

---

---

**Are clinical prediction rules useful for the diagnosis of venous thromboembolism:  
Systematic review and meta-analysis.**

*L Tamariz, J Eng, J Segal, J Krishnan, D Bolger, M Streiff, M Jenckes, E Bass.  
Johns Hopkins University, Baltimore, MD*

---

---

**Purpose:** To summarize the evidence on the use of clinical prediction rules for the diagnosis of venous thromboembolism (VTE).

**Data Sources:** MEDLINE from 1966 to May 2002

**Data Extraction:** We extracted data on study quality, risk factors for VTE, diagnosis reference standard, clinical prediction rules and the number of patients with documented VTE in each risk stratum.

**Study Selection:** We selected studies reported in the English literature in which a clinical prediction rule was prospectively validated against a reference standard.

**Methods:** We calculated positive and negative predictive values and the area under the receiver operant characteristic curve (AUC) for each clinical prediction rule.

**Data Synthesis:** Nineteen studies met our eligibility criteria: 14 evaluated prediction rules for diagnosing deep venous thrombosis (DVT) and 5 for pulmonary embolism (PE). The most frequently evaluated prediction rule was the Wells DVT rule. The risk factors for VTE were incompletely reported, however when it was reported most patients had temporary risk factors and few had malignancy. The negative predictive value of the rules ranged from 81 to 100 percent if the patients were in moderate or high pretest probability categories. The AUCs ranged from 0.74 to 0.90. Addition of the d-dimer test to the prediction rule increased the AUCs to 0.87 to 0.91. The Wells model for PE was the most commonly studied and had an AUCs that ranged from 0.52 to 0.85.

**Conclusion:** The Wells is useful in identifying patients at low risk of being diagnosed with a DVT and is useful in identifying patients with a high enough risk of DVT to warrant additional testing. The prediction rules for PE were less accurate than those used for diagnosing DVT.