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Wells Criteria for Deep Vein Thrombosis

The Wells criteria for DVT are used to calculate risk of DVT based on clinical criteria.

About the Score

The Wells criteria for deep vein thrombosis (DVT) stratifies patients suspected of having DVT into risk groups. The tool can be used in outpatient and emergency department settings.

Traditional testing for DVT involved costly and time-intensive multiple lower-extremity ultrasound. The Wells criteria can be used to determine which patients are overall unlikely to have DVT. Further testing with D-dimer can safely rule out DVT without the need for ultrasound. By risk-stratifying a patient to a low-risk category (Wells score < 2) and receiving a negative D-dimer, clinicians can eliminate the need for ultrasound to rule out DVT.

The Wells criteria stratify patients into "DVT unlikely" and "DVT likely" groups. An additional "moderate" risk group can be added, based on the sensitivity of the D-dimer being used. A score of ≤ 0 is associated with "DVT unlikely" (5% prevalence of DVT). These patients should proceed to D-dimer testing. A score of 1 to 2 is considered moderate risk, with a pretest probability of 17%. These patients should proceed to high-sensitivity D-dimer testing, as moderate-sensitivity D-dimer is not sufficient. A score ≥ 3 suggests DVT is likely. Pretest probability is 17% to 53%. All patients found to be "DVT likely" should receive a diagnostic ultrasound.

There is a low prevalence of DVT in patients with low clinical suspicion (< 25%). The Wells score inherently incorporates clinical gestalt, with a -2 score assigned when an alternative diagnosis is

more likely than DVT. Sequelae from DVT include pulmonary embolism (PE) and pulmonary hypertension, which have an associated mortality of 1% to 8%. Anticoagulation is the mainstay treatment for DVT, although anticoagulation has its own associated risks of bleeding.

As with all clinical decision aids, the Wells criteria for DVT are meant to aid clinical decision making and not to force management. The criteria should be applied only after a detailed history and physical examination are performed. Likewise, the tool should be applied only to those patients who have been deemed to be at risk for DVT. If there is no concern for DVT, then there is no need for risk stratification.

Evidence Appraisal

The Wells criteria for DVT were derived from a number of studies by Wells et al ([Wells 1995](#), [Wells 1997](#), [Wells 2003](#)) in an attempt to stratify risk for DVT in symptomatic outpatients. At the time, the clinical diagnosis of DVT was thought to be inaccurate, leading to widespread overuse of confirmatory imaging.

In their 2003 study, Wells et al identified 1096 outpatients with concern for DVT and randomized them into 2 groups after applying the Wells criteria for DVT. The control group of 520 patients had an ultrasound performed. The other group of 562 patients had D-dimer testing performed. If the D-dimer was positive, they also received an ultrasound; if the D-dimer was negative, no ultrasound was performed. Sixteen percent of the patients in the control group and 15.5% in the test group had DVT or PE, resulting in an overall prevalence of 15.7%. Among the 520 control patients, 279 were considered DVT-unlikely and 241 were considered DVT-likely. Sixteen (5.7%) of the DVT-unlikely patients had DVT or PE. In the control group overall, 6

CALCULATOR REVIEW AUTHOR

Benjamin Slovis, MD

Department of Emergency Medicine, Thomas Jefferson University, Philadelphia, PA

patients (1.4%) who had been initially ruled out had a diagnosis of DVT on 3-month follow-up. Of the 562 patients in the D-dimer group, 315 were considered unlikely to have DVT and 247 were considered likely to have DVT. Seventy-one patients (28.7%) in the likely group had DVT. In the unlikely group, 38.8% of patients had a negative D-dimer and did not undergo further testing. Two of these patients (0.4%) had confirmed DVT on days 4 and 14 of follow-up. The negative predictive value of D-dimer was 96.1%. This algorithm was then supported by Scarvelis and Wells (Scarvelis 2006).

In 2006, Wells et al performed a systematic review (Wells 2006), which evaluated 8239 patients in 14 studies that used the Wells score to predict risk of DVT, and evaluated for the incidence of DVT in association with moderate- or high-sensitivity D-dimer. This review has been utilized by the American College of Chest physicians to provide guidelines for the evaluation of DVT.

Instructions

The Wells score is less useful in hospitalized patients than in outpatient settings (Silveira 2015). There are several versions of these criteria with minor differences based on the study. The calculator on MD- Calc uses the most widely validated criteria, based on the study by Wells et al in 2003 (Wells 2003).

Use the Calculator Now

[Click here to access the Wells Criteria on MDCalc.](#)

Calculator Creator

Phil Wells, MD, MSc

[Click here to read more about Dr. Wells.](#)

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Contact EB Medicine:
Phone: 1-800-249-5770
or 678-366-7933
3475 Holcomb Bridge Rd
Suite 100
Peachtree Corners, GA 30092



Contact MD Aware:
MDCalc
Phone: 646-543-8380
12 East 20th Street
5th Floor
New York, NY 10003

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