



Choosing Wisely Canada National Meeting

2017 Abstract Book

Table of Content

6 Chair's Foreword

8 Agenda

9 Deprescribing

- Calgary Hospitalists Reduce their Use of Antipsychotics and Sedatives in Seniors following Education and Data with Feedback Sessions
- Culture Change through Interprofessional Collaboration
- Examining the Feasibility of a Deprescribing Program: A Pilot Study
- Implementation of a Facilitated Audit-and-Feedback Intervention for Hospitalist Family Physicians in Support of Atypical Antipsychotic and Sedative Deprescribing
- Reducing Unnecessary Benzodiazepines and Sedatives Among Elderly Inpatients
- How Good are Family Doctors at Discussing Deprescribing?
- Mental Health Plus: A Qualitative Study on Family Physician Use of Quetiapine

16 Continuing Education

- How to Talk to Your Patients When You Can't Give Them What They Want: Study of the Impact of Online Learning for Choosing Wisely Communication
- Understanding Unnecessary LabTesting on Internal Medicine Wards
- Teaching Resource Stewardship in a Variety of Learning Environments
- From Access to Quality: Education and Engagement of Physicians in Quebec
- Physician, Lead Thyself: Developing a Clinical Quality Improvement Physician Leadership Program in Saskatchewan
- Practicing Wisely

22 Implementation

- Reducing Repetitive 'Routine' Blood Testing Among Hospitalized Patients
- Achieving Appropriate Transfusion Rates in Primary Hip and Knee Arthroplasty Using Continuous Quality Improvement
- Developing a Standardized Set of Tools to Help Medical Leaders Monitor their Resource Utilization and Key Performance Indicators
- Choosing Wisely SickKids: A Children's Hospital's Experience Promoting Value at the Bedside
- Implementation of Evidence-Informed Practice of Blood Glucose Monitoring of Elderly Residents in Long Term Care
- Low Back Pain Toolkit: A Practical Guide to Applying Evidence for Better Patient Care
- Tissues from Hip and Knee Replacement Surgery: Pathology or Disposal?
- Implementing Choosing Wisely Recommendations for Diagnostic Imaging in Alberta Emergency Departments

- The BETTER Program: An Innovative, Evidence-Based Approach to Appropriate Cancer and Chronic Disease Prevention and Screening
- Choosing Wisely Manitoba: "Appropriate Preoperative Diagnostic Testing – Cataracts"
- REDUCED: REDucing Unnecessary Coagulation Testing in the Emergency Department
- Implementation of a Checklist for Lumbar Spine MRI in Saskatchewan
- VTE Prophylaxis: Focusing on the Right Agent for the Right Patient
- Attacking Lower Hanging Fruits (LHF) to Gain Momentum for a Comprehensive CWC Program at Humber River Hospital (HRH)
- Transfusion-sparing Strategies for Emergency Department Patients with Non-Variceal Upper Gastrointestinal Bleeding
- Urinary Tract Infections in LTC
- Raising Physician Awareness in Laboratory Medicine Through Physician Report Cards
- Examining Practitioners' Assessments of Perceived Aesthetic and Diagnostic Quality of High kVp-low mAs Pelvis, Chest, Skull, and Hand Phantom Radiographs
- Quality Improvement in the Care of Patients with Asplenia: Focus on Diminishing Risk of Infection
- Reducing Unnecessary Nasopharyngeal Virus Testing at a Tertiary Care Paediatric Centre – A Choosing Wisely Initiative
- CWC as CDS: A Modest Proposal
- Reducing Unnecessary Inpatient Routine Blood Work
- Strategies Implemented in Intensive Care Units to Optimize Use of Low Molecular Weight Heparin

45 **Interprofessional Collaboration**

- Creating a multi-societal recommendation for Choosing Wisely Canada in Critical Care
- Nine Things Nurses and Patients Should Question

48 **Measurement**

- Use of the Mean Abnormal Result Rate (MARR) to Gauge Changes In Family Physicians' Selectivity of Laboratory Test Ordering, 2010-2015.
- Tranexamic Acid Use During Total Knee and Hip Replacements and Blood Transfusions Following Surgery: An Audit and Feedback Intervention
- Imaging Practices of Emergency Physicians for Low Risk Atraumatic Low Back Pain
- Computed Tomography Use for Headache Presentations to Emergency Departments in Alberta: Regional, Site and Physician Level Variation
- Health Quality Ontario - Hospital Performance Series Report - Pre-operative Testing Before Low-risk Surgeries
- Pre-operative Testing in Low Risk Patients Undergoing Low Risk Procedures: An Alberta Perspective
- Sociodemographic Correlates of Clinical Lab Test Expenditures in a Major Canadian City
- Genetic Testing of Patients with First Unprovoked VTE – No Brainer or No Point?
- Stool Softeners for Constipation: What Does the Evidence Say?
- Effectiveness of Implementing Evidence Based Interventions to Reduce C-spine Imaging in the Emergency Department: A Systematic Review
- Choosing Wisely in Medical Imaging: Natural Language Processing Proof of Concept in Predicting Positive Findings in Radiology Reports

- Overutilization of Computed Tomography as a First-line Investigation for Patients Presenting with Suspected Recurrent Nephrolithiasis in the Emergency Department: A Retrospective Cohort Study
- Chest Radiograph Ordering For Acute Asthma Presentations to Emergency Departments in Alberta: Regional, Site, and Physician Level Variation
- Choosing Wisely in the Emergency Department: Exploring the Reach, Support and Potential for the Choosing Wisely Canada Campaign Among Emergency Physicians
- The Role of Advanced Imaging in the Management of Benign Headaches in the Emergency Department: a Systematic Review
- Effectiveness of Interventions to Decrease Imaging Among Emergency Department Low Back Pain Presentations: A Systematic Review
- When Physicians Choose Less Wisely: Determinants of CT Head Ordering for Low-Risk Headache in the Emergency Department
- Variation in the Rate of Repeat (< 2 Years Apart) Dual Energy X-ray Absorptiometry (DEXA) Scans Ordered in Alberta by Patient Gender Across Health Zones
- Comparison Between Choosing Wisely Canada and Choosing Wisely United States Radiology-related Recommendations
- Low-Value Clinical Practises in Injury Care: A Scoping Review Protocol
- Utilization Metrics: Defining Appropriateness of Care
- A Population Study of Fasting Time and Serum Iron Levels
- Measurement and Collaboration to Inform Progress on Choosing Wisely Canada Recommendations
- Pre-operative Assessment of Anemia in Women Undergoing Hysterectomy
- The Use of Electronic Medical Records to Change Clinician Behaviour and Increase Adherence to the Choosing Wisely Recommendations
- Choosing Wisely Psychiatry: Variation in Prescribing of Antipsychotics in Alberta
- Are We Transfusing Wisely? An Audit of Transfusion Practices Among Hemodynamically Stable Patients with Anemia in Four Hospitals
- Sentinel Node Biopsy in Breast Cancer

78 Medical Education

- Incorporation of Resource Stewardship into the University of Manitoba Undergraduate Medical Education Program
- Resource Stewardship among Medical Trainees through Choosing Wisely Canada: Cutting Down on Dollars and Patient Harms When Deciding on the Fly
- Resource Stewardship in Undergraduate Medical Education: University of Ottawa Experience

81 Patient Engagement

- Advancing Patient Engagement through Information Design
- Patients as Partners for Choosing Wisely in Alberta
- Choosing Wisely Public Engagement Campaign: 5-Questions to Ask Your Doctor
- Developing and Evaluating a Pamphlet on Glucose Self-Monitoring with Choosing Wisely Canada
- Antibiotic Misuse: The Need for Human-centred Design to Achieve Goals

Regional Strategies

- Choosing Wisely Manitoba: “Appropriate Vitamin D Testing”
- Lessons Learned During Implementation of Choosing Wisely NL (CWNL)
- Choosing Wisely in Medical Imaging: Why Don’t We Apply Point-of-Care Interventions to Everything We Do?
- HQCA Physician Panel Reports
- Choosing Wisely in Radiation Oncology: Driving Practice Improvement through Data and Knowledge Mobilization
- RASCI Coalition for Choosing Wisely
- Choosing Wisely Canada – Bringing it Home to Ontario
- Using Health Technology Assessment (HTA) Products and Services to Inform Appropriateness Initiatives
- Clinical Knowledge & Content Management - Evidence for Excellence
- Raising Physician Awareness of Cost Versus Value in Laboratory Medicine Through Widespread Dissemination of Diagnostic Test Costs

Chair's Foreword

Dear Choosing Wisely Canada 2017 National Meeting Attendees,

Welcome to the second annual Choosing Wisely Canada National Meeting!

Yet again this year, I am amazed by the work being done on Choosing Wisely across Canada. This year, with the establishment of the Choosing Wisely regions, I feel we can truly call ourselves a national campaign with support and communities of practice from Yukon to PEI. As Chair of Choosing Wisely Canada, I am proud of the sizable impact our community is having on healthcare in Canada and the recognition the campaign has gained.

Choosing Wisely Canada is a community of clinical leaders, national professional societies, students, associations and other allied health organizations. At the core of our efforts are the individuals working to embed Choosing Wisely into practice. This year we welcomed other clinician specialty societies to the campaign such as Nursing and Pharmacy.

The contents of this abstract book are a testament to the breadth of clinician leadership, engagement, and dedication our stakeholders have to ensuring Canadian patients are receiving the highest quality of care. Browse the contents of this abstract book by topic, which include: deprescribing, continuing education, implementation, interprofessional collaboration, measurement, medical education, patient engagement and regional strategies.

We are delighted that the Choosing Wisely Canada 2017 National Meeting, hosted by Choosing Wisely Alberta, will showcase leading examples of the fantastic work highlighted in this abstract book. We hope this book will serve as a continued source of inspiration, innovation and ideas that engage the growing community of clinicians, individuals and organizations committed to the Choosing Wisely Canada campaign beyond the National Meeting. It is in partnership with you, our community of stakeholders, that we have made so much progress. I sincerely thank all of you for the commitment you have made to Choosing Wisely and improving our healthcare system.

Yours,



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

Itinerary

The Westin Calgary
320 4th Avenue SW, Calgary, Alberta, Canada

7:30 am

Registration and Breakfast (South Foyer)

8:00 am

Welcome and Opening Remarks (Grand Ballroom)

Dr. Wendy Levinson & Mr. Tai Huynh, Chair & Campaign Director, Choosing Wisely Canada

Dr. Carl Nohr, Past President, Alberta Medical Association

Dr. Granger Avery, President, Canadian Medical Association

8:30 am

Morning Keynote: *Helping Patients Make Wise Choices* (Grand Ballroom)

Dr. Angela Coulter, PhD, Hon FRCGP

Session Learning Objectives

Participants will be able to:

- Explain why patient and public involvement matters for Choosing Wisely
- Identify what, when and how to share decisions with patients
- Describe the measurement challenges Choosing Wisely faces

9:45 am

Networking Break (South Foyer)

10:00 am

Successful Tales of Choosing Wisely From Coast to Coast (Grand Ballroom)

Facilitator: Dr. Bill Hnydyk, Physician Consultant, Choosing Wisely Alberta

Session Learning Objective.

Participants will be able to:

- Describe the top four Choosing Wisely initiatives demonstrating engagement and innovation

1. How to Talk to Your Patients When You Can't Give Them What They Want: Study of the Impact of Online Learning for Choosing Wisely Communication

Presenter: Dr. Constance LeBlanc, Associate Dean, Continuing Professional Development, Dalhousie University

2. Reducing Repetitive 'Routine' Blood Testing Among Hospitalized Patients

Presenter: Dr. Lisa Hicks, Hematologist & St. Michael's Hospital Choosing Wisely Canada Physician Lead

3. Choosing Wisely Manitoba: 'Appropriate Vitamin D Testing'

Presenter: Mr. Jim Slater, Chief Executive Officer, Diagnostic Services Manitoba

4. Calgary Hospitalists Reduce their Use of Antipsychotics and Sedatives in Seniors following Education and Data with Feedback Sessions

Presenter: Dr. Shawn Dowling, Medical Director at Physician Learning Program, University of Calgary

11:15 am

Breakout Sessions (Grand Ballroom)

The breakout sessions will highlight Choosing Wisely innovations, including implementation projects and interactive discussions with presenters. In each breakout, participants will choose to attend sessions on a range of topics, including best practices in implementation, research, measurement, medical education, patient engagement, and deprescribing as they relate to Choosing Wisely.

11:15 am **Breakout Session 1** **Presentations in each breakout detailed in appendix*
Implementation Mayfair
Deprescribing (Data) Britannia
Teaching Resource Stewardship Workshop Rideau, Mount Royal, Lakeview
Medical Education Lake Louise
Regional Strategies Bonavista
Choosing Wisely Alberta Breakout Belaire/Mainroom

12:15 pm **Lunch and Networking (South Foyer)**

1:00pm **Afternoon Keynote: *Collision Course? The Genetic Revolution, Personalized/Precision Medicine and Choosing Wisely (Grand Ballroom)***
Dr. Timothy Caulfield, LLM, FRSC, FCAHS
Session Learning Objectives
Participants will be able to:

- Consider the promise and challenges of "personalized/precision medicine"
- Reflect on the tension between personalized/precision medicine and the overuse of tests that may not add value and/or even harm patients

1:45pm **Networking Break (South Foyer)**

2:00pm **Breakout Session 2** **Presentations in each breakout detailed in appendix*
Implementation Mayfair
Patient Engagement Britannia
Measurement (Emergency) Rideau, Mount Royal, Lakeview
Interprofessional Collaboration Bonavista
Deprescribing (Process) Belaire/Mainroom

3:00pm **Networking Break (South Foyer)**

3:15pm **Breakout Session 3** **Presentations in each breakout detailed in appendix*
Implementation Mayfair
Students & Trainees Private Breakout Session Britannia
Measurement (Pre-op) Rideau, Mount Royal, Lakeview
Regional Strategies Bonavista

4:15 pm - 4:45 pm ***Shaping Our Future Together (Grand Ballroom)***
Dr. Wendy Levinson, Chair, Choosing Wisely Canada
Ms. Eileen Patterson, Program Consultant, Choosing Wisely Alberta

STUDY CREDITS
The University of Calgary – Office of Continuing Medical Education and Professional Development is fully accredited by the Committee on Accreditation of Canadian Medical Schools (CACMS).
CFPC: Mainpro+ Group Learning
This Group Learning program meets the certification criteria of The College of Family Physicians of Canada and has been certified by the University of Calgary, Office of Continuing Medical Education and Professional Development for up to 6.75 Mainpro+ credits.
RCPS: MOC SECTION 1
This activity is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of the Royal College of Physicians and Surgeons of Canada, and approved by University of Calgary Office of Continuing Medical Education and Professional Development. Participants may claim up to a maximum of 6.75 credits.

Deprescribing

Calgary Hospitalists Reduce their Use of Antipsychotics and Sedatives in Seniors following Education and Data with Feedback Sessions

Wenxin Chen, Shawn Dowling, Diane Duncan, Laura Rivera, Christopher Rice, Sampson Law, Lara Cooke | Physician Learning Program, Office of Continuing Medical Education and Professional Development, University of Calgary

The use of antipsychotic, sedative and anxiolytic medications in seniors is common without solid justification for efficacy and safety. The American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (2012) and several Choosing Wisely Canada recommendations identify the need to carefully evaluate use of these medications in seniors. In 2014, Calgary zone hospitalists partnered with the Physician Learning Program to examine prescribing practices.

Our aim was to determine if delivery of educational sessions combined with facilitated feedback on practice data results in reduced prescriptions of antipsychotics and sedatives in seniors.

Patient visits and inpatient antipsychotic and sedative medication data were retrieved from Sunrise Clinical Manager while dispensed outpatient medication data was pulled from Pharmaceutical Information Network database 3 months before the patients' admission and 3 months after discharge. 66 individual hospitalists participated and were given two reports with practice-specific data for patients aged 70 years and older. Eight feedback sessions were recorded, transcribed, and analyzed inductively via thematic analysis.

After attending CME sessions, receiving data reports, and attending facilitated feedback sessions, participants demonstrated deprescribing behaviour for potentially inappropriate medications. Participants decreased their use of antipsychotics

(haloperidol-34.7% reduction, quetiapine-23.9% reduction), sedatives (zopiclone-18.8% reduction, lorazepam-18.8% reduction), and use of combinations (39% reduction in patients receiving both antipsychotics and sedatives during the same hospital stay). The implementation of educational sessions, delivering individual practice data reports with feedback, and engagement in focus sessions resulted in significant change in prescribing practices resulting in deprescribing of potentially inappropriate medications in seniors.

Culture Change through Interprofessional Collaboration

Verdeen G Bueckert, Mollie Cole | Alberta Health Services

Goal: Reduce inappropriate use of antipsychotics and non-essential medications in persons with dementia

Implementation: Monthly interprofessional medication reviews considered perspectives of pharmacists, prescribers, nurses, care aides, families and others. The Pharmacologic Restraint Management Worksheet was developed to support and document these review discussions. Education for change teams and care staff was also vital (For more information, see Choosing Wisely Canada Toolkit: When Psychosis isn't the Diagnosis.)

Measures: Inappropriate antipsychotic use in long term care decreased from 25.3% of residents to 17.9% over 2.5 years; a 30% reduction provincially. (Current Canadian average 22.7%).

Challenges:

- It was difficult for the entire interdisciplinary team to attend medication reviews; strategies had to be devised to include all perspectives (e.g. HCA, family). When prescribers didn't attend, team recommendations weren't always acted upon (See: Evaluation of the antipsychotic medication review process at four long-term facilities in Alberta)
- Many new admissions to nursing homes arrive on antipsychotics and 10 or more medications; work is underway to support culture change in acute care.

Lessons learned:

- Multiple perspectives are required to discover underlying reasons for behaviours, and to determine non-pharmacologic strategies for management.

Curbside consultations allow care teams from across Alberta to share ideas and strategies.

- Responsive behaviours are often related to staff approach and sleep disruption. Education is essential to support improved dementia care (see AUA Toolkit for resources).
- Responsive behaviours are often related to inappropriate polypharmacy; a "drug-ectomy" is often the most effective treatment.

Thank you for your support of the Appropriate Use of Antipsychotics Project in Alberta. We have a new medication review worksheet that prompts consideration of medication side effects and anticholinergic burden, and a number of other new resources. We are currently spreading to Supportive Living sites across Alberta, and will begin work with acute care pilot sites early in 2017.

Examining the Feasibility of a Deprescribing Program: A Pilot Study

Mark Daubaras, Ana Florescu, Jennifer Jayakar, Andrew Liu, Chris Smith, Ankeeta Tatkase, Heather Sampson, Janessa Griffith, John Abrahamson | Michael Garron Hospital, Royal College of Surgeons, Ireland, University of Toronto, Women's College Hospital

Goal: This study was designed to determine the feasibility of implementing a deprescribing program at a community teaching hospital in Ontario.

Implementation: Upon admission to the hospital, pharmacists reviewed the pharmacological profiles of patients ≥ 65 , taking ≥ 5 medications. Physicians viewed electronic notes containing recommendations to deprescribe upon opening the patient's Electronic Medical Record (EMR). If the attending physician agreed with the pharmacist's recommendations, they would have a conversation with the patient/family regarding deprescribing. A note would be sent to the patient's family physician, explaining the deprescription and the rationale.

Measures: Of the 276 patients screened, 72 (26%) were taking medications that were identified as potentially inappropriate. A total of 173 recommendations for deprescribing were identified, averaging 2.4 per patient. During the study, one participant was readmitted that can be attributed to deprescribing. No other adverse events have been reported. Analgesics, anti-hypertensives, proton-pump inhibitors, and sleeping medications were the most common medications recommended for deprescription. Patient compliance is currently being monitored by consulting the Ontario Drug Database.

Challenges: The EMR facilitated pharmacist-physician communication, and provided a platform by which the electronic recommendations were visible. Therefore, this program may not produce similar results in

paper-based settings. A supportive institutional quality improvement environment may have contributed to the success of this program, which may differ in other settings.

Lessons Learned: This study demonstrated that a deprescribing program is feasible and that provider-patient communication can facilitate patients taking fewer medications. Pharmaceutical savings realized through this pilot could support the sustainability of this program.

Implementation of a Facilitated Audit-and-Feedback Intervention for Hospitalist Family Physicians in Support of Atypical Antipsychotic and Sedative Deprescribing

Laura Rivera, Diane Duncan, Wenxin Chen, Shawn Dowling, Christopher Rice, Sampson Law, Rattanjeet Vig, Tarndeeep Athwal, Trevor Chan, Echo Enns, Sarah Evans, Lara Cooke | University of Calgary

Goal: Audit-and-feedback (A&F) provides clinicians feedback on their practice. We administered interactive feedback sessions for hospitalist physicians who received administrative data reports in regards to the Choosing Wisely Canada recommendations to limit prescribing of atypical antipsychotics and sedatives in the elderly.

Implementation: Hospitalists in Calgary, Canada were eligible to participate in an A&F intervention based on data reports capturing individual and aggregate level antipsychotic and sedative prescribing in the elderly. To promote optimal effectiveness of the report discussion session briefings were held with each site's project lead. Briefings were used to: discuss priorities; educate about A&F best practices; coach regarding facilitating the session to promote participant engagement with their data reports; and identify strategies to empower the group to work toward actioning the report results. Facilitated feedback sessions took place in May 2016.

Measures: Sessions were audio-recorded, transcribed, and analyzed using content analysis to determine barriers and facilitators to the target clinical behavior and potential actions to take toward practice change. We administered surveys to elicit perceived intervention effectiveness.

Lessons learned: 43 physicians attended the sessions, where 28 received reports. 100% of participants agreed the report and session effectively supported practice reflection. Barriers to appropriate prescribing included patient factors and social context, while facilitators

were educational interventions and interprofessional team factors. Actionable items identified to promote the target behavior included increasing awareness of the issues for non-hospitalist groups, modifying order sets, and continual data reporting. This work demonstrates the ability of an A&F intervention to promote physician learning and actionability.

Reducing Unnecessary Benzodiazepines and Sedatives Among Elderly Inpatients

Christine Soong, MD, MSc; Grace Eun Hye Lee; Elisabeth Pek, MD; Andrew Remfry, MD; Leora Reiter; Clarissa Cheung, BScPhm; Christopher Fan-Lun, BScPhm | Mt. Sinai Hospital

Goal: To reduce the proportion of new prescriptions of sedative medications in elderly inpatients by 20% on medical inpatients at Mount Sinai Hospital in 1 year.

Intervention:

1. Sleep hygiene and promotion initiative: education to all staff and physicians on importance of sleep hygiene. Environmental changes (reduced lighting, noise, availability of ear plugs, etc.), and unit-based strategies to reduce interruptions to sleep
2. Pharmacy reviews
3. Education to trainees and patients
4. Order-set review and changes to remove or reduce dosing of BSHs

Metrics: Proportion of BSH-naïve patients prescribed a new BSH while in hospital for the primary indication of sleep, patient-reported sleep quality

Results: More than 80% of staff and physicians attending educational sessions. Mean BSH prescriptions declined from 16% in the pre-intervention period to 8.9% (relative reduction of 44%). Reductions in inappropriate BSH prescriptions have been sustained for 12 months.

Fall rates and self-reported sleep quality scores remained unchanged during the study.

Lessons learned: Key enablers of success of this project were alignment with organizational strategy to reduce high-risk medication use and engaging nurses in discussions on ways to reduce preventable harm in patients.

Barriers encountered included effective patient and family engagement. We attempted to place posters and provide handouts to patients and their caregivers. However, patients expressed a desire for “sleeping pills” to cope with the interruptions and stress experienced in hospital, many of which were felt to be unavoidable (e.g., late hospital admissions disrupting other sleeping patients, noise from other confused or agitated patients).

How Good are Family Doctors at Discussing Deprescribing?

Justin P Turner PhD, Marie-Thérèse Lussier MD MSc, Claude Richard PhD, Marie-Eve Lavoie PhD, Cara Tannenbaum MD MSc | Canadian Deprescribing Network (CaDeN)

Background: Choosing Wisely Canada encourages family physicians to engage their patients in discussions about deprescribing low-value medications. Neither benzodiazepines nor chronic use of proton pump inhibitors (PPIs) are currently recommended. Prescribers' skills and capacity for successfully navigating conversations about deprescribing these medications remains unknown.

Aim: To identify conversation stumbling blocks that impede successful deprescribing conversations between prescribers and older adults about discontinuing sedative-hypnotics or PPIs.

Methods: Family physicians (n=12) and a nurse practitioner (n=1) from Family Medicine Teaching Units across greater Montréal, and patients aged ≥65 years who were prescribed sedative-hypnotics (n=7) or PPIs (n=15) were enrolled. Encounters involving conversations re-evaluating consumption of sedative hypnotics or PPIs were audiotaped. A qualitative thematic analysis was conducted. Emergent themes were coded, and areas for improvement identified.

Results: Areas for prescriber improvement include: difficulty clarifying the indication for PPIs; ambivalence towards and difficulty determining the balance of benefit and risk for both drug classes; greater concern about the harms from withdrawal than the harms of continued prescribing, especially for PPIs; fear and reluctance to deprescribe due to the risks of symptom return; lack of reference to tapering schedules; inadequate discussion of alternative drug and non-drug therapies including melatonin or cognitive behavioural

therapy for insomnia; deferral to patient preference to continue sedative-hypnotics; discomfort with assertive deprescribing and lack of affirmation of the necessity for deprescribing.

Conclusion: Education, tools and coaching are required to increase prescribers' skills and confidence for successfully implementing a patient-centred deprescribing plan for sedative-hypnotics and chronic use of PPIs.

Mental Health plus: A Qualitative Study on Family Physician Use of Quetiapine

Kelly M. MBBh, CCFP, Pringsheim T. MD, FRCPC | University of Calgary

Background: Between 2005 and 2012, there was a 300% increase in quetiapine prescriptions in Canada, mostly written by family physicians. Prescribing data indicated high 'off label use', for example, in sleep or anxiety disorder. Factors informing family doctors prescribing decisions, and practices in relation to quetiapine safety are unknown.

Objective: To explore quetiapine prescribing practices from the perspective of the family physician, with a view to designing an educational intervention.

Methods: Following consent, a purposive sample of 16 family doctors (male, female, suburban, vulnerable populations, old, young) were interviewed using semi-structured interviews. Data were analyzed using template analysis, a flexible form of thematic analysis. From reading and re-reading the transcripts a hierarchical template consisting of vertical and horizontal codes and themes was constructed. An external 'critical friend' with expertise in qualitative research in prescribing helped critically interrogate the data and enhance template development. Themes were fed-back to participants for confirmation.

Findings: Two major themes related to patient complexity, and use of quetiapine as an alternative to benzodiazepines. Off label use of quetiapine tended to be for patients with more than one mental health problem, often complicated by social factors; 'mental health plus'. An important factor favoring quetiapine use was to avoid risk of addiction, tolerance or abuse, associated with benzodiazepines. Few physicians

monitored patients for movement disorder, weight gain nor performed lab work.

Conclusions: This study highlights the complexity of prescribing. We have identified a number of 'teaching points' which can be used to inform high quality, safe prescribing of quetiapine.

Continuing Education

How to Talk to Your Patients When You Can't Give Them What They Want: Study of the Impact of Online Learning for Choosing Wisely Communication

Constance LeBlanc, Tanya MacLeod, Dr. Lara Hazelton, Leanne Picketts, Dr. Stephen Miller, Dr. Lisa Bonang, Dr. Julielynn Wong

Background: We developed online learning modules to enhance doctor-patient communication for Choosing Wisely Canada (CWC). We evaluated the impact of the modules using a two-case simulation with trained simulated patients (SP) targeting ancillary cardiac testing. Participants were randomized to complete the online modules before or after the simulation (control group). The SP provided feedback on communication after the first simulation.

Methods: This was a mixed methods study. Communication skills were assessed using a modified Explanation and Planning Scale (m-EPSCALE). Follow-up phone interviews were conducted to explore barriers to change within three months of the program and analyzed using thematic analysis.

Results: Participants (n=30) were mostly family physicians (80%). 70% had no formal communication skills education in the past five years. All participants felt that the frequency of unnecessary tests is “a very/somewhat serious” problem, and 36% reported patient requests for unnecessary tests or procedures “everyday”. In the simulation-based program, no participants ordered/referred for unnecessary cardiac testing, however, there was high variability in global communication scores (mean = 66/100, sd=16, range 28 – 100). The m-EPSCALE demonstrated excellent reliability (Cronbach's alpha = .98). In the follow-up interviews, participants (n=13) reported provider, patient and systems-level barriers to applying the CWC recommendations to practice.

Conclusions: Our novel program provided an opportunity for practicing health professionals to receive confidential feedback on their communication skills. The current data suggest minimal impact of the online learning modules on communication, however, data collection is ongoing.

Understanding Unnecessary Lab Testing on Internal Medicine Wards

Toman Inka, Mathura Pam, Kassam Narmin | University of Alberta

Goal: The Canadian Choosing Wisely campaign recommends against routine complete blood count (CBC) and chemistry testing in the face of clinical stability in the inpatient internal medicine setting. At the University of Alberta Hospital (UAH), we hypothesized that overutilization of lab tests on the internal medicine wards is a problem. Our goal was to understand this problem by analyzing lab data, surveying residents about lab overutilization, and mapping the process of lab ordering. Implementation and

Measures: Implementation and Measures: Analysis of six months of lab data showed that CBC, electrolytes, creatinine and urea accounted for more than 50% of all lab tests performed. A chart audit showed that most patients have daily lab tests ordered at admission, which included CBC, electrolytes, creatinine and urea in 100% of cases. In a survey of internal medicine residents regarding lab test ordering patterns, internal medicine residents admitted to frequently ordering unnecessary lab tests – the primary reason for this being department culture. Through process mapping (SIPOC, cross-functional, cause-effect) we learned that physicians are often unaware when patients are getting daily lab tests, and do not have a formal process to review inpatient lab orders. Conversely, the unit clerk records which patients are scheduled to have daily lab tests, but does not have a formal process to communicate this information to the physicians. Challenges and Lessons Learned: Challenges and

Lessons learned: Culture and communication gaps are major driving forces behind lab overutilization on UAH internal medicine wards. By involving relevant

stakeholders to help understand the problem, we have identified sustainable solutions to be implemented in a 'plan-do-study-act' cycle.

Teaching Resource Stewardship in a Variety of Learning Environments

Alexander Singer, Kimberly Wintemute | University of Manitoba, University of Toronto

Purpose/learning objectives:

- Recognize how the Choosing Wisely Canada campaign integrates with existing learning requirements in the undergraduate, postgraduate, and continuing professional development arenas;
- Identify opportunities to teach concepts related to appropriateness and resource stewardship in multiple settings, for example clinical, small-group and didactic sessions;
- Consider implementation of a suggested framework or plan to effectively teach a single Choosing Wisely Canada recommendation in your particular teaching setting.

Rationale/background: Resource stewardship has long been an expected competency in medical training. But are we teaching it well? Are we teaching it as often as we could? In order to enhance stewardship and patient safety efforts, implementing strategies that effectively change physician behaviour are essential. Each of our domains of teaching has a set of defined competencies. Resource stewardship is present in all of them. In this workshop, we will demonstrate where the principles of Choosing Wisely already appear in the existing expectations for learning at the undergraduate, postgraduate and continuing professional development levels. As a group and through use of role play, we will identify opportunities for teaching resource stewardship in different settings. By the end of the workshop, each participant will have identified at least one Choosing Wisely recommendation that is important to their practice setting, with a plan for how to teach it and implement it.

From Access to Quality: Education and Engagement of Physicians in Quebec

Thériault, Guylène; Goulet, Émilie | Quebec Medical Association

Goal: In 2013, the QMA began to work on various projects to optimize clinical practice to improve the efficiency and performance of the health care system. In 2015, Dr Guylène Thériault developed with the QMA and the CMA a conference on overdiagnosis. The aim is to educate and engage physician on the issue of overdiagnosis and to present ways to take action, one of these being the CWC campaign.

Implementation: Five trained physicians presented this conference more than 30 times in Québec. The main goals of the presentation, is to enable the participant to explain the concept of overdiagnosis, identify concrete actions they can take in their practice to reduce the impact of overuse and implement shared decision-making tools in their practice. The conference is a revision of basic concepts and a reflection on actual practices.

Measures: More than 500 physicians attended this conference. Based on their assessments and on individual interviews performed a few weeks after the conference, we will present what knowledge and skills they learned and how this conference changed their practice.

Challenges: The receptivity was great but we still felt some resistance to change. The political context is not helpful at the moment for that kind of message, the rhetoric focusing on access more than on quality.

Lessons learned: The message is generally well received by family physicians and specialists. We plan to continue this endeavour with more practical

training based on cases to give more tools to physicians enabling them to change their behaviour.

Physician, Lead Thyself: Developing a Clinical Quality Improvement Physician Leadership Program in Saskatchewan

Verrall, Tanya; Furniss, Shari; Wright, Debra; Teare, Gary | Saskatchewan Health Quality Council

Goal: Gaps in physician clinical quality improvement (QI) capability need to be addressed to achieve optimal quality healthcare. Improving appropriateness of care is a key priority of Saskatchewan's health system and a provincial framework has been developed. Framework implementation is underway, providing strategies to build capability with clinicians and patients/ families. The Clinical Quality Improvement Program (CQIP) is a foundational strategy to this framework; with a goal to equip physicians with knowledge and skills to lead successful healthcare QI work, as well as coach and mentor others.

Implementation: CQIP is a sister program to the internationally recognized mini-Advanced Training Program from Intermountain Healthcare in Utah. Content has been adapted for Canadian healthcare context and aligned with CanMEDS/CanMEDS-FM competencies.

Fifteen physicians are participating in the initial 11-month course, taught by local physicians with QI experience and expertise. The program uses a flipped classroom methodology with theory and experiential learning, along with individual coaching and a community of practice. Selected projects include topics aligned with the Choosing Wisely Campaign.

Measures: Evaluation focuses on learning outcomes and healthcare system impact. Participants will rate their development using Kirkpatrick's Four Levels Evaluation Model and indicate the CanMEDS/CanMEDS-FM key competencies addressed through the

program.

Challenges: Key challenges include providing faculty/ coach development, while simultaneously building the program as well as addressing diversity of physicians—e.g., rural/urban, remote, specialty, and family practice.

Lesson learned: Preparation of physician leaders, through external QI training programs, is important to ensure an initial cadre of coaches.

Practising Wisely

Jennifer Young | Ontario College of Family Physicians

Practising Wisely: Reducing Unnecessary Testing and Treatment is a suite of new continuing professional development opportunities for primary care providers. Structured in a modular format, it's available in just the right dose:

- A 90-minute presentation to get you and your colleagues talking and acting against “too much medicine.” (Module 1)
- A half-day case-based small-group workshop (Module 1 and 2 or 3 or 4)
- A full-day deep dive (Modules 1-4)

Participants will identify opportunities to “practise wisely”, with a focus on reducing over-prescribing, over-imaging, over-screening and over-monitoring using the latest evidence and tools from diverse sources. This workshop aligns closely with the Choosing Wisely Canada (CWC) campaign to implement good healthcare stewardship and avoid over-medicalization.

The program centres on case studies and incorporates individual reflection and group work. It helps participants to build communication skills to guide their patients through the shift from seeking sickness to enhancing health.

After active engagement in this program, participants will be better able to:

- Identify opportunities to reduce “too much medicine”
- Access and assess reliable, renewing online resources
- Integrate relevant evidence into individual patient care
- Communicate and build consensus with patients to reduce over-medicalization.

Module one: We examine the harms and drivers of too much medicine and introduce a four-step approach to applying evidence to patient care with a focus on low back pain and ovarian cysts.

Module two: Reliable, renewing online resources are put to work to support practice change. Cases centering on proton pump inhibitors and statins for primary prevention are the focus.

Module three: Cancer screening is the topic here as participants differentiate risks and integrate relevant evidence into individual patient-care supported by shared decision-making.

Module four: Evolving the annual physical exam to become a periodic health review personalized for each patient is a key element of this module. Poly pharmacy in the elderly and over-monitoring for diabetes are addressed as well.

Implementation

Reducing Repetitive 'Routine' Blood Testing Among Hospitalized Patients

Hicks LK, O'Brien P, Parpia R, Longmore A, Wilson M, Hughes B, Abosh D, Walker L, Summan N, Sholzberg M | St. Michael's Hospital

Background: Repetitive, routine blood tests (RBTs) are associated with anemia and increased hospital mortality. Choosing Wisely Canada recommends against repetitive testing in hospitalized patients. At St. Michael's Hospital we have documented high rates of repetitive RBTs and have confirmed an association with worsening anemia at our hospital.

Aim: To reduce repetitive RBTs across the hospital by 15% by December, 2017. Data from 3 pilot wards will be presented: General Internal Medicine (GIM), Hematology/Oncology (Hem/Onc), and cardiovascular/vascular surgery (CVS/PVS).

Methods: Our change strategy involves increasing awareness of local repetitive RBT rates, educating clinicians around the harms of repetitive RBTs, and revising order sets to remove unnecessary tests and open-ended RBT orders.

Results: Prior to the intervention, the average volume of blood collected for RBTs per patient-day-admitted was 6.97ml/pt-day, 8.09ml/pt-day, and 11.89ml/pt-day on the GIM, Hem/Onc, and PVS/CVS services respectively. Following an education and awareness effort, RBTs decreased to 6.40, 7.16, and 11.00 ml/pt-day respectively. After order set changes were introduced RBT rates decreased further to 5.62ml/pt-day, 6.16ml/pt-day, and 10.02ml/pt-day representing total decreases of 19%, 24% and 16% respectively from the baseline period. Estimated cost savings will be presented at the meeting. No change in balance measures (length of stay and proportion of tests sent stat) was observed.

Conclusions: Preliminary results suggest that it is possible to substantially reduce repetitive blood draws among hospitalized patients without negatively impacting care.

Achieving Appropriate Transfusion Rates in Primary Hip and Knee Arthroplasty Using Continuous Quality Improvement

Christina Barr BA MPP, Jane Squire Howden RN BScN, Raul Kuchinad MD FRCSC | Alberta Bone and Joint Health Institute

Goal: To reduce blood transfusion rates in primary elective hip and knee arthroplasty to appropriate targets of 5% for hip and 4% for knee.

The provincial working group discussions helped hospitals work together on challenges to be successful.

Implementation: Implementation had four key points: 1) in May 2012 presentation by the Calgary Zone Perioperative Blood Conservation Program at a provincial Hip and Knee Learning Collaborative (based on IHI Breakthrough Series); 2) starting in October-December 2013 addition of transfusion rates to each hospital's quarterly balanced scorecard with review at quarterly provincial hip and knee working group meetings 3) addition in 2014 to semi-annual confidential physician and aggregate zone reports, 4) in January 2015 provincial care path updated to include tranexamic acid use and blood transfusion thresholds and units.

Measures: In the base year of 2011/12, the transfusion rate was 16.3% and in 2015/16 it was 4.6%. In the July-September 2016 quarter, provincial rates were below targets for both hip and knee for the first time. The estimated savings from the reduced use of blood products is \$5 million.

Challenges: Challenges include practice change, culture change, and appropriate preoperative optimization of patients. It required an interdisciplinary approach with surgeons, anesthesia and operations teams.

Lessons learned: A strong culture of continuous quality improvement and a feedback loop providing data to hospital teams is essential to achieving improvements.

Developing a Standardized Set of Tools to Help Medical Leaders Monitor Their Resource Utilization and Key Performance Indicators

Sebastien Landry, Dr Shaun Visser | Hôpital Montfort

Hôpital Montfort has introduced real-time analytics tools for medical leaders to optimize resource utilization and key performance indicators.

The main goal of this initiative was to educate physicians on their investigational profile in comparison to their clinical peers, with the aim of decreasing overall test ordering across departments.

Improvement: An awareness campaign focused on the discontinuation of order sets to focus on an "a la carte" approach was introduced at Hôpital Montfort. Bundling of orders sets was discouraged and physicians were educated on the costs of individual lab tests vs order sets.

Measures: This initiative led to reduction of 30% in overall laboratory tests in the Emergency Department and a significant reduction in electrolytes ordering at the hospital level over a 6 months period. Furthermore, the use of real-time data also allowed leaders to quickly identify increase in resource utilization and identify solutions.

Challenges: Cumulative numbers are interesting for financial purposes but they don't take into consideration clinical activity. Therefore, we decided to normalize the evidence to reflect individual clinical activity allowing medical leaders to identify champions, and improvement opportunities. Appropriate technical databases mapping was a cornerstone of making this initiative a success.

Lessons learned: These tools will allow our medical leaders to share evidence with their respective departments to analyze their variation in practice and enable focused discussions on the appropriateness of tests.

Conclusion/Next Steps: This bottom-up approach at resource utilization optimization showed early signs of success. We will expand this approach to analyze other key performance indicators.

Comments: As next steps, we are currently validating the mapping of several internal databases which should allow us to duplicate the Choosing Wisely/HQO Report on Pre-operative testing before low-risk urgencies in real-time. We are hoping to have data ready for the National Meeting as a proof of concept.

Choosing Wisely SickKids: A Children's Hospital's Experience Promoting Value at the Bedside

Olivia Ostrow, Carolyn Beck, Kathy Boutis, Sanjay Mahant, Tania Principi, Deena Savlov, Jeremy Friedman | Hospital for Sick Children, Toronto

Background: In Canada, Choosing Wisely has primarily focused on adult healthcare, but improving quality of care, reducing wasted resources, and protecting patients from potential harm are all equally important in pediatrics.

Goal: To describe the development, implementation and initial impact of a departmental Choosing Wisely 'top 5' list on pediatric care at a Canadian children's hospital.

Methods: After input from key stakeholders and review of current specialty society lists, an inventory of potential pediatric recommendations relevant to hospital care was generated. A survey was developed and broadly administered. Two hospitalist leaders independently scored top ranking items based on ease of implementation, measurement, alignment, and value. Five final items were chosen and baseline measurements were obtained. After physician leads were appointed and implementation strategies developed, the Choosing Wisely 'top 5' list was launched using various improvement methodologies.

Results: All five initiatives show large improvements in reducing unnecessary care. For example, in the emergency department, nasopharyngeal testing for respiratory viruses has decreased by 83% and routine radiography for children with low risk acute ankle injuries has decreased from 90% to 50%. For children with typical newly diagnosed ITP, not automatically giving IVIG as first-line treatment has decreased usage of IVIG from 85% to 20%.

Conclusion: Developing a Choosing Wisely 'top 5' list at a Canadian children's hospital was feasible, and initial results following implementation demonstrated a positive impact on promoting a culture of quality and evidence-based, high-value care. This model, along with lessons learned, is being shared with pediatric healthcare providers across the country.

Implementation of Evidence-Informed Practice of Blood Glucose Monitoring of Elderly Residents in Long Term Care

Tucker, Sheila; Brown, Heather; O'Brien, Kelli | Canadian Agency for Drugs and Technologies in Health (CADTH)

Goal: To implement best practice in the care of long term care residents with type 2 diabetes in two regional health authorities in Newfoundland.

Implementation: Implementation focused on a more comprehensive approach to the care of non-insulin dependent residents with type 2 diabetes which included: less reliance on blood glucose testing; increased education and awareness of the signs and symptoms of hypoglycemia; and increased opportunities for resident centred care such as foot care and management of dietary needs. Practice change was achieved through a program of activities which focused on knowledge exchange of evidence-based information; multi-disciplinary health professional education; sharing of evidence-based tools to support the new practice; change management; evaluation and compliance monitoring.

Measurement: Performance was measured across four quality domains: 1) Person-Centred; 2) Efficiency of the Healthcare System; 3) Appropriateness of Care; and 4) Safety.

Challenges: The project evaluation identified the following challenges: lack of buy in/compliance among some health professionals; lack of awareness of clinical practice tools; concerns among some health care professionals regarding access to the required education; and problems with glucose monitors.

Lessons learned: This initiative highlights the importance of: 1) a collaborative approach between health professionals and other project stakeholders;

2) physician engagement in the practice change; 3) empowering front line health professionals to drive practice change in their healthcare setting; 4) audit and feedback; 5) the investment of time and effort required to achieve practice change; and 6) leadership commitment to keep the momentum going and to ensure long term compliance with the practice change.

Low Back Pain Toolkit: A Practical Guide to Applying Evidence for Better Patient Care

Dr. Ted Findlay, Dr. Lee Green, Dr. Derek Emery, Peter Froese, John Lester, Eileen Patterson

Choosing Wisely Alberta, Alberta Medical Association

The goal of this presentation is to outline the development of an Alberta toolkit for low back pain (LBP) management.

LBP is a priority topic for Choosing Wisely Alberta (CWA). In 2010, 28376 people underwent a total of 30456 MRI and or CT scans. Many of these patients underwent repeat lumbar spine imaging within the following five years. With the introduction of the Alberta Health Service's L-spine screening form in August of 2015, there has been a significant reduction in the proportion of requests for imaging going on to be scanned.

A LBP demonstration project explored the drivers of imaging and barriers to appropriateness. Implementation was based on a 5-point strategy; provincial physician-decision tool (new L-spine form), physician communication and support (knowledge-translation of care-options), measurement plan, patient education, and public campaign.

Provincial trend-data was reviewed. Primary Care Networks partnered and delivered physician audit-feedback reports. Patient focus groups (Patient and Community Engaged Research, U. Calgary, O'Brien Institute) identified themes for improved satisfaction, including communication of assessment and warm hand-offs to allied providers. Physician interviews (Cognitive Task Analysis, U. Alberta, Primary Care Research) identified system/specialist-demand, patient-relationship, and evidence among drivers of 'non-red-flag' imaging.

The LBP toolkit includes evidence-based physician

decision-support tools, patient education tools, coordination of care approaches, measurement plans for both practice and program level interventions. It is based on quality improvement methods to increase uptake and successful adoption of behaviours that support appropriateness. The toolkit provides high leverage changes to address common challenges and improve interventions for LBP care.

Tissues from Hip and Knee Replacement Surgery: Pathology or Disposal?

Dr. Eric Bohm, Vivian Lu, Gabor Fischer, Karen Cormier, Jim Slater | University of Manitoba

Background: Current practice requires specimens from total hip arthroplasty (THA) and total knee arthroplasty (TKA) to be sent for pathologic examination. However, literature review demonstrates that pathologic examination rarely provides more information than the clinical/radiological diagnosis or leads to altered clinical management.

Methods: 368 THA and TKA specimens were retrospectively reviewed including elective procedures (349) and fracture-related operations (19). Clinical diagnoses (based on clinical information and radiologic findings) and pathologic diagnoses were compared and classified into three categories: concordant (same diagnoses), discrepant (different diagnoses without alterations in management) and discordant (different diagnoses with change in management).

Results: The pathologic examination did not lead to change in patient management in any of the elective cases. In the 162 elective THA cases, the concordant rate was 100%. 183 out of 187 elective TKA cases had concordant clinical and pathologic diagnoses (97.9%). Four TKA cases showing secondary osteoarthritis with pseudogout fell into discrepant category (2.1%). No discordance was identified. 19 hip replacements for fracture were included, and one showed metastatic carcinoma from a primary urothelial carcinoma. There was 100% concordance for hip fracture patients. There were no pathologic changes in the remaining cases other than fracture site change with or without osteoarthritis.

Conclusions: This study demonstrated the consistency

between clinical and pathologic diagnoses with very low discordant rate. Our data suggests that clinicians can safely decide which specimens are for disposal based on the clinical and radiological information, especially on elective procedures. Cases with unusual clinical/radiological features should be submitted for pathologic examination.

Implementing Choosing Wisely Recommendations for Diagnostic Imaging in Alberta Emergency Departments

Dr. James Andruchow, Dr. Andrew McRae, Dr. Grant Innes, Dr. Shawn Dowling, Dr. Eddy Lang | Alberta Health Services, Emergency Strategic Clinical Network

The goal of this project is to improve emergency physician decision making with two new Choosing Wisely Canada recommendations for appropriate use of diagnostic imaging in the emergency department (ED): (1) use of CT scans for patients with minor head injuries, and (2) use of CT or VQ for patients with suspected pulmonary embolism (PE).

A cluster randomized study design was used to evaluate the effect of embedding evidence-based clinical decision support (CDS) into clinical care into 17 high volume Alberta EDs. Implementation of CDS was customized to best integrate into local work flow. For sites with paper based order-entry, hardcopy decision support forms including evidence-based algorithms and quantitative outcomes data were created, while for sites with electronic order entry, an electronic CDS tool was developed. Quarterly physician report cards were also distributed to provide quarterly feedback on both site and individual physician performance. The primary outcome measure was CT utilization on a site level, with secondary outcomes being site and individual physician adherence to CDS and CT diagnostic yield.

While the project is still ongoing, early results are mixed. Some study sites have been eager to use the CDS tools and showed improvements in CT utilization and diagnostic yield, whereas other sites have demonstrated poor adoption. Challenges associated with this knowledge translation initiative include a disseminated leadership structure with difficulty engaging local leadership and practitioners, a lack of incentives for physician participation, and its voluntary

nature. Future interventions would likely be aided by clearer incentives and/or accountability measures.

The BETTER Program: An Innovative, Evidence-Based Approach to Appropriate Cancer and Chronic Disease Prevention and Screening

Carolina Aguilar, Donna Manca, Kris Aubrey-Bassler, Denise Campbell-Scherer, Aisha Lofters, Melissa Shea-Budgell, Nicolette Sopcak, Eva Grunfeld | University of Alberta Family Medicine

Goal: To improve clinical outcomes, reduce the burden of chronic disease, and improve sustainability of the healthcare system through appropriate cancer and chronic disease prevention and screening (CCDPS) and cancer surveillance in primary care.

Implementation: The BETTER (Building on Existing Tools to Improve Chronic Disease Prevention and Screening in Primary Care) program is an evidence-based, preventive care approach to cancer and chronic disease, including associated lifestyle factors. An individual in the primary care setting is trained as a Prevention Practitioner (PP), who uses the BETTER tool kit to determine which CCDPS actions patients are eligible to receive and, equally as important, not receive. The PP then develops a tailored “Prevention Prescription” with each patient, linking them to community resources, as appropriate. This approach has been implemented in three Canadian provinces.

Measures: A mixed methods approach, which includes a summary composite index, defined as the proportion of appropriate CCDPS actions achieved by the patient (according to pre-defined baseline targets) at follow-up.

Challenges: Family physicians often lack time, resources, and tools to address CCDPS. Although most patients have multiple risks, most guidelines and resources focus on one specific disease, organ system, or lifestyle risk. Furthermore, cancer survivors achieve fewer prevention and screening goals than the general population.

Lessons learned: The BETTER Program builds on the results from the BETTER trial, which demonstrated that introducing the PP role improved uptake of CCDPS as compared to usual care (54% vs. 21%, $p < 0.001$). BETTER provides a framework for an adaptable, collaborative, patient-centred, and evidence-based approach.

Choosing Wisely Manitoba: “Appropriate Preoperative Diagnostic Testing – Cataracts”

Dr. Eric Bohm, Jim Slater, Ashley Struthers, Albert Mota, Dr. Olga Norrie, Dr. Afeez Abiola Hazzan Choosing Wisely Manitoba, | University of Manitoba

Goal: Appropriate preoperative diagnostic testing is important for patient safety, avoiding unnecessary surgical delays, and health system sustainability. In 2010, a guideline for appropriate preoperative diagnostic testing was developed in Manitoba. The guideline was updated in 2016 to align with Choosing Wisely Canada. A comprehensive, collaborative initiative was undertaken to improve uptake and adherence to the guideline with the goal of reducing unnecessary preoperative diagnostic testing by 25%. Audits indicated that cataract surgery accounted for 30% of unnecessary testing. Therefore, one project intervention focused on promoting appropriate preoperative diagnostic testing for patients undergoing cataract surgery.

Implementation: We engaged relevant stakeholders and collaboratively developed and implemented a revised Cataract History and Physical form that eliminated cues for unnecessary preoperative tests.

Measures: Chart audits were performed pre and post-implementation of the revised form to determine the appropriateness of preoperative diagnostic testing. Interviews and surveys were used to obtain feedback from stakeholders.

Challenges: Working collaboratively with stakeholders from various segments of the healthcare system was challenging due to competing priorities and timelines. Challenges included identifying and getting appropriate stakeholders around the planning table, getting stakeholders to understand and accept that

unnecessary preoperative testing was an issue, availability of data, and getting the revised form to the primary care providers.

Lessons learned: Although we encountered some challenges, eliminating cues for diagnostic testing was a simple strategy to reduce unnecessary preoperative tests. Accurate and timely data is a powerful tool to help change behavior, and a representative project team membership is critical to project success.

REDUCED: REDucing Unnecessary Coagulation Testing in the Emergency Department

Nicola Goldberg, Hina Chaudhry, Michael Fralick, Alun Ackery, Patrick O'Brien, Rosane Nisenbaum, Lisa Hicks, Michelle Sholzberg
| University of Toronto, St. Michael's Hospital

Goal: We created a multimodal intervention to reduce unnecessary coagulation testing in the emergency department (ED) at our institution, where test volumes were particularly high and indiscriminate.

Implementation: Stakeholder engagement highlighted two barriers to appropriate coagulation testing: ordering processes and clinician understanding. Previously, most ED blood work panels included activated partial thromboplastin time (aPTT) and prothrombin/international normalized ratio (PT/INR), meaning these tests were ordered routinely for many ED patients. We removed these tests from panels where inclusion was inappropriate. Now, aPTT and PT/INR are only performed when actively ordered by ED practitioners. To improve clinician understanding, we presented at ED rounds and posted targeted prompts.

Measures: We compared coagulation testing rates before versus after our intervention using Poisson regression and interrupted time series analysis, using creatinine testing rate as a control measure, and red blood cell (RBC) transfusion rate as a balance measure and proxy for major bleeding. Following the intervention, weekly coagulation testing rates in the ED decreased by over 50% (PT/INR: 17.2 vs 38.4, RR=0.45 (95% CI 0.43-0.47), $p<0.001$; aPTT: 16.6 vs 37.8, RR=0.44 (95% CI 0.42-0.46), $p<0.001$), and we saved \$6,490 CAD in direct costs per month (projected annual savings: \$77,880 CAD). Creatinine rate remained unchanged. RBC transfusion rate fell slightly, suggesting no harm.

Challenges: At a teaching hospital with high learner

turnover, we found education-only interventions were insufficient for creating sustained, meaningful changes in clinician behavior.

Lessons learned: We attribute our success to early, broad stakeholder support and to our interventional focus on process change.

Implementation of a Checklist for Lumbar Spine MRI in Saskatchewan

Groot, Gary; Gudmundson, Deb | University of Saskatchewan, Saskatchewan Ministry of Health

Improving Appropriateness of Care (AC) is a key priority for the Saskatchewan health system. In early 2015, MRI of the lumbar spine (L-Spine) was selected as a prototype project to test the provincial AC framework. The goal of this project was to improve appropriate ordering of MRI L-Spine. Led by a group of clinicians (orthopedic surgeons, neurosurgeons, radiologists, a family physician, and chiropractor) and patient advisors a MRI L-Spine Checklist based on best practice guidelines was developed as a decision support tool for ordering physicians. It was successfully piloted in the Saskatoon Health Region and the Regina Qu'Appelle Health Region in the fall of 2015. Physician compliance for use of the checklist was above 90% by the end of the pilot, indicating that the checklist has become part of daily work for many physicians.

- The key factor contributing to successful implementation was effective engagement and involvement of physicians, health system leaders/providers and patients in this project.
- The main challenge during the pilot process was a lack of regional capacity to collect data as well as rigorous privacy processes required to collect and share data by non-regional staff.
- Since May 2016, the checklist has been provincially rolled out, including the Five Hills Health Region, where MRI services started January 2016.

The RIS data indicates that there has been a significant reduction in volumes of MRI lumbar spine requisitions in RQHR and SHR since the checklist was implemented. This project is currently being replicated in CT of L-Spine.

VTE Prophylaxis: Focusing on the Right Agent for the Right Patient

Micheal Guirguis, Keith King, Darren Pasay, Elizabeth MacKay | Alberta Health Services

Goal: Ninety per cent of patients admitted to medicine and surgery inpatient units are considered to be at risk of having a venous thromboembolism (VTE). Last year, there were approximately 1000 healthcare-associated VTE events in Alberta Health Services (AHS) hospitals. The AHS VTE policies were created to prompt the appropriate use of Low Molecular Weight Heparins (LMWH) to prevent VTE.

Implementation: A multimodal education and process improvement program was implemented that included: A provincial policy, information cards, pre-printed order sheets, educational webcasts and one page detailing documents. Face-to-face educational sessions by physician champions took place across the province to increase peer awareness.

Measures: Audits assessing VTE prophylaxis ordered in relation to AHS policy provided an understanding of current practice. Results are available to staff using a web-based interface, and are reviewed with unit staff. Since April 2013, prophylaxis appropriateness has increased steadily, currently ranging from 74 to 88% across Alberta. This was accompanied with a dramatic change in LMWH use, from 25% (April 2013) to 46% (Sept 2016) of pharmacological -prophylaxis orders.

Challenges: A key challenge faced by was physician concerns over the potential adverse events associated with LMWH use (e.g. bleeding) in special populations. These issues required significant face-to-face engagement to resolve.

Lessons learned: A broader engagement of clinical

staff may have prevented some of the challenges faced. Due to the size of AHS, there are wide variances in prescriber knowledge and engagement. The entrenchment observed could have been better addressed if more prescriber champions were identified.

Attacking Lower Hanging Fruits (LHF) to Gain Momentum for a Comprehensive CWC Program at Humber River Hospital (HRH)

Stephanie Hood, Dr. Andrea Lo, Dr. Narendra Singh | Humber River Hospital, Toronto, Ontario

Goal: HRH is implementing a comprehensive CWC Program, facilitated by a program coordinator throughout all departments. Identifying easy targets will result in rapid measurable success which should be a catalyst to drive momentum.

Implementation: A CWC committee has been established to lead the project and is implementing CWC recommendations in a three stage process:

- Medical Directives (MDR) as easy targets
- Order Set Modification
- Other Initiatives

Measures: We have identified that MDRs are low hanging fruits, the modification of which along CWC guidelines can have a rippling effect starting in the ER and permeating the rest of the organization. Examples include:

- Foley Catheters: On average, 23% of patients across medicine units have a Foley catheter, many of which are inserted in the ER due to MDRs. MDRs in the ED are being reviewed to reduce insertion on admission.
- Toxicology Screen: 26% of patients presenting to ED with one of the top 9 psychiatric complaints received qualitative toxicology as per MDR. Removing routine qualitative toxicology from the MRDs should reduce unnecessary toxicology screens.

Challenges: Limitations exist on retrospectively collecting data to accurately demonstrate benefit post implementation. There is potential for challenges from physicians who have been used to certain practices for many years.

Lessons learned:

- Focus on low hanging fruits (MDRs) will achieve early victories creating momentum for a more sustained plan.
- Physician engagement and leadership is key for successful implementation of CWC recommendations.
- A Project Coordinator is essential to the success of the program.

Transfusion-sparing Strategies for Emergency Department Patients with Non-Variceal Upper Gastrointestinal Bleeding

Catherine Joseph, Shannon O'Blenes, Sandra Lavorel, Andrew McRae, Grant Innes, Shawn Dowling, Eddy Lang | Alberta Health Services, Emergency Strategic Clinical Network

Unnecessary red blood cell transfusions are a patient safety concern and a burden on healthcare resources. The Transfusion Medicine Recommendations of Choosing Wisely Canada (CWC) are to not transfuse blood when effective and safer non-transfusion strategies are available, and to not transfuse more than one unit at a time in stable patients. In addition, literature indicates that transfusing stable patients with hemoglobin levels $>70\text{g/L}$ can result in increased mortality, rebleeding, and adverse events.

The Emergency Strategic Clinical Network is leading a provincial initiative to improve the management of non-variceal upper gastrointestinal bleeding, and a key objective is to implement the CWC transfusion recommendations. A 2014 review of 1662 transfusions for GI bleeds in Calgary found that 67% of patients were transfused outside the hemoglobin guidelines. A recent detailed clinical review of 115 charts from select Alberta hospitals found 84% of transfusions were for ≥ 2 units of blood, and 20% exceeded the 70g/L threshold in patients who were hemodynamically stable with no comorbidities.

This initiative is working in collaboration with Quality and Healthcare Improvement to pursue sustainable, system-level improvements in patient care. With the sponsorship of senior clinical and administrative leadership, local multidisciplinary teams have been established at six sites. Chart reviews have been conducted to establish a baseline of management, and teams are working through the local adaptation of evidence-based guidelines emphasizing the role of IV

iron. A pilot phase has begun at two sites, while a series of 'Plan-Do-Study-Act' Cycles will evaluate impact and work towards continuous improvement.

Urinary Tract Infections in LTC

Maureen Agnes Klenk, Andrea Walker | Eden Care Communities, Canada

The myth of worsening confusion in the elder equaled a UTI had a very strong hold within Regina Lutheran Home (RLH). In our 62 bed facility 2-3 Elders per week were receiving antibiotics for Urinary Tract Infection (UTI). Our goal was to appropriately assess the Elders symptoms by following evidenced based guidelines before urine samples were sent. And only send samples as per the guidelines.

Implementation consisted of education of evidenced based guidelines to the care givers and family members. The next action: remove all point of care testing strips from the facility. We then measured the number of UTIs being diagnosed over the next year.

Presently the true diagnosis of a UTI at RLH occurs very rarely. We experience two challenges continue in relation to our goal. First, when an Elder is newly admitted from another institution where UTI was frequently diagnosed. Family members are hesitant to accept their family member is not in need of an antibiotic. Second the emergency room almost always samples the urine and treats the asymptomatic bacteriuria if an Elder visits. This results in the Elder returning to RLH on an antibiotic.

Our greatest lesson is in relation to the need for continued family and care staff involved in evidenced based care of our elders.

In this oral presentation, we will demonstrate the RLH approach to accurate screening and management of UTI's. We will use current evidenced based guidelines and case studies to demonstrate our approach to care.



Raising Physician Awareness in Laboratory Medicine Through Physician Report Cards

Lau CK, Guo M, Viczko J, Naugler C. | Calgary Laboratory Services, University of Calgary, Cumming School of Medicine

Background: Laboratory medicine contributes to a small part of the healthcare budget alone however, it can affect many downstream decisions that can add to the increasingly unsustainable healthcare deficit. Mis-utilization of diagnostic testing is a widespread problem acknowledged by healthcare providers globally. Different utilization management methods are available however, audit and feedback and educational measures are generally more well received by physicians 1. A pilot study of physician report cards was administered to select physicians in Calgary, Alberta to raise physician awareness of their practices in laboratory medicine.

Methods: Thirty nine emergency room physicians were profiled and dashboards containing their test ordering and cost information with comparative statistics to their peers were generated and distributed periodically over a 6 month period. Time series analysis was used to analyze pre- and post-intervention effects.

Results: A 4% reduction in test ordering was observed post-intervention equating to \$4,600 in annual savings with a projected provincial savings of \$40,000 for all emergency departments in Alberta.

Conclusion: Physician report cards had a modest effect on test utilization management for emergency room physicians. This may be a result of the urgent nature of their practice not permitting for time to review previous test results or the inability to obtain a thorough patient history. Audit and feedback intervention methods may be more suitable and effective in a primary care setting where the nature of the work is less urgent.

References:

1. Thommasen A, Clement F, Kinniburgh DW, et al. Canadian family physician knowledge and attitudes toward laboratory utilization management. *Clin Biochem.* 2016;49(1-2):4-7.

Examining Practitioners' Assessments of Perceived Aesthetic and Diagnostic Quality of High kVp-low mAs Pelvis, Chest, Skull, and Hand Phantom Radiographs

Lorusso, Elizabeth; Lorusso, Jenna; Lorusso, Daniel; Fitsgeorge, Lyndsay, Fanshawe | College, School of Health Education

This study investigated the utility of the dose optimization strategy of increased tube voltage (kVp) and decreased tube current-exposure time product (mAs) (or high kVp-low mAs) by examining practitioners' assessments of perceived aesthetic and diagnostic quality of direct digital radiographs acquired using this strategy.

Ninety-one practitioners (radiologists, radiology residents, radiographers, and radiography students) from 8 clinical sites in Ontario examined 3 types of radiographs ('standard' image, +20 kVp image, +30 kVp image) for anthropomorphic pelvis, chest, skull, and hand phantoms and rated (on a five-point scale) each image in regards to its: (a) perceived aesthetic quality; (b) perceived diagnostic quality; and (c) visualization of anatomical structures.

Our primary findings are that for the pelvis, skull, and hand, although not the chest, images acquired using standard technical factors were rated significantly higher in diagnostic and aesthetic quality than those acquired using the high kVp-low mAs strategy. Despite this, both standard and dose optimized images of the pelvis, skull, and hand were rated to be of acceptable diagnostic quality for clinical use.

In conclusion, for the pelvis, skull, and hand, an increase of +20 kVp was an effective strategy to reduce dose while still acquiring images of diagnostic quality.

Quality Improvement in the Care of Patients with Asplenia: Focus on Diminishing Risk of Infection

Natalya E O'Neill, BSc (C), Jillian Baker, MD, MSc, Amy Skitch, BSc, Linda Taggart, MD, MPH & Michelle Sholzberg, MDCM, MSc | St. Michael's Hospital, University of Waterloo

Goal: Patients with asplenia (PWA) are at risk of life-threatening infections (1). In 4 years, 72 cases of potentially preventable overwhelming post-splenectomy infection were reported (2). We presume the lack of appropriate management of PWA was due to the unrecognized importance of the condition. The objective of this study was to enhance recognition and understanding of asplenia and promote preventative measures for infection.

Implementation: A quality improvement initiative was conducted in the hematology clinics at St. Michael's Hospital (SMH). An interdisciplinary team developed and dispensed a medical alert card (Figure 1) and information booklet for PWA which provided vaccination schedules and instructions for fever onset (Figure 2). Baseline and post-intervention questionnaires were completed by PWA to assess for change in knowledge.

Measures: The baseline questionnaire was completed by 17 PWA. 75% had no vaccination record, 82% were unaware that fever requires immediate medical attention and 100% had no prescribed antibiotic in the event of fever if >2 hours away from medical attention. Preliminary analyses suggested improved awareness of vaccinations and appropriate fever management; and high patient satisfaction.

Challenges: Up-to-date vaccination records were not always available by the time the follow-up questionnaire was administered which decreased the opportunity for impact.

Lessons learned: Our intervention was associated with improved awareness and understanding of asplenia in this vulnerable patient population. We anticipate these preventative measures will empower PWA to facilitate their safe medical care. Given the successful outcomes and apparent need, we are extending this intervention to other areas of SMH (e.g. surgery) and beyond.

References

- Winkelstein, J. A. (1977). "Splenuctomy and infection." *Archives of internal medicine* 137(11): 1516-1517.
- Waghorn, D. (2001). "Overwhelming infection in asplenic patients: current best practice preventive measures are not being followed." *Journal of clinical pathology* 54(3): 214-218.

Reducing Unnecessary Nasopharyngeal Virus Testing at a Tertiary Care Paediatric Centre – A Choosing Wisely Initiative

Ostrow O, Savlov D, Petrich A, Richardson SE, Friedman JN | Hospital for Sick Children

Background: Viral respiratory testing is commonly performed on paediatric patients, however results often do not impact care and the procedure is uncomfortable. At SickKids Hospital, nearly 6000 nasopharyngeal (NP) swabs for direct fluorescent antibody (DFA) testing (8 viruses) were ordered in 2014; 61% in the Emergency Department (ED) or Paediatric Medicine wards. Approximately 63% of ED swabs were on children discharged home. Results were often not available until the following day so did not impact management.

Goal: To decrease the number of unnecessary NP swabs performed on children in the ED and Paediatric Medicine wards.

Methods: A multidivisional expert panel reviewed published guidelines and formulated a pathway listing indications for testing. Two more effective tests were introduced to replace the older DFA test: 1) rapid influenza isothermal amplification that can provide results within 15 minutes and direct timely antiviral therapy, and 2) multiplex PCR (15 viruses). As a force function, the electronic order set was modified requiring users to select an appropriate indication. As a hard-stop, the rapid influenza test could only be ordered for inpatients with Microbiologist approval. A multi-faceted educational campaign was launched.

Results: Excluding the rapid influenza test, respiratory virus testing decreased by over 80% in the ED during the first eleven months of implementation. Total testing rates decreased by 40% and 33% in the ED and Paediatric Medicine respectively, compared with 2014.

Conclusion: Reducing unnecessary viral testing promotes high-value care, decreases patient discomfort and allows for more effective resource allocation toward tests that truly impact care.

CWC as CDS: A Modest Proposal

Dr. Martin Howard Reed | Department of Diagnostic Imaging, Children's Hospital, Winnipeg, Manitoba

Background: In 2007 Infoway announced as one of its priorities for 2015 installation of clinical decision support (CDS) in electronic health records (EHRs). That goal has not yet been achieved. However, there are now several CDS systems available which integrate guidelines for diagnostic imaging (DI) into computerized order entry systems (CPOEs), presenting the guidelines to physicians as part of their daily workflow. Many of these are installed in the United States and there is growing interest in them in Canada, Europe and elsewhere. Sets of DI guidelines usually include over 100 individual guidelines and there is debate as to whether it is better to install all the guidelines or only a small set of key guidelines into a CDS, such as the 40-50 DI recommendations in CWC.

methods of ordering DI.

Goal: The purpose of this presentation is to demonstrate how CWC DI recommendations could be integrated into a CDS.

Measures: DI CPOEs can analyze in detail ordering patterns of individual physicians, identifying outliers and facilitating interventions to improve ordering behavior. Provincial health data bases can be used to measure the effect of DI CDSs on overall DI utilization.

Results: Trial of such systems would show whether CDS using CWC recommendations could be effective in improving the appropriateness of DI utilization.

Lessons learned: Demonstration projects in Canada and reports in the literature show that DI CDSs can improve DI utilization but to be effective they have to be fully integrated into EHRs and as easy to use as current

Reducing Unnecessary Inpatient Routine Blood Work

Margaret Siyu Wu; Christine Soong, MD, MSc | University of Toronto Medical School, Division of General Internal Medicine, Mount Sinai Hospital

Goal: To reduce the number of “routine” blood tests per inpatient day by 20% among internal medicine inpatients at an academic tertiary hospital in a 1-year period.

Implementation: We developed a list of appropriate indications for daily blood testing by obtaining consensus agreement among physicians. These indications were incorporated into a set of revised electronic ordersets with built in decision support aimed to improve appropriateness. Compared to baseline, there was a 17.2% reduction in routine blood tests per inpatient day among medical inpatients. There was a 7.9% reduction in daily 3-day admission routine blood work ordersets and no significant change non-routine blood testing. In comparison, routine blood testing rates among the control group (surgical inpatients) remained unchanged throughout the study period.

Measures: The primary outcome measure was the total number of routine blood tests (CBC, electrolytes, and creatinine) per inpatient day on medical units compared to baseline of 6 months before intervention and versus a control group. The process measure included the proportion of patients with completed consecutive 3-days routine blood testing ordered as part of an admission orderset. The balancing measure was the number of processed non-routine blood tests per inpatient day. Surgical inpatients served as the control group.

Challenges and lessons learned: Stakeholder engagement and involvement were challenging but

important enablers in reducing inpatient routine blood tests. The development of recommended guidelines combined with the use of computerized order-entry system provided an effective means of reducing blood tests while incurring minimum cost and adverse consequences.

Strategies Implemented in Intensive Care Units to Optimize Use of Low Molecular Weight Heparin

Asma Amir Ali, Dr. Tom Stelfox, Jeanna Parsons-Leigh, Rebecca Brundin-Mather | University of Calgary

The goal of my summer project was to increase the use of Low Molecular Weight Heparin (LMWH) as the primary pharmacological prophylaxis to prevent Venous Thromboembolism (VTE) in four Calgary ICUs. LMWH should be prescribed over unfractionated heparin (UFH) due to lower risks of adverse events and ease of administration; however, UFH use is deeply seated within the ICU culture. Capitalizing on the release of new zonal guidelines for VTE prophylaxis, we implemented several strategies to inform and encourage physicians and pharmacists to prescribe LMWH. These included a grand rounds presentation, laminated cards on rounding carts, tracking VTE prophylaxis through electronic ordering (Sunrise Clinical Manager) and charting (MetaVision) systems, academic detailing, and audit and feedback. For instance, if patients were on UFH, we paged the residents on call to ask if the patient was eligible for LMWH. We measured monthly rates of VTE prophylaxis use by ICU and presented these rates electronically and in posters. The ICU with the highest rate of improvement in using LMWH was rewarded with home-baked treats. The main challenge we experienced was identifying the most effective strategy to ensure buy in from health care professionals. However, over the first months we learned which members of the health care team to target and how to keep VTE prophylaxis on their agenda.

Interprofessional Collaboration

Creating a Multi-Societal Recommendation for Choosing Wisely Canada in Critical Care

Choosing Wisely Canada Critical Care Task Force: Canadian Critical Care Society, Canadian Association of Critical Care Nurses, Canadian Society of Respiratory Therapists | Dr. Andre Amaral

Background: Variation exists in resource utilization in critical care. The Choosing Wisely Campaign (CWC) may decrease overutilization.

Methods: We assembled a task force from the Canadian Critical Care Society, Canadian Association of Critical Care Nurses, Canadian Society of Respiratory Therapists and representatives from pharmacy, dietetics, and physiotherapy. We generated a 38-item list, from which we retained 10 items.

We ranked these 10 items in 6 domains (evidence, prevalence, relevance, easiness of implementation, prevention of harm and costs) to generate a putative list, which was broadly distributed for further engagement at our national meeting and survey of society members.

Results: We generated provisional recommendations for 5 items. After feedback from CWC one item was removed (Don't limit interactions between the patient and their family) as it did not align with either a treatment or procedure. Two items were modified to produce the final list:

- Don't start or continue life supporting interventions unless they are consistent with the patient's values and realistic goals of care
- Don't prolong mechanical ventilation by over-use of sedatives and bed rest
- Don't continue mechanical ventilation without a daily assessment for the patient's ability to breath spontaneously
- Don't order routine chest radiographs for critically ill

patients, except to answer a specific clinical question

- Don't routinely transfuse red blood cells in hemodynamically stable ICU patients with a hemoglobin concentration greater than 70 g/L

Conclusions: Critical Care Medicine broadly engaged a group of interprofessional stakeholders, which will assist in the implementation of our CWC list.

References

- Downar, J., You, J. J., Bagshaw, S. M., Golan, E., Lamontagne, F., Burns, K., et al (2015). Nonbeneficial Treatment Canada. *Critical Care Medicine*, 43(2), 270–281
- Schweickert WD, Pohlman MC, Pohlman AS, et al. Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial. *Lancet*. 2009;373(9678):1874-1882.
- Burry L, Rose L, McCullagh IJ, Fergusson DA, Ferguson ND, Mehta S. Daily sedation interruption versus no daily sedation interruption for critically ill adult patients requiring invasive mechanical ventilation. *Cochrane Database Syst Rev*. 2014;7:Cd009176.
- Girard TD, Kress JP, Fuchs BD, et al. Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomised controlled trial. *Lancet*. 2008;371(9607):126-134.
- Ganapathy A, Adhikari NK, Spiegelman J, Scales DC. Routine chest x-rays in intensive care units: a

systematic review and meta-analysis. Crit Care. 2012
Dec 12;16(2):R68

- Carson JL, Guyatt G, Heddle NM, Grossman BJ, Cohn CS, Fung MK, Gernsheimer T, Holcomb JB, Kaplan LJ, Katz LM, Peterson N, Ramsey G, Rao SV, Roback JD, Shander A, Tobian AA. Clinical Practice Guidelines From the AABB: Red Blood Cell Transfusion Thresholds and Storage. Jama 2016. Published online Oct 12, 2016. Pages E1-E11

Nine Things Nurses and Patients Should Question

Karey Shuhendler, Josette Roussel | Canadian Nurses Association

The Canadian Nurses Association (CNA) partnered with Choosing Wisely Canada (CWC) to lead the development of the first non-medical Choosing Wisely list in Canada. Framed as a series of “don’t” statements, this list of nurse-developed evidence-based recommendations serves as a resource to inform nurse-client conversations about tests, treatments or interventions which lack benefit or cause harm.

This presentation will highlight the significance of CWC’s engagement with CNA as a means to expand the campaign and its evidence-informed recommendations and tools to a broader health-care community, potentially enhancing the ability to positively impact a greater number of patients. In addition, we will provide an overview of the development of the nursing list, describe the appraisal tool, and Delphi process for appraisal used by an expert panel. Nearly 200 potential items were reviewed and appraised by our expert panel.

The development of the “Nine Things Nurses and Patients Should Question” nursing list provides an example of how nursing leadership and expertise can be leveraged to develop nurse-informed resources as a tool to embed evidence into practice and influence quality and safety at point of care. Nurses are the largest group of care providers in Canada, often a patient’s first and most prolonged contact with the health care system, and key participants in team-based care. Nurses need to be informed on evidence base practices as they play a pivotal role in supporting and engaging with patients in conversations about tests, treatments and procedures.

Measurement

Use of the Mean Abnormal Result Rate (MARR) to Gauge Changes In Family Physicians' Selectivity of Laboratory Test Ordering, 2010-2015.

Brack, A., Guo, M., Ma, I., Naugler, C. | Alberta Health Services, Calgary Laboratory Services, University of Calgary, Cumming School of Medicine

Background: The Mean Abnormal Result Rate (MARR), defined as the percentage of laboratory tests yielding an abnormal result, has recently been advanced as a metric of laboratory test appropriateness. As the MARR increases, test ordering selectivity increases, and the proportion of abnormal results representing false positives decreases. We used the MARR metric to examine patterns of change in family physician test requisitions. We hypothesized that increasing physician awareness of testing efficiency, e.g. from initiatives such as Choosing Wisely, would manifest as increasing MARRs.

Methods: We accessed the Laboratory Information System for Calgary Laboratory Services, serving a catchment area of 1.4 million people, for family physician-ordered testing on outpatients to gather aggregate test and abnormal result counts from 2010 to 2015. The MARR for each year was calculated as abnormal test results divided by total tests ordered on patients' first test requisition for that year.

Results: Over the six years, there was an annual average of 3,401,588 tests for 411,295 distinct patients on their first test requisition for the year. The number of tests ordered and number of abnormal results increased from 2010 to 2014 before dropping in 2015. The MARR increased monotonically from 8.1% to 9.0% through this period.

Conclusions: The MARR for Calgary and surrounding area gives tentative evidence of a gradual increase in physician test selectivity and resource use efficiency in recent years. Further data from other catchment areas is needed before making assertions about broader trends in physician awareness of laboratory resource use.

Tranexamic Acid Use During Total Knee and Hip Replacements and Blood Transfusions Following Surgery: An Audit and Feedback Intervention

Inelda Gjata, Shawn Dowling, Laura Rivera, Diane Duncan, Sampson Law, Christopher Symonds, Rafael Talavera, Chris Rice, Lara Cooke, Leyla Baghirzada, Ryan Endersby, Lori Olivieri

Physician Learning Program, Office of Continuing Medical Education and Professional Development, University of Calgary, Alberta Health Services

A Choosing Wisely Canada recommendation suggests limiting blood transfusions when other non-transfusion therapies are equally effective. Intraoperative tranexamic acid (TXA) can reduce blood loss and the need for transfusions following total hip (THA) and total knee arthroplasties (TKA). Despite evidence and local practice protocols supporting use, it is unknown whether TXA is consistently used. We administered an audit-and-feedback intervention to characterize TXA utilization for anesthesiologists at South Health Campus Hospital in Calgary.

Data was extracted from multiple electronic health record sources from Jan 2014 to Jun 2015. We collected patient demographics, TXA usage, the frequency and volume of red blood cell transfusions administered in the 72-hour post-operative period. Consenting anesthesiologists received reports containing their intravenous (IV) TXA utilization data and transfusion rates. A facilitated feedback session focused on the reports, factors contributing to practice patterns and opportunities for change.

1421 cases (THA=577 and TKA=844) were included in the project cohort. 65.7% of THA and 57.5% of TKA cases received intraoperative IV TXA. 3.3% (n=47) of total cohort cases received a RBC transfusion within 72-hours following surgery. Patients who did not receive TXA were 2.3 times more likely to receive a

post-operative blood transfusion ($p=0.002$). 68.1% (n=32) of transfused patients received two or more units of RBC. Numerous barriers and enablers of practice change were identified in the feedback session.

Use of intraoperative TXA is protective against post-operative transfusions in TKA and THA. In light of efforts to minimize blood transfusions, TXA should be considered for joint replacement surgeries when indicated.

Imaging Practices of Emergency Physicians for Low Risk Atraumatic Low Back Pain

Rashi Hiranandani, Meaghan Mackenzie, Dongmei Wang, Eddy Lang

Department of Emergency Medicine & Cumming School of Medicine, University of Calgary, Alberta Health Services, Faculty of Medicine, University of Ottawa

Background: Choosing Wisely Canada (CW) recommends avoiding ordering lumbosacral imaging in the ED for patients with atraumatic low back pain (LBP) in the absence of red flags. This study evaluates X-ray ordering practices of emergency physicians (EPs) in Calgary.

Methods: Data was collected from patients, ages 18-60 and CTAS codes 2-5, who presented with atraumatic LBP from April 1, 2014 to March 31, 2016 in Calgary EDs. Time frame included pre- and post-CW recommendation. Patients considered high risk, with PTT > 40s or INR > 1.2s, neurology/neurosurgery/spine consults, admission to hospital, and history of cancer, were excluded. The primary outcome was to establish the overall usage of lumbosacral radiographs for atraumatic LBP. The secondary outcome was to identify factors that influenced LBP imaging. Factors analyzed included patient age, patient sex, ED wait times, physician age, physician experience, and physician sex. Statistical significance was determined by chi-squared analysis.

Results: The data from 3140 patients showed that 16.5% of the patients received lumbosacral radiographs. Physician variation in X-ray ordering was 0% to 85.7% (IQR 20.4%). Use of X-rays at each site differed significantly. CCFP-EM licensed physicians (17.9%) ordered more X-rays compared to FRCPC licensed physicians (13.7%, $p < 0.001$). Time of

presentation, physician sex, and patient sex did not affect the imaging practices. There was a trend towards decreased ordering of X-rays (17.6% vs. 15.1%, $p = 0.06$) post-CW recommendation.

Conclusion: Considerable variation exists in the ordering practices of Calgary EPs; however, on average they are choosing wisely in terms of ordering X-rays for atraumatic LBP.

Computed Tomography Use for Headache Presentations to Emergency Departments in Alberta: Regional, Site and Physician Level Variation

Lynette D. Krebs, Chris J. Alexiu, Cristina Villa-Roel, Scott W. Kirkland, Lindsay A. Gaudet, Brian R. Holroyd, Maria Ospina, Cathy Pryce, Jeff Bakal, Brian H. Rowe

PRIHS-2 Choosing Wisely Team, Department of Emergency Medicine, University of Alberta, Alberta Health Services; Edmonton, Canada, Department of Obstetrics & Gynecology, University of Alberta

Background: Headaches are a common emergency department (ED) presentation. Evidence demonstrates that computed tomography (CT) imaging varies significantly within and across sites. This study explored CT ordering and variation among headache presentations across Alberta EDs.

Methods: Administrative health data for Alberta were obtained from the National Ambulatory Care Reporting System (NACRS) for all adult (>17 years) headache (ICD-10-CA: G44, G43, R51) ED visits from 2011-2015. Patients with a primary or secondary diagnosis code of headache were included. Exclusions were: sites without CT scanners, Canadian Triage and Acuity Scale score of 1, patients with trauma or external mechanism of injury (e.g., ICD-10-CA S,T,V,W,X,Y), or enhanced/contrast CTs. NACRS data were linked with Alberta Health Services' (AHS) diagnostic imaging data. Preliminary analysis on imaging variation at the zone, ED site, and physician level was completed using SAS (v.9.4). Physicians who saw less than an average of 10 headache patients per year were excluded.

Results: Overall, 98,804 headache presentations were recorded (~20,000/year; 8.5% average annual increase) in 30 EDs. The average proportion of visits receiving CT was 25.1% with an average 6.2% increase per year. CT ordering varied across AHS zones (Variation

[V]:23%; range:9.6-32.7%). Site ordering variation was more dramatic (V:45%; range:1.4-46.5%). The greatest variation was observed among physicians (V:84 %; range:0.0-83.7%) with mean ordering proportion of 28.7%.

Conclusion: From 2011-2015, headache presentations and CT imaging for these patients in the ED increased. Substantial variation in CT ordering exists at multiple levels in Alberta. Further exploration of CT appropriateness is urgently needed.

Health Quality Ontario - Hospital Performance Series Report - Pre-operative Testing Before Low-risk Surgeries

Zago, David; Lam, Jon | Health Quality Ontario

Background: Physicians and other leaders in the hospital sector have developed Choosing Wisely Canada recommendations to avoid routine pre-operative testing for asymptomatic patients undergoing low-risk surgery. [1-3]

There is no evidence that routine pre-operative electrocardiography (ECG) and chest radiography (X-ray) testing in asymptomatic patients undergoing elective low-risk surgeries improves outcomes. [4-6] Despite this, in 2014/15 in Ontario hospitals, pre-operative ECG and chest X-rays are frequently performed for patients who underwent low-risk surgeries and there is nearly a 30-fold difference between hospitals with the lowest and highest rates of pre-operative ECG tests before low-risk surgeries, highlighting opportunities for quality improvement. [7] To support hospitals improve in this area, Health Quality Ontario released to Ontario hospitals a comparative report summarizing their rates of pre-operative testing before low risk surgeries.

Methods

1. Inclusion criteria used to identify low-risk surgery procedures:

- Ontario adult patients (aged 18 and older)
- Outpatient day surgery or acute in-patient settings
- Elective admission

Low-risk surgery is identified by one of the following procedure codes recorded in the first intervention code field: endoscopy, ophthalmologic surgery or other low-risk surgeries. A detailed list of procedure codes can be found online at www.hqontario.ca/hospitalreport.

2. Criteria used to identify cases with pre-operative ECG and chest X-ray tests

ECG or chest X-ray tests occurring within 60 days prior to the index procedure date were considered pre-operative.[15] OHIP claims are used to identify patients who underwent ECG or chest X-ray tests before their procedures.

3. Crude rate of pre-operative ECG or chest X-ray tests was calculated for the following surgery groups: Endoscopy, Ophthalmologic surgery, Other low-risk surgeries

Data sources

- Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD) and CIHI National Ambulatory Care Reporting System (NACRS);
- Ontario Health Insurance Plan (OHIP) Claims History Database; and
- The Registered Persons Database (RPDB)
- The available data is from fiscal year 2010/11 to fiscal year 2014/15.

Results: In 2014/15, rates ranged from 4.5% to 62.5% across Ontario hospitals that performed these procedures with a provincial average rate of 12.6%.

Reports profiling testing rates were distributed to 127 hospital organizations across Ontario. Each report featured the recipient hospital-level data trended between 2010/11 – 2014/15 plus a comparison of recipient hospital-level data to other hospitals for 2014/15. This analysis provided hospital's with a view of their own performance over time plus a most recent

comparison to other hospital rates across Ontario.

The report also provided a series of change ideas to assist hospitals with improving their rates of pre-operative testing for low risk surgeries. Choosing Wisely Canada's "Drop the Pre-op" toolkit featured prominently as resource to support hospitals initiate improvement.

Conclusion: Providing comparative practice and organizational-level data and accompanying change ideas is a key resource to facilitate discussions between clinicians and patients about unnecessary tests, treatments and procedures.

Acknowledgements: This report was developed in partnership with Choosing Wisely Canada, which is a campaign to help clinicians and patients engage in conversations about unnecessary tests and treatments and make smart and effective choices to ensure high quality care.

This report was supported by the Institute for Clinical Evaluative Sciences (ICES), which is an independent, non-profit organization that produces knowledge to enhance the effectiveness of health care for Ontarians. Internationally recognized for its innovative use of population-based health information, ICES evidence supports health policy development and guides changes to the organization and delivery of health care.

Many individuals contributed to the realization of this report, both internal and external to HQO and ICES. We would like to acknowledge the following individuals at HQO: Gail Dobell, Hui Jia, Reena Kudhail, Christopher Linaksita, Jonathan Lam, Ivana McVety, Lathani Sivakumaran, Julie Skelding, Susan Taylor, Mina Viscardi-Johnson and Dave Zago; thank you to those at ICES: Ryan Ng and Michael Paterson. We are

grateful for the input and support from Ontario Hospital Association and the following experts: Sacha Bhatia, Tai Huynh, Timothy Jackson, Arjun Krishna, Kyle Kirkham, Aaron Mocon and Rachel Meyer.

ICES is funded by an annual grant from the Ontario Ministry of Health and Long-Term Care. The opinions, results and conclusions reported in this paper are those of the authors and are independent from the funding sources. No endorsement by the Institute for Clinical Evaluative Sciences or the Ontario Ministry of Health and Long-Term Care is intended or should be inferred.

References

- Canadian Anesthesiologists' Society. Anesthesiology: Five things physicians and patients should question [Internet]. Toronto (ON): Choosing Wisely Canada; 2015 [cited 2016 June 23]. Available from: <http://www.choosingwiselycanada.org/recommendations/anesthesiology/>
- Canadian Association of General Surgeons. Six things physicians and patients should question [Internet]. Toronto (ON): Choosing Wisely Canada; 2014 [cited 2016 June 23]. Available from: www.choosingwiselycanada.org/recommendations/general-surgery/.
- Canadian Society of Internal Medicine. Five things physicians and patients should question [Internet]. Toronto (ON): Choosing Wisely Canada; 2014 [cited 2016 June 23]. Available from: www.choosingwiselycanada.org/recommendations/internal-medicine/.
- Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative medical testing for cataract surgery. *Cochrane Database Syst Rev.* 2012;3:CD007293.
- Balk EM, Earley A, Hadar N, Shah N, Trikalinos TA. AHRQ Comparative Effectiveness Reviews. Benefits and harms of routine preoperative testing:

comparative effectiveness. Rockville (MD): Agency for Healthcare Research and Quality (US); 2014.

- Health Quality Ontario. Preoperative testing in asymptomatic patients undergoing low- or intermediate-risk noncardiac surgery: a scoping review [Internet]. Toronto (ON): Queen's Printer for Ontario; 2016 June; 41 pp. Available from: www.hqontario.ca/evidence-to-improve-care/recommendations-and-reports/choosingwisely-canada.
- Kirkham KR, Wijesundera DN, Pendrith C, Ng R, Tu JV, Laupacis A, et al. Preoperative testing before low-risk surgical procedures. CMAJ. 2015; 187(11): E349–E358.

Pre-operative Testing in Low Risk Patients Undergoing Low Risk Procedures: An Alberta Perspective

Ashi Mehta, Chris Symonds, Sampson Law, Diane Duncan, Shawn Dowling, Lara Cooke | Physician Learning Program, Office of Continuing Medical Education and Professional Development, University of Calgary

Background: Routine pre-operative testing in low risk patients undergoing low risk procedures is an unnecessary burden to the patients and the health care system and provides minimal value. Based on data from other jurisdictions and CWC recommendations on this topic, we sought to determine if a similar problem exists in Alberta.

CWC recommendations.

Methods: Data for this project was extracted from multiple electronic health record sources and merged together from July 1st 2014 to June 30th, 2015. All low risk patients undergoing low risk procedures in the province of Alberta were included in the study. Low risk patient procedures were defined using accepted and published criteria. Lab testing for CBC, electrolytes, creatinine, PTT and INR performed 90 days prior to the procedure was considered low value. Data was analyzed to determine the frequency of pre-operative testing by physician specialty and by health zone.

Results: The median lab ordering rate was 31.7% across all procedures in Alberta. Significant variation existed across specialties (Gynecology 62.4%, Ophthalmology 12.5%), health zones (Calgary 27.5%, Central 43.5%, Edmonton 36.4%, North 21.4%, South 42.0%) and in some instances was related to the volume of surgeries performed at the site.

Conclusion: In Alberta, a significant number of low risk patients undergoing low risk procedures receive some form of lab testing prior to their surgery. An opportunity exists to work with relevant stakeholders to decrease testing in this patient population in accordance with

Sociodemographic Correlates of Clinical Lab Test Expenditures in a Major Canadian City

Jocelyn Barber, Maggie Guo, Leonard T. Nguyen, Roger Thomas, Tanvir Chowdhury Turin, Marcus Vaska and Christopher Naugler | COAPT (Collaboration On Assessing Physician Testing) University of Saskatchewan, University of Calgary Cummings School of Medicine

Background: The increasing cost of clinical laboratory testing is a challenge in our healthcare system that is exacerbated by inappropriate test ordering. However, we lack knowledge about the patients for whom the tests are ordered. The objectives of this study were to calculate the annual clinical laboratory test costs attributed to patients in a major Canadian city and to correlate them to their sociodemographic variables.

Methods: Retrospective cohort study involving patients who received clinical chemistry, hematology, and microbiology tests in 2011 in Calgary, Canada (n = 610,409). Test volumes were obtained from a laboratory informatics database. Total expenditures per patient were calculated using estimated test costs, and then combined with the 2011 Canadian Census Household Survey results to infer sociodemographic correlates.

Results: While more women received laboratory testing (58.4%), men had slightly higher testing costs per capita. Except for Chinese, visible minority and Aboriginal populations had higher testing costs. Higher costs were also found in the unemployed and those without post-secondary education. There was an inverse correlation between testing cost and household income.

Conclusion: There is variation in testing costs for patients amongst different sociodemographic variables.

Genetic Testing of Patients with First Unprovoked VTE – No Brainer or No Point?

Chartrand, Genevieve; Janice, Mann; Helis, Eftyhia | Canadian Agency of Drugs and Technologies in Health (CADTH)

At the conclusion of this activity, participants will be able to:

- Discover the evidence on whether Factor V Leiden (FVL) and prothrombin gene mutation testing is helpful to guide management and predict future clot recurrence in patients with a first, unprovoked venous thromboembolic event (VTE).
- Re-assess routine ordering genetic tests for patients with first blood clots.
- Effectively manage patients with first clot without ordering unnecessary genetic testing.

Context: Factor V Leiden (FVL) and prothrombin gene mutations can lead to an increased risk of developing blood clots – a condition called thrombophilia. When patients experience a first blood clot such as deep vein thrombosis (DVT) or pulmonary embolism (PE) in the absence of other risk factors, can testing help to determine the risk of future recurrence and the appropriate clinical management?

Objective: This presentation will help answer the above important question by reviewing the evidence on the effectiveness and safety of FVL and prothrombin gene mutation testing for patients with a first unprovoked venous thromboembolic event (VTE).

Design: CADTH – an independent agency that finds and assesses the evidence on drugs and other health technologies – conducted a systematic review of the clinical evidence and performed a health economic analysis comparing testing with no testing. An expert panel, which included family physicians, made recommendations on the use of these tests in patients

who have experienced a first, unprovoked VTE.

Target population: Medical practitioners who need to provide care for patients with unprovoked thromboembolism.

Findings: The review of the evidence indicates that routine testing for FVL and prothrombin gene mutations in patients with a first, unprovoked VTE may have limited clinical effectiveness.

Discussion/conclusion: The research findings and the recommendations for primary care practice will be emphasized in the session, allowing family physicians to readily use this knowledge in their practice.

Stool Softeners for Constipation: What Does the Evidence Say?

Chartrand, Genevieve; Janice, Mann; Helis, Eftyhia, Canadian Agency of Drugs and Technologies in Health (CADTH)

At the conclusion of this activity, participants will be able to:

- Compare and contrast current practice for the management of constipation with current evidence on the effectiveness of stool softeners.
- Recognize which patients are unlikely to benefit from stool softeners
- Prescribe effective treatments for patients with constipation.

Context: As much as one quarter of all adults, an estimated three out of every four seniors living in long-term care, and almost everyone who takes opioids regularly for chronic pain experiences constipation. Symptoms of constipation can be a minor annoyance for some but may be severely debilitating for others, having a huge impact on a person's quality of life. Stool softeners are often the treatment of choice for our patients with constipation. In fact, "bowel protocols" that include the routine use of stool softeners are in place in many hospitals and long-term care facilities across Canada. Stool softeners are safe, are well-tolerated by patients, don't tend to interact with other medications, and are low-cost. But do they actually work?

Objective: This presentation will help answer the above important question by reviewing the evidence on the effectiveness of stool softeners (i.e., docusate sodium or docusate calcium) and other constipation treatments.

Design: Findings from a Rapid Response review of the evidence performed by the Canadian Agency of Drugs

and Technologies in Health (CADTH) will be presented.

The review assessed relevant evidence based on two systematic reviews, one randomized controlled trial and two non-randomized studies.

Target population: Medical practitioners who prescribe treatments for patients with constipation.

Findings: The review indicates that docusate does not improve the symptoms of constipation for patients taking opioids or are long-term care residents. There is no evidence on the effectiveness of stool softeners for other patient groups.

Discussion/conclusion: The findings of the evidence review and how they may guide/inform decisions on the treatment of patients with constipation will be discussed.

Effectiveness of Implementing Evidence Based Interventions to Reduce C-spine Imaging in the Emergency Department: A Systematic Review

Shashwat Desai,¹ Chaocheng Liu,¹ Lynette D. Krebs,¹ Scott W. Kirkland,¹ Diana Keto-Lambert,¹ Brian H. Rowe¹ for the PRIHS-2 | Choosing Wisely Team, ¹Department of Emergency Medicine, University Alberta, Edmonton, Alberta

Background: Unnecessary imaging of adult cervical spine (C-spine) injury patients in the Emergency Department (ED) is a concern. Guidance for C-spine image ordering exists; however, the effectiveness and safety of their ED implementation is not well studied. This review examines their implementation and effectiveness in reducing ED C-spine imaging in adults with stable neck trauma.

Methods: Six electronic databases and the grey literature were searched. Comparative studies examining interventions to reduce C-spine radiography were eligible. Two independent reviewers screened for study eligibility, assessed study quality, and extracted data. Data were analyzed using RevMan (v.5.3). Significant heterogeneity prohibited pooled estimates.

Results: Overall, 848 unique citations were screened of which six before-after studies and one randomized controlled trial were included. The study population varied with respect to injury severity (i.e., stability status). None of the studies were assessed as high quality. The interventions employed included locally developed guidelines and clinical decision rules, specifically the National X-radiography Utilization Study (NEXUS) criteria and the Canadian C-Spine Rule (CCR). Various implementation strategies were used (i.e., teaching sessions, pocket reminder cards, posters, computerized decision support, etc.) and several studies used multi-faceted implementation strategies. Of the five study groups that examined change in C-spine X-ray ordering, three groups reported a significant reduction. Two groups showed no change

in imaging.

Conclusion: Evidence of the effectiveness of ED C-Spine imaging interventions for patients with stable neck trauma is inconclusive. Given the focus on improving appropriateness and reducing unnecessary imaging through Choosing Wisely®, additional interventional research is warranted.

Choosing Wisely in Medical Imaging: Natural Language Processing Proof of Concept in Predicting Positive Findings in Radiology Reports

Dyck, Colin; Luo, Jing; Chan, Vivian; Wong, Ian; Chan, Richard; Mohammed, Mohammed; Forster, Bruce | Vancouver Coastal Health, Providence Health Care

Background: At Vancouver Coastal Health and Providence Health Care, when we were adopting the Choosing Wisely Canada recommendations, one key challenge that was encountered was to assess the appropriateness of Medical Imaging exam without chart auditing. A proof-of-concept project was started to leverage advanced data analytics to mine the free text in radiology report.

Methods: This study pertained to patients presenting to Emergency Department of two hospitals with minor head injuries who subsequently received CT head scan. Data was extracted from the hospital's radiology information system. Natural Language Processing (NLP) techniques were applied to the radiology reports to develop a predictive model which could be used to classify Positive and Negative findings. Model was trained based on 20% of the records, in which the classification was provided by the radiologists.

Results: We achieved a precision and recall of 96% and 94% respectively, which were considered as high, as most other NLP studies were around 90%.

Conclusion: The model demonstrated a time efficient alternative to chart audits and required less clinical resource. Although the Canadian Head CT rule was well established/accepted by emergency physicians, this study helped to elucidate how the rule is applied in practice and consequently the physician variations in ordering. It allowed us to analyze the "yield" – a measure of the percentage of exams that report positive findings. Provision of this type of information

had implication to physician practice improvement. Initial feedback from physician leaders had been overwhelmingly positive.

Overutilization of Computed Tomography as a First-line Investigation for Patients Presenting with Suspected Recurrent Nephrolithiasis in the Emergency Department: A Retrospective Cohort Study

Jonah Himelfarb^{1,2} and Dominick Shelton^{1,2} MD BSc, ¹| University of Toronto; ² Sunnybrook Health Sciences Centre

Background: Computed tomography (CT) has increasingly been used as an initial investigation for patients presenting to the emergency department (ED) with suspected nephrolithiasis. Compared to ultrasound, CT has increased cost and ionizing radiation, while frequently not altering management. Choosing Wisely (CW) recommends avoiding CT for healthy patients younger than 50 years with a history of nephrolithiasis who are presenting with symptoms of uncomplicated renal colic. We evaluated the utilization of CT imaging for this subgroup in a tertiary care centre ED.

Methods: A retrospective chart review was performed for all patients younger than 50 years who visited Sunnybrook Health Sciences Centre ED over a six-month period with renal colic symptoms and a history of nephrolithiasis. Demographic data, clinical presentation, and ED management were recorded for each patient.

Results: Out of 130 reviewed charts, 73 patients were identified with a previous history of nephrolithiasis and a presentation of uncomplicated renal colic. Nineteen (26.0%) of these patients received an abdominal CT, none of which demonstrated findings warranting admission or producing identifiable changes in ED management. Five patients had received a total of three to four CTs for renal colic, while one had received 13 CTs.

Conclusion: Abdominal CT scans are often used as an initial diagnostic modality for suspected renal

colic despite infrequent changes in management and a Choosing Wisely recommendation to restrict the use of CT in a target population with suspected renal colic. These findings highlight the need for quality improvement strategies to decrease CT utilization in this patient population.

Chest Radiograph Ordering for Acute Asthma Presentations to Emergency Departments in Alberta: Regional, Site, and Physician Level Variation

Lynette D. Krebs, Chris J. Alexiu, Cristina Villa-Roel, Brian R. Holroyd, Maria Ospina, MSc, Cathy Pryce, Jeff Bakal, Brian H. Rowe, For the PRIHS-2 Choosing Wisely Team, Department of Emergency Medicine, University of Alberta;, Alberta Health Services;, Department of Obstetrics & Gynecology, University of Alberta

Background: Most acute asthma presentations to the emergency department (ED) are uncomplicated and do not require chest radiographs (CXR). Evidence suggests that the proportion of acute asthma patients receiving CXRs in the ED is high and varies substantially within and across sites and studies. This study explored CXR ordering and variation in acute asthma presentations to Alberta's EDs.

Methods: Administrative health data for Alberta was obtained from the National Ambulatory Care Reporting System (NACRS) for all adult (>17 years) acute asthma (ICD-10-CA: J45) ED visits from 2011-2015. Patients with a primary or secondary diagnosis of asthma were included, provided they had a Canadian Triage and Acuity Scale score of 2-5. NACRS data were linked with Alberta Health Services' (AHS) diagnostic imaging database. Preliminary analysis on variation in imaging at the zone, ED site, and physician level was completed using SAS (v.9.4). Physicians who saw less than an average of 10 asthma patients per year were excluded.

Results: Overall, 51,511 acute asthma ED presentations occurred (~10,000/year). The average proportion of CXRs among presentations was 39.5% (2011-2015) with an average annual increase of 6.7%. From 2011-2015, CXR ordering varied across the five AHS zones (variation [V]: 25%; range: 26.0%-51.0%). Substantial variation was observed across ED sites (V: 60%; range: 5.9-66.4%) and physicians (V: 89%; range: 1.4-90.6%). The mean CXR ordering among physicians was 44%.

Conclusion: From 2011-2015, CXR use among acute asthma ED presentations has increased. Substantial variation in CXR use suggests that evidence-based interventions are needed to improve imaging appropriateness.

Choosing Wisely in the Emergency Department: Exploring the Reach, Support and Potential for the Choosing Wisely Canada Campaign Among Emergency Physicians

Lynette D. Krebs, Lucas Chartier, Brian R. Holroyd, Shawn Dowling, Amy H. Y. Cheng, Cristina Villa-Roel, Sam Campbell, Stephanie Couperthwaite, Brian H. Rowe for the PRIHS-2 Choosing Wisely Team, Department of Emergency Medicine, University of Alberta; Division of Emergency Medicine, University of Toronto, Emergency Strategic Clinical Network, Alberta Health Services, Department of Emergency Medicine, University of Calgary; Department of Emergency Medicine, Dalhousie University; Halifax, Canada.

Background: Choosing Wisely Canada® (CWC) launched in April 2012. Since then, the Emergency Medicine (EM) top-10 list of tests, treatments and procedures to avoid has been released and initiatives are on-going. This study explored CWC awareness and support among emergency physicians.

Methods: A 60-question online survey was distributed to Canadian Association of Emergency Physicians (CAEP) members with valid e-mails. The survey collected information on demographics, awareness/support for CWC as well as physicians' perceived barriers and facilitators to implementation. Descriptive statistics were performed in SPSS (Version 24).

Results: Overall, 324 surveys were completed (response rate: 18%). Respondents were more often male (64%) and practiced at academic/tertiary care hospitals (56%) with mixed patient populations (74%) with annual ED volumes of >50,000 (70%). Respondents were familiar with campaigns to improve care (90%). Among these respondents, 98% were specifically familiar with CWC and 73% felt these campaigns assisted them in providing high-quality care. Respondents felt that the top-5 EM recommendations were supported by high quality evidence, specifically the first 4 recommendations (>90% each). The most frequently reported barriers to implementation were: patients' expectations/requests (33%), the

possibility of missing severe condition(s) (20%), and requirements of ED consultations (12%). Potential facilitators were identified as: strong evidence-base for recommendations (37%), medico-legal protection for clinicians who adhere to guidelines (13%), and support from institutional leadership (11%).

Conclusion: CWC is well-known and supported by emergency physicians. Despite the low response rate, exploring the barriers and facilitators identified here could enhance CWC's uptake in Canadian emergency departments.

The Role of Advanced Imaging in the Management of Benign Headaches in the Emergency Department: A Systematic Review

Rory Lepage,¹ Lynette D. Krebs,¹ Scott W. Kirkland,¹ Chris Alexiu,¹ Sandra Campbell,² Brian H. Rowe for the PRISH-2 Choosing Wisely Team | ¹Department of Emergency Medicine, University Alberta, Edmonton, Alberta | ² J. W. Scott Health Sciences Library, University of Alberta, Edmonton, Alberta

Background: Headache is a common emergency department (ED) presentation. Studies have reported over-imaging concerns (e.g., computed tomography [CT]), in the ED management of benign (i.e., non-pathological) headaches. This systematic review examined the proportion of adult ED benign headache presentations who receive a CT(head).

Methods: Eight bibliographic databases and the grey literature were searched. All studies reporting the proportion of benign headache ED patients receiving a CT were eligible. Additionally, studies with a secondary headache population of 15% or less were eligible. Two reviewers independently assessed study inclusion and completed quality assessment and data extraction. Weighted medians were calculated, as appropriate.

Results: Searches identified 2,444 unique citations of which 20 were included (21 patient groups analyzed). Studies were predominantly descriptive and conducted in North America. The proportion receiving CT(head) varied considerably (range: 2.06-67.21%); with a weighted median of 30.0% (interquartile range: 30.0, 30.0). Studies published after 1999 (18/21 groups) had a higher weighted median percentage compared to those published earlier ($p=0.016$). Neither the study country nor the proportion of secondary headache patients had a significant effect on CT utilization. Three studies reported patients' discharge diagnosis; subarachnoid hemorrhage was identified in 2/241 (0.83%) of CT scans.

Conclusion: Considerable variation in CT utilization for benign headache ED presentations exists and estimates indicate that more than a quarter of patients receive CT. Overall, these CTs rarely identify significant pathology, suggesting imaging may be safely reduced. Further research is required to identify interventions which can safely and effectively reduce imaging among headache presentations.

Effectiveness of Interventions to Decrease Imaging Among Emergency Department Low Back Pain Presentations: A Systematic Review

Chaocheng Liu, Shashwat Desai, Lynette D. Krebs, Scott W. Kirkland, Diana Keto-Lambert, Brian H. Rowe | PRIHS-2 Choosing Wisely Team, Department of Emergency Medicine, University of Alberta

Background: Low back pain (LBP) is a frequent emergency department (ED) presentation. Although LBP imaging often results in no change to the ED management, does not identify abnormalities, and has documented risks (e.g., radiation exposure), advanced imaging (i.e., computed tomography [CT], magnetic resonance imaging [MRI]) has become a common part of ED management for LBP. This review examined the effectiveness and safety of interventions aimed at reducing ED imaging for LBP patients.

Methods: Six bibliographic databases and grey literature were searched. Comparative studies of ED imaging interventions for adult patients with LBP were eligible. Two reviewers independently screened study eligibility, and completed data extraction and quality assessment for included studies. Due to a limited number of studies a descriptive analysis was performed.

Results: Overall, 510 unique citations were identified; three before-after studies were included. Quality assessment identified potential biases relating to comparability between the pre- and post-intervention groups, reliable outcome assessment, and an overall lack of intervention description. Interventions included: 1) clinical decision support (i.e., a specialized requisition form), which reported a 47.4% relative reduction of lumbar spine radiography referrals; 2) clinical decision guidelines, which reduced referrals by 43.8%; and 3) multidisciplinary protocols, which reduced the MRI referral rate by 26.1%. Despite reductions in simple imaging, CT use increased in two of the three studies.

Discussion: Reducing LBP imaging is a Choosing Wisely Canada® Emergency Medicine recommendation. Yet, evidence of interventions' effectiveness in reducing LBP ED imaging is sparse and unintended consequences have been reported. Additional studies are strongly recommended.

When Physicians Choose Less Wisely: Determinants of CT Head Ordering for Low-risk Headache in the Emergency Department

Meaghan MacKenzie, Rashi Hiranandani, Dongmei Wang, Dr. Tak Fung, Dr. Eddy Lang | Department of Emergency Medicine & Information Technology, Cumming School of Medicine, University of Calgary, Faculty of Medicine, University of Ottawa, Alberta Health Services

Background: Many specialty societies have found that neuroimaging in headache is a low-value intervention for benign presentations. This study describes factors that influence ER physicians' adherence to Choosing Wisely recommendations for low risk headache patients presenting to Calgary's Emergency Departments. EM has yet to address Neuroimaging in headache as a CW topic; however, this study will inform that decision.

Methods: Data was retrospectively collected about all patients that presented to Calgary EDs with headaches from April 1/14-March 31/16. Patients were low-risk by virtue of discharge home from the ED, age <50 and lack of LP, trauma, neurological consult and red flags on history. The primary outcome was CT ordering rates as a measure of practice variation. Patient and physician factors were used for a Chi-squared analysis between those who did and did not receive CT.

Results: 2734 headache patients and 117 Calgary ER physicians met eligibility criteria. CTs were ordered more often in males compared to females (39.9%; 34.1%; $p=0.002$), and in patients presenting during the day and evening (38.1%; 39.0%) versus at night (29.7%; $p<0.001$). Patients were divided into quartiles by age, with the oldest group receiving significantly more CT heads (45.1%) than the subsequent quartiles (34.9%; 34.9%; 29.7%; $p<0.001$). The physician mean ordering rate was 38.0% with a range of 0% to 95% ($M=39.0%$, $IQR=21.0%$). Day of week, physician gender, age, years

of experience and training program did not influence CT ordering practices.

Conclusion: These findings may be valuable to decision-makers who aim to implement Choosing Wisely.

Variation in the Rate of Repeat (< 2 years apart) Dual Energy X-ray Absorptiometry (DEXA) Scans Ordered in Alberta by Patient Gender Across Health Zones

Ashi Mehta, Laura Rivera, Shawn Dowling, Sampson Law, Lara Cooke | Physician Learning Program, Office of Continuing Medical Education and Professional Development, University of Calgary

The use of dual-energy x-ray absorptiometry (DEXA), can be an important tool in the diagnosis of osteoporosis and to assess a patient's risk of fractures. The indications for DEXAs are dependent on the presence of risk factors and whether patients are on a treatment for osteoporosis. Scans done at short intervals (< 2 years apart) provide little information in guiding long-term management and therefore offer little to no value.

the number of low value repeat DEXA scans.

The aim of this study was to determine the utilization of DEXAs in Alberta and the rate at which short-interval scans were being ordered. The Physician Claims Fee-For-Service database was used to identify patients receiving a scan between 2013 and 2015.

Between 2013 and 2015, 310,060 DEXA scans performed in Alberta with 21.2% ordered on the same patient less than 2 years apart. There was significant variation in repeat scans across the five health zones ranging between 14.0% (North), and 21.3% (Edmonton). Repeat scans were ordered more often in women (20.6%) than in men (11.9%), more frequently by practitioners in specialty care compared to primary care, however provincially, there was an overall decrease by 5% during that period.

Variation in DEXA utilization exists among health zones and women are more likely to receive scans, but given the rate of osteoporosis in men (1 in 5 for men over 65), this patient population is under-screened. These results provide data with which to evaluate the effectiveness of strategies, such as Choosing Wisely, aimed at reducing

Comparison between Choosing Wisely Canada and Choosing Wisely United States Radiology-related Recommendations

Mehran Midia, Devang Odedra, Ehsan Haider, Anatoly Shuster, Jeff Muir | McMaster University Department of Radiology

Background: The purpose of this study is to compare and contrast the radiology-related recommendations between Choosing Wisely Canada (CWC) and Choosing Wisely United States (CWUS) in terms of the recommendations themselves and the level of evidence supporting them.

Method: Radiology-related recommendations were identified and categorized based on the medical specialty/society, setting (inpatient vs outpatient), age (pediatric, adult, geriatric) and imaging modality. An average level of evidence (1-highest, 7-lowest) for each recommendation was calculated and compared across different specialties as well as between CWC and CWUS. The number of duplicated recommendations were identified across multiple specialties.

Results: The CWC makes 40 radiology-related recommendations from 18 specialties/societies. The CWUS makes 64 recommendations from 29 specialties. There were 18 recommendations exclusive to CWC that did not overlap with CWUS. There were 7 duplicated recommendations in the CWC and 7 in the CWUS. The average level of evidence for radiology-related recommendations in the CWC was 2.9 with the highest level (1.0) in gastroenterology, urology, spine and vascular surgery and lowest (4.4) in pediatric surgery. The CWUS level of evidence analysis is currently pending.

Conclusion: The CWUS makes more radiology-related recommendations from more medical societies compared to CWC. Many recommendations are

exclusive to CWC and CWUS. Further conclusions for the differences in the recommendations and the level of evidence will be drawn post-analysis



Low-value Clinical Practises in Injury Care: A Scoping Review Protocol

Moore, Lynne; Stelfox, Henry T; Champion, Howard; Cameron, Peter; Gabbe, Belinda; Yanchar, Natalie; Kortbeek, John; Lauzier, Francois; Chassé, Michael; Turgeon, Alexis F | Laval University

Background: Potentially unnecessary interventions are estimated to consume up to 30% of healthcare resources and may expose patients to avoidable harm. The objective of this review is to identify low-value clinical practises in injury care that can be used to inform the development of quality indicators designed to monitor healthcare overuse.

Methods: We will perform a scoping review of peer-reviewed articles and grey literature to identify level I evidence (systematic reviews meta-analyses, randomized controlled trials) of low-value clinical practises in injury care. We will search Medline, EMBASE, COCHRANE central, and BIOSIS/Web of Knowledge databases, Web sites of government agencies, professional societies and patient advocacy organizations, thesis holdings and conference proceedings. Pairs of independent reviewers will evaluate studies for eligibility and extract data from included articles using pre-piloted and standardized electronic data abstraction form. Clinical practises will be categorized using a conceptual framework and data will be presented using narrative synthesis.

Discussion: We expect to advance knowledge on low-value clinical practises in injury care. This review represents a first step towards developing valid and reliable indicators that can be used to measure potentially unnecessary admissions, transfers, consultations, as well as diagnostic and therapeutic interventions following injury.

Utilization Metrics: Defining Appropriateness of Care

Naugler, C., Guo, M., Lau, C., Viczko, J. | Calgary Laboratory Services, Cumming School of Medicine, University of Calgary,

Goal: To develop standard utilization metrics for defining “appropriate” test ordering practices.

Implementation and measures: Utilization metrics commonly used to define the appropriateness of test ordering include: accordance with clinical practice guidelines, suggested minimum retest intervals and benchmarking test-ordering patterns with fellow physicians. The former two are considered primary utilization metrics while the latter is considered a secondary utilization metric. Benchmarking can include examining total costs attributable to individual physicians and comparing physician practice variation. A utilization metric that involves benchmarking to respective physicians is the mean abnormal result rate (MARR). MARR is a measure of test ordering selectivity. It is based on the assumption that a higher mean abnormal rate indicates more selective test ordering while a lower MARR indicates a higher probability of false positives. Such measures can be used to identify areas of misutilization to guide management and intervention strategies in healthcare settings.

Challenges: Being able to define “appropriate” ordering practices is a challenge faced by healthcare providers. Having definitive metrics to evaluate physicians is a valuable tool for managing inappropriate test utilization. These metrics though, do not account for patient outcomes, an area that remains to be explored.

Lessons learned: Utilization metrics can be used to assess proper test ordering practices, however, to concretely address mis-utilization requires confronting its main driver: physician/patient awareness. This is

where educational campaigns such as Choosing Wisely can redefine the social landscape between physicians and patients to understand the risks versus value of certain health services.

A Population Study of Fasting Time and Serum Iron Levels

Leonard T. Nguyen, Joshua Buse, Leland Baskin, Christopher Naugler | Calgary Laboratory Services, Department of Family Medicine, University of Calgary

Background: Main indications for ordering a serum iron measurement are to determine cases of iron deficiency, which may cause anemia, or iron overload due to iron poisoning or hemochromatosis. To minimize the impact of diet on serum iron concentrations, specimen collection after 8-12 h fasting is sometimes recommended. We evaluated the impact of fasting on the serum iron levels in a large community-based cohort to promote the standardization of test guidelines.

Methods: Data were obtained from the Laboratory Information System of Calgary Laboratory Services (CLS) for community patient iron testing from January 2011 to December 2015. CLS is the sole provider of laboratory services for Calgary and the surrounding Southern Alberta region (catchment population ~1.4 million). Children under 18 years, adult females and males were analyzed separately using SPSS.

Results: Iron measurements from a total of 449,308 patients with recorded fasting times were obtained (49,910 children; 251,122 adult females; 148,263 adult males). Median iron levels were 14.5 μM , 15.9 μM , and 18.1 μM for children, adult females and males, respectively. Univariate analyses reveal that iron levels are lowest in a 4-8 h window after eating. Serum iron increases after 9h fasting as the body releases its iron stores and at >12 h fasting times, iron levels become higher than at near 0 h fasting.

Conclusion: Iron levels show a pattern of fluctuation for up to 8 h following meal ingestion. Caution should be

taken against >12 h fasting for serum iron tests.

Measurement and Collaboration to Inform Progress on Choosing Wisely Canada Recommendations

Michelle Parker | Canadian Institute for Health Information

Background: In healthcare, more doesn't necessarily mean better. Avoidable tests and procedures use valuable resources, cause anxiety for patients, and can lead to patient harm. Through administrative data, we measure the magnitude of unnecessary care across the country. Findings are situated amongst success stories, innovative approaches and facility based initiatives from our partners.

Methods: Our analyses of CWC recommendations uses administrative databases to examine primary care, specialist care, emergency care, and hospital care. Coverage varies by recommendation but may include data from Canadian provinces and territories between the years 2006 and 2016.

Results: We analyzed 8 CWC recommendations spanning the healthcare continuum and found that between 5-30% of tests and procedures are potentially unnecessary. Variation in rates among jurisdictions, regions and facilities was observed, suggesting there is room for improvement and reinforces the concern over resource stewardship across the country.

Findings include:

- In 2014-15 approximately 1 in 10 seniors across the country were chronic users of benzodiazepine although the overall rate of use decreased over time.
- Almost 1 in 3 people who visited emergency departments in Ontario and Alberta for minor head trauma had a potentially unnecessary head scan, totaling more than 15,000 scans.
- The proportion of hospitalizations involving at least

one red blood cell transfusion among elective hip and knee replacement patients has halved since 2006-2007.

Conclusion: Our findings will contribute to setting a baseline for CWC and standardizing methodologies to track improvements over time, support evidence based decisions, and inform conversations, ultimately contributing to improved quality of care.

Pre-operative Assessment of Anemia in Women Undergoing Hysterectomy

Michael W.H. Suen, Ciara Stevenson, Suzannah Wojcik, Cairina Frank, Sukhbir S. Singh,
Elianna Saidenberg | University of Ottawa, McGill University

Background: Patient blood management (PBM) is an evidence-based approach to caring for patients who may require transfusion therapy. Patients undergoing hysterectomy are likely to benefit from PBM because of higher intra-operative bleeding risk. Heavy menstrual bleeding (HMB) can be an indication for hysterectomy, and is a risk factor for underlying iron deficiency anemia. This study audits anemia evaluation practices; understanding current practice patterns enables introduction of peri-operative PBM recommendations.

Methods: Retrospective chart review was performed on patients undergoing hysterectomy within a tertiary academic center by a fellowship-trained surgeon. Demographics, history and laboratory results were collected on a study population between January 2010 and March 2014.

Results: 376 patients met inclusion criteria. 363 (96.5%) had pre-operative complete blood count. Mean Hgb level was 130.6 g/L (SD 14.1); 29 (7.71%), 6 (1.60%) and 2 (0.53%) patients were mildly (100 – 114 g/L), moderately (80 – 99 g/L), and severely (<80 g/L) anemic, respectively. Among patients referred for HMB, 39 (23.9%) had ferritin recorded. Median serum ferritin level was 30 ug/L. 59 (36.2%) patients had pre-operative iron supplementation.

Conclusions: Most patients underwent Hgb testing immediately pre-operatively, which does not permit sufficient time for peri-operative PBM. Monitoring of iron deficiency anemia requires evaluation with serum ferritin, but only 23.9% of women referred for HMB had

ferritin recorded. Based on these findings, a clinical care pathway was subsequently developed to methodically monitor bloodwork, and apply medical management of HMB until surgical treatment; repeat audit will be performed to evaluate impact.

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

Dr. Alexander Singer, Dr. Lisa Lix and Dr. Alan Katz | Department of Family Medicine, University of Manitoba

Background: Unnecessary investigations and treatments pose a health risk to patients and lead to extraneous health system costs. Four Choosing Wisely (CW) recommendations are relevant to primary care were investigated: Antibiotic prescribing for viral infections; Vitamin D testing; prostate-specific antigen (PSA) screening; and antipsychotic prescribing for dementia.

Methods: Data were from the Manitoba Primary Care Research Network (MaPCReN) extracted from the electronic medical records (EMRs) for 250 clinicians in 46 practices. Descriptive statistics and multivariable generalized linear mixed model assessed adherence to the CW recommendations, and associations with patient, provider and practice characteristics. Odds ratios and confidence intervals were reported.

Results: In our sample, 15.6% (N=25,629) of the primary care encounters had an outcome contrary to the CW recommendations evaluated: 10.2% antibiotic prescriptions for viral infections, 1.4% Vitamin D tests, 4.5% PSA screens, and .1% antipsychotic medication for dementia. Female patients had an increased odds of an antibiotic prescription for a viral infection (OR = 1.17, 1.13-1.216) and a vitamin D test (1.5, 1.41-1.68), whereas male dementia patients had an increased odds of an antipsychotic prescription. Salaried physicians and small practices as well as older patients, patients with more frequent office visits and patients residing in rural areas were associated with an increased odds of outcomes contrary to CW recommendations.

Conclusions: Our study provides a baseline for an ongoing audit and feedback randomized control trial. This data is crucial in understanding what factors influence inappropriate and inefficient patient care and is essential in designing further strategies to adopt the CW recommendations

Choosing Wisely Psychiatry: Variation in Prescribing of Antipsychotics in Alberta

Dr Doug Urness, Dr. Nick Mitchell, Shelly Vik, Sandy Patterson, Victoria Suen, Marni Bercov | Alberta Health Services

Background: Thirteen Choosing Wisely Psychiatry recommendations were released in 2015 with the primary purpose to reduce prescribing practices and ordering of diagnostic tests that are not supported by evidence. The Addiction and Mental Health Strategic Clinical Network™ is currently evaluating adherence to these recommendations in Alberta. Analyses related to four recommendations on use of antipsychotics were examined to assess current utilization and practice patterns.

Methods: Antipsychotic medications dispensed in 2014 were extracted from the Prescription Information Network (PIN) database and diagnostic data were obtained from the Discharge Abstract Database (DAD), National Ambulatory Care Reporting System (NACRS) and Practitioner Claims. Dose exposure limits were defined by a clinical working group.

Results: Approximately 2% of the 91,497 individuals who filled an antipsychotic prescription in 2014 were identified as potential high risk patients based on high-dose/combo therapy. High risk utilization was significantly elevated in the Edmonton and South Zones compared to the provincial rate. Utilization of low dose quetiapine among patients without schizophrenia and/or mood disorders was higher among rural zone residents compared to the provincial average. Very few children with a diagnosis of insomnia or ADHD had been prescribed an antipsychotic, suggesting that practice is in line with best evidence within Alberta related to two of the Choosing Wisely Psychiatry recommendations.

Conclusions: The data indicates that engagement may be warranted to address the variation of high-dose/combination prescribing of antipsychotics and low-dose quetiapine, particularly in some areas of the province. Knowledge translation strategies will be developed with zones to address practice change.

Are We Transfusing Wisely? An Audit of Transfusion Practices Among Hemodynamically Stable Patients with Anemia in Four Hospitals

Amanda Wang, Kevin Lonergan, Dongmei Wang, Dr. Eddy Lang | Cumming School of Medicine, University of Calgary

Background: CWC guidelines recommend practicing restrictive red blood cell transfusions, to help mitigate associated risks. Transfusion Medicine recommends a Hgb threshold of 70 g/L, and a single unit at a time (with reassessment). The purpose of this study is to investigate Emergency Department (ED) compliance with these more restrictive thresholds among hemodynamically stable patients.

Methods: A retrospective analysis was performed on data from all emergency visits to adult ER sites in Calgary from July 1 2014 to July 1 2016. We excluded unstable patients (CTAS1, temperature >38°C, HR >100 bpm, RR >20 rpm, systolic BP >140 mmHg or <90 mmHg, diastolic BP >80 mmHg, O2 sat <85%) and certain other criteria (patients who left without being seen, orders cancelled via patient discharge), and examined the transfusions ordered. Appropriateness was assessed using the stratified Choosing Wisely Canada Guidelines for Transfusion.

Results: We identified 988 eligible patients (53% female), with a mean age of 68 and an average first hemoglobin of 71 g/L. Across all groups, 16% of patients received only 1 unit of blood. 20% of transfused patients had a hemoglobin less than 60 g/L, 46% had a Hgb <70 g/L, 32% had a Hgb 70-80 g/L, 16% had a Hgb 80-90 g/L, and 8% had a Hgb >90 g/L.

Conclusions: A retrospective analysis documents a significant likelihood of pRBC over-transfusion among Calgary Emergency Department physicians. The development of audit and physician feedback methods,

and creation of a clinical pathway may help address the rate of over-transfusion.

Sentinel Node Biopsy in Breast Cancer

Nermeen Youssef, Saiganesh Dhannewar, Dianne Johnson, Joanne Duebel, Khurram Jahangir, Kelly Dabbs | University of Alberta

Goal: To expand the use of sentinel node biopsy (SNB) by Albertan physicians performing breast cancer surgeries and to increase the number of referrals to surgeons and hospitals that perform SNB.

Implementation: Our analysts extracted data from the Alberta Health Services Data Repository to identify hospitals performing SNB or axillary node dissection. Hospital chart audits were conducted to validate the data and to ensure proper coding of the procedure. As part of our mission to promote lifelong learning, breast cancer surgeons were invited to presentations by experienced SNB surgeons to receive information about the technique and short and long-term benefits of the procedure.

Measures: Because of the impact assessment exercise undertaken, three surgeons received SNB coaching from our MD lead. Moreover, effective Jan 1, 2013 Alberta Health Services implemented a recommendation from PLP to require mandatory coding for SNB across the province.

Challenges: Despite extensive efforts to access data about the use of SNB in Alberta, we were not able to successfully validate the data that was acquired. There were inconsistencies between data from the Alberta Health Services Data Repository and selected chart audits.

Lessons learned: Due to the data inconsistencies discovered, we recommend the following:

- the acquisition of breast cancer data from the Alberta

Cancer Registry

- to limit cohort to only new diagnoses in the previous year
- to link unique patient identifiers from the Cancer Registry to SNB data in the Alberta Health Services Data Repository

Medical Education

Incorporation of Resource Stewardship into the University of Manitoba Undergraduate Medical Education Program.

Youn Tae Chung, Andrea Kulyk, Dr. Ming-Ka Chan, Dr. Afeez Abiola Hazzan, Dr. Eric Bohm, Jim Slater | University of Manitoba

Goal: Acknowledging the need for enhanced resource stewardship training in undergraduate medical education, the authors collaborated to incorporate principles of resource stewardship and Choosing Wisely Canada (CWC) recommendations into the Undergraduate Medical Education (UGME) pre-clerkship curriculum at the University of Manitoba.

Implementation: The team analyzed the UGME pre-clerkship curriculum to determine the extent of resource stewardship training, identified opportunities to enhance such training, and developed appropriate learning materials that focused on the principles of resource stewardship and CWC recommendations. Learning materials consisted of readings, lecture slides, team-based learning sessions, and online modules. To date, principles of resource stewardship and over 120 CWC recommendations have been integrated throughout the UGME pre-clerkship curriculum.

Measures: An online survey was conducted to assess the first and second year students' baseline knowledge and attitude towards resource stewardship at the beginning of the academic year in September, 2016. To assess the effectiveness of the changes to the curriculum, a follow up survey will be conducted at the end of the academic year in May, 2017.

Challenges: As part of the analysis of the curriculum, and during the development of suggested learning materials, the authors engaged with key stakeholders including the Undergraduate Dean, the Pre-Clerkship

Committee, the undergraduate course directors, and medical students engaged in CWC activities across Canada.

Lessons learned: Enhancing learning opportunities of resource stewardship in undergraduate medical education should help to foster awareness amongst medical students and to encourage them to develop evidence-based skills that they can use throughout their training and career.

Resource Stewardship among Medical Trainees through Choosing Wisely Canada: Cutting Down on Dollars and Patient Harms When Deciding on the Fly

Dana Saleh, Dr. Ghazwan Altabbaa | University of Calgary

Goal: The Choosing Wisely Canada (CWC) campaign is essential for improving care quality while preventing harm to patients from unnecessary testing. Currently, there is a lack of resource stewardship training in postgraduate medical programs to guide future decision making of medical trainees. An assessment of learners' knowledge of resource stewardship is needed for guiding the design of educational interventions.

Objectives: To assess medical residents' knowledge of common CWC recommendations.

Implementation: A total of 16 first year Internal Medicine residents participated in simulation where 3 phone consultations from various consultants- a hospitalist, rural family physician, and an emergency physician tested decision making around CWC. The indications and costs of tests were revealed in the debrief.

Measures: In the first scenario, 2 out of 6 times (33.3%) blood products were given when not indicated to reverse a high INR. In the second scenario, 4 out of 6 times (66.6%) antibiotics were given despite sufficient incision and drainage of a simple cutaneous abscess. In the third scenario, 2 out of 6 times (33.3%) carotid doppler was ordered when not indicated for syncope.

Challenges and lessons learned: Designing simulation scenarios that include CWC recommendations is an effective strategy for identifying knowledge gaps in this area through skilled curriculum design and debriefings. Future directions of this initiative include a comprehensive integration of CWC recommendations

within the Internal Medicine residency program and a continuous quality improvement process of this resource stewardship-based simulation curriculum.

Resource Stewardship in Undergraduate Medical Education: University of Ottawa Experience

Anastasiya Muntyanu, Danusha Jebanesan, Peter Kuling | University of Ottawa, Faculty of Medicine; The Ottawa Hospital Academic Family Health Team, University of Ottawa

Resource stewardship plays an important role in delivering high-quality and cost-effective medical care. Unnecessary testing is not only detrimental to the healthcare system, but could also cause significant harm to patients. Currently, the teaching on resource stewardship in Canadian medical schools is limited. The goal of this study was to assess the current baseline knowledge among pre-clerkship students at the University of Ottawa and determine the most efficient strategies for addressing these topics in the curriculum.

A survey was conducted among pre-clerkship medical students at the University of Ottawa. One-hundred and fifteen medical students completed the survey and 46.7% indicated that they had no exposure to costs-of-care teaching at any point in their education. In terms of attitudes regarding cost-conscious and patient-safety decision-making, over 80% of students agreed that all physicians, residents, and medical students should be familiar with the concepts. Additionally, 81.3% reported that they are not prepared to engage in cost-conscious decision-making conversation with their patients. When the students were provided with scenarios on ordering specific tests, their answers indicated a severe lack of knowledge of the current guidelines. Despite this, 93.7% agreed that it is important to learn about cost-conscious decision-making during their medical education.

In this study students self-identified limitations in their knowledge and the need for teaching in the curriculum to promote critical thinking about tests/treatments

early on in their careers whereby reducing unnecessary testing and promoting patient safety. As a result, the Faculty will focus on incorporating further discussion through Case-Based-Learning.

Patient Engagement

Advancing Patient Engagement through Information Design

Heather Hair, Dr. Shawn Dowling, Daniel Grigat, Denise Boudreau, Chris Rice, Dona Kelly, Terri Roth, Sharleen Luzny, Erin Bugbee, Dr. Neil Collins, Eileen Patterson, Dr. Eddy Lang, Dr. Dr. James Andruchow, Dr. Andrew McRae, Dr. Grant Innes, Dr. Stephanie Vandenburg | Emergency Strategic Clinical Network, Alberta Health Services

Within Alberta, 30% of patients presenting to emergency with minor traumatic brain injuries (MTBI) will receive a CT scan before being sent home. Choosing Wisely Canada recommends using validated clinical decision-support to rule out serious injury before considering a CT.

To provide patients with information on the risks and benefits of imaging, and to encourage asking the four questions of their doctor, the Emergency Strategic Clinical Network (ESCN) has designed a patient infographic on CT scans for MTBI.

The ESCN, Physician Learning Program, and Choosing Wisely Alberta partnered with the Mount Royal University Department of Information Design to develop an interactive patient infographic storyboard. Students spent a semester developing infographics on Choosing Wisely recommendations which were then presented to stakeholders. From this work a student was selected to develop a final design.

The refinement of the design took place in consultation with clinical experts, and was tested in two focus groups with a patient advisory committee. The final design was evaluated against the International Patient Decision Aid Standards (IPDAS) checklist.

The infographic has been posted in the emergency department waiting room of the Foothills and Peter

Lougheed hospitals. The design uses cell phone QR technology that is linked to Google Translate, and an evaluation survey. The survey will evaluate whether the infographic influenced patient beliefs about the risks and benefits of CT scans, and their willingness to engage in a discussion with their doctor.

Results from the patient survey will be available at the time of presentation

Patients as Partners for Choosing Wisely in Alberta

Dr. William Hnydyk, Karla Wyld, Eileen Patterson | Alberta Health Services

The goal of this presentation is to demonstrate ways that Choosing Wisely Alberta (CWA) values and leverages the strength of the patient experience to improve our 'More Is Not Always Better' campaign. This campaign promotes healthy conversations between patients and physicians for appropriate care and away from current overuse of tests, treatments and procedures. To achieve this provincial culture shift requires collaborative leadership from providers and patients. Patient representatives are included in governance, program planning and implementation.

Patients are crucial contributors when planning and implementing a patient engagement strategy, and provide practical feedback that improves communication by promoting high value approaches and new perspectives. Alberta patient champions have created the patient leader role and provincial patient outreach strategy, and co-delivered consultation sessions to peer advisory groups. Patient leaders, trained in research methodology, have led patient focus groups related to Low Back Pain, and produced recommendations for improve care interventions.

Patient representatives are effective partners in planning campaign strategies and engaging other patient groups. They can identify tools and resources that can best support health literacy related to appropriateness. The patient experience can show us where we have missed the opportunity to build quality, continuity and appropriateness into the design, planning, delivery and assessment of health care. Alberta will expand our patient champion strategy to reach more patient advisory/governance groups. CWA

will also profile more patient stories to illustrate the importance of Choosing Wisely for better patient care experiences and outcomes.

Choosing Wisely Public Engagement Campaign: 5-Questions to ask your Doctor

Dom Lorusso | Consumer Reports

Consumer Reports believes that in order for patients and consumers to be willing to speak to their health practitioner about their healthcare, they need to feel comfortable asking basic questions. To accomplish this, CR began a campaign to disseminate Choosing Wisely wallet cards, focused on the 5 questions to ask your doctor. Dissemination techniques included distribution through employers, medical practices and social media. One medical practice system in Connecticut ran a 2-week pilot test utilizing these questions in their practice, hanging posters and distributing wallet cards and conducting surveys. Additionally, Consumer Reports created a Choosing Wisely Wednesday social media campaign in June, promoting the wallet cards to the general public. Since May 2016, we have distributed over 250,000 wallet cards through various techniques. Additionally, we offered co-branding of posters and flyers to medical practices and employers.

During this session, Consumer Reports can share the various techniques of promoting the card and questions and the results, including some specific examples of their use.



Developing and Evaluating a Pamphlet on Glucose Self-Monitoring with Choosing Wisely Canada

Born, Karen; Cheung, Daphne; Felfeli, Tina; Levinson, Wendy | University of Toronto

Goal: There is currently no plain language patient information on the unnecessary use of self-blood glucose monitoring for diabetic patients. The objective of this project is to develop a pamphlet with patients on Choosing Wisely Recommendation Number One from the Canadian Society of Endocrinology and Metabolism (CSEM).

Implementation: A total of 12 patients (1:1 female to male ratio) from the Diabetes Education Program (DEP) at North York General Hospital and Sunnybrook Health Sciences Centre will be recruited to participate in our focus group events and provide feedback to help elicit program development. Two medical students will conduct a series of 15-minute focus groups (5-7 patients per group) with open-ended questions that investigate the thoughts and opinions of patients with diabetes.

Measures: The session will be recorded, transcribed and analyzed for relevant themes. The information obtained from the focus groups will be further complemented with consultation with healthcare providers, CSEM, and Consumer Reports. Using an iterative process, themes that emerge from focus groups will be used to inform, revise, and design content of draft pamphlets.

Challenges: Coordination of a multi-centre initiative and building a safe space for the co-creation process are anticipated challenges. Furthermore, the recruitment and engagement of participants in discussions about the topic of diabetes will introduce challenges.

Lessons learned: In line with best practices and available literature on co-creation of patient education materials, the pamphlet will enhance the collaboration of medical students with patients in eliciting their feedback and creating an educational pamphlet.

Antibiotic misuse: the need for Human-Centred Design to Achieve Goals

Fabiola Guillermina Noë, PhD. Emilia | Romagna Regional Agency for Healthcare Evolution, Italy

Goal: The Emilia-Romagna Regional Agency for Healthcare Evaluation needed to reduce antibiotic prescribing by helping family physicians and paediatricians develop conversations with patients regarding antibiotics.

Implementation: The main element of the campaign was a decision aid. This was accompanied by posters, placed in waiting rooms and pharmacies, and by a small brochure. The strategy was implemented from November 2011 to February 2012 in Modena and Parma.

Measures: The Italian National Health Institute provided data regarding antibiotic prescriptions. The Agency used descriptive analysis to identify changes in the prescription rates during the implementation time compared to the previous year. During the implementation period there was an 11.9% decrease in prescriptions, compared to a 7.4% in the control area.

Challenges: The main challenge was the lack of access to users: to co-design with them and evaluate outcomes. Lack of awareness about human-centred design was seen as a major barrier. Most stakeholders did not see the need to collaborate with the users of the health system as a priority or as a viable method to improve health outcomes.

Lessons learned: While evidence indicates that including patients could improve health outcomes, having access to users is difficult. Patient-centred care puts patients' needs as a focal point. Human centred-

design is the key to achieving user-centred care. This requires new ways of thinking and implementation methods: called co-designing. It is anticipated that collaboratively designing with end users could result in significantly improved outcomes.

Regional Strategies

Choosing Wisely Manitoba: “Appropriate Vitamin D Testing”

Jim Slater, Dr. Eric Bohm, Dr. Celia Rodd, Dr. Laurel Thorlacius, Dr. Abdul Razaq Sokoro, Dr. Michael Moffat, Dr. Afeez Abiola Hazzan, Albert Mota, Dr. Lisa Lix | Choosing Wisely Manitoba

Goal: While vitamin D's role in bone health has been known for some time, it has recently gained further prominence due to various purported health benefits. This has resulted in significant increases in testing both internationally and locally. In Manitoba, testing for 25(OH)D levels has grown significantly in the past nine years. Approximately 5,000 tests were analyzed in 2006, and over 52,000 tests in 2015. The current study focuses on creating and implementing an intervention strategy for the appropriate use of 25(OH) vitamin D.

Implementation: A new 25(OH)D ordering process for Manitobans was recently developed and implemented. We review the rationale, development, and effectiveness of this process, as well as impact on number of tests ordered.

Measures: Evidence based guidelines for 25(OH)D advises against routine testing, however, it's estimated that in 2013 approximately 60% of 25(OH)D tests were analyzed on patients with no apparent medical indication. We measured reduction in unnecessary 25(OH)D tests, awareness/buy-in from stakeholders, patient safety, and reduction in backlog.

Challenges: There was no guidelines supporting 25(OH)D testing in Manitoba, which may have led to unnecessary testing. A culture shift regarding vitamin D status testing was required. Ongoing monitoring and reporting are beneficial to support change in testing strategies.

Lessons learned: It was important that the project team was composed of the right mix of skill sets which included supportive executive sponsors, physicians, Clinical Biochemistry Laboratory, and communications specialists. Also, the phased-in approach allowed the ordering professionals and labs an opportunity to adapt to the new process.

Lessons Learned during Implementation of Choosing Wisely NL (CWNL)

P Parfrey, B Barrett, E Dicks, C Street | Memorial Medical School, Newfoundland, Canada

Goal: To initiate a provincial program (CWNL) to enhance appropriate utilization of health care interventions.

Implementation: A Centre of Health Information and Analytics was created to examine utilization data. The SPOR NL Support unit provided human resources to implement change. CWNL was launched in October 2016 in collaboration with NL Medical Association.

Measures: The initial campaign, aimed at both patients and physicians, is to reduce use of antibiotics. Further interventions being undertaken include appropriate use of vascular testing, laboratory biochemical testing, colonoscopy, imaging for low back pain, and anti-psychotics in nursing homes. Twenty five projects are in the implementation / planning phase using this template: analyse baseline utilization of the intervention, compare this to best practice, implement actions using CWC guidelines, and evaluate the effects of these actions.

Challenges: (1) inefficient data access because of privacy, ethical and bureaucratic barriers, (2) priority setting, (3) patient engagement, (4) public communication, (5) physician communication, (6) assessment of project value.

Lessons learned: A more efficient data acquisition process from administrative and clinical data-bases was feasible. Priorities differed depending on the perspectives of patients (access), regional health authorities (costs) or practitioners (harms v benefits).

Patients engaged at all phases from priority setting to project development and implementation. Traditional media were very responsive to the first 2 campaigns but non-traditional media required patience. Initial doctor engagement via email has been limited by 1/8 wanting paper communication and 1/3 actually reviewing personal utilization data on a secure site. A value matrix has been developed to apply to each project.

Choosing Wisely in Medical Imaging: Why Don't We Apply Point-of-Care Interventions to Everything We Do?

Luo, Jing; Chan, Vivian; Forster, Bruce | Vancouver Coastal Health, Providence Health Care

Goal: Vancouver Coastal Health and Providence Health Care adopted selected Choosing Wisely Canada recommendations in Medical Imaging. Where required, interventions were applied to affect physician ordering practices.

Implementation: The implementation strategy varied depending on the target physician population, the workflow and the setup of electronic health information system.

Five studies are presented. CT orders from ED for Low Back Pain (LBP) and Uncomplicated Headache (UH) patients involved changing the ordering system at the point-of-care; CT orders from ED for Minor Head Trauma (MHT) patients involved providing physician level audit and feedback; MRI orders for Osteoarthritis (OA) patients required developing a new workflow across operational and clinical specialties to reduce scanning patients with co-morbidities; CT orders from GPs for UH patients was to provide physician education.

Measures: The key measures were 1) percentage of the defined patient population having MI test(s) and 2) physician variation on metric 1).

Challenges: Research projects showed that the most effective way of changing physician practice was through point-of-care interventions. However, the infrastructure of the information system had been the biggest barrier, especially in the community based services. Aside from that, engaging wide array of stakeholders across specialties and lack of electronic

data for assessing appropriateness and measuring results also posed great challenges to these studies.

Lessons learned: The combination of audit and feedback and point of care interventions were most effective in changing physician ordering practices. Point of care intervention required greater coordination amongst various stakeholders to implement but takes less resource to sustain it.

HQCA Physician Panel Reports

Pow, Jody; Aktary, Walie; Wanye, Randy; Lahtinen, Markus, Aktary, Walie | Health Quality Council of Alberta (HQCA)

The Health Quality Council of Alberta (HQCA) creates physician panel reports as an annual quality and practice improvement resource for general practitioners (GPs). Report content is determined in collaboration with GPs and other healthcare system partners, and provides aggregate descriptive information on the GP's practice habits and his/her patient panel with metrics structured to highlight recommended provincial or best-practice guidelines where applicable. For each report, the patient panel is based on either a confirmed patient lists (CPL) or the HQCA's proxy panel. Administrative health data and leading best practices within Alberta, as well as nationally and internationally, are used to define and calculate the metrics. For the 2017 Physician Panel Reports, the HQCA collaborated with the Physician Learning Program to develop and report on the following Choosing Wisely metrics:

- Papanicolaou (Pap) tests – for females aged 21 to 69; those between 15 to 21; and those over 70
- DEXA scans –the number of patients under and over 65 who had a single DEXA scan in the last year and the number of patients who had multiple DEXA scans in the last two years
- Lumbar spine scans – the number of lumbar spine scans done by x-ray, CT, and MRI

The reports provide information that is not available in EMRs, presents peer comparators, and adjust utilization metrics to control for the influence of patient characteristics. The 2017 Physician Panel Reports, along with patient experience data, can be used for primary healthcare planning, evaluation, and service development.

Every year the HQCA evaluates and refines its

Physician Panel Report, as well as the metrics within it. It is our intent to strive for a user friendly report that has clinical relevance with physicians, and which enables comparisons of subject areas and associated metrics to appropriate comparator groups. In doing this work, the HQCA seeks out leading best practices within Alberta, as well as nationally and internationally, to define and calculate the metrics. This year, we estimate producing 2,500 reports for GPs in Alberta with the intent of next year doing 3,600. In addition, in the upcoming year we will collaborate with our systems stakeholders to determine the content of the future reports and would consider including additional Choosing Wisely metrics.

Choosing Wisely in Radiation Oncology: Driving Practice Improvement through Data and Knowledge Mobilization

Louise Zitzelsberger, Kim Tran, Jennifer Chadder, Corinne Daly, Annemarie Edwards, Anubha Prashad, Rami Rahal, Heather Bryant | Canadian Partnership Against Cancer

Background: One of Choosing Wisely Canada's oncology recommendations suggests the use of single fraction radiation for the palliative treatment of uncomplicated painful bone metastasis. A recent report published by the Canadian Partnership Against Cancer (the Partnership) showed adherence to this recommendation in 2013 varied from 40.3% (British Columbia) to 69.0% (Saskatchewan). The purpose of this work was to develop a quality improvement (QI) initiative to decrease variability in delivery of multi-use RT in uncomplicated bone metastasis across Canada.

Methods: The Partnership engaged in discussions with leadership at the Canadian Association of Radiation Oncologists and the Canadian Partnership for Quality Radiotherapy, clinician researchers, and local opinion leaders, and conducted a literature search to identify barriers to adherence to this recommendation plus potential strategies used for practice change in RT.

Results: A joint QI project involving the Partnership and two jurisdictions with the highest rates of multi-fraction RT for bone metastases began in summer 2016. Strategies aimed at addressing practice change barriers (i.e. local champions, educational outreach, clinical decision tools) will be implemented between January and March 2017. Pre- and post-implementation data will identify if QI strategies have helped to influence clinical practice, and will inform refinement of these strategies so they can be applied across Canada.

Conclusions: This work has the potential to increase evidence-based use of RT for bone metastasis which

can improve patient quality of life and convenience, and can contribute towards health system sustainability.

RASCI Coalition for Choosing Wisely

S. A. Colbourne, MD | Alberta Health Services

Goal: To establish a transformation coalition to leverage system levers in support of point of care and peer supported adoption of best practice.

Implementation: There is some evidence that moving large agendas quickly requires quality relationships in a dual operating structure: traditional hierarchy with a less structured acceleration network. In order to support large scale adoption of clinical appropriateness activities including Choosing Wisely, major stakeholders in Alberta are establishing a coalition including clinical teams, strategic clinical networks, medical association, provincial, zonal and local health systems, health ministry, health quality council and others. Coalition members have collaborative role clarity in a RASCI Framework to deliver a nimble, adaptive support system for point of care adoption of leading practices.

Measures: Rate of adoption of specific protocols and pathways. Utilization metrics in laboratory and diagnostic imaging services. Patient and provider experience.

Challenges: Bridging a bottom up, top down and sideways approach to accelerating large scale transformational change, one patient at a time.

Lessons learned: A RASCI framework and partnership map are key elements to understand connections, accountabilities, assets and opportunities. Consistent and strategic application of coalition partner assets enables clinician leadership, patient and family voice, change supports, audit and feedback loops as some of the minimum specifications for program success.

Remark of Authors: This is a coalition in development to bring the largest Canadian provincial health authority together with great work already underway within the provincial medical association and others to expand and leverage combined assets to accelerate adoption. This abstract will focus on current state of opportunities and lessons learned in building the coalition.

Choosing Wisely Canada – Bringing it Home to Ontario

Fairclough, Lee; Taylor, Susan | Health Quality Ontario

Goal: Choosing Wisely Canada is designed to help physicians and patients engage in conversations about unnecessary tests, treatments and procedures. Health Quality Ontario, as the provincial advisor for quality, has partnered with CWC to ensure that programs and resources developed for use nationally are fully leveraged for use in Ontario.

Implementation: In March 2015, HQO and CWC convened a group of stakeholders to prioritize areas of focus for Ontario. Since that time, substantial investment has been made and implementation is underway in a number of areas including:

- The Ontario College of Family Physicians has integrated recommendations into their educational program
- ARTIC, a major spread strategy in Ontario, funded a project for an early adopter site to lead 6 other hospitals and primary care practices through the implementation of recommendations
- The Appropriate Prescribing Demonstration Project has advanced the appropriate prescribing of antipsychotics in Long Term Care Homes through audit and feedback (provided through Practice Reports) and Academic Detailing, and supported through a Community of Practice
- The Hospital Performance Series Reports provide transparent, hospital-specific data related to pre-op testing.

Next Steps: HQO will help coordinate provincial implementation, recognizing the tension of ensuring this retains an organic, grass roots feeling while at the same time reinforces alignment across priority areas,

by:

- Disseminating stories, reinforced by data, to spread implementation “know-how”
- Using existing reports to share practice-level data that will inform progress within and across sectors
- Establishing a group to help steer the effort in Ontario.

Using Health Technology Assessment (HTA) Products and Services to Inform Appropriateness Initiatives

Kubatka-Willms, Elena; Clement, Fiona | Health Technologies and Services Policy Research and Innovation Branch Strategic Planning and Policy Development Division, Alberta Health

Participants will:

- Understand how services offered by the Health Technologies and Services Policy (HTSP) Unit at the Ministry of Health can inform appropriateness initiatives.
- Examine case-studies that support changes in clinical practice.
- Learn where to find information on products and how to refer topics for assessment.

Background: The HTSP Unit identifies and prioritizes health technology/service topics that warrant provincial review based on government and system priorities. The HTSP Unit works with independent HTA partners to synthesize and contextualize evidence on non-drug health technologies, services, and models of care and to facilitate knowledge translation in the province. Topic and clients' needs determine types of deliverables produced.

Methods: In the past, at the request of the Seniors Health and Addictions and Mental Health Strategic Clinical Networks, the UofC conducted a review of pharmacological and non-pharmacological alternatives to antipsychotics, which supported the development of a new CPG and online resources for patients and providers.

This year, in anticipation of federal legislation on cannabis, the Addiction and Mental Health Branch requested the UofC to conduct a review to support the province in developing provincial regulations and policies, and creating supports for clinicians, such as

continuing medical education courses.

At the request of Alberta's Palliative and End of Life Innovations Steering Committee, the U of C is conducting a review of palliative care components to inform the Committee's efforts in implementing Alberta's Palliative Care Strategy.

Conclusion: The Unit welcomes new referrals for assessments, which align with provincial priorities, and are in need of evidence to promote innovative health care.

Clinical Knowledge & Content Management - Evidence for Excellence

Debbie Pinter | Clinical Knowledge & Content Management, Alberta Health Services

Goal: Clinical Knowledge and Content Management (CKCM) translates evidence and best practices to information that is useable at the point of care. The goal of this work is to develop provincially agreed upon clinical guidance and practice standards. This will serve as groundwork for the development of the future AHS Provincial Clinical Information System (CIS) supporting a clinician-friendly CIS ecosystem, attuned to user needs, that promotes patient safety, clinical improvement and meaningful use.

Implementation: New provincial content is being disseminated to Alberta's current information systems for adoption wherever possible. As new content is developed, it is published on the Clinical Knowledge Viewer which will be available for clinicians to access anywhere across the province of Alberta. Ultimately, the implementation of the AHS Provincial CIS will enable the use of evidence informed clinical guidance and practice standards across the province.

Measures: Facilitating growth of information, analytics and eHealth literacy, this work promotes clinical information system adoption, meaningful use and organizational learning. Resulting analytics and outcome data will provide clinicians with information at the point of care to further improve patient outcomes and reduce unsupported practice variation.

Challenges:

- Understanding the impact of practice variation
- Moving from local content development to provincial content development.

- Achieving engagement and participation from stakeholders across the province.

Lessons learned:

- Focus on clinician engagement early
- Find champions among Medical Leadership
- Make the results data-driven
- Targeted communication

Raising Physician Awareness of Cost Versus Value in Laboratory Medicine through Widespread Dissemination of Diagnostic Test Costs

Ramdas, Z, Lau, CK, Jackson, R, Naugler, C | Calgary Laboratory Services, University of Calgary, Cumming School of

Goals: Our goal was to provide a general reference of commonly ordered laboratory tests for healthcare workers in Alberta including primary care physicians. This didactic tool was to encourage dialogue and awareness on costs associated with laboratory tests and the impact inappropriate utilization has on the healthcare budget.

Implementation: A test cost list was compiled and approved by the Alberta Laboratory Utilization Steering Committee and was distributed to Zone medical leadership throughout Alberta Health Services (AHS) for dissemination to staff in respective zones. Zones were allowed to tailor the cost list provided to fit their specific needs.

Measures: Test costs lists have been disseminated and effectiveness of this didactic intervention will be evaluated in the upcoming months through the continuous monitoring of test ordering changes in the most frequently ordered tests.

Challenges: Obtaining test costs posed many challenges as this data is considered proprietary and varies across provincial laboratories. In addition, obtaining agreement from the various Zone medical leaders on which test costs to disseminate was another challenge. Under and overpricing was also an issue of contention. Clear caveats were included to ensure that costs are only for reference purposes only and cannot be used for cost accounting utilization interventions.

Lessons learned: The utility of providing such a reference to initiate dialogue on laboratory test utilization, cost savings and impacts to patient care was identified as a gap and agreed upon as a useful endeavor by leaders in all zones.