



Canadian Association of Radiologists
L'Association canadienne des radiologistes



CANADIAN ASSOCIATION OF RADIOLOGISTS

SYMPOSIUM ON DIAGNOSTIC IMAGING REFERRALS AND APPROPRIATENESS

JANUARY 29, 2018

TABLE OF CONTENTS

Executive Summary	3
About the Canadian Association of Radiologists	4
Keynote Presentations.....	5
Morning Panel Session	7
Afternoon Panel Session	8
Capstone Discussion.....	9
Next Steps.....	9

Symposium on Diagnostic Imaging Referrals and Appropriateness

January 29, 2018 – Ottawa, ON

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EXECUTIVE SUMMARY

On Monday January 29, 2018, as part of our ongoing work on DI referral guidelines and quality improvement, the Canadian Association of Radiologists (CAR) convened a symposium on diagnostic imaging referral guidelines, appropriateness, and computerized clinical decision support systems (CDS).

The symposium had three major goals:

1. To open lines of communication on issues and strategies related to imaging referrals, appropriateness, and quality improvement.
2. To create opportunities for collaboration on imaging referrals and appropriateness.
3. To inform the CAR's future work on national imaging guidelines, and to set a foundation for the broader use of clinical decision support systems in Canada.

In addition to the invited panelists, who represented a breadth of national health agencies and organizations, representatives from provincial health authorities across Canada were also invited to attend the symposium as observers, in the interest of building the pan-Canadian connections that will inform and inspire implementation projects designed to enhance appropriateness of care, contribute to value-based models of care delivery, and improve patient outcomes.

The morning opened with keynote presentations from Dr. Jeremy Grimshaw (Ottawa Hospital Research Institute) and Dr. Ramin Khorasani (Brigham and Women's Hospital). Dr. Grimshaw focused on the current state of medical guidelines development and implementation, with an emphasis on how the mode of implementation can influence the level of uptake of a given set of guidelines. In his presentation, Dr. Khorasani spoke from his experience as a primary investigator on the Medical Imaging Demonstration project, which collected data regarding physician use of advanced diagnostic imaging services to determine the appropriateness of services in relation to medical specialty guidelines.

Following the keynote presentations, the CAR welcomed two panels of stakeholders from national health agencies. The panel discussions focused on the agencies' current involvement in DI referral guidelines and quality improvement and future interest in collaborating on projects related to guidelines, appropriate imaging, and clinical decision support. The roundtable discussion that followed presented a clear opportunity for the CAR to collaborate with the Canadian Association of Emergency Physicians, the College of Family Physicians of Canada and Choosing Wisely Canada on DI referrals and the implementation of guidelines via quality improvement projects designed to enhance patient care.

INTRODUCTION

As the national specialty society for radiologists in Canada, the Canadian Association of Radiologists has a clear mandate to set national standards for quality care. We do this through our work on referral and clinical practice guidelines for imaging. The CAR's *Diagnostic Imaging Referral Guidelines* were most recently updated in 2012, and are thus in need of review and revision to ensure that they represent the best practices and up-to-date scientific evidence. Moreover, the landscape of diagnostic imaging (DI) referral technology has evolved significantly since the last revision of the guidelines.

On Monday January 29, 2018, as part of our ongoing work on DI referral guidelines and quality improvement, the Canadian Association of Radiologists (CAR) convened a symposium on diagnostic imaging referral guidelines, appropriateness, and computerized clinical decision support systems (CDS). The idea for the symposium originated with the CAR's Referral Guidelines Working Group, chaired by Dr. Martin Reed. In order to properly guide the CAR Board of Directors on the best way forward for our referral guidelines and work on CDS, the working group convened the symposium to engage stakeholders at the national level to learn more about their work and how the CAR might collaborate with them on projects designed to enhance patient care and ensure the appropriateness of imaging orders.

The goal of the symposium was to open lines of communication and collaboration on issues and strategies related to imaging referrals and quality improvement. The connections made at the symposium will serve to advance project plans to expand and enhance DI referral guidelines, while setting a foundation for the broader use and implementation of CDS technologies across Canada.

ABOUT THE CANADIAN ASSOCIATION OF RADIOLOGISTS

The Canadian Association of Radiologists (CAR) is national specialty society for radiologists in Canada. We are committed to promoting the highest standards of patient care, lifelong learning, research, and helping radiologists contribute to the very best health care for patients. The CAR has over 2000 members across Canada, and is particularly active on three fronts: patient care, advocacy, and education. We work with governments, health professionals and technology leaders to make optimal use of medical imaging. Our goal is to ensure the right tests are performed on patients at the right time. We also serve as the voice of Canadian radiology so that governments, the public and news media are fully informed about the benefits and risks of medical imaging, the challenges we face and the solutions we propose. We create, accredit and promote opportunities for continuing medical education and research, helping radiologists stay at the leading edge of medical imaging healthcare.

KEYNOTE PRESENTATIONS

DR. JEREMY GRIMSHAW

In his keynote presentation **Current state of Medical Guidelines and Relevance to DI Guidelines**, Dr. Grimshaw covered a broad amount of research related to the writing and implementation of clinical practice guidelines. Drawing on his work and research on implementation science, Dr. Grimshaw emphasized that one of the key barriers to quality improvement in healthcare has been a consistent failure to translate research findings into clinical practice. In the case of practice guidelines for DI, this lack of knowledge mobilization and translation has led to underuse, overuse, and misuse of diagnostic imaging capacity. Research shows that when appropriately disseminated and implemented, evidence-based guidelines improve the process and quality of patient care.

GUIDELINE DEVELOPMENT

The process by which the healthcare community writes guidelines has also evolved over time. Prior to the 1990s, most guidelines were expert-based, and written by groups of experts who relied on their own clinical judgment and experience. Canada has led the way in exploring and implementing more rigorous approaches to guideline development, and on implementation science itself. Indeed, the Canadian Task Force on Preventive Health Care was an early leader in pursuing the three keys to good guideline writing and has continued to push best practices forward.

PAN-CANADIAN STRATEGY FOR CLINICAL PRACTICE GUIDELINES

- Coordination of production efforts
- Standards for guideline production
- Adequate resources for guideline production
- Enhanced implementability of guidelines
- Conduct knowledge translation barrier assessments alongside guideline development process

GUIDELINE IMPLEMENTATION

Dr. Grimshaw emphasized that there are many effective dissemination and implementation strategies, all of which work some of the time, and none of which work all the time. Focusing on behavior change as the root of successful implementations will likely be the best way forward. Understanding the barriers to uptake of a new set of guidelines at the outset can also result in smoother implementations.

Guidelines can be implemented at any level of the healthcare system, from federal or provincial levels, down to the individual healthcare professional. Historically, the burden of implementation has rested on healthcare professionals, which has not always been effective. Focusing at the regional healthcare authority level may be more effective, especially when the guidelines are implemented in such a way that they promote the development of a learning healthcare system.

3 KEYS TO GOOD GUIDELINES

1. Multi-disciplinary input
2. Systematic review of literature
3. Levels of evidence

CLINICAL DECISION SUPPORT

Iterative interaction of a user with a computer to improve clinical decision making. Creates an expert system to improve the performance of non-expert clinicians.

In order to succeed, it needs to be efficient, educational, evidence-based, and encourage or enforce adoption.

DR. RAMIN KHORASANI

In his presentation, Dr. Ramin Khorasani focused on one method of guidelines implementation: via computerized clinical decision support systems. He has extensive experience in this area by virtue of his involvement in the Medicare Imaging Demonstration (MID). The MID assessed the impact of CDS based on selected professional society guidelines (primarily the American College of Radiology Appropriateness Criteria) on 11 targeted high-cost outpatient imaging procedures for Medicare fee-for-service patients.

CDS IN THE UNITED STATES

In the United States, concern about the inappropriate use of diagnostic imaging prompted the government to implement protocols whereby imaging that was being funded by Medicare and Medicaid needed to be run through a CDS system using specific Appropriate Use Criteria (AUC). The program was intended to improve the quality of imaging care and to reduce waste, while protecting provider workflows by eliminating onerous pre-authorization programs.

The MID study covered 11 high-cost imaging exams, and over 800 different rules. By the end of the study, ordering physicians had been exposed to over 83,000 alerts, and only 23 exams were cancelled. When the alerts were actionable, physicians changed their requisitions about 7% of the time. The MID study showed that referring physicians are more amenable to altering their requisitions than to cancelling it entirely. Unfortunately, CDS recommendations did not mesh with local best practice, and there was a lack of perceptible consequence for ignoring CDS alerts.

CDS MUST HAVES: SIMPLICITY AND CLINICAL RELEVANCE

The simplicity and clinical relevance of the any health system intervention are paramount to ensuring the optimal uptake of that intervention, and CDS is no exception. Poor implementation of guidelines and other tools in the past has trained people to click ignore on the thousands of alerts that they receive each day, rather than to engage with efforts at quality improvement like CDS tools. Dr. Khorasani emphasized the idea that the goal of CDS – putting the best clinical evidence in front of a referring physician to improve patient care and

contribute to quality improvement – must be balanced with the realities of practicing medicine in 2018, including the prevailing concern about physician burnout.

CLOSING THE EVIDENCE GAP

Dr. Khorasani emphasized that CDS-enabled interventions in clinical workflows are most effective when they are designed to improve adherence to evidence rather than appropriateness. Effective CDS will be a clinical transformation project, not an IT initiative. Adherence to evidence is a quantifiable metric that can be collected as data that is used to inform and improve the system itself. Federal funding is needed to take advantage of the translational research opportunity that exists to accelerate evidence creation and validation using “big data” and machine learning. Dr. Khorasani emphasized that Canada can continue to lead in implementation science without spending billions on infrastructure. Improved adherence to evidence can happen with targeted interventions. Ultimately, CDS can only be considered a success if it improves the patient’s experience of care and leads to effective population health management.

EVIDENCE-BASED MEDICINE

An approach to practice in which the clinician is aware of the evidence in support of their clinical practice and the strength of that evidence.

It can take 5-14 years for evidence to get into practice, and there is a large variation of the adoption of evidence into practice.

MORNING PANEL SESSION

PARTICIPANTS

Mr. Gavin Brown – Director, Health Care System Policy, Health Canada

Mr. Michael Green – CEO, Canada Health Infoway

Dr. Lesley Dunfield – Director, HTA and Rapid Response, CADTH

Mr. Neil Drimer – Director, Programs, Canadian Foundation for Healthcare Improvement

PRESENTATIONS

The morning panel session featured speakers from federal health agencies with a stake or an interest in clinical decision support and imaging guidelines. Health Canada's involvement has largely been as a funder for organizations like CADTH, Choosing Wisely, and Canada Health Infoway. However, the department has an interest in improving the appropriateness of care and in supporting work on clinical practice guidelines to accomplish that goal.

In his presentation on Canada Health Infoway's past and future involvement in CDS, e-referrals, and technology systems in healthcare, Michael Green emphasized the importance of implementing clinical interventions at the regional level. Though Infoway does not currently count imaging among its priorities, the organization's ongoing work to give Canadians a single-point of entry to their healthcare might have an influence on the eventual pan-Canadian implementation of CDS systems.

CADTH's emphasis has been on producing evidence assessments for a range of recommendations. Additionally, CADTH produces optimal use recommendations, looking at the effect of technologies from a clinical, economic, environmental and patient perspective. CADTH has worked with the CAR in the past, including on its Canadian Medical Imaging Inventory (CMII). CADTH is interested in taking on more work related to identifying

knowledge gaps, and in doing stakeholder consultation about barriers to implementation and how to standardize the implementation process of guidelines and CDS systems.

The Canadian Foundation for Healthcare Improvement is a pan-Canadian organization funded by Health Canada, with a focus on seeking out innovations that can be scaled and spread across Canada. The programs funded by CFHI need to be aligned with provincial, territorial, and federal health system priorities. Moving forward, in order for guideline development and CDS projects to be supported by CFHI, the programs and projects being pursued will need to be tailored to suit regional and provincial priorities.

DISCUSSION HIGHLIGHTS

- Infoway has supported innovation in DI in the past, specifically via PACS – is there any way for the organization to support research?
- Federal leadership will be needed on patient privacy, data security, interoperability and in lowering the barriers to implementation of new CDS systems.
- AI looms large and is on the radar of the federal government – any effort to improve DI referrals and to make use of CDS will necessarily include a discussion of big data and how to harness deep learning and machine learning.
- New programs and innovative projects need to have demonstrable results, improve care quality, and show the cost-benefit analysis for funding.
- If guidelines were to be developed between the CAR, CFPC, CAEP and Choosing Wisely, which have a demonstrated impact on enhancing appropriateness, or reducing inappropriate diagnostic imaging, then an organization like CFHI could build on the success of a pilot project to do a scale-and-spread to other jurisdictions.
- Federated delivery of health care in Canada is both a challenge and an opportunity to pilot innovative ideas on a smaller scale before spreading them across the country. There will not be a one-size-fits-all solution for DI referrals or CDS – physicians and project managers will have to adapt various approaches to their local circumstances.

AFTERNOON PANEL SESSION

PARTICIPANTS

Mr. Tai Huynh – Campaign Director, Choosing Wisely Canada

Dr. Paul Pageau – President, Canadian Association of Emergency Physicians

Dr. Victor Ng – Physician Advisor, College of Family Physicians of Canada

PRESENTATIONS

The afternoon panel session featured speakers from organizations that are more directly involved with guideline development and implementation. One of the main goals of the symposium was for the CAR to develop a stronger connection with its physician-colleagues in family medicine and emergency medicine, to better appreciate the pressures on the demand-side of DI referrals. Hearing from the CFPC and CAEP about their priorities, perceived challenges, and outlook on how DI can interface with their work to improve patient care was essential as the CAR plans its next steps and way forward.

In his presentation about the College of Family Physicians of Canada, Dr. Victor Ng emphasized that the practice of family medicine varies widely from jurisdiction to jurisdiction. As such, attention to local context is incredibly important when planning quality improvement initiatives and interventions. Guideline development and implementation efforts that emphasize knowledge translation and continuing professional development opportunities are likely to enhance the uptake of new interventions by family physicians.

Speaking about his experience as an emergency physician, and as the leader of the Canadian Association of Emergency Physicians, Dr. Paul Pageau stressed that timely access to diagnostic imaging is key to improving patient care. There is a great deal of research ongoing about the use of clinical decision rules in emergency medicine. For emergency physicians, CDS tools need to be easy to use, promote efficiency, and demonstrate

strong adherence to locally-relevant clinical evidence. Emergency physicians will be more likely to use tools that they have been involved in generating, rules that they have been involved in writing, and projects that they are made partners in from the beginning.

Choosing Wisely Canada has been involved at the grassroots level of improving the appropriateness of diagnostic tests and treatments. Choosing Wisely currently involves 60 professional societies, representing approximately 98% of physicians in Canada. Of their 270 recommendations, 20% are diagnostic imaging-related. Choosing Wisely has done excellent work collecting, compiling, and communicating recommendations, but their work going forward will be to “move beyond the list” and to be more focused on implementation and measuring how well recommendations are being translated into practice. Choosing Wisely has shown time and again that there is only so much work that can happen at the national level – in order to implement change, it will be necessary for projects to focus at the regional or provincial level, to involve patients, and to account for the gap between the science/evidence and public perceptions of what kinds of care, clinical interventions, and diagnostic tests are necessary.

DISCUSSION HIGHLIGHTS

- Discussions about appropriateness need to account for underuse in addition to overuse. Access to certain kinds of equipment have a huge impact on what kinds of DI referrals physicians submit; there is often a gap between what is appropriate based on the clinical indication and what is appropriate given the practical realities and resources of where the care is being delivered.
- To what degree can national professional societies drive physician behavior at the national, regional, or individual level?
- How can we work to standardize data collection to better feed into an organization like CIHI to begin constructing a learning healthcare system?
- How will embedding structured reporting into the system facilitate better feedback, follow-up, and communication between radiologists and referring physicians?

CAPSTONE DISCUSSION

Dr. Grimshaw stressed that simple solutions are not likely to do the trick – if there was a simple solution, someone would have found it by now. If this group of stakeholders waits for perfect alignment or the perfect moment, no progress will be made. Policy options may also be constrained by path dependency, whereby the decisions and options considered feasible in the present are limited by decisions that were made in the past. Canada has a strong history of leadership on all of the various elements that would go into creating successful projects – guideline development, implementation science, innovation in health system technologies, but has also struggled with interoperability issues, inability to scale and spread health interventions, and the realities of a federated model of healthcare delivery.

Funding will follow once there has been data collected to demonstrate the feasibility and impact of projects that link CDS interventions with clinically-relevant DI guidelines. The natural experimentation that will arise from these projects will lead to a broader evidence base which can then feed into improvements and better-informed approaches and interventions in the future.

We have a uniquely Canadian opportunity to focus on targeted interventions using credible evidence to frame multidisciplinary collaboration. Canada has the talent and energy to make this work happen and has the capacity to bring real value to patients and the healthcare system. For the CAR, a key consideration is the role of a national specialty society in comparison to the role of other stakeholders in the health system. It is unlikely that the CAR will be responsible for funding or the practical delivery of these interventions. Rather, the CAR should focus on its ability to leverage partnerships with other physician organizations and to coordinate its connections in the radiology community to begin improving the appropriateness of DI at the ground level.

NEXT STEPS

- The Canadian Association of Radiologists will continue to lead on guideline development for DI, and will immediately begin to bridge with organizations like CFPC, CAEP, and Choosing Wisely Canada to identify priorities and to develop DI referral guidelines accordingly.
- Across the board, the CAR heard the need for collaboration from the point of project planning until the guidelines are developed and implemented into CDS systems. The CAR will make a concerted effort to involve more clinical stakeholders in the development of referral guidelines.
- A meeting planned for June 2018 in Toronto will bring together EMR vendors, CDS vendors, and many of the stakeholders from this meeting to discuss what it will take to implement CDS in Canada.



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