WEDNESDAY, JUNE 7th, 2023
12:00 pm - 1:00 pm ET

REVIEW OF TOP QI ARTICLES IN NEPHROLOGY 2022/23

Learning Objectives

- To review recent top QI articles published within Nephrology
- To discuss pertinent QI methodology that can be used for future initiatives
- To highlight the ways that variety of ways that QI can be implemented within clinical care

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada and approved by the Canadian Society of Nephrology. You may claim a maximum of 1 hour (credits are automatically calculated).

Moderator

Samuel Silver
MD, MSc, FRCPC
Kingston, ON

Speaker

Tamara Glavinovic
MD CM, MSc, FRCPC
Ottawa, ON

Bourne Auguste
MD, MSc, FRCPC
Toronto, ON

The webinar will begin shortly

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

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LAND ACKNOWLEDGMENT

Tamara Glavinovic

MD CM, MSc, FRCPC

Dr. Tamara Glavinovic is an assistant professor at the University of Ottawa. She completed her undergraduate training and medical school at McGill University. She then went on to complete her Internal Medicine training at the University of Manitoba, and her Nephrology training at the University of Toronto. She moved to Melbourne, Australia to complete an MSc in Public Health along with further training in glomerulonephritis. She is currently completing a Master of Clinical Education through the University of Melbourne. Her clinical focus is in pregnancy-related kidney disease, and her research interests are in both medical education and quality improvement.

Bourne Auguste

MD, MSc, FRCPC

Dr. Bourne Auguste is a nephrologist at Sunnybrook Health Sciences Centre and an Assistant Professor in Department of Medicine with the job description of Clinician in Quality and Innovation. Dr. Auguste obtained a BSc. (Hon) from Carleton University, an MD from McMaster University and completed his internal medicine and nephrology residencies at the University of Toronto. He also completed advanced training with a clinical fellowship in home dialysis at the University Health Network and a Master of Science in System Leadership and Innovation from the Institute of Health Policy, Management and Evaluation. He currently serves as the Co-director for the Certificate program at the Centre for Quality Improvement and Patient Safety (CQuIPS) out of the University of Toronto. His main interests include developing innovative tools for home dialysis training and improving the focus of equity-based care in quality improvement.

CSNQUIS

QUALITY IMPROVEMENT & IMPLEMENTATION SCIENCE

AMÉLIORATION DE LA QUALITÉ ET SCIENCE DE LA MISE EN OEUVRE

Review of Top QI Articles in Nephrology: 2022/23

Tamara Glavinovic

Bourne Auguste

June 7, 2023

Disclosures

Dr. Bourne Auguste:

Has received speaking honoraria from Amgen and Baxter Healthcare

Dr. Tamara Glavinovic:

No conflicts

Learning Objectives

1. To review recent top QI articles published within Nephrology

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Article #1

De-prescribing in nephrology

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CANADIAN JOURNAL OF
KIDNEY HEALTH AND DISEASE
Journal canadien de la santé et de la maladie rénale

Original Clinical Research Quantitative

De-Prescribing Proton Pump Inhibitors in Patients With End Stage Kidney Disease: A Quality Improvement Project

Canadian Journal of Kidney Health and Disease
Volume 9: 1–7

DOI: 10.1177/20543581221106244
journals.sagepub.com/home/cjk
SAGE

Daniel Czikk[1], Yasin Parpia[2], Katelyn Roberts[3], Gaurav Jain[1], Dan-Cung Vu, MD[4], and Deborah Zimmerman[3,5]

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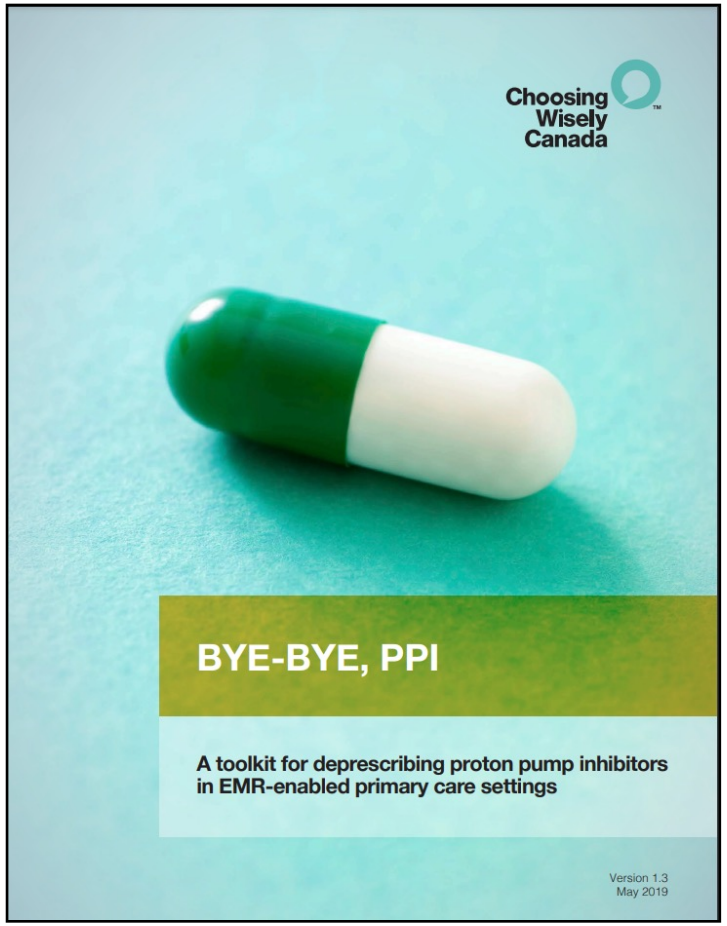
Background



Choosing Wisely Canada

- De-prescribing PPIs
- Strategy to reduce polypharmacy
- Reduce side effects due to chronic use

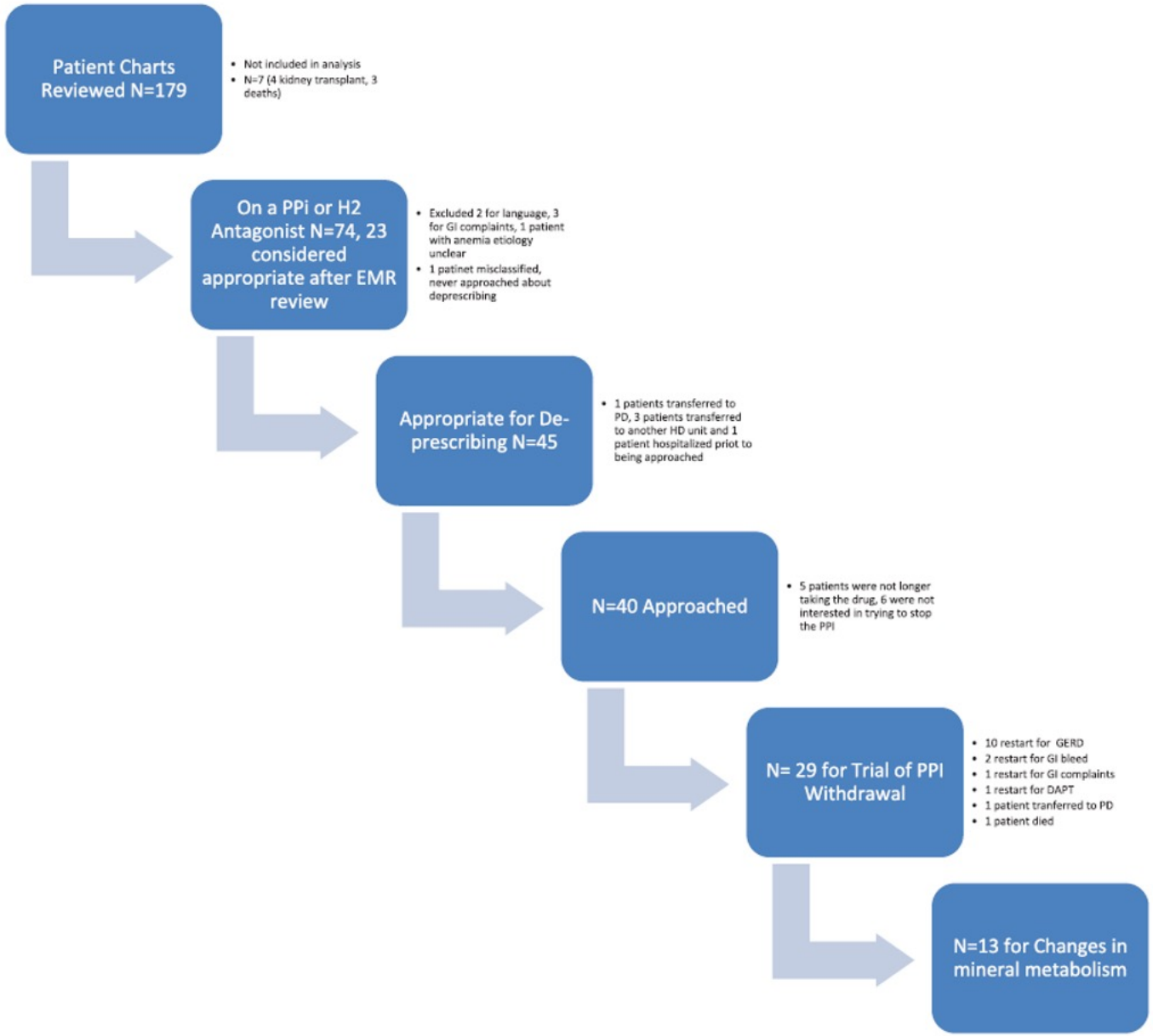


Figure 1. Flow diagram for PPI deprescribing.
Note. PPI = proton pump inhibitor; EMR = electronic medical record; GI = gastrointestinal; HD = hemodialysis; GERD = gastroesophageal reflux disease; DAPT = dual antiplatelet therapy; PD = peritoneal dialysis.

Results

- 40% patients with ESKD on dialysis taking PPI
- Only 1 in 3 of that group taking PPI with appropriate defined indications
- 29 Patients agreed to a trial of withdrawal of PPI
- Nearly half of patient had to restart their PPI within 2 within a few weeks of stopping due to symptoms and GI bleeding

Take-Home Points

- Applying broad de-prescribing strategies to patients on dialysis is not without risk
- Patients on dialysis are not the same as general population, risk–benefit profile may vary
- Further study needed in this population

Article #2

Creating consensus recommendations

AJKD

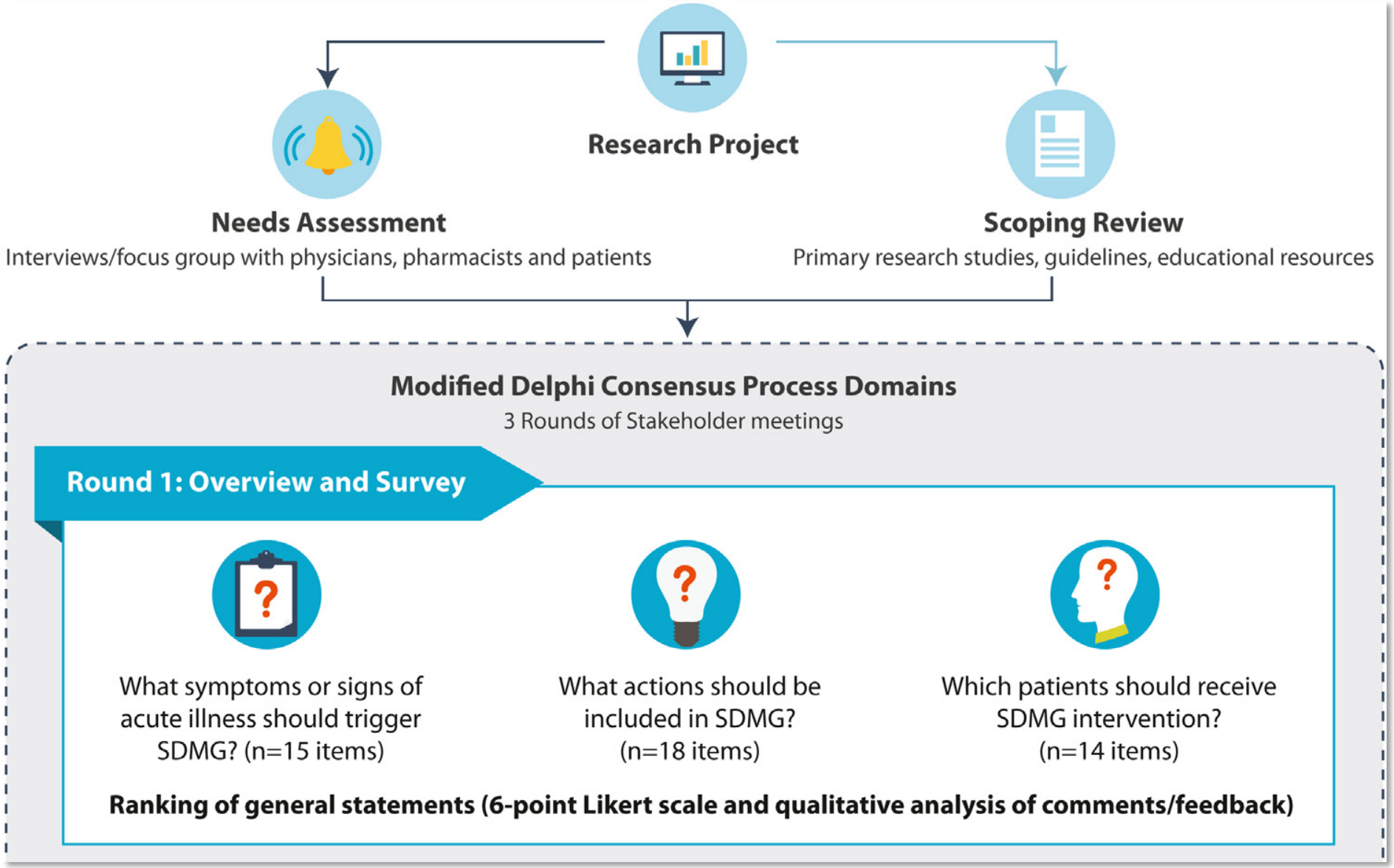
Original Investigation

Consensus Recommendations for Sick Day Medication Guidance for People With Diabetes, Kidney, or Cardiovascular Disease: A Modified Delphi Process

Kaitlyn E. Watson, Kirnvir Dhaliwal, Sandra Robertshaw, Nancy Verdin, Eleanor Benterud, Nicole Lamont, Kelsea M. Drall, Kerry McBrien, Maoliosa Donald, Ross T. Tsuyuki, David J.T. Campbell, Neesh Pannu, and Matthew T. James, on behalf of the PAUSE (Preventing Medication Complications During Acute Illness Through Symptom Evaluation and Sick Day Guidance) Medication Safety Advisory Panel

Background and Rationale

- Sick day medication guidance recommended
- Little empirical evidence, lots of variation in guidance
- Goal : achieve consensus on recommendations for sick day med guidance that could be studied in future intervention studies


Research Project
Needs Assessment
Interviews/focus group with physicians, pharmacists and patients
Scoping Review
Primary research studies, guidelines, educational resources
Modified Delphi Consensus Process Domains
3 Rounds of Stakeholder meetings
Round 1: Overview and Survey
What symptoms or signs of acute illness should trigger SDMG? (n=15 items)
What actions should be included in SDMG? (n=18 items)
Which patients should receive SDMG intervention? (n=14 items)
Ranking of general statements (6-point Likert scale and qualitative analysis of comments/feedback)

Round 2: Focused session statements

Small groups

T2DM-Hypoglycemics

T2DM-Volume/BP

CKD-Post AKI

Heart failure +/- CKD

Refine general statements based on clinical expertise for specific conditions in small groups & Qualitative analysis of comments/feedback provided

Round 3: Obtain consensus on SDMG recommendations

What symptoms or signs of acute illness should trigger SDMG? (n=15 items)

What should be included in SDMG? (n=15 items)

What medication instructions should be included in SDMG (n=19 items)

Ranking of revised statements (Binary scale) for inclusion as SDMG recommendations

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Consensus

- Signs and symptoms of volume depletion that should trigger SDMG
- Signs that should prompt urgent contact with a health care provider (altered LOC, low BP, ketones, tachycardia, fever)
- Related to scenarios and strategies for patient self management (frequent glucose monitoring, checking ketones, fluid intake, consumption of food to prevent hypoglycemia
- STOP renin angiotensin system inhibitors, diuretics, NSAIDs, SGLT2 inhibitors, metformin temporarily
- Hold insulin, sulfonylureas, metiglinides only if BG if low and and basal and bolus insulin be increased by 10-20% if blood glucose was high
- Restart medications 24-48 hours after resolution of symptoms if there was a pattern of normal eating / drinking

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Take-Home Points

- Delphi process to reach consensus between participants
- Patient engagement
- Applicable methodology to development of QI indicators

Quality Assurance and Improvement in Nephrology - Original Clinical Research Quantitative

An Environmental Scan of Ambulatory Care Quality Indicators for Patients With Advanced Kidney Disease Currently Used in Canada

Jay Hingwala[1], Amber O. Molnar[2], Priyanka Mysore[1,*], and Samuel A. Silver[3,*]

Environmental Scan of QI indicators in Canadian Nephrology

Article #3

Improving Vaccination Rates

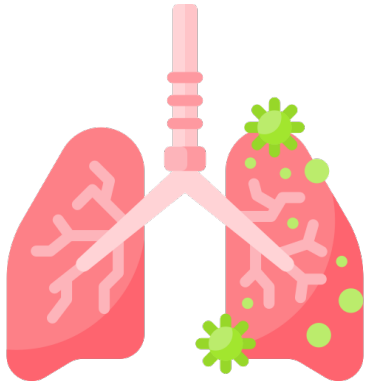
AJKD
AMERICAN JOURNAL OF KIDNEY DISEASES
Official Journal of the National Kidney Foundation™

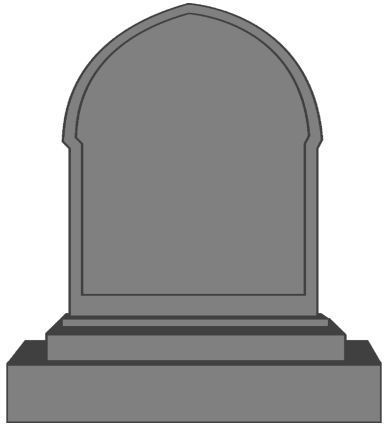
RESEARCH LETTERS

Best Practice Alerts in Electronic Medical Records to Improve Pneumococcal Vaccination in CKD

Take-Home Points

- Low pneumococcal vaccination rates in patient with advanced CKD
- Patients with nephrotic syndrome at increased risk
- Associated with pneumococcal pneumonia and increased risk of CV complications and mortality





Sample best practice alert for vaccination

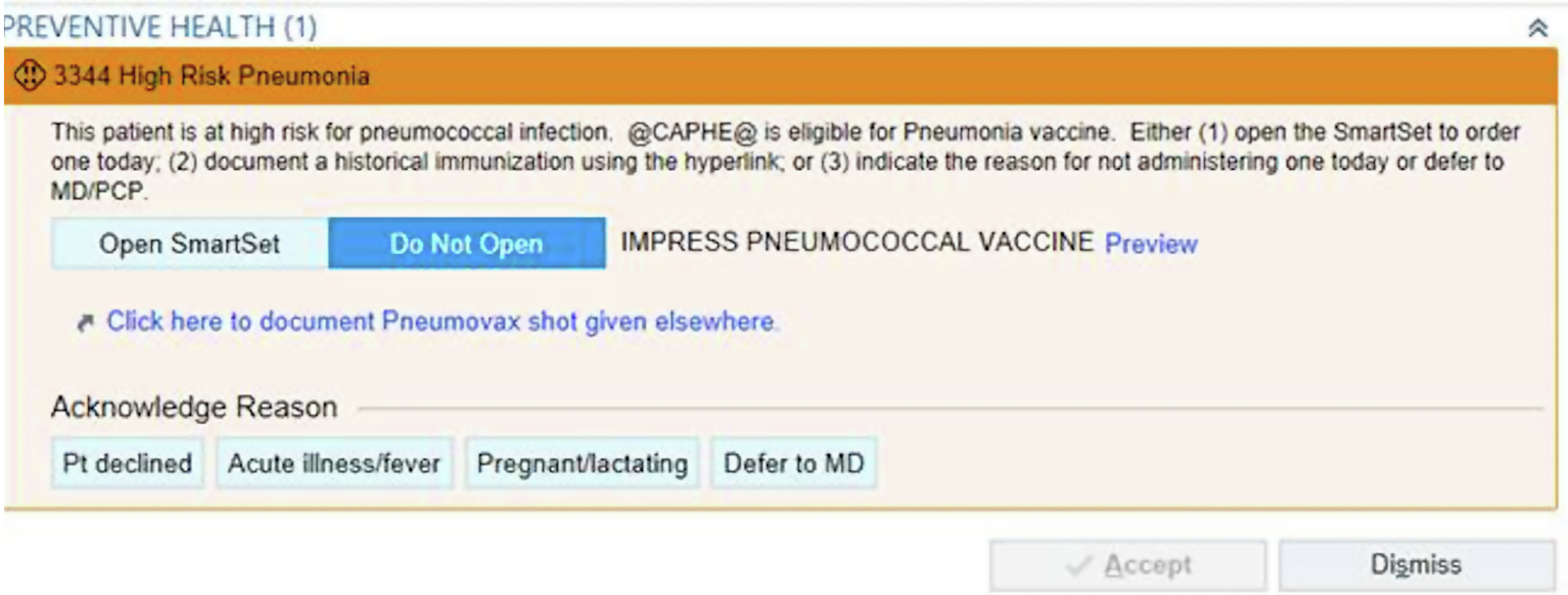
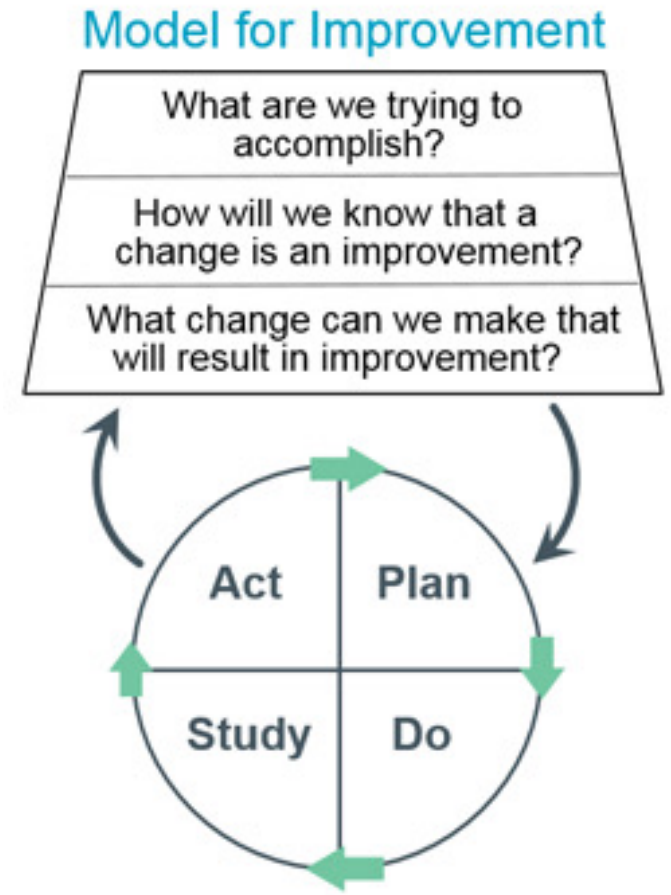


Figure 1. Sample best practice alert for pneumococcal vaccination. This alert is for Prevnar-13 administration; an identical alert but listing Pneumovax-23 was displayed when appropriate.

Model for Improvement



Source: [Institute for Health Improvement]

Results

Table 1. Baseline Characteristics and Vaccination Rates

	Preintervention Group (n = 752)	Intervention Group (n = 1,146)	*P*
Age, y	65.3 ± 15.8 (18-94)	68 ± 14.3 (24-101)	0.001
Age ≥65 y	417 (55.0%)	745 (65.0%)	<0.001
Female sex	383 (51.0%)	554 (47.5%)	
Race			
White	537 (71.4%)	802 (70.0%)	0.7
Black	192 (25.5%)	281 (24.5%)	0.6
Other	63 (5.5%)	23 (3.6%)	0.04
Kidney diagnosis			
CKD stage 4	564 (75.0%)	825 (72.0%)	0.1
CKD stage 5	113 (15.0%)	210 (18.0%)	0.06
Nephrotic syndrome	75 (10.0%)	111 (10.0%)	0.4
Patients vaccinated			
Overall	472 (62.7%)	804 (70.2%)	<0.001
Aged ≥65 y	294 (70.5%)	524 (70.3%)	0.9
Aged 18-64 y	178 (53.0%)	280 (69.8%)	<0.001
Female patients	249 (65.0%)	384 (70.6%)	0.7
White patients	307 (62.0%)	572 (71.0%)	<0.001
Black patients	130 (67.7%)	204 (72.6%)	0.25

Values for age given as mean ± SD (range).

- Patients included in this intervention
  - Stage 4 CKD (G4)
  - Stage 5 CKD (G5)
  - Nephrotic Syndrome
- 70.5% of patients in pre-intervention group who had been vaccinated >65 years of age
- Significant increase in the vaccination rate from 62.7% to 70.2% ($p<0.001$)
- Primarily driven by increase in vaccination rates in the 18-64 years age group

Limitations

- No details on the fidelity measures
- Possible Hawthorne effect
- Education may have introduced biases
- No information on balancing measures

Take-Home Points

- Reminders may increase vaccination rates
- Process can be integrated into clinic workflow
- More data required to determine impact on overall workflow within CKD clinic

Article #4

Managing medications in AKI

nature communications

Article

https://doi.org/10.1038/s41467-023-38532-3

A randomized clinical trial assessing the effect of automated medication-targeted alerts on acute kidney injury outcomes

F. Perry Wilson[1] ✉, Yu Yamamoto[1], Melissa Martin[1], Claudia Coronel-Moreno[1,2], Fan Li[3], Chao Cheng[3], Abinet Aklilu[1], Lama Ghazi[1,4], Jason H. Greenberg[1], Stephen Latham[5], Hannah Melchinger[1], Sherry G. Mansour[1], Dennis G. Moledina[1], Chirag R. Parikh[6], Caitlin Partridge[2], Jeffrey M. Testani[7] & Ugochukwu Ugwuowo[1]

BACKGROUND

AKI is common, AKI is bad, AKI is asymptomatic

Trials of alerts with AKI → mixed results

Success with **specific, actionable information**

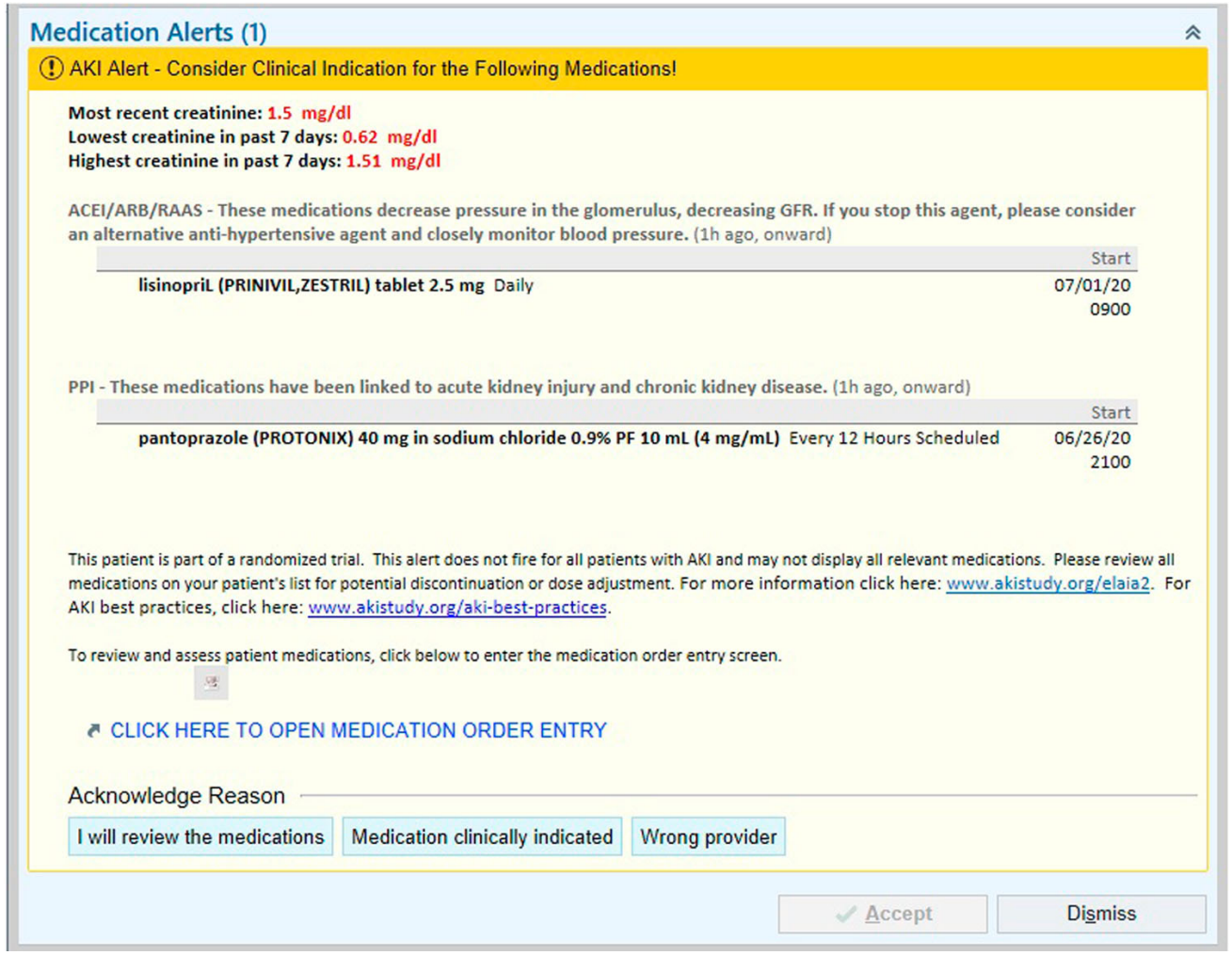
Aim - To evaluate the effectiveness of a medication targeted AKI alert across multiple hospitals within a large health system.

ELAIA-2

- Multicenter, parallel group, pragmatic, open label RCT
- Real time EHR alert for AKI exposed to either RAS blockade/NSAIDs/PPIs
- 1:1 allocation. Participants and providers not masked, investigators were.

Primary outcome

- Composite of AKI progression, dialysis, or death within 14 d of randomization



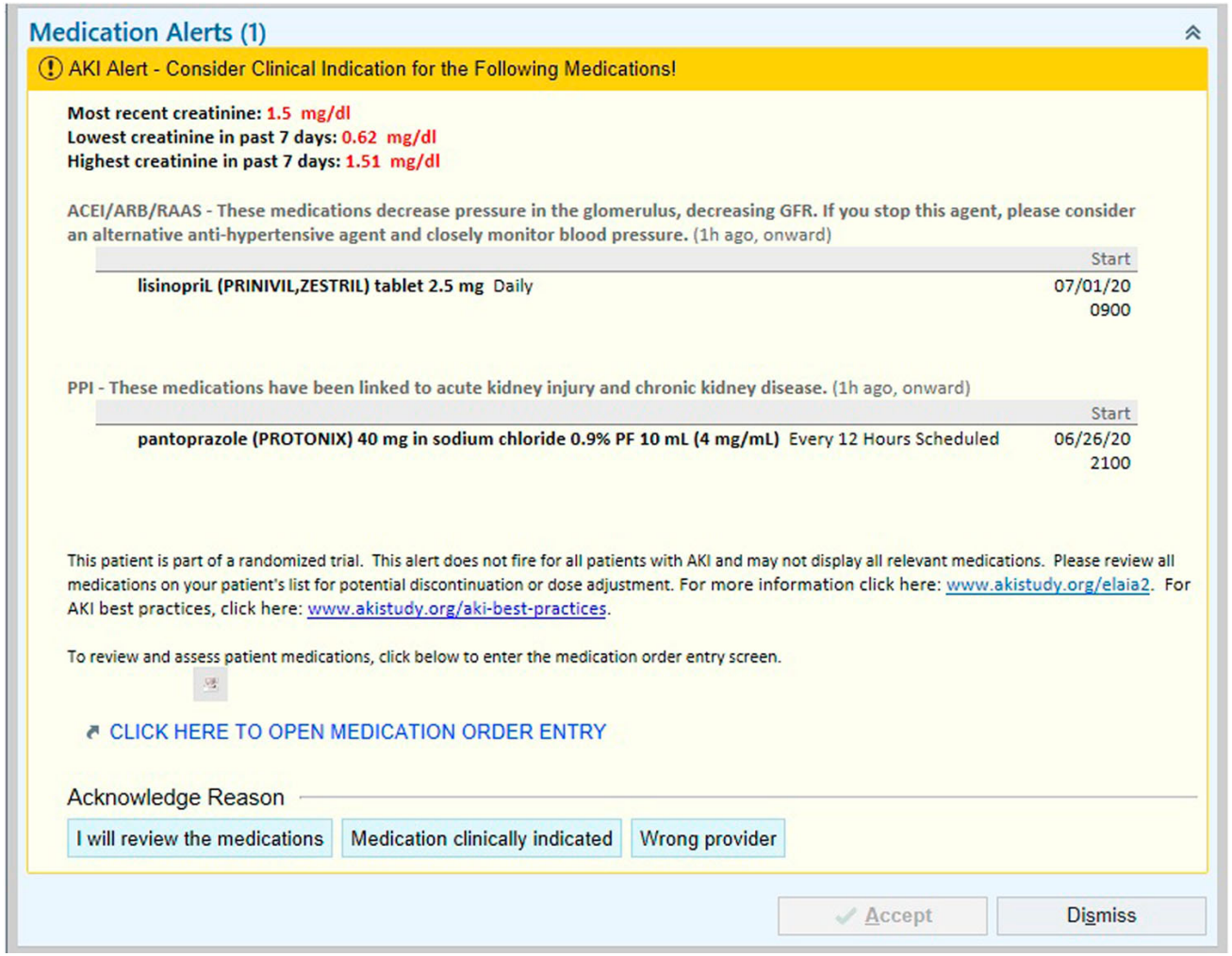
- About 48% women
- Median age was 70
- 76% medical admission

Common comorbidities:

- HTN in 68%
- CHF 32%
- CKD 25%

AKI stage 1 (90%)

Exposures prior to AKI		
Contrast in prior 72 h	621 (25%)	662 (26%)
RAASi	1350 (53%)	1329 (53%)
NSAID	748 (30%)	805 (32%)
PPI	1654 (65%)	1644 (65%)
One medication of Interest	1470 (58%)	1451 (57%)
Two medications of interest	904 (36%)	904 (36%)
Three medications of interest	158 (6%)	173 (7%)



- About 48% women
- Median age was 70
- 19% black

Common comorbidities:

- HTN in 68%
- CHF 32%
- CKD 25%

Take-Home Points

- Pragmatic randomized trial of medication targeted electronic alerts for AKI
- Impact on reducing exposure to medications of interest, no difference on primary outcome
- Can increase rate of cessation of medications

- ***Alerts with actionable processes may improve outcomes***

Article #5

Program implementation across specialties

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CANADIAN JOURNAL OF
KIDNEY HEALTH AND DISEASE
Journal canadien de la santé et de la maladie rénale

Original Clinical Research Quantitative

A Unique Multi- and Interdisciplinary Cardiology-Renal-Endocrine Clinic: A Description and Assessment of Outcomes

Canadian Journal of Kidney Health and Disease
Volume 9: 1–10

DOI: 10.1177/20543581221081207
journals.sagepub.com/home/cjk
SAGE

Lisa Dubrofsky[1*], Jason F. Lee[1*], Parisa Hajimirzarahimshirazi[2], Hongyan Liu[1], Alanna Weisman[3], Patrick R. Lawler[4,5,6], Michael E. Farkouh[5], Jacob A. Udell[2,7,8], and David Z. Cherney[1]

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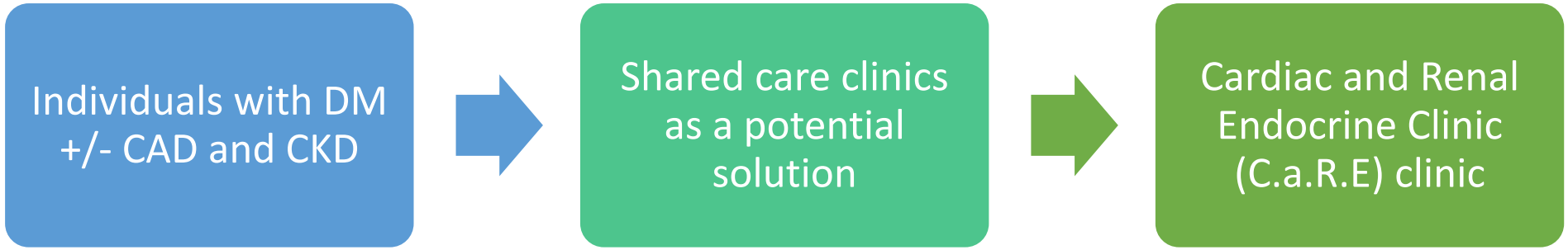
Background / Project Description

Unique medical needs, multiple indications for guideline directed therapies



Goals?

- Describe patient characteristics between 2014-2020
- Focus on feasibility, strengths, challenges of this care model

What they found

- 118 patients (74 info for 1st and last visit)
- Clinic flow
  - Trainee / staff
  - Pharmacy
  - Clinical trial
  - DM educator
  - Dietician
  - Ophthalmology
  - CV test integration

Limitations?

- Retrospective chart review
- Changing evidence / guidelines → practice changes

Table 2. Clinical Data at First Clinic Visit Versus Last Clinic Visit (N = 74).

	First visit data	Last visit data	*P* value
Body mass index, kg/m²	29.7 (26.7, 33.9)	29.6 (26.7, 33.6)	.15
Systolic blood pressure, mm Hg	132.0 (120.8, 154.8)	129.0 (119.3, 140.0)	.03
Diastolic blood pressure, mm Hg	76.0 (70.0, 84.0)	74.0 (67.0, 77.0)	.04
Blood pressure ≤130/80—No. (%)	27 (36.5)	39 (52.7)	.04
Hemoglobin A1C, %	7.5 (6.6, 8.2)	7.1 (6.3, 8.1)	.02
eGFR, mL/min/1.73 m² [a]	45.0 (33.0, 59.0)	40.0 (30.0, 54.9)	<.01
No albuminuria—No. (%)[b]	12 (17.6)	11 (16.2)	
Moderately increased proteinuria—No. (%)[b]	24 (35.3)	32 (47.1)	
Severely increased proteinuria—No. (%)[b]	32 (47.1)	25 (36.8)	
Low-density lipoprotein, mmol/L	1.9 (1.5, 2.3)	1.5 (1.2, 1.9)	<.01
Aspirin and/or clopidogrel use—No. (%)	37 (50.0)	38 (51.4)	.71
Renin-angiotensin-aldosterone system inhibitor use—No. (%)	58 (78.4)	61 (81.8)	.56
Statin use—No. (%)	60 (81.1)	69 (93.2)	.01
Sodium-glucose cotransporter-2 inhibitor use—No. (%)	3 (4.1)	26 (35.1)	<.01
Glucagon-like peptide-1 receptor agonist use—No. (%)	3 (4.1)	10 (13.5)	.02

Take-Home Points

- Highlights program implementation, process of care
- Emphasizes that outcome measures are hard to demonstrate
- Describes a one-stop-shop approach

- Opportunities for:
  - Guideline alignment
  - Trial recruitment
  - Patient engagement (PROMs)

- Carbon emissions



Article #6

Conducting QI work without breaching ethics

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CANADIAN JOURNAL OF
KIDNEY HEALTH AND DISEASE
Journal canadien de la santé et de la maladie rénale

Quality Assurance and Improvement in Nephrology - Narrative Review

Quality Improvement in Canadian Nephrology: Key Considerations in Ensuring Thoughtful Ethical Oversight

Canadian Journal of Kidney Health and Disease
Volume 9: 1–10

DOI: 10.1177/20543581221077504
journals.sagepub.com/home/cjk
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Tamara Glavinovic[1], Jay Hingwala[2*], and Claire Harris[3*]

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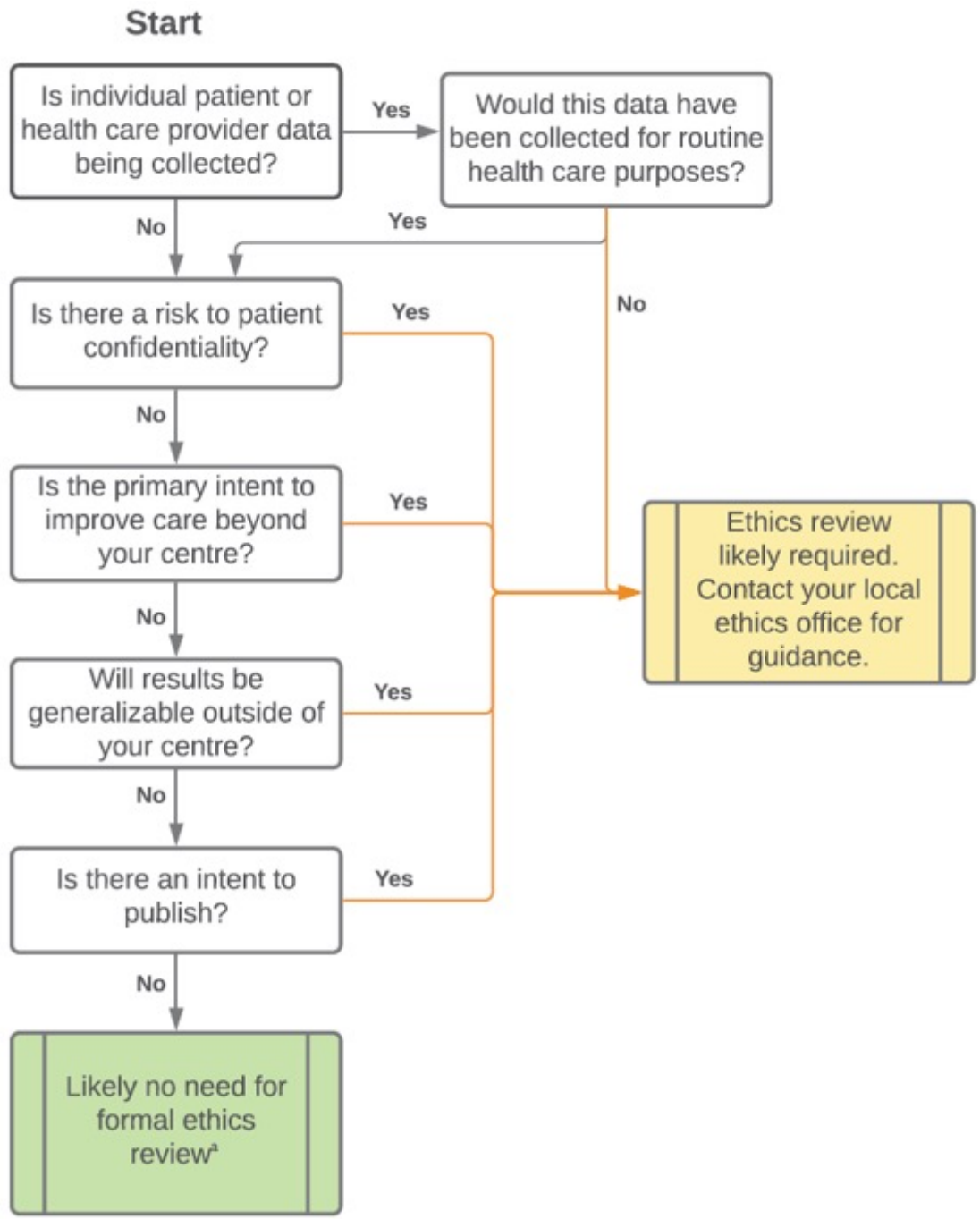
Start
Is individual patient or health care provider data being collected?
Yes
Would this data have been collected for routine health care purposes?
No
Yes
No
Is there a risk to patient confidentiality?
Yes
No
Is the primary intent to improve care beyond your centre?
Yes
No
Will results be generalizable outside of your centre?
Yes
No
Is there an intent to publish?
Yes
No
Ethics review likely required. Contact your local ethics office for guidance.
Likely no need for formal ethics review[a]

Key Findings

- Lack of standardized process in Canada for QI-specific IRB review
- Significant variability between academic and community centres
- Need for better co-ordination between QI experts to find consensus

QI Repository

The CSN-QUIS Quality Improvement Repository is a compilation of QI related projects from across Canada that is continually updated.

VIEW THE REPOSITORY SUBMIT A PROJECT

The repository will include a comprehensive list of projects from all levels of completion and spans the full spectrum of nephrology.

The repository will be accessible to both members and non-members of the CSN, and will allow users to submit projects for upload directly from the website using a simple process.

This resource aims to allow for increased awareness on the QI projects being done in Canada, reduce project redundancy, and foster collaboration across sites and provinces.

Acknowledgements

- C-QUIS Committee
- Dr. Sam Silver – Chair C-QUIS

- Filomena Picciano
- Marli Sa

References

1. Czikk D, Parpia Y, Roberts K, et al. De-Prescribing Proton Pump Inhibitors in Patients With End Stage Kidney Disease: A Quality Improvement Project. *Canadian Journal of Kidney Health and Disease* 2022; 9: 20543581221106244.
2. Dubrofsky L, Lee JF, Hajimirzarahimshirazi P, et al. A unique multi-and interdisciplinary cardiology-renal-endocrine clinic: a description and assessment of outcomes. *Canadian Journal of Kidney Health and Disease* 2022; 9: 20543581221081207.
3. Glavinovic T, Hingwala J and Harris C. Quality Improvement in Canadian Nephrology: Key Considerations in Ensuring Thoughtful Ethical Oversight. *Canadian Journal of Kidney Health and Disease* 2022; 9: 20543581221077504.
4. Kapoor S, Sheth HS, DeSilva R, et al. Best Practice Alerts in Electronic Medical Records to Improve Pneumococcal Vaccination in CKD. *American Journal of Kidney Diseases* 2023.
5. Watson KE, Dhaliwal K, Robertshaw S, et al. Consensus Recommendations for Sick Day Medication Guidance for People With Diabetes, Kidney, or Cardiovascular Disease: A Modified Delphi Process. *American Journal of Kidney Diseases* 2023; 81: 564-574.
6. Wilson FP, Yamamoto Y, Martin M, et al. A randomized clinical trial assessing the effect of automated medication-targeted alerts on acute kidney injury outcomes. *Nature Communications* 2023; 14: 2826.

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Q&A

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1 hr Section 1 Group Learning credits.

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