Provider Use of Risk Stratification Tools for PE and CTA Ordering Practices

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Background

Emergency medicine residents hypothesize inter-physician variability in PE diagnostic algorithm and suspect overutilization of CTA-PE

Physicians tend to overestimate pretest probability in low and intermediate risk patients (2, 3)

In low pretest probability patients, PERC (Level B) or D-dimer (Level A) can exclude PE (2)

In intermediate pretest probability patients, D-dimer may be used to exclude PE (Level C) (2)

Aims for Improvement

Quantify utilization of clinical decision tools, D-dimer and CTA-PE at TJUH and compare to benchmark and implement the logic seen in the adjacent QR code to an EPIC pop-up
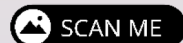
Methods

Retrospective observational study of patient encounters from 07/01/2019 – 12/31/2019 for which CTA-PE study was performed in patients aged 18 – 50 years old

Measurements/ Results

Christopher Study (1)

Wells $\leq$4, abnormal D-dimer, 23.2% (266/1149) +PE

Wells >4, 37.1% (408/1100) +PE

20.4% (674/3306) study population +PE

Our Data

Wells $\leq$4, abnormal D-dimer, 9.4% (3/32) +PE

Wells >4, 20.0% (10/50) +PE

12.1% (71/586) study population +PE

Wells $\leq$4, no D-dimer, 21.1% (4/19) +PE

Wells >4, no D-dimer, 24.3% (9/37) +PE

Regardless of Wells, D-dimer normal, 0.0% (0/18) +PE

Intervention

Require use of Wells, PERC and D-dimer in CTA-PE order set on Epic. COVID-19 precluded intervention due to resource consumption and concern for missed pathology (i.e. hypercoagulability, PE) in hypoxic patients

Lessons Learned

Our methods differed from Christopher Study making it difficult to compare to benchmark

Our department demonstrates low documentation rates of Wells, PEC and D-dimer

We hypothesize that this represents use of gestalt/other deviation from PE workup algorithms or gaps in documentation

COVID-19 highlights how we cannot always apply our best evidence to our patient populations when prevalence of disease changes

Our EM physicians should be educated on the importance of validated score documentation

Studies are needed regarding the use of Wells, PERC and D-dimer in COVID-19 and new diagnostic approaches/validated tools should be developed