



Canadian Association of Radiologists

MANITOBA PROJECT ON DIAGNOSTIC IMAGING DEMAND-SIDE CONTROL

Title: CAR's Commitment to Appropriate Use of Diagnostic Imaging

In 2004, The Canadian Association of Radiologists completed a strategic review setting a number of objectives including: **to significantly reduce waiting times for Diagnostic Imaging (DI)**

Four proposed solutions

1. **Guidelines:** assist referring clinicians to the most appropriate test instead of adding tests incrementally
2. **PACS/ RIS:** accelerate use of medical services linked by electronic health records
3. **Collaborative Care:** identification, training and deployment of advanced practice technologists to take over the provision of a range of DI services
4. **Interventional Radiology:** substitution of these less costly, less invasive alternatives for a growing range of open surgical procedures

CAR Demonstration Projects in Implementing Guidelines:

Key principle: guidelines must supply clinical decision support for DI decisions

Purpose of CAR Demonstration Initiatives: Support clinical decision making at the point of initial contact with DI to insure appropriate resource use (improved clinical efficiency).

- Active participation sought from health care policy decision makers: regional health authorities, provincial health departments and Health Canada
- Clinical areas of interest (and suspected maximal impact):
 - Demonstration in general practice medicine (typical Canadian patient contact with health care system)
 - Demonstration with a high throughput DI user (i.e. busy emergency rooms)
 - Demonstration with a high volume DI clinical user (i.e. orthopedics) and
 - Demonstration of improved efficiency in DI referral from rural and remote areas

The Manitoba Project

- Fall 2005, interest identified in Health Canada, MB Health and Winnipeg Regional Health Authority
- Children's Hospital and Pediatric Radiology were chosen as the first demonstration site
- Plan was to involve community pediatricians (Manitoba Clinic) once project was functional at Children's Hospital

Project Funding

- Startup funds from MB Health and CAR
- Contribution Agreement from Health Canada
- Funds first available in January 2006
- Project to run until August 2007

Clinical Guidelines

The Canadian Association of Radiologists (CAR) adopted clinical guidelines used in this project after a review of the scientific evidence of best practice in the use of DI for clinical diagnosis and treatment management. For maximal effect clinical guidelines must be made seamlessly available as part of the clinician's regular workflow. The project imbedded the CAR guidelines in an electronic diagnostic imaging order entry system, Percipio™, developed by Medicalis Inc., a Canadian company based in Waterloo, Ontario.

Good involvement across spectrum of specialist pediatric clinicians:

14 sites in Children's Hospital involved in the project:

- Pediatric Emergency Department
- Children's Clinic, including general medicine, rheumatology, nephrology, Respirology Clinic and Cancer Clinic
- NICU, PICU, Intermediate Care Nursery, neonatal resuscitation unit
- Individual clinicians' offices

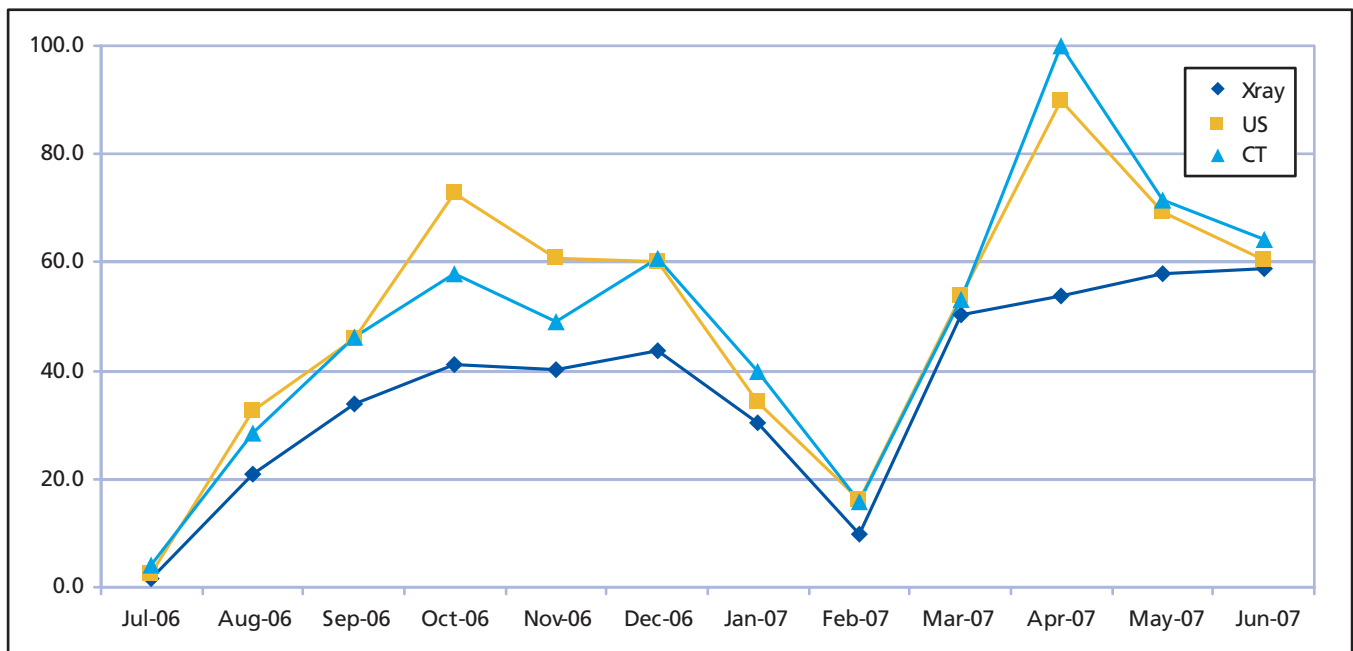
Research and Evaluation Component

- Contract with WRHA Research & Evaluation unit
- Independent, arms length evaluation
- Collaborative development of R & E plan, interpretation of findings
- Research focus: identify facilitators and barriers to implementation (transferable findings)

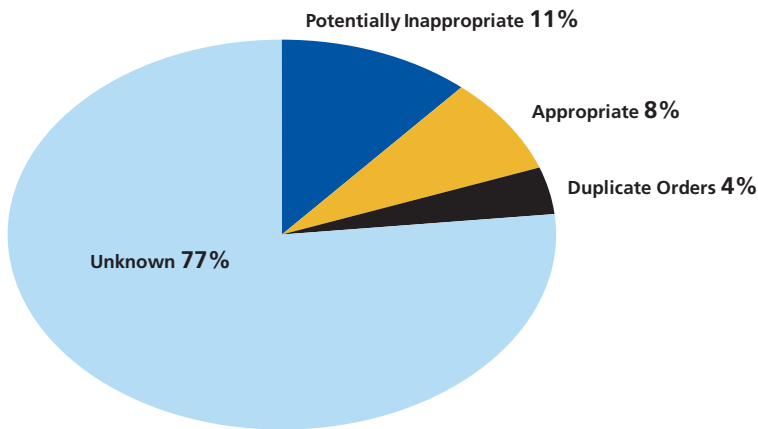
RESULTS

Use of the computerized order entry system increased steadily

*Jan-Feb 07, the ER moved locations



Incorporated Guidelines Insufficient: Decision Support Available for ONLY 1 in 5 orders



Most Advice is Ignored

- Only 5% (95% confidence interval = 3.8-6.3) of advice received, was accepted (n=1213).
- Very little (2%) appropriateness advice was accepted (n=905).
- Some (13%) duplicate order advice was accepted (n=354).
- Most appropriateness advice recommends canceling the order (78%), with some recommending a different modality; both had low (2%) acceptance rates.
- 11% of DI ordered was inappropriate according to the CAR Guidelines for appropriate DI use.

Common Conditions Trigger the Most Advice

Guideline	Number of orders triggering decision support	% of total orders triggering decision support
Duplicated order	386	32.7
Acute chest infection	205	17.4
Wheeze	173	14.6
Recurrent productive cough	69	5.8

Why Such Limited Impact?

Low impact (5% accept rate) could be result of several factors:

1. Insufficient guideline coverage of actual practice
 - Would additional guidelines increase impact?
2. Good existing DI appropriateness at demonstration site
 - Would guidelines be more useful for generalists (i.e. family practitioners) vs. specialists?
3. Need for stronger clinical engagement about DI appropriateness
 - Would more attention to demonstrating the “need” for guideline adherence influence physician knowledge and attitudes and lead to practice change?
4. Timing of advice
 - Was this intervention placed “too late” in decision-making process (after physician commitment to a course of action)?

Evaluation Conclusions

1. Limitations of a computerized order entry system must be addressed to achieve theorized benefits
 - Limitations include taking longer to order DI, less useful information on the order, and lack of integration with other systems
2. Cannot conclude from this project that computerized order entry and decision support can effectively reduce inappropriate DI use
 - Low impact observed during demonstration project
 - Additional research required to address the problem appropriately

Additional Research Required

Additional research is required in all of the following areas:

1. To understand clinicians' decision-making process about ordering DI
2. To test different types of interventions to reduce inappropriate DI use
3. To determine how decision support fits in broader healthcare IT systems
4. To test interventions in other settings (specialist vs. generalist)

What We Have Learned

1. Complex processes are complex to implement.
 - Slower than hoped for start up: 9 months to get to initial data collection
2. Introducing computerized order entry and decision support are two different changes. Computerized order entry is a *process change*. Decision support is a *practice change*. Each requires a different strategy.
 - Computerized order entry was introduced as IT/process change, with effective and appreciated training and support, BUT decision support was not a sufficient focus of implementation. It lacked a strong strategy to support practice change.
3. There may be inappropriate use of diagnostic imaging: 4% of orders were duplications; 11% were potentially inappropriate according to the CAR Guidelines.
4. Guidelines are always a work in progress. Accuracy, coverage and applicability are ongoing responsibilities for professional specialist societies.

Where do we go from here?

The CAR commitment continues.

- **Improve the software.** CAR is working with software producers to build in advice that is more effective and place those interventions more efficiently in the clinical decision stream.
- **Increase guideline utilization.** CAR is actively seeking other regional, provincial and federal partners to explore further possibilities of reducing inappropriate DI demand.
- **Improve the guidelines.** CAR is working with other sources of radiology guidelines to broaden and update guideline coverage.
- **Try a different venue.** CAR has designed demonstration projects focused on general practitioners, secondary hospitals and rural settings in the belief that clinicians in these settings may be more prepared to accept advice than specialists in quaternary level specialty hospitals.

Canadian Association of Radiologists
310-377 Dalhousie Street
Ottawa, Ontario, CANADA K1N 9N8
Phone: (613) 860-3111 Fax: (613) 860-3112
Web: www.car.ca