

CT scanning aids rapid diagnosis, treatment planning for abdominal pain

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The use of CT scanning to evaluate abdominal pain in emergency departments can help physicians arrive at a diagnosis quickly and decisively. A study conducted at Massachusetts General Hospital (MGH) and appearing in the February issue of the *American Journal of Roentgenology* also finds that information provided by CT scans changed treatment plans for almost half the patients studied and significantly reduced probable hospital admissions.

"Our report addresses an important question with substantial policy relevance – what is the value of [CT scanning](#) in the emergency department setting?" says Scott Gazelle, MD, MPH, PhD, an MGH radiologist and director of the Institute for Technology Assessment, senior author of the study. "We specifically looked at how the use of CT for patients with abdominal pain affects physicians' thinking about their patients' diagnosis, their confidence in the diagnosis and the treatment plan; and we found that it significantly affected all three."

Gazelle explains that imaging has become a target for efforts to reduce health care costs. "We've strongly believed that the use of CT in the emergency department can improve efficiency in the workup for many conditions, but we haven't had the evidence we would like to back up that assertion. We chose abdominal pain for our study because it's a common presenting symptom that doesn't have the clearly defined diagnostic guidelines available for other common symptoms that can lead to CT, like headache."

Over a 15-month period from November 2006 through February 2008, physicians in the MGH Emergency Department (ED) who ordered CT scans for patients with [abdominal pain](#) not associated with a traumatic injury were asked to complete a questionnaire both before the scan was conducted and again after receiving the results. The questionnaire included the physicians' current diagnosis of the probable cause of symptoms, their level of confidence in the diagnosis and their expected treatment recommendations.

Complete sets of questionnaires on the care of 584 patients were available for analysis. The CT scan results changed the diagnosis for 49 percent of patients and the management plan for 42 percent. The number of patients who would have been held for observation – possibly including additional diagnostic procedures – decreased 44 percent, and the number of planned [hospital admissions](#) was reduced almost 20 percent. The use of CT scanning significantly increased physicians' confidence in their diagnosis – both when the scan changed and when it did not change the prescan diagnosis – and that improvement was more pronounced in resident physicians than in staff physicians.

"Poor diagnostic certainty can lead to poor decision making," explains lead author Hani Abujudeh, MD, MBA, of MGH Radiology. "Increased certainty improves treatment planning and can reduce inappropriate utilization of hospital resources. Overall, the CT scan is an important tool for providing our patients with appropriate and timely care."

Gazelle adds, "While we didn't include a cost analysis in our study, it is fair to say that our results suggest the CT scan might reduce the use of other tests and procedures and therefore lower overall costs. Another benefit is that CT provides rapid results, which makes the workup process more efficient and can reduce both monetary costs and the time required to move patients through the ED."

Provided by Massachusetts General Hospital

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