

Large medical center reduces CT scans and patient radiation exposure through a simple, educational intervention

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A large New York medical center reduced the number of CT scans and radiation dose delivered to emergency department patients with suspected pulmonary emboli (PE) by holding collaborative educational seminars for staff and routing patients to CT pulmonary angiography (CTPA) or ventilation perfusion (V/Q) scanning based solely on their chest X-ray results, according to a study published in the February issue of the *American Journal of Roentgenology*.

A V/Q scan evaluates the ability of air to reach all portions of the lungs and also measures the supply of blood through the lungs. CTPA uses a CT scan to obtain an image of the pulmonary arteries. "The total effective radiation dose from CTPA is approximately five times greater than that from V/Q scanning, and the dose is 20 - 40 times greater to the female breast," said Linda B. Haramati, MD, MS, lead author of the study. "Most physicians are not aware of these differences," said Haramati.

Collaborative educational seminars were held among the radiology, nuclear medicine, and emergency medicine departments regarding the [radiation dose](#) and accuracies of V/Q scanning and CTPA for diagnosing PE at Montefiore Medical Center in the Bronx, NY. In addition, an imaging algorithm was introduced in which emergency department patients with a clinical suspicion of PE underwent chest radiography. If the chest radiograph was normal, V/Q scanning was recommended,

otherwise CTPA was recommended.

As a result of the educational intervention and new algorithm, "the number of CTPA examinations performed at our center decreased from 1,234 in 2006 to 920 in 2007, and the number of V/Q scans increased from 745 in 2006 to 1,216 in 2007. The radiation was reduced by 20 percent, from 8.0 mSv in 2006 to 6.4 mSv in 2007," said Haramati.

"The purpose of our study was to decrease radiation exposure to emergency department patients with suspected PE, for whom imaging was clinically warranted, by safely increasing the use of V/Q scanning and decreasing the use of CTPA through an educational intervention," she said.

"We have shown that a simple, collaborative educational intervention and routing of patients to CTPA or V/Q scanning based on the results of chest radiography can change the practice pattern in the [emergency department](#) for patients with suspected PE. The use of V/Q scanning in patients with normal chest radiographs results in considerably lower patient [radiation exposure](#)," said Haramati.

Provided by American College of Radiology / American Roentgen Ray Society

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