Role of Echocardiography and Carotid Doppler Ultrasound in work up of ischemic stroke: A Cost-Benefit PSQI Study

Background
Stroke is one of the recognized leading causes of mortality, and is known to kill 1 American in every 4 minutes. It is also known to cost the United States health care system about 34 billion dollars every year. Part of the cost is attributed to work-up of patient who present with stroke, with the aim geared at preventing further strokes or finding the cause of the stroke. Part of this work-up includes Echocardiography as well as Carotid Doppler ultrasound.

Hypothesis
Our Hypothesis is that carotid Doppler ultrasound and echocardiogram do not offer any significant change to the management of patients presenting with ischemic stroke, and these tests should not be ordered for everyone presenting with an ischemic stroke. By avoiding the routine ordering of these tests, overall health care costs will be reduced.

Objective
1. To identify number of patients who present with an ischemic stroke that undergo echocardiography and carotid Doppler ultrasound
2. To identify patients who undergo interventions based on echocardiography and carotid Doppler ultrasound findings
3. To assess a cost-benefit analysis of both investigations

Method
This is a retrospective cohort study that was conducted at St. Vincent’s Medical center. Medical records of patients with ischemic stroke between the period of July 1 2014 and July 1 2016 were reviewed, and data pertinent to the study gathered.

Results
309 patients with Ischemic stroke were analyzed. 253 (81.9%) of these patients underwent carotid Doppler ultrasound and 273 (88.3%) underwent transthoracic echocardiography during admission. Only 6 (2.2%) patients who underwent echocardiography were found to have a cardiac thrombus (3 with a left atrial thrombus, 3 with a left ventricular thrombus), of which 2 patients were already on Coumadin. 38 patients (15%) who underwent carotid Doppler ultrasound had > 50% stenosis of the carotid artery lumen. Only 6 patients (2.4%) were found to have critical stenosis and planned for surgery.

Conclusion
Echocardiography and carotid Doppler ultrasound have a low diagnostic yield following an Ischemic stroke and only alter the management in <5% of patients.