

Audit Title: MRI after a negative CT in hyperacute stroke: A single institution audit

Descriptor: An audit to evaluate the impact of delayed MRI in patients presenting with TIA symptoms, who have a negative CT scan, and the associated costs with hospital length of stay related to delayed MRI.

Background and Aim: MRI is superior to CT to diagnose acute ischemic stroke. Because MRI is not always readily available to assess CT negative patients, patients with suspected stroke are admitted, with MRI performed to exclude stroke. MRI is not always performed within 24 hours leading to costs associated with preventable length of stay (LOS). Our aim is to evaluate the impact of delayed MRI on patient admission, LOS and associated expenses.

Methods: We reviewed patients with stroke symptoms who underwent CT/CTA as part of our Institutional "Hyperacute Stroke Protocol" during 2014. In patients with negative CT/CTA, we recorded MRI results, patient admission status, LOS and discharge diagnosis. Cost of hospital stay was estimated as \$3000/day.

Standards: MRI should be performed within 12-24 hours in hyperacute stroke patients with negative CT/CTA.

Audit Target: Standard should be achieved in over 90% of cases.

Recommendations:

The main consideration is the length of stay and costs associated with hospitalization of patients presenting with stroke symptoms, who have a negative CT, and a delayed MRI.

Interventions / Action Plan:

Results will be shared with physicians from Radiology, Neurology and Emergency to facilitate future access to MRI within 12-24 hours of patient presentation, to reduce patient admissions.

References:

1. Wardlaw JM, et al. An assessment of the cost-effectiveness of magnetic resonance, including diffusion-weighted imaging, in patients with transient ischaemic attack and minor stroke: a systematic review, meta-analysis and economic evaluation. *Health Technol Assess.* 2014;18: 1-368.
2. Brazzelli M et al, Diffusion-weighted imaging and diagnosis of transient ischemic attack. *Ann Neurol.* 2015;75: 67-76.
3. Gargan ML, et al (2015, July). The value of MRI Brain following negative CT Brain in the acute stroke setting. Poster session presented at the Annual U.K. Radiological Congress (UKRC), Liverpool, UK.