



Choosing Wisely Canada

National Meeting

Abstract Book

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Chair's Foreword

Dear Choosing Wisely Canada National Meeting Attendees,

Welcome to our inaugural Choosing Wisely Canada National Meeting!

As the Chair of Choosing Wisely Canada, I am extremely pleased with the enthusiastic and overwhelming response to our call for Abstracts of this National Meeting. The abstract book is a compilation of projects that demonstrate the commitment of the many individuals and organizations across Canada to ensuring patients are receiving the highest quality of care and avoiding unnecessary or potentially harmful care. From my numerous meetings and conversations with those participating in activities related to Choosing Wisely Canada, I am struck that the content of this book is just a small selection of the wealth of work being done.

In less than two years since its launch, Choosing Wisely Canada has, by virtue of the sheer number of grassroots and institutional participants, become the prime vehicle for tackling unnecessary care in Canada. Over this period, as the content in this abstract book reveal, the campaign has inspired innovative work in:

- Implementation of a variety of the 165 specific Choosing Wisely Canada recommendations, which will grow to over 200 by the end of the year
- A community of early adopters (clinics, hospitals, health regions and provinces) who are implementing the recommendations and demonstrating significant reductions in utilization across many clinical areas
- Making resource stewardship an essential component of clinical training and continuing education across Canada, which has been accelerated with the launch of the STARS/ESPOIRS initiative last fall engaging students from all 17 of Canada's Faculties of Medicine.
- Measuring the impact of Choosing Wisely and strengthen Canadian research capacity in the area of overuse

Today on March 30th, 2016, for the first time, we are bringing together a cross section of the Choosing Wisely Canada stakeholder community of close to 300 individuals for this National Meeting. I am thrilled this event sold out, even before the registration deadline.

It is in partnership with you, our community of stakeholders that we have accomplished so much in such a short period of time. For this, I thank you and look forward to our continued collaboration.

Yours sincerely,



Wendy Levinson, MD, OC
Professor of Medicine, University of Toronto
Chair, Choosing Wisely Canada

Agenda

March 30th, 2016

Bram & Bluma Appel Salon, Toronto Reference Library, 789 Yonge St., Toronto

8:00 - 8:30 am	Registration, Coffee meet and greet
8:30 - 9:00 am	Welcome Comments <i>Wendy Levinson, Chair, Choosing Wisely Canada</i> <i>Cindy Forbes, President of the Canadian Medical Association</i> <i>Bob Bell, Deputy Minister, Ministry Health and Long Term Care</i> CWC – Past, present and future <i>Wendy Levinson, Chair, Choosing Wisely Canada</i>
9:00 - 9:15 am	Ice-breaker – Why did you feel it was important for you to attend today?
9:15 - 10:00 am	Opening Keynote: “Needs, Wants and No-Ways: The Challenges of Choosing Wisely” <i>Andre Picard, Health columnist at The Globe and Mail</i>
10:00 - 10:10 am	Break
10:10 - 10:55 am	Let's have a dialogue about quality of care and overuse Facilitators: <i>Jim Lavery, Research Scientist, St. Michael's Hospital, and Janet Parsons, Research Scientist, St. Michael's Hospital.</i> Purpose: The CW Brokered Dialogue project offers a preliminary strategy for seeding a national conversation about overuse among key stakeholders. The panel offers reflection on the process and its potential to contribute to the CWC mission. Panelists: <i>Kimberly Wintemute, Medical Director, North York Family Health Team, Andrew Quinn, Family Physician, Tweed, ON, Susan Fitzpatrick, Chief Executive Officer, Toronto Central LHIN, and Andre Picard, Health columnist at The Globe and Mail.</i>
10:55 - 11:55 am	Implementing Choosing Wisely – lessons from across Canada Facilitator: <i>Lynn Wilson, Vice-Dean Partnerships for the Faculty of Medicine, University of Toronto</i> 1. Choosing Wisely Alberta Partnership Approach for Governance and Implementation Presenters: <i>Lyle Mittelsteadt, Senior Medical Advisor, and Eileen Patterson, Operational Lead, Choosing Wisely Alberta, Alberta Medical Association</i>

2. Student-led initiative: Choosing Wisely on the Medical teaching unit
Presenter: Paul Cameron, Medical Resident TGUI2 Internal Medicine, Dalhousie University
3. Primary Care: Communicating Choosing Wisely - Using innovation to help family doctors and their patients talk about prevention
Presenters: Jamie Meuser, Executive Director, Professional Development and Practice Support, and Janice Harvey, Physician Advisor, College of Family Physicians of Canada
4. Choosing Wisely North York General Hospital: Rethinking "More is Better"
Presenter: Donna McRitchie, VP, Medical & Academic Affairs - North York General Hospital

11:55 - 12:40 pm

Lunch

12:40 - 1:00 pm

Choosing Wisely Canada - What's next?

Tai Huynh, Campaign Manager, Choosing Wisely Canada

Travel Time to Breakout Sessions

1:05 - 1:55 pm

Breakout Session #1: What are different groups doing to implement Choosing Wisely?

1. Specialty Societies (3)
2. Regional Implementation (2)
3. Medical Education (2)
4. Family Medicine (2)
5. Focused Interventions (2)
6. Public Engagement (3)
7. Deprescribing (3)

Travel Time to Breakout Sessions

2:00 - 2:50 pm

Breakout Session #2: What are different groups doing to implement Choosing Wisely?

1. Hospital Strategy and Focused Intervention (2)
2. Regional Implementation (2)
3. Continuing Medical Education (2)
4. Medical Education (2)
5. Deprescribing (2)
6. Oncology (2)

2:50 - 2:55 pm

Break

2:55 - 3:55 pm Measurement – “Measuring low-value care and the impact of Choosing Wisely”?

Sacha Bhatia, Evaluation Lead, Choosing Wisely Canada and Director, Women's College Hospital Institute for Health System Solutions and Virtual Care

Description: Discuss a framework to guide measuring low-value care and answer the following questions:

- What data do you need?
- How are different organizations measuring CW recommendations at the local, provincial, and national levels?
- How is it working?

Panelists: **Jennifer D'Silva**, Manager, Emerging Issues, Canadian Institute For Health Information, **Simon Hagens**, Director, Benefits Realization, Canada Health Infoway, **Rami Rahal**, Director, System Performance and Surveillance, Canadian Partnership Against Cancer, **Ashi Mehta**, Project Manager, Alberta Physician Learning Program, **Christine Soong**, CWC Clinical Leadership Group member and Physician, Mount Sinai Hospital

3:55 - 4:25 pm Summary of CWC day

Daniel Wolfson, Executive Vice President of the ABIM Foundation and a leader of Choosing Wisely in the United States

4:25 - 5:00 pm Solutions Exchange and Closing Remarks

Wendy Levinson, Chair, Choosing Wisely Canada

Continuing Medical Education

Practising Wisely - Continuing Professional Development from the Ontario College of Family Physicians

Shirley Connor and Jennifer Young, Ontario College of Family Physicians

The Ontario College of Family Physicians will soon launch "Practising Wisely." This new course is an expansion of our successful CPD program "Don't Just Do Something: Stand There!" which has been offered to family physicians since 2011 and aligns closely with the goals of the new Choosing Wisely Canada campaign.

Participants in the renewed program will identify opportunities to "practise wisely" with a focus on reducing over-prescribing, over-imaging, over-screening and over-monitoring. Active learning exercises help participants build communications skills in guiding patients through a shift from seeking sickness to enhancing health. The renewed program integrates Choosing Wisely Canada materials, as well as the latest evidence and tools from diverse sources. Accessing reliable, curated and renewing online resources for evidence-informed practice is a key element.

The program centres on small-group, case-based discussion where primary care providers learn with and from each other in order to translate the message of the Choosing Wisely campaign into action.

Try-Try-Apply: A Continuing Professional Development Initiative

Constance LeBlanc and Tanya MacLeod, Dalhousie University

Goal: We aimed to assess communication skills for CWC. Primary care physicians were randomized into two groups: flipped-classroom and no flipped-classroom. The flipped-classroom group completed three modules: CWC overview, Think Aloud Model communication strategy, and CWC cardiology recommendations. All participants underwent a two-case OSCE with trained simulated patients (SP) targeting ancillary cardiac testing. The SPs provided feedback on participant's communication after the first case.

Measures: Participant's communication skills were assessed using a modified Explanation and Planning Scale (m-EPSCALE) based on the Calgary-Cambridge framework¹. Communication skills were rated by SP-observer pairs, based on the Think Aloud Method, and rated globally on their communication. Observers evaluated feedback from SPs using a modified Quality of SP Feedback Form³.

Challenges: The m-EPSCALE demonstrated high reliability and face validity. No participants (n=12) ordered/referred for unnecessary cardiac testing, however, there was large variation in participant's global communication scores and on the m-EPSCALE. Although we found no difference in scores between groups, scores increased significantly for the second OSCE. Anticipated barriers to using the CWC cardiology recommendations include: unfamiliarity with guidelines (73%), malpractice concerns (73%), patient preference (64%), and discomfort with uncertainty (45%).

Lessons Learned: Preliminary findings suggest no impact of the online learning modules on communication skill in this small sample. The implications of the findings to date will be discussed. Data collection is ongoing.

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1. Silverman J, Archer J, Gillard S, et al. Initial evaluation of EPSCALE, a rating scale that assesses the process of explanation and planning in the medical interview. *Patient Education and Counseling*; 82: 89–93.
2. Schlegel C, Woermann U, Rethans J-J, et al. Validity evidence and reliability of a simulated patient feedback instrument. *BMC Med Educ*; 12: 6.

A new kind of Rounds

Jessica Otte*, Nanaimo, British Columbia

Interested in the overall idea that “More is not always better,” we aim to increase awareness and open a public dialogue around unnecessary and harmful tests and treatments in our community. We have done this by modernizing the concept of Teaching Rounds for an education initiative targeted at GPs, NPs, and pharmacists.

The first event centered around overtreatment of Type 2 Diabetes, with emphasis on the Canadian Geriatrics Society (CGS) Choosing Wisely Recommendation #5: “Avoid using medications known to cause hypoglycemia to achieve hemoglobin A1c <7.5% in many adults age 65 and older; moderate control is generally better.”

Using local patient stories as inspiration, cases were developed for small-group learning; this interactive component, highlighting the harms of overtreatment, was followed by a didactic session – with discussion of the evidence, guidelines, and practice support resources (eg. The Choosing Wisely website) – and a question period with specialist perspective on the topic.

After the session, participants completed an evaluation form and provided ideas for format improvement and future topics, directing us to consider appropriate treatment of hypertension and cardiovascular risk factors. Accordingly, the second event will emphasize Choosing Wisely

Australia’s recommendation (“Don’t commence therapy for hypertension or hyperlipidemia without first assessing the absolute risk of a cardiovascular event.”).

Without measuring aspects of care, we are unable to quantify the impact, if any, of our education session. Given the success of the first event, A New Kind of Rounds will become a series and for future installments we will implement a practice improvement audit looking at clinical practice before and after the Rounds.

* Choosing Wisely Canada Clinical Leadership Group Member

Deprescribing

D-PRESCRIBE: A consumer-targeted, pharmacist-led, educational intervention to reduce inappropriate medication use in community older adults

Philippe Martin, Université de Montréal

Background: Medication safety in the elderly population represents a unique challenge. A 2012 report on drug use by the elderly revealed that 38.9% of seniors used an inappropriate prescription with 12.4% presenting claims for multiple inappropriate prescriptions. We hypothesized that in order to maximize de-prescription, educational medication-risk reduction initiatives should simultaneously include patients, physicians and pharmacists. The objective of this trial is to test the beneficial effect of a new de-prescribing paradigm enlisting pharmacists to transfer knowledge to both patients and prescribers in a 2-pronged approach to reduce inappropriate prescriptions.

Methods: We are conducting a 3-year pragmatic cluster randomized parallel-group controlled trial to test the effect of the new de-prescribing intervention compared to usual care for reducing 4 classes of inappropriate prescriptions from the 2015 Beers criteria among 450 community-dwelling older adults. The experimental group receives a written educational program and have their pharmacist send their physicians an evidence-based pharmaceutical opinion to recommend de-prescription. The main outcome is discontinuation/substitution of the targeted inappropriate prescription 1 year post-intervention.

Results: Preliminary results on a subsample of 111 participants having completed the 6-month follow-up indicate that while all participants received the brochure, only 86 (77.5%) of pharmaceutical opinions were sent to physicians. Physicians responded in 46.5% of cases. The bimodal intervention resulted in 61 (55%) discontinuations or substitutions of the targeted inappropriate prescription at 6 month follow-up.

Conclusion: This pharmacist-led approach involving both patients and physicians in the deprescribing process holds promise for achieving deinvestment in drugs that are potentially harmful in the elderly.

Building the 'Dosing Wisely' Movement in Canada: Testing Ways to Make Deprescribing go Viral

Jessica Otte*, Nanaimo, British Columbia

Background: "Starting a new medication is like the bliss of marriage; stopping it is like the agony of divorce," said a wise clinician. Despite many, diverse encouragements to elicit new prescriptions, few resources help clinicians stop medications, even in cases where polypharmacy-induced harm is probable.

Deprescribing is often fraught with psychological stress due to doctors and patients being unsure why certain drugs were prescribed in the first place, and are reluctant to contradict decisions of other doctors and specialists.

Objectives: In order to engage practitioners, elderly patients and caregivers in discussing quality of life and medication reductions, we created a companion program called DosingWisely. Our goal is to develop tools to help patients and practitioners become enthusiastic about safe and effective deprescribing and learn from best practices of Choosing Wisely.

Methods: The first tool developed by our team was Medstopper.com, an expert-developed, online decision sequencer to aid in deprescribing. By ranking a patients' medications, from "more likely to stop" to "less likely to stop," according to the drug's ability to improve symptoms, reduce future illness and avoid harm both doctors and patients

can start the deprescribing journey. With extensive feedback from practitioners and patients we have created a music video and a short dramatic 'trailer' to generate broad social media exposure to solidify the DosingWisely brand. We monitor use of the tool by Google Analytics and online feedback.

Preliminary Results: Exploration of the website is widespread but persistent use is rare so far

Conclusions: A movement-building strategy is needed, preferably with patient and family champions.

* Choosing Wisely Canada Clinical Leadership Group Member

Deprescribing guidelines for the Elderly

Barb Farrell and James Conklin, Bruyere Research Institute, Ottawa

Goal: Class-specific deprescribing guidelines are a potential solution to the problem of polypharmacy. We developed four such guidelines to help health care providers reduce medications when potential risks outweigh potential benefits. These guidelines correspond to Choosing Wisely recommendations, notably in gastroenterology and geriatrics. Targeted drug classes include: Proton Pump Inhibitors, Benzodiazepine Receptor Agonists , Antipsychotics, and most recently, Antihyperglycemics.

Improvement: Decision-support tools (i.e. algorithms) based on each of the first three guidelines were developed and piloted in a sequential manner, in three long-term care and three family health team practices in Ottawa, Ontario.

Measures: Pre and post guideline implementation self-efficacy survey results demonstrate improvement in self-efficacy for deprescribing tasks. Qualitative evaluation (observations, interviews) have identified facilitators and barriers to implementation.

Challenges: We found guideline implementation was successful when incorporated into routine interprofessional medication reviews, particularly in long-term care. The algorithms were identified as key facilitators to making deprescribing decisions and carrying out deprescribing tasks. Implementation in primary care was impeded by competing priorities and lack of a regular medication review process. Ongoing community engagement work aims to identify components and processes

necessary to facilitate deprescribing initiatives in primary care.

Lessons Learned: Deprescribing is feasible and health care providers appreciate and benefit from the support offered by evidence-based deprescribing guidelines. Incorporating a deprescribing decision-support tool into regular medication reviews is one way to help to ensure that deprescribing becomes a regular part of practice. In addition, interprofessional collaboration on regular medication reviews helps to support effective deprescribing decision-making.

Appropriate Use of Antipsychotics - a provincial initiative

Duncan Robertson, Dennis Cleaver and Mollie Cole, Alberta Health Services

Appropriate use of antipsychotics (AUA) is a topic of concern for those providing care to older adults with dementia. Evidence is mounting that long-term use of these medications is hazardous for this population. Choosing Wisely Canada has identified this as an area for improvement. In Alberta, the Seniors Health Strategic Clinical Network (SH SCN) undertook an initiative aimed at the appropriate use of antipsychotics in our 170 Long Term Care sites. In 2013-14, eleven sites volunteered to implement monthly medication reviews with the goal of reducing the number of residents on antipsychotics in the absence of a chronic mental health diagnosis. Over a 9 month period, these sites reduced by half the number of residents receiving antipsychotics. In 2014-15, the AUA team engaged over 100 LTC sites with higher antipsychotic use in Innovation Collaboratives that consisted of 3 Learning Workshops over a 9 month period with action periods between. Teams submitted monthly progress reports using a balanced scorecard with indicators for each of the 6 components of quality as described by the Health Quality Council of Alberta.

The remaining LTC sites received education sessions on the AUA resources, such as the Choosing Wisely patient information sheet, that have been posted on a webpage: <http://www.albertahealthservices.ca/scns/auatoolkit.aspx>. The key performance measure for the initiative is the RAI 2.0 Quality Indicator for AUA. In 2011-12, Alberta's provincial average for this indicator was 26.8%. By Q2 of 2015-16, Alberta's provincial average sits at

18.8%. A provincial benchmarking process for this indicator is currently underway.

Measuring “Do not use atypical antipsychotics as a first-line intervention for insomnia in children and youth”

Jordan Hunt, Canadian Institute for Health Information

Select atypical antipsychotics, such as olanzapine and quetiapine, are used to manage insomnia in children and youth, despite insufficient evidence for their efficacy. These drugs carry significant risk of potential side-effects, even at low doses. Quetiapine has been prescribed most frequently, and the majority of studies on the use of atypical antipsychotics for insomnia have focused on quetiapine. When used to treat insomnia, relatively low doses of quetiapine (below 150 mg/day) are dispensed compared to effective doses for treating on or off label clinical indications. Rates for children and youth (age 5-24) dispensed low dose quetiapine for more than 60 days were calculated for three Canadian provinces (BC, Saskatchewan and Manitoba), using the Canadian Institute for Health Information’s National Prescription Drug Utilization Information System Database. Overall, long-term use of low-dose quetiapine among 5-24 year olds increased significantly from 2008/09 to 2012/13. Rates were higher, and increased significantly over the 5-year study period, among adolescents and young adults (15-24). Rates were lower, and remained comparatively stable, among children and youth (5-14). These patterns were consistent across all three provinces. The use of quetiapine reported here is of some concern because the low dosages at which it is being prescribed are consistent with its use as a sleep aid, which is not approved nor recommended.

Reducing polypharmacy in frail elderly patients: a CW patient safety project

Carolyn Wilson, Vandan Yousefi, Karen Dhari, Nilu Partovi, Vancouver General Hospital

Goal: To implement the recommendation from the American Geriatrics Society "do not prescribe a medication without conducting a drug regimen review" on an Acute Care for Elders unit at Vancouver General Hospital (VGH).

Improvement: The purpose of this initiative is to conduct a comprehensive medication review within 48 hours of admission on a select group of patients that have been identified as being at high risk for readmission and are ≥ 80 years old. This is followed by a discussion of the patient's drug therapy regimen and possible improvements between the clinical pharmacist, hospitalist and, when possible, the patient's family doctor. Upon discharge, the results of the review and the patient's updated medication list will be provided to patient, their family doctors as well as their community pharmacy to improve information transfer.

Measures: Process measures include: number of medications on admission and discharge, number of potential drug-related adverse events, number and type of clinical and compliance interventions made and frequency of communication with the family doctor and community pharmacy. Outcome measures include length of stay, readmission rate and incidence of in-hospital medication-related adverse events.

Challenges: Since July 2015, we have identified a number of challenges with standardization of the medication review process, facilitating family doctor participation in medication reviews, and the

fluctuating volume of patients and subsequent time demands. We have developed an electronic medication review template to standardize the medication review. We have also developed communication templates and processes to better engage family physicians.

Lessons Learned: We have performed medication reviews on 20 patients to date. A total of 43 drug therapy problems were identified resulting in 19 clinical interventions and 5 compliance interventions. Of the 43 drug therapy problems identified, the most common was drug without an indication (12) followed by drug dose too low (9). We have received support from various stakeholders including the Vancouver Coastal Health leadership, members of the hospitalist program, clinical pharmacists and members of the family physician community. However, we have also learned that the implementation of a complex process takes time, and is an iterative process.

Other team members: Carolyn Wilson, Greg Egan, PharmD, Jenifer Tobamo, Vivian Chan, Roderick Tukker, Dr. Wendy Woodfield, Jacqueline Per, Debbie Jacobsen, Judit Bakonyi, Kumar Shivedasani

Proton Pump Inhibitors: De-Prescription to Enhance Patient Safety and Appropriate Resource Utilization

Dr. Tiffany Florindo, Dr. Kimberly Wintemute*, Suja Arackal, Eric Lui, North York Family Health Team, North York General Hospital

Choosing Wisely Canada (CWC) has suggested that physicians consider re-evaluating the need for proton pump inhibitor (PPI) use at least once per year in patients on long-term PPI therapy who do not have a high-risk for gastrointestinal bleeding. Internationally, 30-60% of those on PPIs do not have an appropriate indication. The rationale behind the CWC recommendation is based on data showing increased risk of infection, notably pneumonia and C. Difficile. Other risks include: medication interactions, nutrient deficiencies, and increased fracture risk. At the North York Family Health Team, 6.4% of patients have been on PPIs for more than 1 year. In the interest of patient safety and appropriate resource utilization, we aim to reduce this number over a 3-month period. We will be making use of education sessions for physicians and allied health professionals, as well as patient and physician handouts we deprescribing regimes and instructions on how to treat rebound symptoms. Additionally, a reminder will be placed in the electronic charts of the aforementioned patients to encourage the physician to consider PPI de-prescription.

adverse effects of commonly used drugs.
CMAJ. Review: 1-6

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* Choosing Wisely Canada Clinical Leadership Group Member

Family Medicine

Pap smear and Bone density testing practice in Alberta

Chris Symonds, Wenxin Chen, Ashi Mehta, Diane Duncan, Lara Cooke, Cumming School of Medicine, Physician Learning Program, University of Calgary

Context: The Physician Learning Program analyzes Alberta Health (AH) and Alberta Health Services (AHS) administrative databases to provide audit and feedback reports for physicians' continuing professional development. Current Choosing Wisely Canada (CWC) recommendations advise against Pap screening in women under age 21 and over age 69 and repeating bone density testing (DEXA) more often than every 2 years.

Objective: To evaluate current Pap smear screening and bone density testing practices in Alberta to assess alignment with CWC recommendations.

Design: For Pap smear testing, AH administrative data was evaluated over 3 years (2012-2014). For bone density testing, AH administrative data was evaluated over 4 years (2010-2013).

Results: Using discrete numbers of patients, we found that 14.6% of women ages 15-20 years, 13.7% ages 70-79 years and 3.2% aged 80 years or older had one or more Pap smear over 3 years from 2012-2014. The denominator was 2013 mid-year population from Alberta Health Interactive Health Data Application (IHDA). For bone density testing, there were 368,256 scans performed from 2010-2013; 62,525 (17%) were repeat scans performed less than 2 years apart accounting for

more than \$9 million in healthcare spending over 4 years.

Conclusion: Variances were identified between current practice in Alberta compared to CWC recommendations for Pap smear screen testing and bone density testing. Barriers to and enablers of best practice may be complex and will require systematic and comprehensive evaluation to better inform strategies to reduce unnecessary testing.

POEMs Reveal Candidate Clinical Topics for the Choosing Wisely™ Campaigns

Roland Grad, McGill University

Objectives: Via a systematic literature surveillance method based on POEMs, I sought to identify candidate clinical topics for consideration by expert panels.

Methods: POEMs are tailored synopses of original research or systematic reviews, selected by searching over 100 journals. Delivered to members of the Canadian Medical Association (CMA) by email, physicians use the validated Information Assessment Method (IAM) to reflect on the daily POEM in the context of a continuing medical education program. The IAM questionnaire captures perceptions of the clinical relevance of each POEM, their intention to use this information for a specific patient and any expected health benefit, from using POEMs information for decision-making.

We analyzed 321,334 ratings submitted by CMA members on all 253 POEMs delivered in 2015. Given the objective of the Choosing Wisely campaigns, I focused my analysis on one item in the IAM questionnaire, namely the expected health benefit of 'avoiding an unnecessary diagnostic test or treatment'. For each POEM, I counted the number of these 'avoid' ratings. Then, I selected the top 20 POEMs in 2015 associated with this type of health benefit. Next, to determine if the clinical topic of these 20 POEMs was included in the master list of the Choosing Wisely campaign, I searched this list by keyword and topic area, on January 9 2016.

Results: None of the clinical topics addressed in these 20 POEMs were the subject of a recommendation from the Choosing Wisely campaigns. Each POEM title and corresponding clinical action to consider for de-adoption will be presented in tabular format, grouped in the following categories:

1. Diagnostics (n=4),
2. Medical interventions (n=13),
3. Surgical interventions (n=3).

Conclusion: In 2016, the selection of new recommendations for Choosing Wisely can be informed by a systematic crowdsourcing approach based on POEMs.

Clinique medicale nepisiguit - our early experience

JP Arseneau, Clinique medical Nepisiguit

Goal: Implementation of Choosing Wisely recommendations in the Clinique Médicale Nepisiguit, a medical practice of 15 family doctors and 5 specialists working with a nurse practitioner and 6 to 8 family practice nurses, and one LPN who work for the family physicians. This is a teaching family practice to second year family medicine residents and cares for over 15,000 patients with a full scope of services from the working physicians including hospitalization, nursing home care, emergency room care, obstetrical care, palliative care, etc.

Improvement: Reduction of recurrent testing without medical indication (eg. Regular cholesterol measurements, fasting sugars, HbA1c, thyroid testing, renal function.)

Reduction of unnecessary routine blood tests and screening tests such as PSA

Measurement: Reduced rates of blood tests for one physicians practice (JP Arseneau): 32% overall in the last 3 years in the rate of unnecessary recurrent blood testing at the local hospital lab.

Reduction of community lab wait times from 8-12 weeks to 2 weeks.

Challenges: Measuring the impact of changes, in terms of dollar value as well as system level changes.

Lessons Learned: Capacity for full review of the practice to find areas for improvement.

Low Back Pain Quality Improvement Project: Understanding Physician Mental Models

Dr. Lee Green, University of Alberta

Background: Imaging for uncomplicated low back pain is a priority area for Choosing Wisely Canada (CWC) in Alberta. In order to design an effective intervention for imaging overuse, it is necessary to understand physician drivers. We sought to

1. identify significant drivers behind ordering MRI when red flags were absent and
2. understand physicians' decision making, so an effective intervention could be devised.

Methods: Quality Improvement (QI) project conducted in collaboration with 3 Primary Care Networks across Alberta. The qualitative research approach includes using Cognitive Task Analysis (CTA) interviews with up to 12 physicians to understand their mental models of and decision making about back pain and MRI. Participating physicians capture a range of demographics. Patient and Community Engaged Research (PaCER) is conducting a sub-study looking at patient perspectives. The results of this study and the PaCER study will be mutually shared and considered.

Results: The CTA interviews revealed 2 mental models among physicians:

1. evidence-based, detailed understanding of back pain, order MRI only for red flags or for other demands;
2. relationship-oriented, focused on symptom severity, order MRI for patient satisfaction, when pain persisted or for other demands.

Conclusions: This project is still in progress and expected to be completed by March 2016. The physician interviews show most physicians do not order MRI when red flags are absent. Other demands (significant drivers) such as specialist or program requirements (WCB) and patient and family expectations are likely the causes of unnecessary imaging ordering.

Choosing wisely: musculoskeletal disorders

Robert Ferrari, University of Alberta

Context: This presentation will describe how to implement Choosing Wisely recommendations in the primary care setting, specifically with regard to patients with musculoskeletal disorders.

Objective: To review studies by the presenter on the effects of Choosing Wisely recommendations on imaging and serological testing in patients with musculoskeletal disorders.

Design: Two studies, including one published in Canadian Family Physician, will be reviewed.

Participants: The studies sampled primary care patients.

Intervention/Instrument (as applies): The studies evaluated patients 1-year after applying Choosing Wisely recommendations regarding diagnostic testing.

Outcome Measures: Recovery from disorder, diagnosis

Results: The presenter will show that one can apply Choosing Wisely recommendations with a low risk of missing a diagnosis or causing harm.

Conclusions: Choosing Wisely recommendations are supported by recent research concerning patients with musculoskeletal disorders.

References of studies to be discussed:

Ferrari R. Evaluation of the Canadian Rheumatology Association Choosing Wisely recommendation

concerning anti-nuclear antibody (ANA) testing. Clinical Rheumatology 2015;34:1551-6. (<http://link.springer.com/article/10.1007/s10067-015-2985-z>)

Ferrari R. Evaluation of Choosing Wisely recommendations concerning imaging studies in patients with spinal pain. Canadian Family Physician 2016;in press.

Focused Intervention

Reducing sedatives among elderly hospital patients

Christine Soong*, Mt. Sinai Hospital

Background: Inappropriate use of sedative-hypnotics in elderly patients results in preventable harm such as falls, hip fractures, delirium, and mortality. Examples of potentially inappropriate indications include sleep. Local data on general internal medicine (GIM) at Mount Sinai Hospital (MSH) indicated nearly half of elderly patients receiving either a benzodiazepines (BZD) and/or zopiclone was for the primary indication of sleep.

Aim: We set out to reduce the proportion of eligible elderly medical inpatients (65 years and older) receiving BZD and/or zopiclone for the primary indication of sleep by 20% by December 2016.

Methods: We conducted PDSA cycles piloting an educational audit-feedback intervention targeting physician trainees in conjunction with a safe sleep hygiene campaign among target hospital wards. The intervention included an educational presentation at a trainee orientation outlining the harms of sedative-hypnotic use while promoting safer sleep hygiene practices. Mid-way through the rotation, performance feedback was provided to the residents. Lessons learned from this educational initiative informed on following iterations of the intervention. A second component of the intervention involved nursing education. Sessions were

held to promote environmental changes to enable better sleep practices such as noise reduction, limiting disruptions at night and requesting bundling of investigations and/or treatments overnight, making available ear plugs and eye shades, and offering warm non-caffeinated beverages. Finally, we updated existing ordersets to remove or reduce the dose of sedative-hypnotic agents.

Results: The results of our first PDSA with medical trainees are shown in Figure 1. The number of potentially inappropriate sedative-hypnotic prescriptions decreased by over 60% without increases in prescriptions of other sedative agents. Currently the other intervention components are in varying stages of implementation. We are evaluating the effects of each change with SPC charts.

* Choosing Wisely Canada Clinical Leadership Group Member

Targeting a specific Emergency Department (ED) presentation to identify 'routine' tests of little value

S.G. Campbell*, co-authors: I. Cajee, S. Field, K. Magee, M.B. Butler, C.L. Campbell, S Bryson., Dalhousie University

Background: Chest pain is common in the ED.

Chest x-rays (CXR), serum electrolytes (SE) and coagulation studies (CS) are often 'routinely' ordered in these patients. We retrospectively evaluated the records of a group of such patients to assess the value that these tests provided to patient care.

Methods: Clinical details and CXR, SE and CS results of 984 patients who had been referred to cardiology with chest pain were reviewed independently by four experienced ED faculty. Reviewers indicated if they thought the results were, or might have been helpful (relevant), or whether the result added nothing to care. A result was considered 'relevant' if any one of the reviewers considered it so.

Results: 7.8% of CXR findings were considered relevant. Including only patients with a temperature < 37.5, decreased this to 5.8%. 4.1% of SE and 1.8% of CS results were considered relevant.

No CS findings were found to contribute to the emergency care.

Conclusions: Afebrile patients with chest pain suspected to be of cardiac origin rarely benefit from CXR. We were not able to identify a subset of afebrile patients in whom CXR should be eliminated, but clearly more judicious use of CXR in this

group of patients is indicated.

Routine SE testing contributes very little to patient care for these patients. CS testing for patients with chest pain suspected to be cardiac in origin should be restricted to patients on Vitamin K antagonists anticoagulants, with liver disease or with known coagulation abnormalities.

* Choosing Wisely Canada Clinical Leadership Group Member

A medical directive for nurses to remove inappropriate urinary catheters among hospitalized patients

Jerome Leis, Sunnybrook Hospital and Association of Medical and Microbiology and Infectious Diseases Canada

Goal: To not leave in place urinary catheters without an appropriate indication at our hospital, as recommended by the Canadian Society of Internal Medicine.

Improvement: All physicians and surgeons achieved consensus regarding appropriate reasons to leave a urinary catheter in place. A multidisciplinary team developed a medical directive allowing nurses to assess urinary catheters every shift and discontinue those lacking appropriate indications.

Measures: In April 2014, a point prevalence audit confirmed that 54/274 (19.7%; 95% Confidence Interval (CI), 15.4-24.8%) medical and surgical patients had a urinary catheter, of whom 37 (68.5%; 95% CI, 54.3-80%) lacked an appropriate reason based on guideline criteria. In September 2014, medical wards introduced the medical directive resulting in marked reduction in urinary catheter use to 410/4816 days (8.5%; 95% CI, 7.8-9.3%), significantly below wards that continued to rely on usual practice (794/5364 days; 14.8%; 95% CI, 13.9-15.8%; p<0.001). The directive was spread to all medical units with sustained results in September, 2015 (42/527 days, 8.0%; 95% CI, 5.9-10.7%). The directive was adapted for surgical patients and implemented on surgical wards in July, 2015, resulting in further reduction in urinary catheter use from 4235/24777 days (17.1%; 95% CI, 16.6-17.6%) six months prior, to 4889/35058 days (14.0%, 95% CI, 13.6-14.2%; p<0.0001).

Challenges: Sustaining adherence to the medical directive is our greatest challenge. The medical directive has become hospital policy and included in training of new employees.

Lessons Learned: The key to implementing this intervention was obtaining consensus among all physicians and surgeons regarding appropriate reasons for urinary catheter use, and successfully engaging nurse leaders.

Reduction in Urine Toxicology Testing in Emergency Rooms through a Choosing Wisely Approach

Doug Urness, Marni Bercov, Nick Mitchell, Alberta Health Services

The Addiction and Mental Health Strategic Clinical Network (AMH SCN) is a collaborative group led by clinicians with a mandate to bring evidence to practice and improve health outcomes for Albertans. Stakeholders include health care administrators, researchers, government, non-profit associations, patients and family members.

In 2014 -15 the SCN commenced work to reduce the use of stat drug toxicology screening for psychiatric patients presenting to emergency rooms. This would become one of the thirteen Choosing Wisely recommendations for Psychiatry. This work engaged various teams, gathering data and providing education to providers on the limitations of the testing. Implementation resulted in a decrease in stat toxicology testing by 96 per cent over a six month period.

The AMH SCN has established a working group to address the other 12 psychiatry recommendations. Given the diversity of representation within our network, and the clear alignment with the research community we are uniquely positioned to drive changes in clinician practice. We will be working closely to document our change management approach in order to offer assistance and knowledge to those jurisdictions not yet able to move forward on this work.

Enhancing Appropriate Utilization of Coagulation Tests

Michelle Sholzberg Co-Authors Chaudhry H, O'Neill N, O'Brien P, Petrucci J, Fralick M, Hicks L*, St Michael's Hospital

Background/Goal: The activated partial thromboplastin time (aPTT) and prothrombin time (PT) coagulation tests have become ubiquitous in medical practice despite only having been validated for very specific clinical indications. Indiscriminate use of these tests increases costs with little anticipated benefit for patients, and may mislead care. We reviewed laboratory data at St. Michael's Hospital from 2014-2015 and determined that aPTT/PT testing cost 1.5 million dollars. In most cases both the aPTT and PT were ordered concurrently suggesting widespread over usage. The aim of our project is to identify inappropriate aPTT/PT testing at St. Michael's and to develop curbing strategies.

Change Strategy: We identified relevant stakeholders; held focus groups; developed process maps and stakeholder-specific change strategies. Interventions used to-date include: changes to order sets with decision support; development of educational materials/prompts; and educational sessions. We will be sharing our change strategy and educational materials.

Measures: The main outcomes are aPTT/PT test volumes and costs. Same day alternate test volumes are balance measures. Process control charting will be used to track utilization. We plan to monitor knowledge and attitudes through focus groups and surveys. Preliminary data will be presented.

Conclusions: Changing aPTT/PT usage has been challenging due to the plethora of stakeholders involved. Nonetheless, incremental progress has been made and clinicians have demonstrated willingness to address unnecessary testing. Laboratory data has facilitated the identification of areas where there appears to be substantial overuse. We anticipate that our project will result in an important decrease in aPTT/PT utilization and associated expenditures.

* Choosing Wisely Canada Clinical Leadership Group Member

Simple and Effective Strategy to Address Overuse of Thrombophilia Testing

Chaudhry H, O'Brien P, Hicks L*, Sholzberg M, St. Michael's Hospital

Background/Goal: Inherited thrombophilia testing for the in-patient population is rarely indicated, can be misleading due to concurrent conditions and rarely changes short-term management. In the out-patient setting, the benefits and relevance of testing for inherited thrombophilia is controversial and indiscriminate testing is not supported by the literature. Thrombophilia testing availability for in- and out-patients was evaluated at St. Michael's Hospital (SMH) as part of the Choosing Wisely SMH initiative.

Change Strategy: In the spring of 2015, a memo was sent to all ordering physicians indicating that inherited thrombophilia tests would no longer be routinely available for in- and out-patients at SMH. However, thrombophilia testing could still be performed by the laboratory if vetted through the Venous Thromboembolism (VTE) Clinic, hematology consultation service or medical director of the coagulation laboratory.

Measures: Test volumes were collected through the laboratory information system pre- and post-implementation. There was a > 60% reduction in thrombophilia testing for in-patients and a > 50% reduction in out-patient testing. Currently, this decrease has led to a \$3000 reagent cost savings for the laboratory. This initiative has also had substantial time-saving implications for the technologists performing the testing. There was no push-back

from ordering clinicians regarding the change and the benefits appear to be sustained.

Lessons Learned: We implemented a simple and effective strategy through staff education and safeguard development that significantly diminished thrombophilia testing at our center. There is potential for this methodology to be expanded to other areas of laboratory testing overuse in the future.

* Choosing Wisely Canada Clinical Leadership Group Member

Frequency of Repetitive Routine Blood Testing at an Urban, Academic Hospital

Lisa K. Hicks*, co-authors: O'Brien P, Yip D, Ng V, Wilson M, Hughes B, Summan, N, Abosh D, Freeman M., St. Michael's Hospital

Background: Choosing Wisely Canada recommends against repetitive complete blood count (CBC) and biochemistry testing in hospitalized patients with stable lab values.

Aim: To estimate the extent of repetitive lab testing at St. Michael's Hospital in Toronto.

Methods: Using local administrative data we determined the volume of blood collected for routine blood tests (RBTs) per patient day, the proportion of eligible patients where RBTs were performed for > 3 consecutive days and the proportion of patients in whom RBTs was performed every day of admission. RBTs were defined as CBC, electrolyte, creatinine and/or liver enzyme tests. Data from May 2015 was collected for three services: General Internal Medicine (GIM), Peripheral Vascular/Cardiovascular Surgery (PVS/CVS), and Hematology/Oncology (Hem/Onc).

Results: The average volume of blood collected for RBTs per patient-day-admitted was 8.28ml/day, 9.50ml/day, and 8.32ml/day for GIM, PVS/CVS, and Hem/Onc respectively. A majority of eligible patients RBTs for > 3 consecutive days (60%, 81%, and 79% respectively) and a substantial proportion of patients (50%, 58%, and 65%) had RBTs sent every May-day of their admission. The total volume of blood collected from each patient for RBTs

ranged from 4.5 ml to 463.5ml per patient stay in May. For the largest service (GIM) 17.9 litres of blood was sent for routine lab testing in May 2015.

Conclusions: Repetitive CBC and routine biochemistry testing is very common at our institution and likely contributes to iatrogenic anemia. We are developing a change strategy to address this problem.

* Choosing Wisely Canada Clinical Leadership Group Member

Beta-lactam allergy skin testing (BLAST) to reduce use of alternate second-line therapy among patients with reported beta-lactam allergy

Jerome Leis, Sunnybrook Hospital and Association of Medical Microbiology and Infectious Disease Canada

Goal: One of the top five Choosing Wisely statements of the Association of Medical Microbiology and Infectious Diseases (AMMI) – Canada is “Don’t prescribe alternate second-line antimicrobials to patients reporting non-severe reactions to penicillin when beta-lactams are the recommended first-line therapy.” The aim of our project was to reduce the use of alternate second-line antimicrobial therapy among patients seen on the Infectious Diseases consultation service at a large academic centre who report a beta-lactam allergy.

Improvement: Clinical pharmacists were trained to perform beta-lactam allergy skin testing (BLAST) for patients with history of beta-lactam allergy who would otherwise receive alternate therapy due to severity of their allergy.

Measures: A 6-month before-after evaluation of BLAST was undertaken. At baseline, the proportion of patients receiving alternate second-line therapy due to their reported beta-lactam allergy was 30.6% (22/72) corresponding to 21.5% (149/692) of overall days of therapy. Following availability of BLAST, use of alternate therapy decreased to 13.8% (8/58) of patients ($p=0.02$) corresponding to 7.2% (66/918) of overall days of therapy ($p<0.001$). All patients undergoing BLAST had negative tests and tolerated preferred beta-lactam therapy without any adverse effects ($n=8$).

Challenges: Reasons for not undergoing BLAST included history of non-IgE mediated reaction, pa-

tient refusal, expected duration of therapy <2-days and recent reactions (<3months).

Lessons Learned: The use of BLAST at the point-of-care is a promising antimicrobial stewardship strategy to preserve the use of beta-lactam therapy among patients with reported allergy. A larger multicentre evaluation is underway to determine safety and cost-effectiveness of this intervention.

A Quality Improvement Initiative to Optimize Appropriate Testing for Venous Thromboembolism in the Emergency Department

S. Vaillancourt, X. Y. Wang, B. Leontowicz, M. Sholzberg and K. McIntyre St. Michael's Hospital, University of Toronto

Background: Venous thromboembolism (VTE) is a common diagnostic consideration among patients presenting to the emergency department (ED) and often requires the use of diagnostic testing. A normal d-dimer (DD) blood test can exclude VTE and eliminate the need for costly imaging and the associated contrast medium and radiation exposure. The purpose of this quality improvement initiative was to increase the use of DD testing for patients with a low and intermediate clinical pre-test probability of VTE, increase the use of ventilation perfusion scans (VQ) and decrease the use of CT pulmonary angiogram (CTPA) at St. Michael's hospital.

Methods: A multispecialty team developed an ED specific algorithm set for appropriate VTE testing that were posted on the ED online portal along with a poster in each zone of the ED after an ED launch campaign with request for feedback. A run chart was used to track DD, CTPA, VQ and venous Doppler (VDUS) utilization. Two-sided T-test comparison was conducted to compare pre- and post-implementation utilization.

Results: Physician feedback was positive regarding the use of: DD in VTE intermediate risk patients and the VTE algorithm set. Feedback was negative for DD turnaround time. We found a significant increase in DD use (77 tests per month to 93; p=0.013), but no significant change in the use of CTPA (27.3 per month to 30; p=0.38), VDUS, or VQ. ED visits remained constant.

Conclusions: This intervention increased DD utilization, but measuring appropriateness will require prospective collection of clinical pre-test probability. We are working to integrate risk stratification and prompts into computer physician order entry as our next intervention.

Promoting Resource Stewardship: Reducing Inappropriate Free Thyroid Hormone Testing

Julie Gilmour, St. Michael's Hospital

Background: Free thyroxine (fT4) and free triiodothyronine (fT3) are often ordered when not clinically warranted, leading to unnecessary healthcare expenditures.

Goal: To reduce the number of fT4/fT3 measurements by 50% at Women's College Hospital (WCH) by August 2015.

Improvement & Measures: A baseline audit was conducted over 12 months to quantify the quality gap. Unnecessary fT4/fT3 tests were defined as any measurement in the setting of a normal TSH; this occurred in 64.2% fT4 and 58.8% fT3 tests. Two change ideas were implemented:

1. Education of physicians began 12/17/14 and
2. A hospital-wide reflex laboratory, forced-function system was implemented 03/09/2015 with subsequent data collection for 25 weeks.

The main outcomes were to examine differences in the weekly median TSH, fT4 and fT3 tests in the pre-intervention, education and reflex time periods, as well as, to analyze for special cause variation with statistical process control (SPC) charts. Balancing measures were collected through means of an email survey.

Project Impact & Challenges: The median number of fT4/fT3 processed per week were significantly reduced from 90/39 at baseline, to 78/34 post-education, and 59/14 post-reflex ($p <0.0001$). There

was only 2% variation in TSH. SPC charts demonstrated special cause variation following implementation of the reflex system for fT4/fT3. Limited issues with processing of fT3 were mitigated early.

Lessons Learned: The reflex fT4 system was feasible and effective in reducing fT4/fT3 at WCH. Stakeholder engagement was essential, while physician pre-education aided in the rapid acceptance of the new system.

References

1. Garber, J.R., et al., Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. *Endocr Pract*, 2012. 18(6): p. 988-1028.
2. Choosing Wisely Canada: Canadian Society of Endocrinology and Metabolism, Five Things Physicians and Patients Should Question. Choosing Wisely, Initiative of the Canadian Medical Association 2013 [cited 2014 November 10].

Make your urine sample count!

Sandra Comand, Brant Community Health System

As a lean organization we attempt to provide data driven decisions in our quality improvement strategies. Our data has indicated that approximately 60% of the urine cultures collected within the Emergency Department yielded a "Mixed Growth or Contaminated" specimen. A focused study performed at our hospital in 2014 (July 2014-August 2014) revealed that 25% of our in-patients were inappropriately treated for urinary tract infections.

Objectives:

1. Reduce the number of urine cultures collected on asymptomatic patients.
2. Increase the quality of the urine specimens collected by reducing the number of urine cultures that yield a mixed growth - indicating contamination upon collection.

Change Concepts:

1. Protocol developed that outlines when a urine culture is required based on evidence based symptoms.
2. Staff member instructed to provide patients with a specimen collection kit which includes a labeled container and a towelette for self cleansing. Patient encouraged to use poster instructions within the bathroom for guidance.

Measures:

1. Number of urine cultures collected.
2. Number of mixed growth / contaminated urine cultures reported by the lab.

Outcomes:

1. Most important lesson learned was that even with a clear protocol in place we would not have success without the engagement of the patient.
2. Staff had the misconception that they were being proactive (expediting flow of information) by collecting urine on patients in the triage area (prior to being seen by the physician) when symptoms of a UTI were not necessarily present.

Quantitative:

1. A reduction of approx. 45 urine cultures ordered per month
2. A 4% (N=58.84) reduction in the number of mixed growth urines collected within the ER.

Essential and Non-Essential Blood Testing in the Internal Medicine Clinical Teaching Units

Cody Sherrer, Queen's University School of Medicine

Appropriate utilization of clinical tests is a globally recognized goal. Our project aimed to examine the utilization of blood tests on the Internal Medicine Clinical Teaching Units (CTU) at Kingston General Hospital (KGH).

Over an eight-week period, 14 CTU attending physicians at KGH were interviewed. They were asked for each of their patients, "What blood tests do you consider to be essential for tomorrow morning to maintain appropriate care for this patient?" The following day, blood tests that were ordered and processed were recorded and compared to the "essential" list previously given by the attending physician.

Of a total of 291 processed blood tests, 148 (51%) had not been considered essential by attending physicians; of the 203 tests which were considered essential, 60 (30%) were not processed. Total agreement between "essential" and processed tests was poor ($\kappa = 0.51$; CI, 0.45-0.56). There was no association between age, sex, attending physician and duration of hospital stay, and the adequacy of blood tests.

This common inadequate utilization of blood tests adds unnecessary expenses and surely negatively affects patients' experience and safety. Lack of consistent decision making and communication is likely the underlying cause. This study will inform future quality improvement initiatives to address the problem.

Management of Patients with Venous Thromboembolism

Natalie Szpakowski, Shail Rawal, Tom MacMillan, University Health Network

Background: New evidence and recent guidelines have emerged to inform the investigation and treatment of patients with acute venous thromboembolism (VTE). Despite this, there exists significant variation amongst clinicians in the management of patients with acute VTE. We sought to review the literature in order to identify areas where there were likely to be gaps between evidence and practice in the treatment of VTE. This review is the initial phase of a project that aims to reduce the frequency of low-value investigations and resource overuse in the care of patients with VTE at the University Health Network.

Methods: A PubMed search was performed to identify studies related to key areas of variation in the management of patients with VTE. Keywords included “thrombophilia”, “echocardiography”, “outpatient”, and “occult malignancy”. This was complemented by a review of major VTE guidelines.

Results: We identified five evidence-based themes:

1. most patients with pulmonary embolism (PE) can be safely managed with outpatient treatment;
2. direct oral anticoagulants are the preferred initial treatment for VTE;
3. investigations for hereditary thrombophilias are seldom warranted for VTE;
4. extensive investigations for occult malignancy are not indicated in patients with VTE;
5. echocardiography is not routinely required in the management of PE.

Conclusions: We have proposed five recommendations to standardize care for patients with acute VTE and to reduce low-value care. Next, we aim to develop an intervention to assist in the implementation of these recommendations and to better the quality of care for patients with VTE.

Are Research Advisory Committees Useful? Lessons from research into unnecessary treatments and ways of ensuring high-quality care.

James Conklin; Karen Chun, Bruyere Research Institute

Goal: Advisory committees (ACs) are often used in Canadian health services research, but little work has been done to understand their impact. This project investigates an AC working with a research program whose findings support several Choosing Wisely recommendations, including Hospital Medicine (recommendation 3), Gastroenterology (1), and Geriatrics (2 & 4). Our goal is to understand how an AC can ensure that research findings about issues such as appropriate medication use are translated into practice.

Improvement: This project's findings can help improve the relevance and transferability of research. Our results show how an AC influences research in positive ways, and can create linkages between scientists, practitioners, and policy makers. Our findings will help other researchers to create ACs that improve the impact of research.

Measures: We used a qualitative design including interviews, observations, open-ended surveys, and document analysis.

Challenges: We shared our results with the research program's leaders and AC members, to help them identify and design improvements for the program's second phase. Findings are also being disseminated more widely to help other researchers to establish high-performing ACs.

Lessons Learned: The project generated insights into factors that facilitate or impede an AC's work

in translating research into practice. Facilitators include early engagement of the AC in research design, ensuring that members represent all of those who are impacted by and who can influence the uptake of findings, providing members with comprehensive (but not overwhelming) updates, providing structure and strong meeting facilitation, and allowing opportunities for both formal and informal discussion.

Transfusion Premedication Practices among Pediatric Health Care Practitioners in Canada: Results of a National Survey

Ziad Solh, Anthony KC Chan, Nancy M Heddle, McMaster University

Background: Pre-transfusion medication (premedication) is prescribed to patients who have had a transfusion reaction (TR). Though not supported by evidence, premedication has 50-80% prevalence in North America (Sanders BJH 2005). Research questions:

1. What are Canadian pediatric practitioners' views and practices regarding premedication; and
2. What are barriers to reducing premedication overuse in pediatrics?

Methods: An online survey targeted hematology/oncology, emergency medicine, general surgery, and critical care practitioners in all 16 Canadian pediatric tertiary hospitals. The survey collected demographic, clinical, future directions, and organizational questions.

Results: 55 individuals from 15/16 sites completed the survey. 55% (30/55) were pediatric hematology/oncology providers, and 35% (19/55) were Directors of their respective divisions. 87% (48/55) estimated that they order premedication for up to 25% of transfusions, and 13% (7/55) premedicate 26-50% of transfusions. Factors influencing premedication decisions are presented in Figure 1. We identified specific education-based and institution-based barriers to reducing premedication overuse.

Conclusion: The survey yielded 2 important messages:

1. views and practices are variable and clinical guidelines are desired by the majority of respondents;
2. there is a knowledge-to-action gap regarding blood supply leukoreduction, TR risk factors, alternatives to premedication, and the importance of TR reporting.

Until more research demonstrates a benefit, routine premedication is likely not necessary regardless of TR history. More effort should be made to increase TR reporting which will improve diagnosis and management of TR.

Health Informatics

The Use of Electronic Medical Records to Change Clinician Behaviour and Increase Adherence to the Choosing Wisely Recommendations

Alexander Singer, University of Manitoba

Background: The Manitoba Primary Care Research Network (MaPCReN) is ideally positioned to investigate the impact of Choosing Wisely recommendations on patient care and physician behaviour. The MaPCReN processes de-identified Electronic Medical Record data from primary care clinicians that can provide insight regarding tests and procedures being performed.

We plan to assess adherence related to four key Choosing Wisely Canada recommendations in Manitoba primary care clinics. The focus is: potentially inappropriate antibiotic prescribing, Vitamin D testing, annual PSA screening, and prescription of antipsychotics. We will measure the impact of an audit-feedback intervention incorporating provider-specific data and comparisons to the control group. We will also consider the impact of changes in clinician behaviour on patient care and cost.

Methods: A randomized cluster trial design will test quarterly audit-feedback cycles leveraging existing MaPCReN practice reports. Primary care providers will be randomized into groups at the clinic level. The intervention group will receive modified feedback reports containing information specific to their adherence to the Choosing Wisely recommendations. The control groups will receive the regular feedback reports with general infor-

mation about Choosing Wisely or nothing extra. Analyses will assess patient and provider factors pre and post intervention to explain the variables influencing and altering patterns of potentially unnecessary testing and prescribing.

Results: The study received a grant from the Manitoba Medical Service Foundation. We expect to begin the trial in April 2016.

Conclusion: We expect this study will provide new insights to the impact of EMR-based audit-feedback intervention to improve adherence to the Choosing Wisely recommendations.

Software for the Evolution of Knowledge in Medicine (SEKMED)

Guylene Theriault*, Choosing Wisely Canada Clinical Leadership Group Member, McGill University

Choosing Wisely recommendations have to be known to clinicians to be implemented into practice. At the point of care it can be a challenge to remember them and some clinicians might not be aware of some of them. We wish to present a tool we believe can help implementation of Choosing Wisely recommendations into real life practice.

SEKMED is a web-based tool used to incorporate medical evidence in clinical practice right at the point of care. It facilitates access to the highest quality evidence so that it can be translated directly into patient care.

We integrated some Choosing Wisely recommendations directly into SEKMED resources. While we cannot promise any data on actual physician behavior changes, we want to show how this tool can be used in that way, as others might be interested in using or trying it. SEKMED mainly focuses on getting the right information to the clinicians when they need it most, when caring for a particular patient. It can be used in any setting, by any health professional and can help bring coherence between different actors caring for the same patient.

We believe that choosing wisely recommendations can be truly integrated in medical and professional practice through SEKMED. It is not an electronic medical record, but it can interact with one.

SEKMED is a way of reducing unnecessary care; of sharing new developments between clinicians; and of influencing medical practice. When a resource is changed to include a Choosing wisely recommendation, it is immediately available to all users.

* Choosing Wisely Canada Clinical Leadership Group Member

Databases and IT systems to evaluate the Choosing Wisely campaign: example of fractionation patterns for bone metastases

Maida J. Sewitch and Deborah Watkins Bruner, Xiaojun Jiang, Ian Crocker, McGill University

Background: We sought to construct one quality measure at one academic healthcare center to evaluate adherence to the Choosing Wisely (CW) recommendation for fractionation patterns in patients undergoing palliative radiation therapy (RT) for bone metastases (not >10 fractions).

Methods: A retrospective cohort study of patients with bone metastases (diagnosed 2010-2015, aged 18 and older, treated with RT for palliation) is underway at two Emory University hospitals in Atlanta Georgia, USA. Data sources were the Winship tumor registry and the ARIA radiation oncology database. The registry provided patient data (bone metastasis diagnosis and date, age, sex, race, primary cancer site, insurance coverage). Aria provided RT data (course intent, hospital site, treating physician, in/out patient status, #Gy, #fractions). Adherence outcomes to construct were the numbers of patients each year with:

1. either single or multiple fraction RT of 10 fractions or less (recommendation adherence), and
2. multiple fraction RT of >10 fractions (recommendation non-adherence).

Results: We identified patients with bone metastasis in the Winship tumor registry using the ICD-9 code (198.5). The medical record number (patient ID) unique identifier was then used to manually link registry and ARIA data. Course intent (palliation) was contained in narrative requiring manual search and data abstraction. Insurance status was

not reliably entered into either the registry or ARIA. Prior to 2010, diagnostic codes were not reliably entered into ARIA. During the fourth quarter of 2015, ICD-10 codes replaced ICD-9 codes in ARIA using an automatic translator.

Importance: Several challenges were identified in constructing one quality measure at one health-care center. Data entry program improvements would facilitate the evaluation of quality measures.

Hospital Strategies

Choosing Wisely NYGH: Rethinking “More is Better”

Mark Fam and Donna McRitchie, North York General Hospital

Goal: The Choosing Wisely NYGH campaign was focused on all hospital-specific Choosing Wisely recommendations related to diagnostic testing.

Improvement: NYGH built on our CPOE system, advanced EHR and clinical order sets to introduce Choosing Wisely. Hospital leadership and clinical chiefs were engaged in reviewing recommendations and suggesting additions. Patient engagement was critical throughout design and implementation. Insights from all stakeholders were validated and incorporated into order sets and medical directives.

NYGH also led a research study, with Life Labs, to examine the spread of Choosing Wisely NYGH efforts on community-based ordering by NYGH physicians.

Measures: Choosing Wisely NYGH compared the normalized testing volumes since implementation, to the same period of the previous year.

- # of patient pre and post implementation
- # of tests pre and post implementation
- # of add on requests pre and post implementation

Challenges: We have sustained the following significant annual decreases in testing:

- Emergency Laboratory Testing: 40%
- Pre-Op Laboratory Testing: 37%
- Inpatient Laboratory Testing: 5%
- Community NYGH Laboratory Testing: 5%
- Inpatient ICU Chest X-Rays: 20%
- Inpatient CT Exams: 5%

Lessons Learned: Choosing Wisely NYGH has several lessons learned:

- *Physician Leadership.* Strong engagement by all physician leaders with their clinical teams helped to achieve success.
- *Administrative Leadership and Project Management.* Operational and project leadership was critical to implementation, evaluation, risk mitigation, and timelines.
- *Leveraging Culture and Informatics.* The existing culture of evidence-based practice, supported by comprehensive electronic order sets, was critical to success.
- *Patient Insights.* Integrating Patient Advisors into the governance, design and implementation helped to ensure a balanced approach to change.

Choosing Wisely SMH – Developing a process to engage and empower clinical staff to reduce unnecessary hospital tests and treatments

Lisa K. Hicks* - Co-authors Patrick O'Brien, Dr. Doug Sinclair, Anne Trafford, Dr. Michelle Sholzberg, Hina Chaudhry, St. Michael's Hospital

In September 2014, St. Michael's Hospital (SMH) committed to exploring a ground-up approach to medical overutilization entitled Choosing Wisely (CW) SMH. The goal of CW SMH is to support the development and implementation of multiple clinician led projects aimed at reducing overutilization.

Methods: Projects are developed through two work streams: CW disease reviews and independent project proposals. CW disease reviews involve:

1. formation of a multidisciplinary, voluntary task force (TF) of local experts;
2. sharing of relevant hospital utilization data;
3. distribution of relevant Canadian and US CW recommendations;
4. solicitation of recommendations from the TF and a larger cohort of key informants;
5. prioritization by the TF of three actionable items, initiative led by a taskforce member. Clinicians are also encouraged to submit independent project proposals. All projects receive endorsement by hospital leadership and are offered initial organizational assistance.

Results: To date, CW SMH has triggered nine utilization projects; five of these originated from two CW disease reviews, while four were clinician-initi-

ated. Results are available for two projects which aimed to reduce thrombophilia testing in ambulatory and hospitalized patients respectively. In the seven months since implementation there has been a > 50% reduction in thrombophilia testing at SMH.

Lessons Learned: Clinical staff are interested in and knowledgeable about opportunities to decrease unnecessary testing and treatment. With a small amount of administrative structure and support it is possible to develop multiple, locally relevant initiatives to address medical overutilization.

* Choosing Wisely Canada Clinical Leadership Group Member

Developing a standardized knowledge dissemination tool for communicating the need for Choosing Wisely© in Alberta's emergency departments

Lynette Krebs, Cristina Villa-Roel, Maria Ospina, Brian R. Holroyd, Brian H. Rowe*, University of Alberta

Introduction: Standardized tools for disseminating knowledge summaries of low value or unnecessary care (e.g., testing, procedures and treatments) are limited, but needed to equip clinicians for discussions with patients about care decisions. The objective of this study is to assess the acceptability of a tool developed by our emergency department (ED) team to communicate the evidence supporting the Choosing Wisely Canada© (CWC) and other similar recommendations.

Methods: The tool highlights three areas: Facts, Gaps, and Acts. The Facts portion highlights the current state of knowledge and illustrates the strength of the evidence supporting guideline recommendations. The Gaps section identifies variation in current clinical practice. The Acts section includes larger CWC goals, as well as specific next steps for a demonstration project. Each section contains one key message for clinicians, ensuring the tool is easy to use.

Results: A test case has been developed for avoiding chest radiographs in patients with an exacerbation of documented asthma. The Facts section reviewed current guidelines for asthma care. The Gaps section collated evidence from a systematic review and primary research. The Acts section recapitulates the CWC recommendations. In order to assess acceptability feedback cycle will

be completed using surveys of 50 patients and 50 clinicians.

Conclusion: While generating the Facts, Gaps, and Acts tool for a CWC recommendation represents a translational activity, evidence of effectiveness is needed prior to widespread implementation. We report the rational and development of a novel tool to engage clinicians and patients in conversations about unnecessary care in the ED.

* Choosing Wisely Canada Clinical Leadership Group Member

Leveraging the CoLabs Laboratory Medicine Network for Choosing Wisely Success and Sustainability

David Langstaff and Joanna Ellis, Suhas B. Joshi, Kalen Paulson, Hamilton Health Sciences

CoLabs provides Laboratory Medicine service to 1.4 Million people through an integrated network of 17 Hospital site laboratories across Brant, Burlington, Haldimand, Hamilton, Niagara and the Norfolk County. Through collaboration under a joint administrative and medical leadership model, our 1300 employees are working together to provide new levels of quality, innovation and sustainability for the patients and communities we serve. Both the Executive Director and Executive Medical Director work closely with site Laboratory Medical and Administrative Directors to ensure clinical appropriateness of integration planning, operations and laboratory utilization. Affiliated with McMaster University, CoLabs is bringing an evidenced-based approach to our strategies for Choosing Wisely success and sustainability.

Prior to Choosing Wisely, CoLabs had identified laboratory utilization opportunities at various individual sites. Examples include discontinuation or restrictions on laboratory tests such as Amylase, PTT, Folate, Glycosylated Hemoglobin. We have also approached the use of expedited test ordering (stats and urgents) as a utilization issue that negatively impacts overall laboratory turn-around-time. Improvements in these areas will be included in the presentation.

Initial site specific approaches to utilization have now been unified through CoLabs to accelerate progress. Our most recent work involves using our Regional Emergency Services Group to create a

medically lead consistent approach for utilization management in this key clinical area.

Through leveraging the combined expertise across multiple sites within a well aligned laboratory, medical and corporate accountability model, we are confident in our ability to complete full implementation of Choosing Wisely recommendations at all 17 hospital sites.

Medical Education

Choosing Wisely on the MTU

Paul Cameron, Dr. Allen Tran, Dr. Harrison Petropolis and Jennifer Hyson, Dalhousie University

Introduction: Morbidity from iatrogenic insults on general medicine inpatient wards is significant and common. The Canadian Society of Internal Medicine (CSIM) and Canadian Geriatrics Association (CGA) Choosing Wisely Campaign guidelines feature several recommendations relevant to this setting including appropriate usage of urinary catheters, reduction of unnecessary bloodwork and limiting usage of sedative hypnotics for insomnia in the elderly.

Design: A multi-faceted project was undertaken on the Medical Teaching Unit at the Halifax Infirmary. Nurse and physician education, patient awareness materials and chart reminder checklists were implemented over a 3 month period with adherence to guidelines and relevant outcomes measured before and after.

Results: There was a significant reduction in the days of indwelling urinary catheters use (mean difference 4.2d, 95% CI 1.0, 7.5, p=0.01) and proportion of patients with a stop order for daily bloodwork (mean reduction 11.9%, p=0.02). There was a non-significant trend towards fewer days of consecutive bloodwork (mean difference 2.0 days 95% CI 0.5, 3.7, p=0.07), cost of bloodwork per patient (reduction of \$16) and need for transfusion per patient (overall reduction 50%). There were no differences in usage of sedative hypnotics or

development of delirium.

Conclusion: Implementation of a multi-faceted approach involving a reminder system and patient and staff education reduced the duration of usage of indwelling urinary catheters and increased the number of bloodwork stop orders. There was also a trend towards fewer days of routine bloodwork and reduced cost. Given the volume of patients and frequency of interventions on inpatient medical wards, this study demonstrates the feasibility of a programme to reduce unnecessary elements of care.

Residents for Choosing Wisely: a hospital-wide, resident-led initiative for implementation of the Choosing Wisely Canada campaign

Gurpreet Jaswal., Alexa Caturay, Gita Raghavan, Brigitte Longmuir, Genevieve Turi, Sarah Simpson, Zale Mednick, Steven Montague, Johanna Murphy*, Kingston General Hospital

The Kingston General Hospital “Residents for Choosing Wisely” leadership initiative was formed in May 2015 with the objective of creating a resident-led, hospital-wide campaign to implement Choosing Wisely Canada’s recommendations into daily clinical practice.

Thirty residents from fifteen medical specialties translate recommendations from Choosing Wisely into quality improvement and/or education projects. Standard guidelines for individual projects include data collection on current practices, development of target outcomes, educational strategies to change behaviour patterns, and measurement of outcomes in patient health, physician attitudes, and physician behaviours. Resident-led projects have included reduction of unnecessary labwork in stable medicine inpatients, antibiotic stewardship for corneal ulcers in outpatient ophthalmology, and construction of patient-friendly pamphlets on preoperative testing in collaboration with the Canadian Anesthesiologists’ Society.

Sustainability of a multi-disciplinary resident group poses an ongoing challenge, and is addressed through enrolment of residents from all postgraduate years (PGY1-6), while encouraging teleconferencing availability for regular meetings.

A subcommittee of residents oversees the execution of a system-wide hospital campaign program to increase awareness of Choosing Wisely recommendations amongst allied health professionals, residents, attending physicians, nurses, and patients. This has been achieved through engagement of hospital executives, and Choosing Wisely resident representation in hospital administration committees such as the KGH Joint Quality Utilization and Implementation Committee and the established KGH Resident Advisory Committee.

The KGH “Residents for Choosing Wisely” initiative has potential national implications by offering a practical, system-wide model for promoting multi-disciplinary resident leadership in Choosing Wisely, while encouraging increased hospital awareness of Choosing Wisely recommendations at multiple levels.

* Choosing Wisely Canada Clinical Leadership Group Member

Choosing Wisely for Medical Education: Six Things Medical Students and Trainees Should Question

Anand Lakhani, William Silverstein and Elliot Lass, University of Toronto

Background: Physician behaviors that promote overuse of healthcare resources develop early in medical training. To catalyze systemic changes that curb medical overuse, these behaviors must be addressed before students ingrain them into their clinical practices. Thus, the first Choosing Wisely list for medical students was developed, which highlights crosscutting behaviors in medical education that drive overuse.

Methods: A student-led taskforce which included medical education experts was convened to develop recommendations that target behaviors medical students should question during their training. The list was developed in partnership with the Canadian Federation of Medical Students, and the Fédération médicale étudiante du Québec, which together represent all medical students in Canada. Students at all Canadian medical schools were consulted via an online questionnaire to solicit feedback on a list of candidate recommendations, which was subsequently used to inform the final list of six recommendations.

Results: 1921 medical students provided input to develop the list of "Six Things Medical Students Should Question" during their training. Recommendations highlight behaviors that trainees should avoid (e.g., "Do not suggest ordering the most invasive test before considering other less invasive options"), as well as the hierarchical nature of clinical supervision that promote overuse (e.g., "Do not hesitate to ask for clarification on tests,

treatments, or procedures that you believe may be ordered inappropriately").

Conclusion: This list identifies behaviors and aspects of medical education that drive overuse. It can enable multiple stakeholders in medical education to initiate changes that can equip students to become better practitioners of high-value care.

Choosing Wisely Canada: Using Virtual Interactive Cases to Promote Cost-Conscious Healthcare Delivery

Shirley Chow and Linda Zhou, Canadian Rheumatology Association

Cost-conscious clinical decision-making allocates appropriate resources to those who would truly benefit, and protects patients from unnecessary tests and procedures. With this in mind, Virtual Interactive Case (VIC) modules were developed, assessed and evaluated to implement Choosing Wisely in education and in practice.

VIC modules allow trainees to diagnose and manage a presenting patient by carrying out a history, physical exam, diagnostic tests, imaging and consultations. Each VIC was designed to reinforce specific learning objectives promoting cost-conscious healthcare delivery. To evaluate their effectiveness, trainee responses were anonymously tracked through a secure database and evaluated based on actions performed and missed, and the cost and time of each work-up.

Twelve medical trainees completed a total of 18 VIC rheumatology modules. On average, trainees spent \$207.75 and 68 virtual minutes on each case. On average, the number of essential actions performed was 43, the number of essential actions missed was 74, and the number of non-essential actions performed was 8. In addition to qualitative feedback, 85.7% agreed or strongly agreed that they felt more comfortable to work-up and diagnose similar rheumatology cases in the future and 57.1% agreed or strongly agreed that the VIC modules increased their ability to appropriately order rheumatologic investigations.

In conclusion, initial evaluation of the VIC modules supports their role as an effective tool in resource stewardship. Future directions are to improve current VICs based on the feedback received and developing new cases. It will be worthwhile to assess clinical performance of trainees pre- and post-VIC modules.

Assessing Undergraduate Medical Knowledge of Resource Stewardship at Northern Ontario School of Medicine

Meagan Roy, Northern Ontario School of Medicine

Background: The Royal College of Physicians and Surgeons and the College of Family Physicians Canada identify resource stewardship as a key competency for today's practicing physicians. The integration of resource stewardship into practice involves the availability of material taught in undergraduate medical education, which, for most medical schools in Canada, is nonexistent. A need to embed training programs with resource stewardship is necessary to improve value of care for future medical practitioners. Within this paucity of curriculum, I want to explore the current level of knowledge and understanding of undergraduate medical students at the Northern Ontario School of Medicine (NOSM) towards resource stewardship. A mandate of NOSM is to serve rural and remote communities where resources are often limited, therefore the practice of resource stewardship is of utmost importance for these future-practicing physicians.

Method: A voluntary survey will be distributed to undergraduate students to gauge current knowledge on costs of care or cost-conscious decision-making. As the population size is small ($n=131$), a response rate of 40% is ideal.

Results: To date, no data has been collected as ethics approval from the two parent universities, Laurentian and Lakehead Universities, is pending. Once survey data has been collected, it will be analyzed to assess current knowledge and practices in clinical settings.

Conclusion: From these results, appropriate actions can be made to support or dissuade formal integration of resource stewardship into the undergraduate medical curriculum. This pilot project at NOSM can also be used as a framework for assessment of the residency program.

Implementing Choosing Wisely Curriculum at the University of Ottawa

Anastasiya Muntyanu, Danusha Jebanesan, University of Ottawa

Goal: Resource stewardship discussions are prevalent in healthcare because unnecessary tests and treatments add strain to the finite resources and may be harmful to the patients. By implementing principles into the undergraduate medical curriculum at the University of Ottawa, the goal is to target the issue at the grassroots level which will be translated into practice by the future clinicians.

Improvement: Through the addition of a self-learning module, the students will get an opportunity to practice critical thinking skills as they pertain to use of resources. Appropriate use of tests and treatments relates to professionalism, therefore we plan to integrate resource stewardship concepts into the already mandatory professionalism seminars embedded in the curriculum. In Case-Based Learning, diagnostic tests are frequently discussed and it would be beneficial to elaborate on the appropriate use of each of one in the specific scenario. The students would integrate teaching points on resource stewardship at the end of each block.

Measures: Since, there is limited formal curriculum focusing on resource stewardship, it is essential to obtain a baseline measure of the knowledge students possess using a survey prior to the implementation of the program in the incoming class (MD2020) and then evaluate changes in student responses after exposure to curriculum changes to assess effectiveness. Additionally, current clerkship students will be surveyed to assess their preparedness for resource stewardship concepts

in practice followed by survey of future students.

Lessons Learned: This project will evaluate the effect of changes to the curriculum and results will be used to optimizing the curriculum on resource stewardship in the future.

Assessing physician awareness of the Choosing Wisely recommendations

Seth J. Stern, MSc, MD, Anne Holbrook, MD, PharmD, MSc, FRCPC, Ameen Patel, MB, FRCPC, McMaster University

Background: The Canadian campaign for Choosing Wisely, an initiative to reduce low-quality and unnecessary medical care, launched in April 2014. Modeled after the American campaign, the movement seeks to engage both physicians and patients in discussions around investigations and management options that lack evidence or are potentially harmful. As the campaign is approaching the two-year mark in Canada, it remains unclear to what extent faculty physicians and residents have been aware of the initiative, and whether they are aware of specific recommendations relevant to their own specialty. The objective of this study is to assess physician awareness of the Choosing Wisely campaign and these specific recommendations.

Methods: A survey will be sent to all faculty physicians and residents at McMaster University within specialties that have existing Choosing Wisely recommendations. Questions will focus on physician attitudes regarding low-quality medical care, awareness of the campaign, and on self-reported changes in practice. The primary outcome will be the proportion of responders with good awareness of the Choosing Wisely recommendations targeted to their respective specialty, defined as the ability to name at least three of the five recommendations. Secondary outcomes will include general awareness of the campaign, attitudes towards improving low-value care, attitudes towards the Choosing Wisely recommendations, and stated changes to practice in response to these recommendations.

Goals: Based on the results, we plan to develop knowledge translation programs to enhance uptake and guide practice of the Choosing Wisely recommendations.

Getting Choosing Wisely Canada (CWC) Recommendations to the Point-of-Care (POC) via DynaMed

Brian Alper and Amy Lombara EBSCO Information Services/DynaMed

Goal: We made Choosing Wisely (CW) recommendations available for rapid recognition at the POC through DynaMed, an evidence-based clinical reference that is available to all Canadian Medical Association members and used by many other clinicians in Canada and globally. In today's fast-paced patient care settings, when clinicians turn to reference tools they not only need to answer their questions quickly, they also need prompts for related information to provide high-value care, and the CW recommendations provide this added value.

Improvement: The DynaMed editorial team systematically reviewed each CW recommendation to determine optimal placement within POC reference content. In addition, clinical experts for each topic evaluated if the CW recommendations should alter topic overviews or recommendations.

Measures: CW recommendations are now integrated into 290 DynaMed topics (CWC in 144 topics), including many of the most highly accessed topics. Furthermore, 18 of 28 (64%) CWC-participating organizations have accepted the opportunity to review how their recommendations were integrated in DynaMed and have been acknowledged for their contribution.

Challenges: The most significant barrier faced was when the patient population was not well elucidated in the CW recommendation, making placement within our content difficult. This challenge can be easily overcome by ensuring each

recommendation has an adequately specified population.

Lessons Learned: Continuing this collaborative endeavor between DynaMed and CWC offers a vehicle to make CW recommendations available to clinicians at the POC, in the actual moment they are seeking guidance. Examples of recommendations that were difficult to place can be used to reflect on how CW recommendations are presented.

Oncology

Choosing Wisely Canada and the Development of Pan-Canadian Indicators: A New Set of Metrics to Assess the Use of Low Value Practices in Cancer Control

K Tran, R Rahal, C Louzado, G Porter, G Mitera, C Earle, R Olson, S Tyldesley, C Booth, J Brierley, R Halperin, S Fung, H Bryant in collaboration with the System Performance Steering Committee and Technical Working Group, Canadian Partnership Against Cancer

Background: Choosing Wisely Canada (CWC) is a national campaign to identify low value, unnecessary, or harmful services that are frequently used in Canada. In 2014, recommendations specific to oncology were developed. This prompted the need to develop baseline measures of the current utilization rates for these practices across Canada.

Methods: The Canadian Partnership Against Cancer, working with provincial partners, developed indicators for five of the CWC oncology recommendations. These were selected based on data collection feasibility and were further vetted by two expert panels with representation from medical, radiation and surgical oncology to ensure the indicators, several of them proxy measures to accommodate data limitations, were representative of the oncology recommendations.

Results: Six oncology-related indicators were developed; all indicators are related to cancer treatment:

1. Chemotherapy use in the last 30 days of life
2. Number of fractions (1 vs. >1) to the bone for patients with advanced cancer
3. Number of fractions (16 vs. 25) after breast conserving surgery for stage I or II breast cancer

patients \geq 50 years

4. Treatment (surgery or RT) for low-risk prostate cancer patients
5. Treatment (surgery or RT) for stage IV colorectal cancer patients
6. Treatment (surgery) for stage IV breast cancer patients

Data for these indicators were obtained from provincial cancer registries and hospital/cancer centre databases.

Conclusion: We have identified credible and feasible measures of low value practices in cancer treatment across Canada. We have now begun to use them to assess the extent to which practice is consistent with currently supported evidence-based recommendations. Results will be presented in the upcoming Quality and Sustainability in Cancer Control: A System Performance Spotlight Report. The results will identify opportunities for improvement and will form a baseline for future monitoring.

Screening mammography rates among women of average risk aged 40 to 49 in Canada.

Tanya Khan, Canadian Institute for Health Information

Background: This analysis focuses on utilization associated with the *Choosing Wisely Canada* recommendation “don’t routinely do screening mammography for average risk women aged 40-49”. The primary research question is “What proportion of average risk Canadian women aged 40-49 had a screening mammogram?”

Methods: In collaboration with the Canadian Partnership Against Cancer (CPAC), weighted data from the 2012 Canadian Community Health Survey (CCHS) is being used to calculate the proportion of average risk women aged 40-49 who received screening mammograms in a two year period.

Results to Date: In 2012, 25.0% of average risk women in Canada, aged 40 to 49, reported receiving a screening mammography in the past two years (95% CI: 22.1-27.9; national rate excludes Quebec). There was substantial variation in screening rates across Canada’s provinces and territories. To better contextualize results from the CCHS data, we have begun exploratory work on a sub-analysis of one province’s Patient-Level Physician Billing (PLPB) data. The sub-analysis of PLPB data will examine trends over time as well as patient level factors that were unavailable in the CCHS.

Conclusions: Unnecessary screening mammography in average risk women aged 40-49 is a challenge in Canada during the study period. Future

analysis using 2015 CCHS data is required to track changes in utilization over time. Further investigation, by the research community and others, into clinician practices, screening mammography strategies and patient outcomes is also required to identify effective ways of reducing unnecessary tests.

Choosing Wisely in Oncology: Screening for a new Primary Cancer in Patients with Metastatic Disease

Simron Singh, Sunnybrook Health Sciences Centre

Background: The Choosing Wisely Canada (CWC) campaign aims to initiate conversations about unnecessary treatments and procedures and guide high-quality care. In particular, the CWC campaign in cancer seeks to reduce unnecessary interventions that are not supported by evidence or could contribute inordinately to the rising cost of cancer care. We sought to document the performance of routine cancer screening for a new primary cancer in patients with existing metastatic cancer (CWC statement #2).

Methods: We used population-based administrative health care databases from Ontario, Canada that are held at the Institute for Clinical Evaluative Sciences (ICES). The cohort included all adult residents of Ontario of eligible screening age (age 50 or older), who were diagnosed with incident colorectal (CRC), lung, breast, or prostate cancer between January 1, 2007 and December 31, 2012. Only individuals who had stage IV (metastatic) cancer at diagnosis were included. We examined cancer screening for CRC and breast cancer. Given the high mortality rate of the population, the incidence of screening was calculated using the cumulative incidence function which takes into account the competing risk of death or the occurrence of the cancer for which the patient was being screened (prior to being screened).

Results: For CRC screening, patients with existing CRC and prior inflammatory bowel disease were excluded. Among the 20,992 patients with

metastatic lung, breast, and prostate cancer, CRC screening within 1 year of cancer diagnosis occurred in 2.8%, 6.1%, and 13.0%, respectively (4.7% of all patients). Within 3 years of diagnosis, screening rates reached 3.9%, 11.9%, and 26.9%, respectively. Crude rates of CRC screening appeared to increase over the study time period (Fine-Gray model; $p=0.0144$). Among the 10,034 women with metastatic lung and CRC, breast cancer screening within 1 year following cancer diagnosis occurred in 8.7% and 8.0% of women, respectively (8.5% of all patients). Within 3 years of diagnosis, screening rates reached 10.2% and 13.1%, respectively. Screening rates were highest in patients age 50-74 (compared with those ≥ 75).

Conclusions: Our findings indicate excessive rates of routine screening in metastatic patients who are unlikely to benefit. Further studies are warranted to identify predictors for screening, resource utilization implications, potential and harms borne by patients and society, and the future impact of the CWC campaign on this practice.

Performance Measurement

We asked, you answered – an innovative method to sourcing answers to pressing health policy and health care questions. A panel discussion.

Fraser Ratchford and Simon Hagens, Canadian Institute of Health Information

The rapid evolution of digital health has generated a diverse and disparate array of data across Canada, some of which are rich and underutilized. The purpose of this panel discussion is to inform and engage participants in a dialogue about an innovative method used to crowd-source answers to important health issues.

Activities, methods, innovations: In spring 2015, a series of fourteen research questions were identified based upon information needs of the CIHI, CAHSPR, Choosing Wisely Canada and Canada Health Infoway. Nine of these questions were regarding Choosing Wisely Canada recommendations on topics such as antipsychotic screening for older adults and annual screening blood tests. As part of Canada Health Infoway's ImagineNation Challenges, teams were invited to look into the data available to them and respond. Participants agreed to comply with all applicable guidelines/processes, and had the appropriate authorization to use the data for the purposes of the Challenge.

Outcomes, results, lessons learned: In just 64 days, 41 responses were received from a wide spectrum of organizations. Some drew upon widely accessed data sets, others upon more novel sources. A panel of 35 judges reviewed the submissions. New evidence from these submissions

has increased our understanding of appropriateness of care today. This is already sparking discussion and beginning to inform policy and practice.

The panelists will represent organizations contributing questions and managing the challenge, as well as participants who submitted answers and judges. The panel will discuss the process, findings, lessons learned and how this approach may be used again.

Pap smear and Bone density testing practice in Alberta

Chris Symonds, Wenxin Chen, Ashi Mehta, Diane Duncan, Lara Cooke, Alberta Physician Learning Program,
University of Calgary

Context: The Physician Learning Program analyzes Alberta Health (AH) and Alberta Health Services (AHS) administrative databases to provide audit and feedback reports for physicians' continuing professional development. Current Choosing Wisely Canada (CWC) recommendations advise against Pap screening in women under age 21 and over age 69 and repeating bone density testing (DEXA) more often than every 2 years.

Objective: To evaluate current Pap smear screening and bone density testing practices in Alberta to assess alignment with CWC recommendations.

Design: For Pap smear testing, AH administrative data was evaluated over 3 years (2012-2014). For bone density testing, AH administrative data was evaluated over 4 years (2010-2013).

Results: Using discrete numbers of patients, we found that 14.6% of women ages 15-20 years, 13.7% ages 70-79 years and 3.2% aged 80 years or older had one or more Pap smear over 3 years from 2012-2014. The denominator was 2013 mid-year population from Alberta Health Interactive Health Data Application (IHDA). For bone density testing, there were 368,256 scans performed from 2010-2013; 62,525 (17%) were repeat scans performed less than 2 years apart accounting for more than \$9 million in healthcare spending over 4 years.

Conclusion: Variances were identified between current practice in Alberta compared to CWC recommendations for Pap smear screen testing and bone density testing. Barriers to and enablers of best practice may be complex and will require systematic and comprehensive evaluation to better inform strategies to reduce unnecessary testing.

Pre-operative Testing in Low Risk Patients for Daycare Surgery in Calgary

Chris Symonds, Ashi Mehta, Wenxin Chen, Diane Duncan, Lara Cooke, Alberta Physician Learning Program,
University of Calgary

Context: The Physician Learning Program analyzes AH and AHS administrative databases to provide audit and feedback reports for physicians' continuing professional development. Nine Choosing Wisely Canada recommendations from five Specialty Societies advise against ordering routine pre-operative tests in low risk patients.

Objective: To evaluate current pre-operative laboratory, diagnostic imaging and cardiac testing practices in low risk patients undergoing low risk procedures performed as outpatients.

Design: Administrative data was evaluated over 3 months in 2013 to define a low risk procedure cohort undergoing daycare surgeries at 3 acute care sites in Calgary. Patients seen by Anesthesia, Cardiology, Respirology, or Internal Medicine 90 days prior to the surgical date were excluded to define a low risk patient cohort. This cohort was then assessed to see if routine laboratory tests, diagnostic imaging and cardiac tests were performed in the 3 months prior to the surgical date.

Results: 3188 daycare surgeries were performed over the 90 day period; 1474 (46%) patients were deemed to be low risk. 99.5-100% of these patients underwent at least one blood test of interest and 14.5-30.4% of patients had at least one Chest X-ray, ECG or echocardiogram in the 90 days prior to the surgical date.

Conclusion: Despite these 9 CWC recommendations, almost every low risk daycare surgery patient in Calgary underwent at least one routine pre-operative blood test. This study supports a knowledge to action approach to identify barriers to reduce unnecessary preoperative testing.

Assessing the Use of Head CT Scans in Hospitalized Inpatients with Delirium

Josh Fagbemi, Geoff Paltser and Vanessa Sovran, Canadian Institute for Health Information

Background: Clinical experts consider the routine use of head computed tomography (CT) in determining the cause of delirium of low diagnostic value. In addition, potentially inappropriate use of CT scans can subject patients to unnecessary radiation exposure. This study examines delirium inpatients who receive head CT in the absence of appropriate indications.

Methods: This study used CIHI's Discharge Abstract Database for 2010-11 to 2014-15 from Ontario, where comprehensive coverage of CT data is available. ICD-10-CA codes were used to identify delirium cases and indications for head CT (e.g. head trauma). CCI codes were used to identify head CTs. Analyses are restricted to facilities that reported use of CT.

Results: In 2014-15, approximately 29% of Ontario's 38,000 delirium inpatients received a head CT. Preliminary results further show 23% of the 22,800 delirium inpatients without documented indications received a head CT, down from 26% in 2010-11. Despite this decrease, the volume of both hospitalized delirium inpatients and those who received head CT among them have gone up substantially in recent years. Significant variations in use of head CT for both delirium inpatients overall and those without indications were found at both regional and hospital levels, with some hospitals performing imaging on over 40% of delirium inpatients.

Conclusion: A substantial proportion of delirium inpatients received head CT in the absence of identified indications. This study provides relevant information on a CWC recommendation and can help to facilitate initiatives to address this issue.

Potentially unnecessary diagnostic imaging for low back pain in Alberta

Xi-Kuan Chen, Canadian Institute for Health Information

Background: CWC recommends that don't do imaging for low-back pain (LBP) unless red flags are present. The purpose of this study is to examine the rates of potentially unnecessary diagnostic imaging for patients with LBP, and explore potential risk factors for scan rates and a zone variation of scan rates.

Methods: Linking diagnostic imaging data to physician billing data in 2011/12, we identified adult patients with non-persistent LBP who sought medical care from family physicians in Alberta. We excluded LBP patients with any red flags recommended by CWC. We determined whether they had a potentially unnecessary X-ray or CT/MRI within 6 months after index visits. Generalized estimating equations were used to identify significant risk factors.

Results: In Alberta, about 30% of LBP patients had potentially unnecessary scans within 6 months of index visits to family physicians. Most patients had an X-ray; about 5% had a CT/MRI. Patients who were older, male or living in high income neighborhoods had higher scan rates. Physicians who saw fewer patients with LBP ordered more imaging. Those practicing in rural regions ordered more CT/MRI. Fee-for-service physicians ordered more X-rays than alternative payment physicians. X-ray scan rates were similar across health zones, but CT/MRI scan rates were lower in the urban zones (Edmonton and Calgary) compared to the rural zones.

Conclusion: More than 1/3 LBP patients are receiving potentially unnecessary diagnostic imaging, and the imaging rates are associated with risk factors at the patient- and physician-levels.

Descriptive analysis studying the proportion of patients on Seroquel for off-label indications hospitalized at the Royal Victoria Hospital on the Internal Medicine unit.

Ploa Desforges, McGill University

Research Question: We investigated the proportion of patients who are using Seroquel for an off-label indication (insomnia, anxiety, dementia) among patients on Seroquel hospitalized at the Royal Victoria Hospital on the Internal medicine unit.

Methods: This study consists of a descriptive analysis of n=162 Seroquel users. These patients derived from a retrospective cohort study of 1448 admitted adults patients on the Internal Medicine unit at the Royal Victoria Hospital in Montreal, Canada from 2013-12-17 to 2014-11-15. Data regarding patient's age, sex and reason for admission were collected. In order to develop the sub-cohort, we searched for all the patients with a current prescription for Seroquel using MUHC electronic medical record (OACIS). The indications for Seroquel were identified and grouped in three categories: sleep/anxiety, dementia and psychiatric illness. The patients were subdivided in three categories depending on the timeframe for the prescription of Seroquel. The primary outcome was the proportion of patients with an off-label indication for Seroquel.

Results: A total of 162 patients had an indication for Seroquel. Out of 162 patients on Seroquel, 104 had a prescription for sleep/anxiety, 14 were on the medication for dementia and 44 had an underlying psychiatric illness. Among the patients on Seroquel, 81 were on the medication only during

their hospitalization, 10 were started on Seroquel during their hospitalization and discharged on it and 66 had a prescription prior to hospitalization.

Conclusion: The results of the study suggest that Seroquel is often used for off-label indications (insomnia/anxiety and dementia) although it carries major short-term and long-term significant adverse effects.

Adherence to Intravenous Immunoglobulin (IVIG) Treatment Guidelines for Patients with Immune Thrombocytopenia

Nishwa Shah, McMaster University

Introduction: Immune thrombocytopenia (ITP) is an autoimmune disease characterized by low platelets. Treatment with corticosteroids is recommended for platelets $<30 \times 10^9/L$. IVIG is recommended only for ITP complicated by bleeding, when a rapid rise in platelets is required, or when corticosteroids are contraindicated. IVIG can cause adverse effects, such as thrombosis, hemolysis, infusion reactions and aseptic meningitis. We performed a retrospective audit of patients with ITP who received IVIG across three tertiary care centres to determine if IVIG is administered based on guideline recommendations.

Methods: Patients <18 years who received IVIG for ITP between Jan 1–Dec 31, 2014 were included. Platelet counts prior to and following IVIG treatment were recorded. Charts were reviewed to determine if there was bleeding, a need for rapid rise in platelets or corticosteroid contraindications.

Results: Forty-two of the 58 patient records reviewed were eligible. Twenty-nine patients (69%) receiving IVIG for ITP had a platelet count $<30 \times 10^9/L$. Appropriate indications for IVIG were found in 82.8% of patients with a platelets $<30 \times 10^9/L$, with contraindication to corticosteroid being the most common (18/29) indication. For the patients with a platelet count $>30 \times 10^9/L$ who received IVIG, only 30.8% had an appropriate indication (rapid rise in platelets required). Overall, 33.3% of patients received IVIG without a guideline indication.

Conclusion: This audit demonstrates that a third of IVIG used for ITP patients across three tertiary care centres was inappropriate. Interventions to improve appropriate utilization of IVIG for ITP should be explored to limit unnecessary harm to patients.

Overuse of tests and procedures in acute injury care

Lynne Moore, Université Laval

Injury care is one of the most resource-intensive medical specialties and preventable injury is second only to cardiovascular diseases in terms of acute care costs in Canada and the USA. Unnecessary tests and procedures have been identified as one of the most important areas of excess healthcare spending and increase patient exposure to adverse events. Recent efforts to improve acute injury care quality have concentrated on developing indicators to assess adherence to evidenced-based clinical processes (underuse) but validated measures of resource overuse are unavailable.

The overall objective of this study is to derive and validate a series of quality indicators to measure resource overuse in acute injury care. Specific objectives are:

1. summarize evidence of tests and procedures associated with no clinical benefit in acute trauma care using a systematic review,
2. develop an expert consensus-based list of tests and procedures representing resource overuse in acute trauma care using a UCLA-RAND expert consensus study,
3. develop and validate a series of quality indicators to measure resource overuse in acute injury care using a retrospective, multicenter cohort study.

This study will fill major knowledge gaps on resource overuse in acute injury care and provide a tool to monitor resource overuse in trauma

centers. Indicators will be validated for use in the pan-Canadian trauma center accreditation program in collaboration with the Trauma Association of Canada, and Accreditation Canada. This project has the potential to decrease the costs of acute injury care, improving access to care through improved allocation of resources and ultimately, improving patient outcomes.

Public Engagement

Communicating Choosing Wisely - Using innovation to help family doctors and their patients talk about prevention

Jamie Meuser, Janice Harvey and Mike Evans, College of Family Physicians of Canada

Health information campaigns, delivered through innovative media, have the potential to influence dialogue between physicians and patients.

The Patient Education Committee (PEC) of the College of Family Physicians of Canada (CFPC) embarked on an innovative initiative aimed at educating patients and the public about anticipated changes in how family physicians approach the prevention work they do with their patients.

Building on the success of the Choosing Wisely Canada™ Campaign, the CFPC launched a whiteboard video titled 'Do More Screening Tests Lead to Better Health?'. This video focuses on a number of common screening tests that are deemed as being most relevant to family medicine, including screening tests for Vitamin D malabsorption, mammography, thyroid testing, chest x-ray and ECG, Pap smears, DEXA (Dual-Energy X-ray Absorptiometry) and annual physical exams.

The CFPC partnered with Dr. Mike Evans Lab, creator of the worldwide YouTube sensation "edutaining" whiteboard videos that have been viewed by millions. The video script was reviewed by the CFPC Patient Education Committee, along with Dr. Kimberly Wintemue, a Primary Care co-lead with Choosing Wisely Canada™.

This video was showcased at the CFPC's annual Family Medicine Forum (FMF) scientific conference in Toronto on November 13, 2015 which hosted over 4000 attendees. The video is posted on the Dr. Evan's YouTube video channel and will be available for broadcast in physicians' offices in a shortened sound-free format. Three print-format resources (Infographics) will also be available to support physician-patient discussions. Additional dissemination materials will include newsletters, posters, local public relations magazines/newspapers, community centres, and key partners' channels. We hope to officially launch this video at the national Choosing Wisely Canada™ conference in March 2016.

This initiative is a positive step for the CFPC to nationally coordinate communication tools that family physicians and patients can access directly at the point of care. We are looking forward to feedback from our members to see how this video and the infographics aided in priming discussions with patients around screening tests and/or assisted patients in their understanding of topics discussed. High quality materials delivered in innovative ways such as this are important in helping empower patients to proactively prepare for dialogue with their health care providers.

NBMS work to promote Choosing Wisely Canada

Aleisha Bosch and Andrew MacLean, New Brunswick Medical Society

The New Brunswick Medical Society has worked to educate physicians and the public about CWC. We participated in the initial launch, and in a second release. We also hosted two information sessions on Choosing Wisely in 2013 and 2014 at two of our major events.

A recent Member Satisfaction Survey included a section on Choosing Wisely Canada. It found that a majority of members were now aware of the campaign, with a significant percentage saying they had started to change their practice because of it. Some survey results indicated a disconnect between a physician's assessment of patient knowledge and a patient's assessment of their own knowledge of appropriate use of health services. This disconnect could be aided by explaining the need for dialogue to patients.

With this feedback as our guide, we launched an initiative to educate patients using online and print advertisements, and earned media. For social media, we used topical blog posts based on pre-existing CWC materials. In addition to these and for our print advertising, we interviewed notable physicians about what it is like to deal with patients who could benefit from a conversation about what is medically necessary and what is not. The ads explained CWC concepts from the perspective of trusted physicians and were well received.

Continued education of both groups could facilitate a relationship where both parties believe themselves to be partners in reducing unnecessary care.

Spreading the Knowledge – Health Literacy Empowering Senior Health Decision Making

Sayward Montague & Louise Bergeron, National Association of Federal Retirees

The National Association of Federal Retirees represents 188,000 retired federal public servants, Canadian Forces and RCMP members. The Association supports Choosing Wisely Canada through knowledge transfer exchange that highlights Choosing Wisely Canada updates in our daily Health in the News online newsletter.

Based on CIHI's 2011 report, *Health Care in Canada – A Focus on Seniors and Aging*, seniors were identified as the greatest users of the Canadian health care system. As well, 88% of Canadian seniors compared to 60% of other Canadians are health illiterate.⁽¹⁾ Health knowledge projects that educate and inform this segment of the population can improve not only their health literacy, but also their use of the health care system. A survey of our members conducted in 2012 identified health as their number one priority.⁽²⁾ Delivering evidence-based health information to our members digitally and in print is a core focus of the Association.

By relaying and highlighting the evidence-based recommendations of Choosing Wisely Canada, we hope to reduce the risks associated with inappropriate testing for our members and play a small part in saving costs to the Canadian health care system. To measure the impact, the Association will conduct baseline and follow-up member surveys.

References

1. Health Care in Canada – A Focus on Seniors and Aging 2011 Report – Canadian Institute of Health Information page 34 https://secure.cihi.ca/free_products/HCIC_2011_seniors_report_en.pdf
2. Public Health Agency of Canada <http://www.phac-aspc.gc.ca/cd-mc/hl-ls/index-eng.php>

Reducing imaging tests for low back pain: can patients choose wisely?

Nick Bansback, School of Population and Public Health, University of British Columbia

Background: Management of nonspecific acute low back pain (LBP) is complicated by many patients' belief that imaging tests will be useful. The objective of this study was to determine the potential impact the Choosing Wisely (CW) educational pamphlet on individuals' behavioural intentions for future imaging tests.

Methods: We recruited a cohort representative of the Canadian adult general population to a web survey in English and French. We first ascertained respondents' experiences of LBP and baseline behavioural intentions for a future LBP episode, including attitudes, beliefs and knowledge on LBP and imaging tests. We next asked respondents to read the CW pamphlet before asking follow-up questions to understand the pamphlet's potential impact.

Results: Of the 3507 respondents that began the survey, 3095 completed all questions and were included in the analysis. Respondents broadly matched the age and gender of the Canadian population, with 7% completed the survey in French. 65% of respondents reported an episode of LBP in the past year, of which nearly a half had visited a family physician. Overall, ~38% of respondents stated they would want and expect an imaging test for future LBP, but this reduced to ~23% after reading the CW educational pamphlet ($p<0.001$). Similar improvements were seen in other questions.

Conclusions: The CW pamphlet for LBP was effective in changing some individuals' behavioural intentions around imaging tests. Future analysis will explore subgroups where this influence is most and least. Follow-up studies are planned to assess whether respondents stated changes in behavioural intentions are realized.

Wikipedia as a Public Engagement Tool

Anand Lakhani, William Silverstein and Elliot Lass, University of Toronto

Improvement: Wikipedia, the free, web-based encyclopedia, is often the first point of information for a majority of internet users. It is ranked amongst the ten most popular websites, with the Wikipedia health articles receiving over 150 million views per month. In order to strengthen the campaign's public engagement platform, the Wikipedia page for Choosing Wisely Canada (CWC) was drafted and published online in July, 2015. The page describes the motivation, history, challenges, reception, impact and recommendations of the campaign.

Measures: Since the launch of the page, it has been viewed from 1648 unique Internet Protocol (IP) addresses, with 442 views from October-December, 2015. This number does not include multiple visits from the same IP address and redirects from another Wikipedia page. Thus, the total number of page views are likely higher.

Challenges: The page was initially removed by Wikipedia as it was perceived as advertisement for the campaign. The subsequent draft was accepted when the impact of the campaign was elaborated and additional third-party references, including further peer-reviewed publications, were provided.

Lessons Learned: Accessible, unbiased and easy to read information sources such as Wikipedia are important public engagement tools, especially for campaigns like CWC, which aim to promote public conversations about controversial health topics. A benefit of using Wikipedia is that users

can iteratively adapt the article as the CWC campaign grows. Wikipedia can be used synergistically with the other components of CWC's multipronged public engagement approach, which includes the official website, Facebook, Twitter, smartphone applications, and print media.

Impact of the Choosing Wisely Patient Educational Materials

William Silverstein, Elliot Lass & Cara Tannenbaum, University of Toronto, Université de Montréal

Background: The effectiveness of Choosing Wisely Canada (CWC) patient educational materials for changing patient knowledge around the overuse of medical resources has never been evaluated. We sought to assess the impact of these materials on a) changes in patient knowledge around the overuse of certain tests and treatments, and b) patients' intentions to discuss the necessity of these tests and treatments with a health care professional.

Methods: A cross-sectional iPad survey with an embedded pre-post experimental design was delivered to all patients aged 50 years and older waiting to see their family practitioner in the waiting room of an academic clinic in Toronto, over 4-weeks. Participants were queried on knowledge of the appropriateness of sedative-hypnotic use, antipsychotic use for dementia, imaging for low back pain, antibiotics to treat sinusitis and routine use of EKGs, before and after being exposed to the CWC brochures. McNemar's test examined pre-to-post changes in knowledge (significance set at $p<0.05$). Participants were asked if they intended to discuss the information with a health care professional.

Results: The survey was completed by 291 patients (mean age 63, range 50-91, 42% male). Knowledge improved significantly for the antipsychotic (77%), imaging for back pain (70%), use of antibiotics to treat sinusitis (70%), and sedative-hypnotic (53%) topics. On average, 70% of participants reported intent to discuss the information.

Conclusion: There is value in exposing patients to CWC patient educational materials. Whether ensuing conversations with health professionals result in a reduction of unnecessary tests and treatments remains to be determined.

Regional Implementation

Choosing Wisely Alberta Partnership Approach for Governance and Implementation

Eileen Patterson*, Lyle Mittelsteadt and Dr. William Hnydyk, Choosing Wisely Alberta, Alberta Medical Association

The Choosing Wisely Alberta (CWA) Steering Committee coordinates partnerships for governance and implementation to address cultural and behavioral changes that drive appropriateness of care. Members include Alberta Health, Alberta Medical Association (AMA); Alberta Health Services (AHS), Alberta Innovates – Health Solutions, Alberta College of Family Physicians, Institute of Health Economics, Universities of Alberta and of Calgary Faculty of Medicine, and patient representatives.

Guiding principles:

- Build on existing programs.
- Coordinate partnerships for planning, engagement, delivery, evaluation.
- Support physicians/patients fully.

CWA operates at three levels:

- Dissemination of the full campaign to physicians/patients, and mapping of aligned provincial supports. The Physician Learning Program reviewed all topics for measurability based on administrative data, and Electronic Medical Records. AHS partner programs contribute data for our CWA dashboard to showcase Alberta

performance and help physicians set improvement priorities.

- Support to existing initiatives aligned to Alberta's priority topics. The Vitamin D committee implemented a 5-part intervention: patient pamphlet, physician communication, media release, measurement, and Vitamin D testing order form. A 93% decline in Vitamin D test ordering was achieved. Other partner projects include Emergency Department Diagnostic Imaging, Blood Transfusion, Appropriate Use of Anti-psychotics, and Spine Access.
- The Low Back Pain demonstration project explores the real drivers of over-testing. This includes quantitative tracking of variations and trends in L-spine imaging, and qualitative data from patient focus groups and cognitive task analysis physician interviews. Early quantitative results are promising and early qualitative themes are emerging and will be used to strengthen interventions.

* Choosing Wisely Canada Clinical Leadership Group Member

Choosing Wisely Manitoba: Provincial Approach to the Appropriate Use of Diagnostic Testing

Jim Slater and Tara Mangano, Diagnostic Services Manitoba

Choosing Wisely Manitoba (CWM), modeled after Choosing Wisely® and Choosing Wisely Canada (CWC), is a provincial initiative to improve health outcomes, patient and provider experiences as well as health system efficiencies and sustainability. CWM is a partnership between Diagnostic Services Manitoba (DSM) and the George and Fay Yee Centre for Healthcare Innovation (CHI) and is recognized for its focus on building a foundation of physician engagement and leadership.

Goal:

- Vitamin D,
- Pre-Operative Diagnostic Testing,
- Transfusion Medicine,
- Coagulation (e.g. activated Partial Thromboplastin Time; aPTT)

Improvement:

- Grassroots physician/practitioner engagement sessions to set a foundation for culture change and system transformation.
- Integrating CWC into medical education curriculum to ensure that the new CanMEDS (especially physician leadership and resource stewardship) are taught to medical students, residents.
- Appointing Executive Sponsors who have decision-making and financial authority to push initiative forward across the province.
- Support and endorsement from Manitoba's Minister of Health.

- Strategic partnerships with key stakeholders and physician organizations.

Measures:

- Physician awareness surveys
- Volume of tests (pre vs post implementation)
- Blood utilization (pre vs post implementation)

Challenges:

- aPTT test requests from physicians have decreased from 99 to 40% (depending on the site).
- In 2015/2016 it is anticipated that 50,000 Vitamin D tests will be performed, 90% of which have no medical indication. Target reduction of 50% in first year.
- Preoperative history, physical and diagnostic testing for cataract surgeries have been reduced by 80%. Target for other surgical procedures 25% in first year.

Lessons Learned: Engagement and collaboration with physicians is crucial to the success CWM.

Preoperative testing in advance of low risk surgery

Jennifer Frood, Canadian Institute for Health Information

Choosing Wisely Canada is a physician led campaign with the goal of encouraging physicians and patients to engage in conversations about “low-value” tests, treatments and procedures. One of these recommendations is to not perform preoperative cardiac testing for low-risk surgeries. While CWC has previously reported on preoperative testing for low-risk surgery in Ontario, the objective of this study is to provide additional regional context by adding data for Alberta and Saskatchewan in the hopes of clarifying drivers of preoperative testing. There were 528,000 low risk surgeries performed in Alberta, Saskatchewan and Ontario in 2012/13, representing 55% of all low-risk surgeries in Canada. Overall, preoperative testing rates were highest in Ontario (35.5% of low risk procedures) compared to Saskatchewan (21.8%) and Alberta (17.9%). ECGs were by far the most common type of preoperative test ordered in all provinces, followed by chest X-rays, echo and stress tests. Individual physician variation was a stronger predictor of preoperative testing rates than patient characteristics or type of procedure.

Note: this project is one of many CIHI-CWC initiatives.

Pre-transfusion testing - Do you really need it?

Carole Ann Lagrange, Dr.Gernet Horne, Monique Goranson, Alberta Health Services

How AHS-Central Zone is Choosing Wisely. "Don't order unnecessary pre-transfusion testing for all pre-operative patients". Choosing Wisely recommendation from the Canadian Society of Transfusion Medicine (CSTM #7).

Pre-transfusion testing-Do you really need it? A review of standing orders for pre-operative type and screen suggested overuse of this test. A type and screen ensures that matched blood is available for a patient if required. For most surgical procedures, transfusion is not required, hence type and screen testing is unnecessary. Each Type & Screen ordered for an elective procedure over three months was recorded. The surgical procedure, number of patients transfused, number of units transfused and transfusion timing were noted. Ten frequently performed surgical procedures with transfusion rates below 2% and, with standing orders for Type & Screen were identified.

Data presented at the Joint Surgical-Anesthesia meeting led to review of the standing order list for each specialty. With consensus, new standing orders were approved. A reduction of pre-operative Type & Screen orders resulted: Obstetrics: 50%; Orthopedics: 55%; Urology: 85%; General Surgery. Laparoscopic: 80%; General Surgery- Other: 65%. A 25% reduction in antibody screen reagents used also resulted.

Review by the obstetrical department led to changes in standing orders for both elective C-Sections and Labor and Delivery patients. Smaller facilities

with active maternity services had the practice of ordering 2 unit crossmatches on all elective C-section patients. Data and evidence sharing with these facilities resulted in a substantial reduction in routine and unnecessary crossmatch orders.

The communications provided to hospitals related to this project garnered interest from the provincial Newborn Child & Youth Strategic Clinical Network resulting in development of standard educational tools to support other jurisdictions advocating similar change.

Choosing Wisely Medical Imaging in Vancouver Coastal Health and Providence Health Care

Vivian Chan, Bruce Forster, Ruben Aristizabal, Andy Basi, Vancouver Coastal Health

Goal:

- More effective use of available capacity;
- Where possible, release of capacity to meet unmet demand;
- Working with specialists and family physicians to promote appropriateness of care;
- Shared decision making between patients and physicians;
- Leverage learnings across our health authority

This is accomplished by: Working groups comprised of ordering physicians, radiologists, and patients advised on appropriateness and practice variation for selected medical imaging (MI) exams, decided on practice parameters, developed change strategies, and encouraged and monitored adherence.

Focus: Five MI exams are under investigation; for each study, red flag recommendations are developed by the working groups. The low back pain (LBP) review is the focus of this presentation.

Measures: Metrics captured the number of MI studies (plain radiograph, CT, and MRI) ordered in the emergency department and physician ordering variability. Unintended consequences were also tracked.

Results: red flag recommendations were introduced as a 'medium stop' in the orders and documentation system at our pilot site. We found:

- Physician ordering decreased by five percent change in median ($p\text{-value}=0.01$; $\alpha=0.05$).
- Post-intervention physician variation significantly reduced for MI ordering of LBP (IQR from 17% to 11%).
- No unintended consequences – similar pattern between pre and post intervention in percent patients returning as outpatients and returning to emergency with a significant diagnosis.

Lessons Learned: As part of the intervention design, we found advantages to integrating point-of-care decision support alongside educational support (versus a strictly educational intervention).

Improving the Stewardship of Diagnostic Imaging Resources in Alberta Emergency Departments

Daniel Grigat and Dr. Eddy Lang, Alberta Health Services

Computed tomography (CT) utilization has increased dramatically as a result of availability, medico-legal pressures, and the perceived association of imaging with quality of care. Despite this trend, more is not always better* when it comes to medical tests. CT exposes patients to radiation leading to consequent cancer risks and contributes to increased healthcare costs and length of stay.

In the case of mild traumatic brain injuries (MTBI), validated clinical decision rules can identify patients unlikely to benefit from a CT scan. The Canadian CT Head Rule (CCHR) is a check list of symptoms and risk factors to identify patients at very low-risk of adverse outcomes requiring treatment. Head-injured patients with no CCHR high-risk factors, have a probability of needing acute neurosurgical intervention of less than 1 in 7,000.

Despite widespread awareness of the CCHR, Alberta data indicate significant persistent practice variability between physicians. An analysis of 311 emergency physicians treating 20,797 patient encounters for head injury found that, while 40% of all patients received a CT scan, ordering rates by physician ranged between 5% and 90%.

The Alberta Health Services Emergency Strategic Clinical Network is leading a province-wide research and quality improvement initiative to address over-utilization and variation in CT ordering. The initiative focuses on engagement of

physicians, decision support integrating the CCHR into physician workflow, performance monitoring and reporting, and engaging patients in shared decision-making. This presentation will discuss the experience of implementing a Choosing Wisely recommendation to not order CT scans for minor head injuries unless indicated by a clinical decision rule.

Specialty Societies

The Canadian Rheumatology Association is Choosing Wisely

Shirley Chow and Carter Thorne, Canadian Rheumatology Association

Since the launch of the Canadian Rheumatology Association's (CRA) list of 5 things, members have been busy promoting the Choosing Wisely Campaign, disseminating the lists of things rheumatology health professionals should question to its members and patients, and evaluating the items.

Improvement: A working group of committed rheumatologist from across Canada have been presenting the lists at national and local meetings.

Educational materials and tools have been developed to inform rheumatology professionals and trainees on overuse and misuse of rheumatology tests and treatments. These include journal and newsletter publications, online modules, a new patient pamphlet, and interactive activities such as Price is Right and Jeopardy at the annual scientific meeting.

Members are leading research projects evaluating the use of some of these tests, including ANA and HLAB27 testing, bone scan and bone density testing.

Measures: The CRA evaluated the impact of Choosing Wisely recommendations to the rheumatology community through a series of online surveys sent 2 weeks and then 6 months after the release date. These assess how many of the mem-

bers had heard about the campaign, their perceptions of the Choosing Wisely items, and whether it has impacted their practices.

Challenges: Variations in regional testing have led to different adoption of items. Culture change of overuse requires local champions.

Lessons Learned: Members are interested and feel they are not ordering unnecessary testing and treatments. Data and support needed to document uptake, adherence, and to track progress. Leadership support is a key enabler.

Development, Dissemination and Evaluation of Mental Health Choosing Wisely Statements

Alison Freeland and Katie Hardy, University of Toronto

In this presentation, the process by which 13 Mental Health Choosing Wisely Statements were developed and approved will be reviewed. Our plan to evaluate awareness and utility of these in clinical practice by psychiatrists will be presented, and preliminary results will be shared.

The Canadian Psychiatric Association (CPA) partnered with the Canadian Academy of Geriatric Psychiatry and the Canadian Academy of Child and Adolescent Psychiatry to develop CW statements across the life span. A working group was established with psychiatrist, resident and health service user representation. Following a literature review, ideas were generated through surveying the membership of each provincial psychiatric association, and CW statements subsequently developed. Once finalized, statements were vetted through the provincial associations with final approval from the boards of the three national associations.

The CPA has now struck a working group to develop and implement strategies for evaluating awareness and potential impact of the CW statements. A questionnaire has been developed and presented at the national CPA meeting, and is about to be sent to the membership of the three national societies, and the provincial psychiatric associations. Preliminary results of the survey will be presented.

Additionally, an educational initiative directed at assisting psychiatrists to link CW with day to day

clinical practice is being proposed. The format will be an online self directed learning module that highlights aspects of selected CW statements, and provides education about incorporation of these into clinical practice. The presenters will discuss preliminary plans to launch and evaluate this online module nationally.

Adopting CWC for the Specialty of Physical Medicine and Rehabilitation (PM&R)

Larry Robinson, St. John's Rehab

The Canadian Association of Physical Medicine and Rehabilitation (CAPM&R), representing physiatrists across Canada declared in May 2015 the intent to develop, approve and disseminate at least five recommendations for Choosing Wisely Canada (CWC).

The CAPM&R executive leadership team asked the organization's special interest groups (SIGs) to each discuss and propose items for the membership at large to consider. Over the subsequent 4 months, the SIGs proposed 23 items for further consideration. Ultimately, a survey was developed to ask the CAPM&R membership at large for ranking and input on these items with a goal to ultimately narrow down the 23 items to 5-7 items. Some items were more general PM&R items and others were more focused on subspecialty areas. Thus membership was asked to vote on up to 4 general recommendations and up to 3 subspecialty recommendations. The final selected recommendations will be presented to CAPM&R members at the May 2016 annual meeting for approval and dissemination.

Challenges:

1. Members did not initially understand CWC and required education about the initiative,
2. Members wished to propose items that would do "more" rather than do "less",
3. Some members proposed recommendations that are more appropriate for other specialties than for PM&R.

Benefits:

1. Strong member engagement in the selection process,
 2. Education about CWC early in the process,
 3. Member ownership of the recommendations.
- We plan to have 5 - 7 items to submit to CWC by June 2016.

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