

Tyler Kallsen, Block 12, Journal of the American Medical Association

Reference Article: Righini, M., Van Es, J., Den Exter, P.L. et al. *Age-adjusted D-dimer cutoff levels to rule out pulmonary embolism: the ADJUST-PE study*. JAMA. 2014; 311: 1117-1124.

Question: Is D-dimer cutoff, defined as age x10 in patients 50 years or older, associated with an increased diagnostic yield when ruling out suspected PE in elderly patients?

Background: D-dimer is an important tool in the workup of patients suspected of having pulmonary embolism, especially as a test for exclusion for PE in conjunction with clinical assessment. This test with current parameters has limited usefulness in patients older than 50 given age related increases in D-dimer. This limits the yield and cost-effectiveness of noninvasive diagnosis in this group.

Methods: This study was a multicenter, multinational, prospective study involving 4 European countries, total patients with low probability 2898 out of 4420 assessed for eligibility. Primary outcome was failure rate defined as thromboembolic events during the 3-month follow-up period among patients not treated with anticoagulation based on a negative highly sensitive D dimer measurement and low clinical suspicion for PE, using the simplified revised Geneva score or the 2-level Wells score for PE. Patients were followed up with a 3-month phone call follow-up. Secondary outcome was

Patient Selection: Consecutive outpatients, age greater than 18 years, who presented to the ED with clinical suspicion of PE defined as an acute onset or worsening SOB or chest pain without another obvious source. Exclusion criteria included those on anticoagulation, allergy to contrast medium, impaired renal function, life expectancy of less than 3 months, ongoing pregnancy, or inaccessibility for follow-up.

Results: Of the 2898, 817 had negative D-Dimer less than 500 micrograms/L, 330 had levels above 500 but below age-adjusted cut off, 1744 had level higher than age adjusted cut off. Age adjusted cutoff resulted in an 11.6% absolute increase in negative d-dimer results. D-Dimer lower than 500 thromboembolic risk was 1/810 or 0.1%. D-Dimer above 500 and below age-adjust cutoff, thromboembolic risk 1/331 or 0.3%.

Discussion: The authors conclude that the age-adjusted D-dimer cutoff combined with probability assessment ruled out the diagnosis of PE and was associated with a low likelihood of subsequent symptomatic VTE with an increase in the proportion of patients in whom the diagnosis can be excluded. Strength to this method includes easy memorizing and tailored to each patient versus fixed increased cutoff values for elderly patients. Limitations: not a randomized clinical study, used different clinical assessment tools and 6 different d-dimer assays. Did not count subsegmental PEs as failures on 3 month follow up.

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