

OAC and those who were referred to cardiology, family medicine, or did not have a documented follow up plan. Patients with a previous history of AF or current anticoagulant therapy were excluded. We recorded if any patients returned to the ED within 90 days with ischemic stroke, AF recurrence, myocardial infarction, other embolic disease or death. **Results:** 86 of 294 (29.5%) of patients who qualified under CHADS-65 received OACs appropriately. 64 of 66 (97.0%) of patients who did not qualify under CHADS-65 did not receive OACs appropriately. 5 patients overall returned within 90 days with ischemic stroke, 4 of those were not prescribed OACs, however this was not statistically significant ($P = 0.999$). **Conclusion:** This data suggests that physicians in the study are under-prescribing OACs relative to published guidelines. A larger study is necessary to elucidate the effect of ED OAC prescribing patterns on long-term patient outcome.

Keywords: atrial fibrillation, oral anticoagulant, quality improvement and patient safety

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Are we missing pulmonary embolism in acute exacerbations of chronic obstructive pulmonary disease presenting to the emergency department? Multicenter insights into incidence of concomitant disease and yield of testing

D. Moussienko, BHSc, D. Lang, L. Skeith, MD, E. Lang, MDCM, University of Calgary, Calgary, AB

Introduction: Patients with Chronic Obstructive Pulmonary Disease (COPD) often present to the ED with acute exacerbations (AE-COPD) of the disease. A potential occult yet fatal disease that might contribute or accompany an AE-COPD presentation is a pulmonary embolism (PE). Previous studies have investigated and report rates of PE in up to 29% of patients presenting with AE-COPD. Misdiagnoses of PE leads to poor outcomes, however, over-testing for PE also presents with substantial risks to the patient and strain on acute care resources. The goal of this study was to pragmatically identify the prevalence and 30-day incidence of PE in patients presenting with AE-COPD to EDs, as well as the burden and yield of PE investigations. **Methods:** We conducted a retrospective analysis of extracted data for patients ≥ 50 years old presenting to one of four emergency departments in Calgary with an AE-COPD since 2013. Patients with a history of outpatient anticoagulation therapy from a community pharmacy were excluded. Each patient chart was reviewed to identify a diagnosis of PE during the admission for an AE-COPD, or 30 days post discharge from an AE-COPD admission or ED presentation. An AE-COPD diagnosis was defined as a primary. **Results:** A total of 9554 AE-COPD ED patient visits were included in the study. 0.69% (95% CI 0.54 to 0.88) were identified to have a PE. 26 of the 66 (39.4%) were diagnosed during an AE-COPD inpatient admission, while 43 (65.2%) were diagnosed within 30 days post-discharge from an AE-COPD admission or ED presentation. Since 2016, 7.4% of AE-COPD patients underwent a CT-PE, while 16.7% underwent a d-dimer. The most common chief complaint in PE patients was dyspnea (75.8%). The mean age of the PE diagnosed was 73.4, with nearly equal representation of both sexes. Many patients had underlying comorbidities, such as hypertension, diabetes, and cancer of various sites, all of which are risk factors for developing a PE. **Conclusion:** The prevalence and 30-day incidence of PE in AE-COPD patients appears to be lower than what was previously reported in the literature. Despite this, a significant proportion of AE-COPD patients were exposed to the risks and burden of a PE work up, with low diagnostic

yield. PE investigations in AE-COPD should be used selectively and could inform a quality improvement indicator. A future prospective study would drastically contribute to whether a PE clinical work up should be recommended and of value to patients.

Keywords: chronic obstructive pulmonary disease, pulmonary embolism

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Reducing overcapacity: applying the LEAN model to length of stay in the emergency department

N. Wilson, G. Bugden, BSc, MD, J. Swain, BSc, Memorial University, St. John's, NL

Introduction: Recently there have been many studies performed on the effectiveness of implementing LEAN principals to improve wait times for emergency departments (EDs), but there have been relatively few studies on implementing these concepts on length of stay (LOS) in the ED. This research aims to explore the initial feasibility of applying the LEAN model to length-of-stay metrics in an ED by identifying areas of non-value added time for patients staying in the ED. **Methods:** In this project we used a sample of 10,000 ED visits at the Health Science Centre in St. John's over a 1-year period and compared patients' LOS in the ED on four criteria: day of the week, hour of presentation, whether laboratory tests were ordered, and whether diagnostic imaging was ordered. Two sets of analyses were then performed. First a two-sided Wilcoxon rank-sum test was used to evaluate whether ordering either lab tests or diagnostic imaging affected LOS. Second a generalized linear model (GLM) was created using a 10-fold cross-validation with a LASSO operator to analyze the effect size and significance of each of the four criteria on LOS. Additionally, a post-test analysis of the GLM was performed on a second sample of 10,000 ED visits in the same 1-year period to assess its predictive power and infer the degree to which a patient's LOS is determined by the four criteria. **Results:** For the Wilcoxon rank-sum test there was no significant difference in LOS for patients who were ordered diagnostic imaging compared to those who were not ($p = 0.6998$) but there was a statistically significant decrease in LOS for patients who were ordered lab tests compared to those who were not ($p = 2.696 \times 10^{-10}$). When assessing the GLM there were two significant takeaways: ordering lab tests reduced LOS (95% CI = 42.953 - 68.173min reduction), and arriving at the ED on Thursday increased LOS significantly (95% CI = 6.846 - 52.002min increase). **Conclusion:** This preliminary analysis identified several factors that increased patients' LOS in the ED, which would be suitable for potential LEAN interventions. The increase in LOS for both patients who are not ordered lab tests and who visit the ED on Thursday warrant further investigation to identify causal factors. Finally, while this analysis revealed several actionable criteria for improving ED LOS the relatively low predictive power of the final GLM in the post-test analysis ($R^2 = 0.00363$) indicates there are more criteria that influence LOS for exploration in future analyses.

Keywords: lean thinking, process efficiency, quality improvement

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Psychological distress in patients following pulmonary embolism diagnosis

A. Tran, BSc, M. Redley, PhD, K. de Wit, BSc, MChB, MD, MSc, McMaster University, Hamilton, ON

Introduction: Pulmonary embolism (PE) is a treatable condition, with a low mortality rate (of around 1% in those who are diagnosed