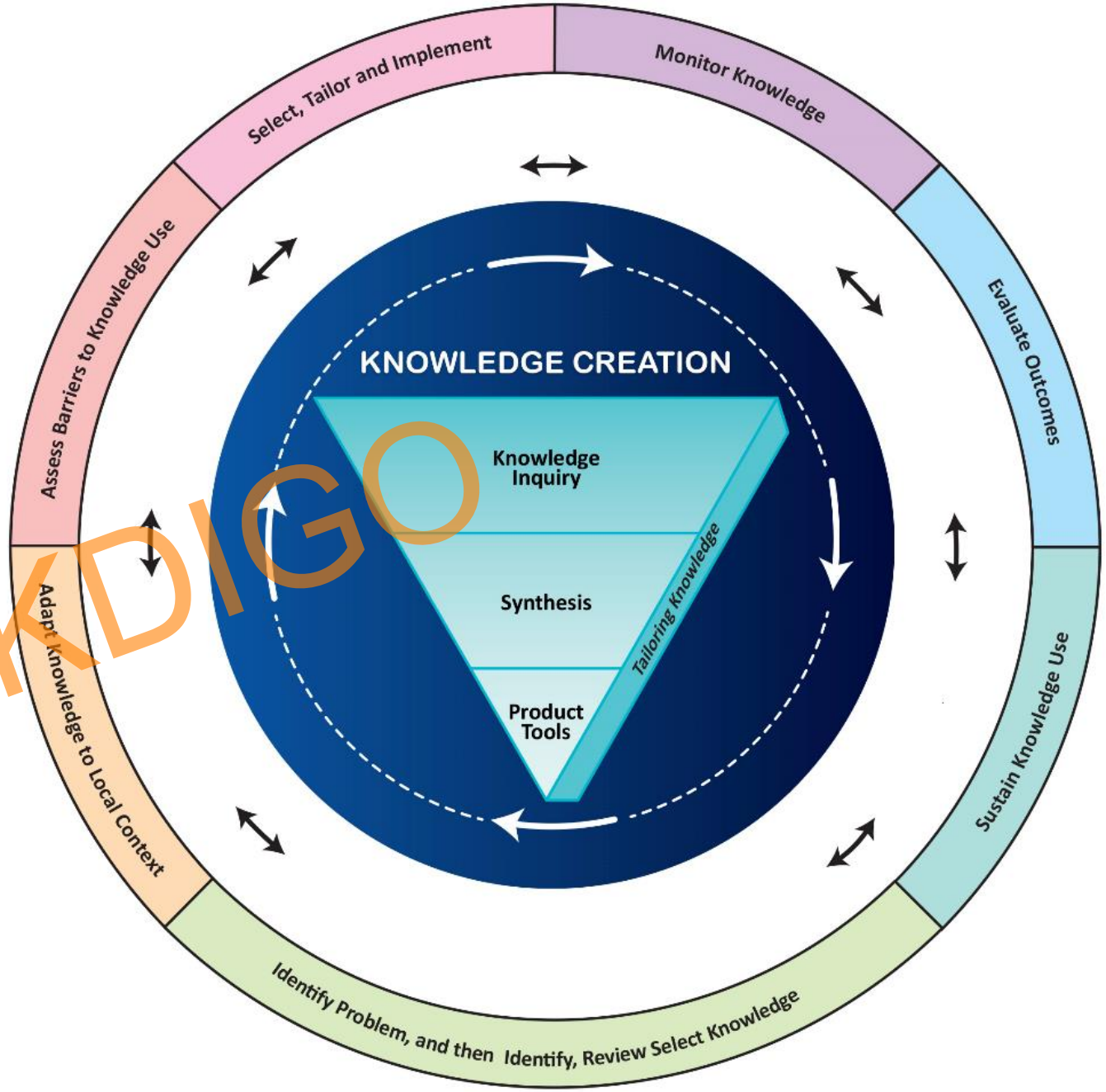
- The Canadian Society of Nephrology (CSN) created guidelines but had no knowledge translation plan/activities
- The CSN created “CANN-NET” to create priority areas for KT, and to use the knowledge to action cycle to improve care and outcomes in priority areas in kidney disease

Knowledge to Action Cycle

Digging deeper



Barriers to implementation of evidence

1. Professional
2. Patient
3. Health care team/ organization
4. Practice environment

Barriers to implementation of evidence:

Professional

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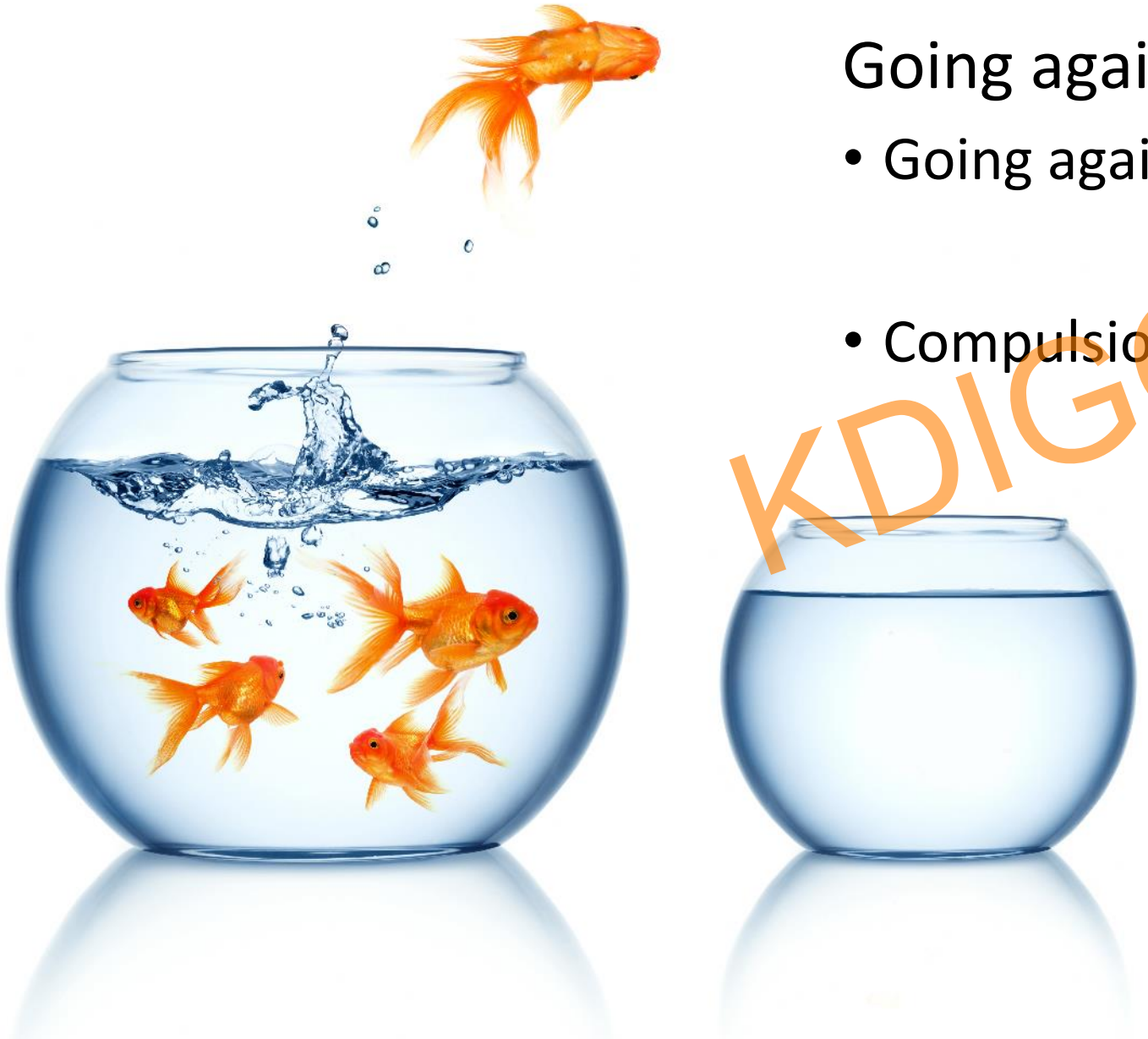
Physician knowledge

- Lack of awareness of study / guideline
- Medical training / lack of skills / obsolete knowledge
- Information overload
- Unsure how to implement the intervention

Uncertainty

- Clinical uncertainty –poor quality evidence
- Key opinion leaders not in agreement



Going against the grain:

- Going against usual “Standard of care”
- Compulsion to act (need to do something)

Barriers to implementation of evidence:

Patient

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Patient's expectations

- Patient typically doesn't know what they want!
- Expressed wishes for prescription

Problems with adherence

- Lack of understanding regarding need for adherence
- Lack of time (i.e. exercise)
- Financial barriers to adherence
- Individuals exist within a larger society
  - Lifestyles are collective – dialysis education campaign more effective?

Barriers to implementation of evidence:

Health System

Health care team / organization

- Lack of reimbursement for service or medication
- Lack of time
- Perception of liability (risk of complaints)

Practice environment

- Geographic location of clinics / amenities
- Advocacy (i.e. by pharmaceutical companies)

Now we know what the relevant barriers are…….

So what works to change care?

It depends on what the identified barrier is….

- No one intervention is effective in all circumstances
- Combinations of interventions may be more effective

In general….

- Prepare well
- Identify the barriers to implementation up front
- Select a set of strategies aimed at different barriers
- Define indicators for success and monitor progress regularly

If the Barrier is physician knowledge:

1. **Distribution of educational materials to professionals:** mixed effects
2. **Guideline implementation strategies:** median improvement in "care" of 8%
3. **Continuing Medical Education:**
   - Large conferences and didactic teaching: No/ minimal effect
   - Small group / interactive education with active participation: Positive effects on practice, possibly outcomes
4. **Educational outreach by experts:** particularly effective for prescribing

Other Strategies

Audit and feedback:

- Most evidence is around targeting of test ordering or prevention
- Mixed results when used on its own.
- Possibly more effective when combined with reminders, and education

Reminders (posters, patients reminding staff):

- largest effect of any of the strategies used on its own, but large variation across studies

Substitution of tasks:

- Use of nurses / pharmacists
- Anemia protocols, clinical pathways / order sets with implementation guided by nurse

- <u>Can be similarly effective or more effective than physician-only care</u>

Patient-directed interventions

- Can be effective; particularly for improving prevention / vaccination
- Examples include education or Facilitated relay

Example: Using albuminuria to assess risk in CKD

The barriers

Lack of understanding of the results of the test
Lack of understanding of the prognostic significance
- In CKD
- In nonCKD

?Clinical decision support?

Clinical decision support system

Address http://ppd.partners.org/scripts/phsweb.swl

Oetest,Labor PG TDS4

00000117 (BWH) 01/01/1965 (37 yrs.) F BIMA

Select | Desktop | Patient Chart Summary | Custom | Reports | Sign | Resource

Sticky Notes

VITAL SIGNS: 04/08/2002 BP 100/80 PULSE 22 RESP N/A TEMP 98.6 Height N/A Weight N/A

Medications	Problems	Procedures	Allergie
Sudafed 30MG 1 Q6H	Smoking [N]	Tonsillectomy	Bactrim
Zocor 20MG 1 QHS [N]	Hypertension		Dairy products
	Head trauma		
	Diabetes mellitus		

Reminders

- Patient has Diabetes and Hypertension on problem list and ACE inhibitor is not on the medication list. Recommend ACE inhibitor.
- Patient is overdue for HbA1C (rec: q 6 months).
- Patient is Overdue for LDL test (rec: q 1 year)
- Patient is overdue for Ophtho exam (rec: q 1 year).

Applying the policy: Clinical decision support systems

- To identify features of clinical decision support systems critical for improving clinical practice
- Systematic review of 70 RCTs, 68% of which "improved practice"
- Evaluated for the presence of 15 decision support system features

Kawamoto et al, BMJ 2005

Features of effective decision support systems

Characteristic	Example	Adjusted odds ratio
Automatic provision of decision support as part of clinician workflow	Care recommendations provided within patients chart, so that clinicians do not need to seek out recommendations	112
Provision of decision support **at time and location** of decision making	Care recommendations provided as chart reminders during an encounter, rather than as monthly reports listing all the patients in need of services	15
Provision of a **recommendation**, rather than an assessment	CPGs recommend use of an ACE inhibitor vs ACE inhibitors are effective…	7

Article

A Cluster Randomized Trial of an Enhanced eGFR Prompt in Chronic Kidney Disease

Braden Manns,[*†‡§] Marcello Tonelli,[§‖] Bruce Culleton,[§] Peter Faris,[¶] Kevin McLaughlin,[*§] Rick Chin,[‡§] Katherine Gooch,[§] Finlay A. McAlister,[§‖] Ken Taub,[*§] Laurel Thorlacius,[§] Richard Krause,[**] Monica Kearns,[††] and Brenda Hemmelgarn,[*†‡§] on behalf of the Alberta Kidney Disease Network

Can an eGFR management-based laboratory prompt, which identifies a patient with CKD as being at high risk for cardiovascular disease and progression to kidney failure, improve the management of cardiovascular risk factors and kidney disease by physicians?

Clin J Am Soc Nephrol 7: 565–572, 2012. doi: 10.2215/CJN.12391211

Standards of care- appearing below the eGFR for patients with GFR <60 mls/min	New Management-based eGFR prompt - appearing below the eGFR for patients with GFR <60 mls/min
In outpatients with stable kidney function, estimated GFR is a more accurate marker of kidney function than serum creatinine. Chronic kidney disease is defined by GFR <60 mls/min/1.73m^2 for more than 3 months. Published guidelines recommend that patients with GFR <30ml/min/ 1.73m^2 be referred to a Nephrologist (see www.akdn.info)	This patient has reduced kidney function and is at risk for cardiovascular events and progression to kidney failure. The National Kidney Foundation recommends: 1. Measure random urine albumin-to-creatinine ratio 2. Institute an ACEi or ARB in patients with diabetes, or those with an Alb:Cr >35mg/mmol 3. Referral to a Nephrologist if GFR < 30 ml/min/ 1.73m2 4. Assess and treat modifiable risk factors for CV and renal disease: a) target BP less than 130 /80 mmHg, b) target LDL-C < 2.5 mmol/L, c) if diabetic, target HbA1C < 7.0% The above recommendations are general in nature and may not apply to all patients. Further information is available at www.akdn.info

Results:

Primary outcome: Use of ACEi/ARB in patients with diabetes/ albuminuria

Cohort	Subgroup	Standard eGFR laboratory prompt, N(%)	Management based eGFR laboratory prompt, N9%)	Intra-class Correlation Coefficient (p-value)	Unadjusted Relative Risk (95% CI)
All patients, GFR<60 ml/ min/1.73m^2)	Prevalent CKD patients	1,932 (77.1)	2,260 (76.9)	0.020 (<0.001)	1.00(0.96 to 1.04)
	Incident CKD patients	338 (73.3)	337 (68.9)	0.011 (0.224)	0.94 (0.86 to 1.02)
All patients GFR <30 ml/ min/1.73m^2)	Prevalent CKD patients	161 (72.2)	208 (80.0)	<0.001 (0.0497)	1.13 (1.03 to 1.24)
	Incident CKD patients	38 (62.3)	57 (73.1)	<0.001 (0.498)	1.17 (0.91 to 1.50)

Results: Acquiring a measure of albuminuria

Cohort	Subgroup	Standard eGFR laboratory prompt, N(%)	Management based eGFR laboratory prompt, N9%)	Intra-class Correlation Coefficient (p-value)	Unadjusted Relative Risk (95% CI)
All patients, GFR<60 ml/ min/ 1.73m²)	Prevalent CKD patients	550 (6.3)	645 (7.4)	0.050 (<0.001)	1.29 (1.03 to 1.62)
	Incident CKD patients	162 (6.0)	134 (5.2)	0.083 (<0.001)	1.06 (0.75 to 1.49)
All patients GFR <30 ml/ min/ 1.73m²)	Prevalent CKD patients	42 (10.2)	69 (14.7)	0.038 (0.100)	1.50 (1.02 to 2022)
	Incident CKD patients	25 (16.8)	36 (20.6)	0.057 (0.171)	1.35 (0.81 to 2.25)

Conclusion:

- Baseline use of angiotensin blockade is high
- No additional impact of a management-based eGFR prompt, including on clinical outcomes
- Physicians may respond differently to the treatment-based lab prompt if eGFR<30mls/min


WHY?
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Timely initiation of dialysis

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Canadian Society of Nephrology 2014 Clinical Practice Guideline for Timing the Initiation of Chronic Dialysis

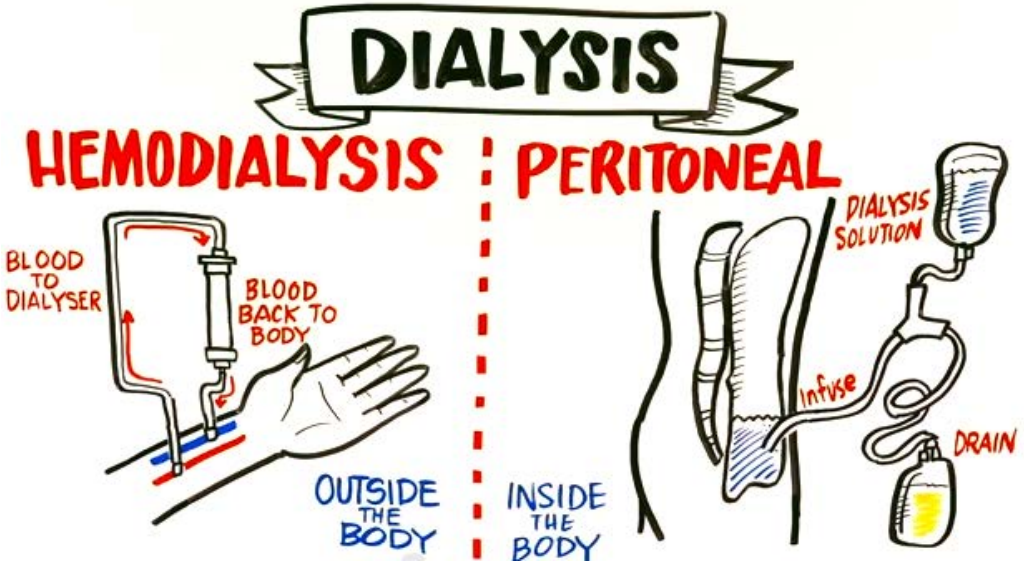
Gihad E. Nesrallah, Reem A. Mustafa, William F. Clark, Adam Bass, Lianne Barnieh, Brenda R Hemmelgarn, Scott Klarenbach, Robert R Quinn, Swapnil Hiremath, Pietro Ravani, Manish M. Sood, Louise M. Moist

Canadian Society of Nephrology/
Société canadienne de néphrologie
CSN/SCN

CMAJ, Feb 2014

CSN Guideline

- Recommendation for the initiation of chronic dialysis
    - **“intent-to-defer” over “intent-to-start-early” approach**
    - Strong recommendation; moderate quality evidence

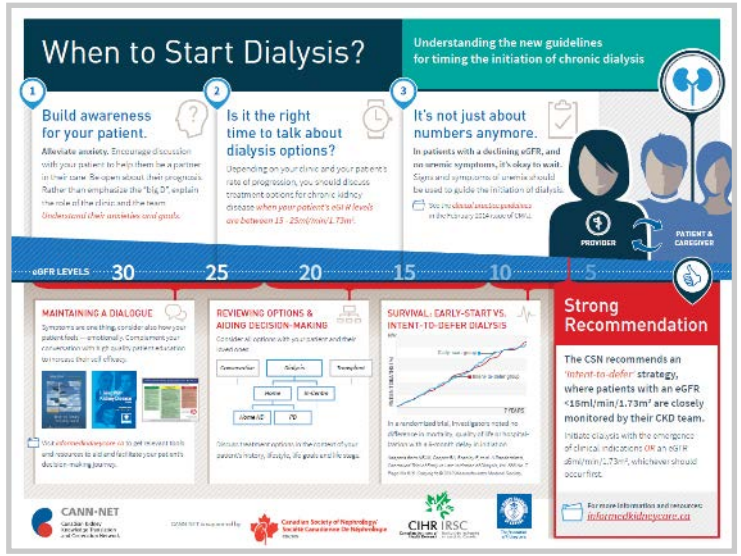


Barriers to implementation of evidence survey

- No renal program across Canada has a policy on timing of dialysis initiation
- A significant number of respondents felt uremic symptoms occurred earlier in patients with advancing age or co-morbid illness.
- Many Nephrologists felt there was an absolute eGFR at which they would initiate dialysis in an asymptomatic patient.

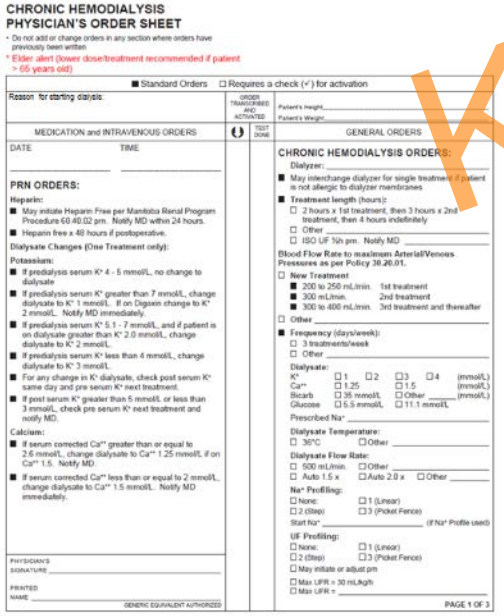
Online
Survey Results

Knowledge to Action Cycle



Poster for providers

Education for patients


CHRONIC HEMODIALYSIS PHYSICIAN'S ORDER SHEET

- Do not add or change orders in any section where orders have previously been written.
- Elder alert (lower dose/treatment recommended if patient > 65 years old)

■ Standard Orders ☐ Requires a check (✓) for activation

Reason for starting dialysis:

ORDER TRANSCRIBED AND ACTIVATED | TEST DONE

Patient's Height: _____
Patient's Weight: _____

MEDICATION and INTRAVENOUS ORDERS | GENERAL ORDERS

DATE _____ TIME _____

PRN ORDERS:

Heparin:
- May initiate Heparin Free per Manitoba Renal Program Procedure 60.40.02 pm. Notify MD within 24 hours.
- Heparin free x 48 hours if postoperative.

Dialysate Changes (One Treatment only):

Potassium:
- If predialysis serum K⁺ 4 - 5 mmol/L, no change to dialysate
- If predialysis serum K⁺ greater than 7 mmol/L, change dialysate to K⁺ 1 mmol/L. If on Digoxin change to K⁺ 2 mmol/L. Notify MD immediately.
- If predialysis serum K⁺ 5.1 - 7 mmol/L, and if patient is on dialysate greater than K⁺ 2.0 mmol/L, change dialysate to K⁺ 2 mmol/L.
- If predialysis serum K⁺ less than 4 mmol/L, change dialysate to K⁺ 3 mmol/L.
- For any change in K⁺ dialysate, check post serum K⁺ same day and pre serum K⁺ next treatment.
- If post serum K⁺ greater than 5 mmol/L or less than 3 mmol/L, check pre serum K⁺ next treatment and notify MD.

Calcium:
- If serum corrected Ca^{++} greater than or equal to 2.6 mmol/L, change dialysate to Ca^{++} 1.25 mmol/L if on Ca^{++} 1.5. Notify MD.
- If serum corrected Ca^{++} less than or equal to 2 mmol/L, change dialysate to Ca^{++} 1.5 mmol/L. Notify MD immediately.

CHRONIC HEMODIALYSIS ORDERS:

Dialyzer: _____
- May interchange dialyzer for single treatment if patient is not allergic to dialyzer membranes
- Treatment length (hours):
  - ☐ 2 hours x 1st treatment, then 3 hours x 2nd treatment, then 4 hours indefinitely
  - ☐ Other _____
  - ☐ ISO UF ½h pm. Notify MD _____

Blood Flow Rate to maximum Arterial/Venous Pressures as per Policy 30.20.01.
- ☐ New Treatment
  - 200 to 250 mL/min. 1st treatment
  - 300 to 400 mL/min. 2nd treatment
  - 3rd treatment and thereafter
- ☐ Other _____
- Freqeuency (days/week):
  - ☐ 3 treatments/week
  - ☐ Other _____

Dialysate:

K⁺	☐ 1	☐ 2	☐ 3	☐ 4	(mmol/L)
Ca^{++}	☐ 1.25		☐ 1.5		(mmol/L)
Bicarb	☐ 35 mmol/L		☐ Other _____		(mmol/L)
Glucose	☐ 5.5 mmol/L		☐ 11.1 mmol/L		

Prescribed Na⁺ _____

Dialysate Temperature:
☐ 36°C ☐ Other _____

Dialysate Flow Rate:
☐ 500 mL/min. ☐ Other _____
☐ Auto 1.5 x ☐ Auto 2.0 x ☐ Other _____

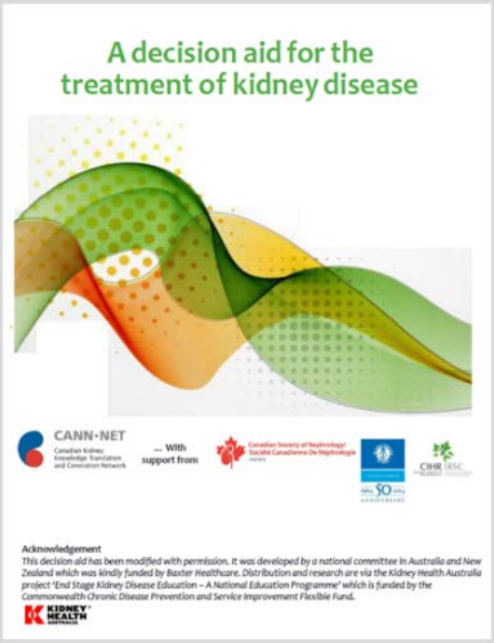
Na⁺ Profiling:
☐ None: ☐ 1 (Linear)
☐ 2 (Step) ☐ 3 (Picket Fence)
Start Na⁺ _____ (if Na⁺ Profile used)

UF Profiling:
☐ None: ☐ 1 (Linear)
☐ 2 (Step) ☐ 3 (Picket Fence)
☐ May initiate or adjust pm
☐ Max UFR = 30 mL/kg/h
☐ Max UFR = _____

PHYSICIAN'S SIGNATURE _____
PRINTED NAME _____
GENERIC EQUIVALENT AUTHORIZED

PAGE 1 OF 3

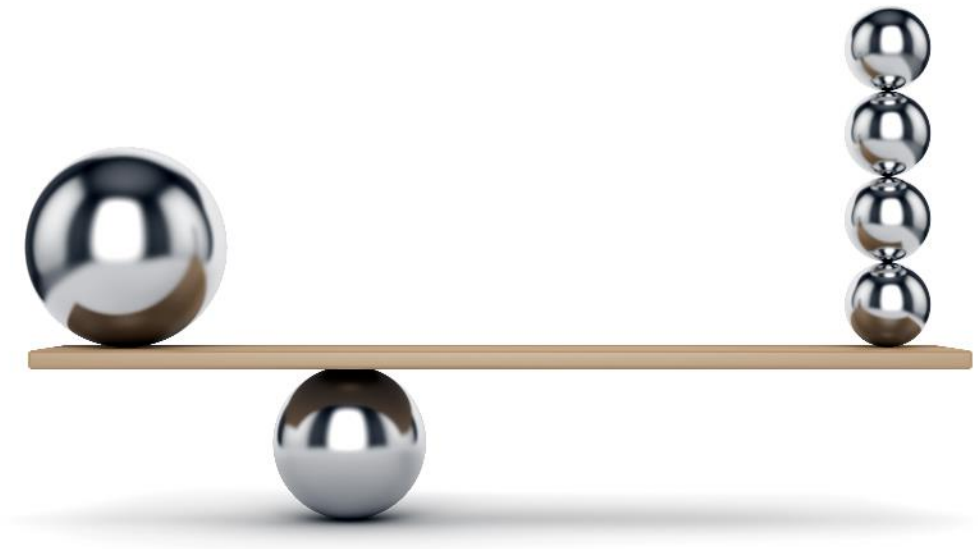
Draft order sets



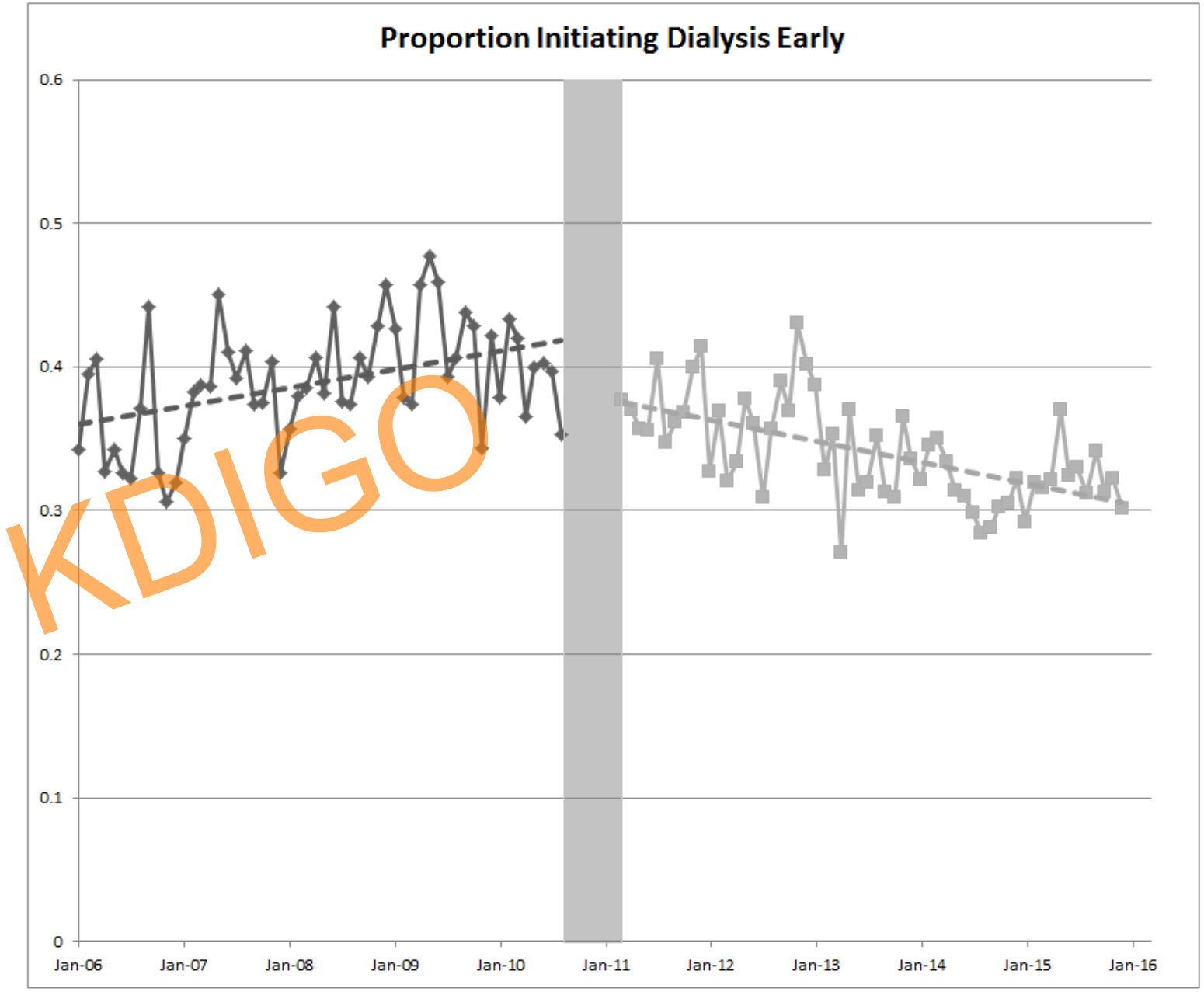
Decision aid

Evaluate the impact of KT strategy

- What happened after publication of the IDEAL study – a time series analysis
- The impact of our KT strategy – a cluster RCT using 55 predialysis clinics in Canada, testing the impact on timing of dialysis and use of home dialysis



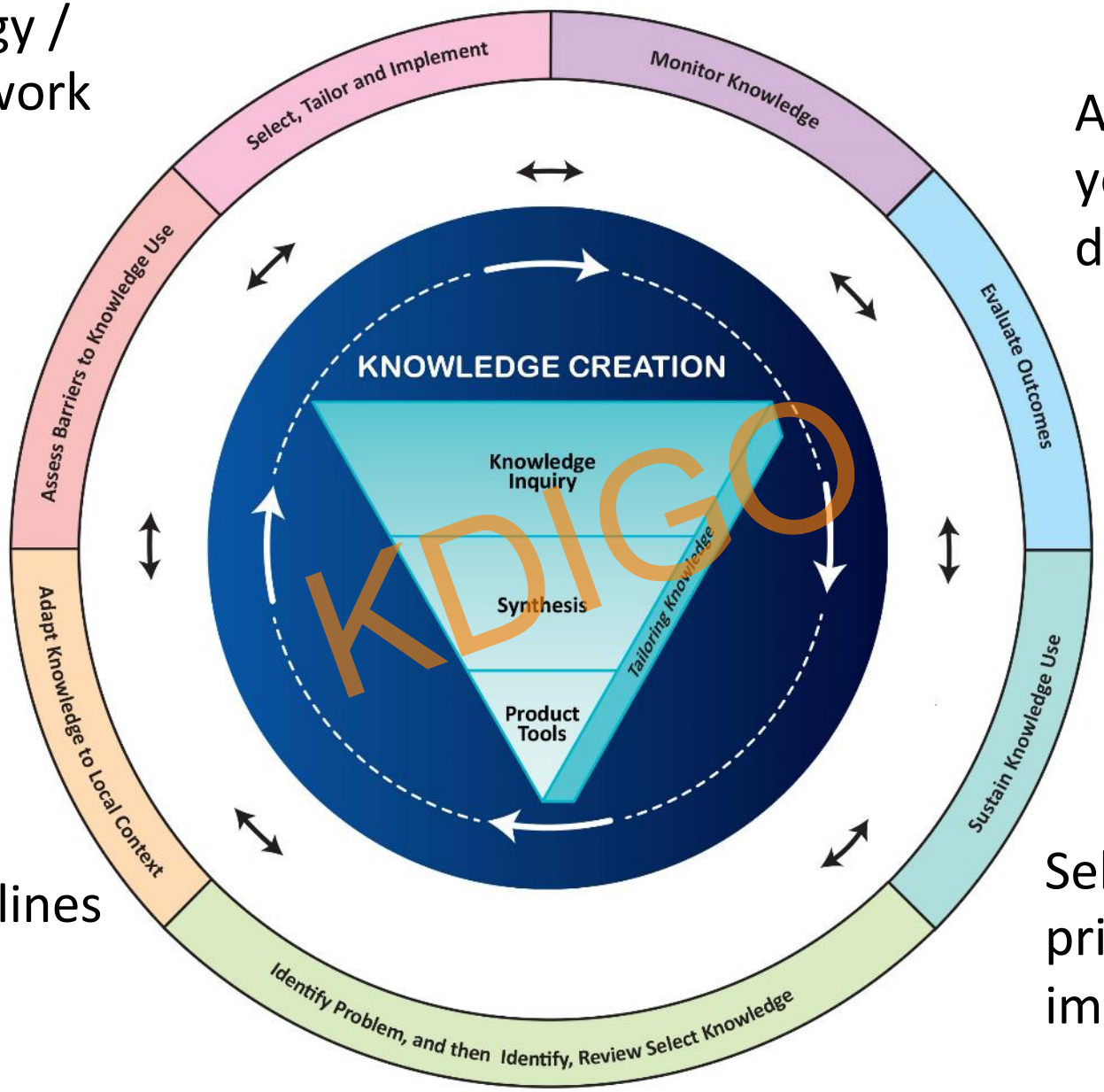
Proportion of patients initiating dialysis early, before and after the IDEAL study



What strategy / KT tool will work best?

Assess to see if you've made a difference

Why don't we do better



Local guidelines

Select your guideline to prioritize based on importance and care gaps

ICDC Team 2018