

Wait Time Alliance

Leading Practices

Name of Sponsoring WTA Member Society:

Canadian Association of Radiologists

Name of Project/Program/Initiative:

The CAR Experience in Increasing Appropriateness in Imaging through Computerized Clinical Decision Support

Location:

Three projects in Manitoba since 2005:

- a tertiary care children's hospital (Winnipeg; completed 2007)
- a rural family practice clinic (Steinbach; completed 2009)
- another study at children's hospital in Winnipeg to examine how to improve compliance with the best practice guidelines is currently underway

Description of Program:

Significant change is coming to diagnostic imaging (DI) care. In Canada, and elsewhere, the change drivers are clear: mounting fiscal pressures, growing wait times, increasing concern with radiation safety and growing evidence of clinically suboptimal use. These pressures will shape responses to a range of issues such as hybrid diagnostic imaging, personnel substitution and equipment replacement.

Attending to the *appropriateness* or *clinical effectiveness* of DI exam requests could significantly impact all these health care drivers.

Recognizing that health care professionals must assume responsibility for ensuring that the work they do is necessary and appropriate, the Canadian Association of Radiologists (CAR), the national association representing radiologists in Canada, introduced a set of evidence informed clinical guidelines in Canada in 2005 based on the guidelines of the Royal College of Radiologists in the United Kingdom. (New CAR Guidelines are presently being released.) These Diagnostic Imaging Referral Guidelines help physicians order the most appropriate imaging exam for the clinical presentation. When physicians choose the best test first, it results in more effective and efficient use of DI equipment and health human resources (radiologists, technologists and others). It also improves patient care and safety by shortening wait times for patients who stand to benefit most and by reducing unnecessary exposure to medical radiation.

Although CAR imaging referral guidelines are available in booklet, PDF and CD formats and on physician websites, the CAR recognized that for maximal effect, guidelines must be made seamlessly available as part of the clinician's regular workflow. To achieve this, the CAR guidelines have been integrated into a computerized physician order entry (CPOE) system for diagnostic imaging with attendant computerized clinical decision support (CCDS). The side bar describes how the system works. The CAR believes that this is the most effective way of implementing guidelines to ensure that DI resources are used most appropriately and effectively.

This delivery model of computerized clinical decision support can serve as a prototype for other areas of medicine, and the lessons learned can assist in the integration of other types of decision support into Electronic Health Records in Canada, a current health care priority. The CAR has undertaken three projects, each building on the one before, in Manitoba, to implement CCDS into imaging care.

Evidence to Support Effectiveness of Program:

The lack of sustainability of the Canadian health care system must be addressed. Issues identified in medical imaging around resources, wait times and patient safety all can be positively impacted by improving the appropriateness of the imaging care that is requested.

The CAR has tested the effectiveness of providing its Diagnostic Imaging Referral Guidelines through the computerized clinical decision support and CPOE in two settings in the province of Manitoba - a tertiary care children's hospital (Winnipeg; completed 2007) and a rural family practice clinic (Steinbach; completed 2009). Results of the studies suggested that 10-20% of imaging requests were not indicated given the clinical situation or were not the appropriate imaging modality. The CAR has a third study currently underway at a Children's Hospital in Winnipeg to examine how to improve compliance with the best practice guidelines. Several other provinces are separately exploring guidelines implementation initiatives.

With mounting evidence demonstrating between 10 -20% of imaging studies as being inappropriately requested, any clinical intervention without clear purpose or patient benefit creates waste and negatively affects quality of care.

Rising costs alone for DI are a looming threat to health system sustainability. Spending for diagnostic imaging in Canada has increased markedly and now exceeds an estimated \$2.2 billion in operational costs alone. Eliminating even 10% of unnecessary tests could allow \$220 million in spending each year to be redirected to more effective patient care.

The CPOE and computerized clinical decision support system in the CAR appropriateness studies operated as follows:

1. The physician logs into the system and acquires the necessary demographic data about the patient automatically from the electronic admission/transfer/discharge system.
2. The physician orders an imaging study from a series of drop down menus and then provides the relevant clinical information by clicking on appropriate items in lists of relevant history, signs and symptoms and differential diagnoses. There are also free text fields to enable the physician to provide more detailed information.
3. If the imaging study ordered is appropriate for the clinical information provided, according to the guidelines, the request can automatically be sent to the Diagnostic Imaging Department or be faxed to that site or be given directly to the patient to take to the imaging site.
4. However, if the imaging study ordered is not recommended by the guidelines, the relevant guideline appears on the screen, either recommending a more appropriate imaging study or suggesting that no imaging is required.
5. The physician can then continue with the original order by overriding the guideline, or follow the advice of the guideline.
6. The software will also indicate to the physician if the patient has had the same imaging study ordered through the software within the previous month (duplicate order advice).
7. All the details of each order process are saved within the software and are available for later analysis.