



INSTITUTE FOR CLINICAL SYSTEMS IMPROVEMENT

Redesign for Results

High-Technology Diagnostic Imaging

The use of elective outpatient high-technology diagnostic imaging (HTDI) has risen significantly in the past decade without a demonstrated corresponding improvement in patient outcomes.

Studies indicate the increased usage is occurring among both radiologists and non-radiologists. Improved technology made some of these imaging devices able to diagnose more problems, thus increasing their usage. There is a financial incentive to use newly purchased HTDI equipment. Providers may also be electing to use these devices to avoid lawsuits over missed diagnoses. Some increase can be attributed to patient demand, as providers say “the worried well” request more imaging.

Although procedures like CT scans can offer superior images for better diagnoses, the National Cancer Institute indicates a CT scan of the stomach exposes a patient to as much radiation as 500 chest x-rays. Based on recent use data, it’s estimated that radiation from CT scans may have contributed to 1.5-2.0% of all cancers in the U.S. (Brenner and Hall, 2007). Moreover, the increased usage in HTDI is raising health care costs for consumers, employers and health plans.

As a result of these health and cost factors, employers and providers nationally initiated interventions to support effective and appropriate use of HTDI. In 2007 several Minnesota health plans initiated prior notification (PN)



requirements. They call for the provider to contact a vendor, selected by the insurance company, before ordering an MRI, CT, PET or Nuclear Cardiology procedure.

Within a year, PN/PA requirements reduced the number of HTDI procedures ordered in Minnesota by about 10%. However, it was unclear if these requirements resulted in more appropriate use of HTDI procedures.

Moreover, these requirements often did not allow the provider to order images at the time they were seeing the patient, thereby delaying the imaging tests and possibly delaying diagnosis or interventions. This was inconvenient, as patients had to return at a later date to receive their imaging procedure. Providers claim the PN initiatives are also inefficient—adding work and expense without known improved patient outcomes. Most provider organizations had to add full- or part-time employees to manage this process.

HTDI Redesign

As a result, the Institute for Clinical Systems

Improvement (ICSI) was engaged. As a non-profit, independent organization, ICSI is recognized for bringing diverse groups together to find solutions to health care issues that no single entity can solve on its own. When a member group asked ICSI to address this issue, ICSI saw an opportunity to help develop a patient-centered, value-driven alternative to PN requirements using decision support at the point of service for ordering HTDI.



Pilot Program

ICSI brought together medical groups, independent radiology providers, health plans, and the Minnesota Department of Human Services to develop criteria, measures, and quality improvement (QI) components for HTDI decision support. ICSI also consulted with employer groups. Through this collaboration, ICSI developed a pilot program as an alternative point-of-service approach to PN.

Six medical groups (Allina Medical Clinic, Fairview Health Services, HealthPartners Medical Group, Mayo Clinic, Park Nicollet Health Services, and St. Mary's/Duluth Clinic Health System) and five health plans (Blue Cross and Blue Shield of Minnesota, HealthPartners, Medica, Preferred One and UCare Minnesota) participated, as did the Minnesota Department of Human Services.

Through ICSI, the participating medical groups and health plans developed a model that addresses 90% of the CT, MRI, PET and Nuclear Cardiology scans ordered by their providers using a set of guidelines based on

American College of Radiology (ACR) and the American College of Cardiology (ACC) imaging appropriateness criteria. This process was integrated into their routine workflow so that appropriate ordering of HTDI procedures could be done at the point of service. ICSI committees defined the pilot design criteria, reporting criteria, measures and the specifications for a daily data set that medical groups submit to health plans.

Pilot Results

One goal of this initiative is to ensure the most appropriate test is ordered. Imaging orders are considered high-, moderate- or low-utility—that is, they range from the most appropriate or most useful to the least appropriate or least useful for diagnosis based on the patient's symptoms. The combined data from the five medical groups (Mayo is still in the design process) showed 63% of all images ordered in the pilot met high-utility appropriateness criteria, 7% moderate utility, 4% low utility and 26% fell into the "other" category.

All medical groups met the expectation that at least 90% of their HTDI images were ordered based on ACR/ACC criteria. They uncovered some limitations with the ACR appropriateness criteria, and additional indications and content were added to the criteria being used to help clinics make even more appropriate decisions when ordering HTDI procedures.

Evaluation

ICSI also determined that information in a patient's medical chart could be used to show that a medical group was using appropriateness criteria when ordering HTDI procedures. Results from a study of 300 charts on three HTDI procedures showed that a larger proportion of studies ordered after implementing ICSI decision support fit appropriateness criteria (89.2% vs. 79.5%).

The pilot illustrated how medical groups and health plans can collaborate to accelerate improvement in patient care. The participating health plans accepted the ICSI- defined alternative

as a more efficient and effective way to deliver value-driven and patient-centered care. The participating medical groups are not required to provide PN before ordering imaging.

Although the pilot program has ended, the medical groups are continuing to use and refine their imaging appropriateness criteria. They report this alternative approach allows for shared decision-making with patients at point of service and serves as a useful patient education tool.

Combined Procedures

	Pre	Post	P
N	151	148	
Definite fit with criteria	79.5%	89.2%	.02
A	70%	82%	.04
B	22%	12%	
C	8%	6%	
Ambiguous fit	2.6%	3.4%	
No fit	17.9%	7.4%	
Within normal limits	37.5%	31.8%	.33
Positive N (%)	32 (21.2%)	44 (29.7%)	.24
Related to indication	16.6%	22.3%	
Further studies rec.	3.3%	5.4%	
Effect on care:			
Major	38%	36%	.79
Minor	31%	25%	
Uncertain	12%	18%	
None	19%	20%	

Next steps

ICSI determined that point-of-service decision support using appropriateness criteria was possible and effective, and that using a common set of appropriateness criteria will be the most effective and useful for broader implementation. ICSI has evaluated sources for this common criteria, and is exploring how to spread this alternative to other health care providers statewide.

For More Information

Contact Cally.Vinz@icsi.org or call 952.814.7068

© Copyright 2008. Institute for Clinical Systems Improvement. All Rights Reserved.



8009 34th Avenue South
 Suite 1200
 Bloomington, MN 55425
 952-814-7060
www.icsi.org