Title: Pulmonary computed tomography angiography in the diagnosis of acute pulmonary embolism: an assessment of prevalence and use

Descriptor: An assessment of overuse of pulmonary CT angiography (PCTA) in the diagnosis of acute pulmonary embolism (PE), through the evaluation of frequency of use and positive yield rate of PCTA

Background: PE is a frequent and potentially lethal disease. Its diagnosis is often difficult and involves the use of clinical and paraclinical data and medical imagery. PCTA is the most commonly used imaging method used. Its prevalence is increasing, but without significant improvement in mortality rate associated with PE, suggesting overuse. The main objective is to evaluate the positive yield rate and prevalence of use of PCTA at a university-based practice.

Target: No current consensus on target positive yield rate or prevalence of use. However, theoretical estimates of maximum positive yield rate and minimum prevalence of use are 38.4% and 22.7% respectively.

Materials and method*s*: Retrospectively gather patient data from electronic medical records system. All patients having undergone D-dimer testing, ventilation-perfusion scintigraphy or PCTA are included. Gather the following information from the radiology reports: age, sex, location of patient (department), specialization of prescribing MD, scan result with location of the most proximal embolus if applicable, and relevant clinical data written on the request (hemoptysis, dyspnea, chest pain, syncope, desaturation, signs of right-sided heart failure)

Interventions/Action Plan: Discussion of results at an intra-departmental meeting and/or Emergency department meeting. Funding of a prospective study could be considered. Implementation of a clinical decision support system could be considered.

Resources required: None.

Time required: Two months for a sample of approximately 1300 scans.

References:

Mamlouk MD, vanSonnenberg E, Gosalia R, et al. Pulmonary embolism at CT angiography: implications for appropriateness, cost, and radiation exposure in 2003 patients. Radiology 2010;256:625-32.

Costantino MM, Randall G, Gosselin M, Brandt M, Spinning K, Vegas CD. CT angiography in the evaluation of acute pulmonary embolus. AJR Am J Roentgenol 2008;191:471-4.

Wells PS, Anderson DR, et al. Excluding pulmonary embolism at the bedside without diagnostic imaging: Management of patients with suspected pulmonary embolism presenting to the emergency department by using a simple clinical model and D-dimer. Annals Intern Med 2001;135:98-107.

Pistolesi M. Pulmonary CT angiography in patients suspected of having pulmonary embolism: case finding or screening procedure? Radiology 2010;256:334-7.

DeMonaco NA, Dang Q, Kapoor WN, Ragni MV. Pulmonary embolism incidence is increasing with use of spiral computed tomography. Am J Med 2008;121:611-7.