

EVIDENCE BASED STATEMENT

DOMAIN **06**, Statement **01**

TOPIC: “Proper Venous Thrombotic Risk Assessment”

SEARCH TERMS & SOURCES

PubMed

((("venous thrombosis" OR "venous thromboembolism" OR "VTE") AND ("risk assessment model") AND ("meta analysis" OR "review")))

INCLUSION CRITERIA

Reviews evidence-based risk VTE assessment models
Reviews multiple studies from 2012 to 2022

SEARCH RESULT BEFORE - AFTER SELECTION

60 – 12

PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Darzi AJ, Repp AB, Spencer FA, Morsi RZ, Charide R, Etxeandia-Ikobaltzeta I, Bauer KA, Burnett AE, Cushman M, Dentali F, Kahn SR. Risk-assessment models for VTE and bleeding in hospitalized medical patients: an overview of systematic reviews. Blood advances. 2020 Oct 13;4(19):4929-44.
2. Golemi I, Adum JP, Tafur A, Caprini J. Venous thromboembolism prophylaxis using the Caprini score. Disease-a-Month. 2019 Aug 1;65(8):249-98.
3. Huang W, Anderson FA, Spencer FA, Gallus A, Goldberg RJ. Risk-assessment models for predicting venous thromboembolism among hospitalized non-surgical patients: a systematic review. Journal of thrombosis and thrombolysis. 2013 Jan;35(1):67-80.
4. Pandor A, Tonkins M, Goodacre S, Sworn K, Clowes M, Griffin XL, Holland M, Hunt BJ, de Wit K, Horner D. Risk assessment models for venous thromboembolism in hospitalised adult patients: a systematic review. BMJ open. 2021 Jul 1;11(7):e045672.

EVIDENCE BASED STATEMENT

Domain 6; Statement 1

IDENTIFIED REFERENCES

1. Autar R. Evidence for the prevention of venous thromboembolism. *British journal of nursing*. 2006 Oct 12;15(18):980-6.
2. Barbar S, Prandoni P. Scoring systems for estimating risk of venous thromboembolism in hospitalized medical patients. In *Seminars in thrombosis and hemostasis* 2017 Jul (Vol. 43, No. 05, pp. 460-468). Thieme Medical Publishers.
3. Cohen AT, Alikhan R, Arcelus JJ, Bergmann JF, Haas S, Merli GJ, Spyropoulos AC, Tapson VF, Turpie AG. Assessment of venous thromboembolism risk and the benefits of thromboprophylaxis in medical patients. *Thrombosis and haemostasis*. 2005;94(10):750-9.
4. Cronin M, Dengler N, Krauss ES, Segal A, Wei N, Daly M, Mota F, Caprini JA. Completion of the updated Caprini risk assessment model (2013 version). *Clinical and Applied Thrombosis/Hemostasis*. 2019 Apr 2;25:1076029619838052.
5. Fuentes HE, Paz LH, Al-Ogaili A, Andrade XA, Oramas DM, Salazar-Adum JP, Diaz-Quintero L, Acob C, Tafur A, Caprini J. Validation of a patient-completed Caprini risk score for venous thromboembolism risk assessment. *TH Open*. 2017 Jul;1(02):e106-12.
6. Gerotziapas GT, Papageorgiou L, Salta S, Nikolopoulou K, Elalamy I. Updated clinical models for VTE prediction in hospitalized medical patients. *Thrombosis research*. 2018 Apr 1;164:S62-9.
7. Gervaso L, Dave H, Khorana AA. Venous and Arterial Thromboembolism in Patients With Cancer: JACC: CardioOncology State-of-the-Art Review. *JACC: CardioOncology*. 2021 Apr 20.
8. Hawes EM, Viera AJ. Anticoagulation: indications and risk classification schemes. *FP essentials*. 2014 Jul 1;422:11-7.
9. Kyrle PA. Predicting recurrent venous thromboembolism in cancer: is it possible?. *Thrombosis research*. 2014 May 1;133:S17-22.
10. Mosaad M, Elnaem MH, Cheema E, Ibrahim I, Ab Rahman J, Kori AN, Hin HS. Cancer-Associated Thrombosis: A Clinical Scoping Review of the Risk Assessment Models Across Solid Tumours and Haematological Malignancies. *International Journal of General Medicine*. 2021;14:3881.
11. Stuck AK, Spirk D, Schaudt J, Kucher N. Risk assessment models for venous thromboembolism in acutely ill medical patients. *Thrombosis and haemostasis*. 2017;117(04):801-8.
12. Vyas D. Variations in risk assessment models may contribute to the existing gap between venous thromboembolism prophylaxis guidelines and adherence. *SpringerPlus*. 2012 Dec;1(1):1-5.

EVIDENCE BASED STATEMENT

Domain 6; Statement 1

TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 06, Statement 01, TOPIC: “Proper Venous Thrombotic Risk Assessment”

Venous thromboembolism (VTE) events cause substantial morbidity, mortality, and long-term sequelae, but can be prevented with the judicious use of mechanical and pharmaceutical prophylaxis. For patient groups with elevated baseline VTE risk, including surgery patients, hospitalized patients, and patients with cancer, clinicians should perform individualized VTE risk assessments using models that have been validated within the patient population of interest (**Darzi AJ, Repp AB, Spencer FA, et al. Risk-assessment models for VTE and bleeding in hospitalized medical patients: an overview of systematic reviews. Blood advances. 2020 Oct 13;4(19):4929-44**). Individualized risk assessment is key to targeting patient groups most likely to benefit from chemoprophylaxis while minimizing the risk of bleeding side effects in patients unlikely to benefit. Patient risk scores should be used as clinical decision tools to determine appropriate, evidence-based levels of VTE prophylaxis (**Stuck AK, Spirk D, Schaudt J, Kucher N. Risk assessment models for venous thromboembolism in acutely ill medical patients. Thrombosis and haemostasis. 2017;117(04):801-8**).

There are many known risk factors for VTE, including age, obesity, immobility, personal and family history of VTE (including second and third-degree relatives), inherited disorders of coagulation, cancer, trauma, sepsis, and surgical operations, and this list continues to grow as further risk factors are discovered. The more risk factors that a patient has for VTE, the higher their overall risk and the greater the need for chemoprophylaxis. High quality evidence supports the use of 7-10 days of chemoprophylaxis for patients at high risk of VTE, and 30 days of chemoprophylaxis for patients determined to be at very high risk (***Golemi I, Adum JP, Tafur A, Caprini J. Venous thromboembolism prophylaxis using the Caprini score. Disease-a-Month. 2019 Aug 1;65(8):249-98**).

The Caprini, Geneva, IMPROVE, Kucher, and Padua risk assessment models have been externally validated for the prediction of VTE in various medical populations, while the Khorana score is commonly used in patients with cancer (**Stuck AK, Spirk D, Schaudt J, Kucher N. Risk assessment models for venous thromboembolism in acutely ill medical patients. Thrombosis and haemostasis. 2017;117(04):801-8; Pandor A, Tonkins M, Goodacre S, et al. Risk assessment models for venous thromboembolism in hospitalised adult patients: a systematic review. BMJ open. 2021 Jul 1;11(7):e045672**). The Caprini Risk Score has been validated in well over 100 publications among multiple surgical and medical populations. The score has several advantages over other risk scores in these populations. The score is more comprehensive and specifically queries family history, which has been proven to be a major risk factor for VTE. The high sensitivity and negative predictive value of the Caprini makes it the ideal tool to determine which patients are at low risk of VTE and can safely avoid chemoprophylaxis during a hospitalization or after surgery. It has also been implemented as part of hospital prophylaxis protocols that successfully reduced rates of VTE (**Golemi I, Adum JP, Tafur A, Caprini J. Venous thromboembolism prophylaxis using the Caprini score. Disease-a-Month. 2019 Aug 1;65(8):249-98**).

EVIDENCE BASED STATEMENT

Domain 6; Statement 1

STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 06, Statement 01

“Venous thromboembolism is a blood clot of the veins of the legs (deep venous thrombosis), or lungs (pulmonary embolism,). Patients should be informed about their risk factors”.

4 SELECTED REFERENCES

1. Darzi AJ, Repp AB, Spencer FA, Morsi RZ, Charide R, Etxeandia-Ikobaltzeta I, Bauer KA, Burnett AE, Cushman M, Dentali F, Kahn SR. Risk-assessment models for VTE and bleeding in hospitalized medical patients: an overview of systematic reviews. *Blood advances*. 2020 Oct 13;4(19):4929-44.
2. *Golemi I, Adum JP, Tafur A, Caprini J. Venous thromboembolism prophylaxis using the Caprini score. *Disease-a-Month*. 2019 Aug 1;65(8):249-98.
3. Pandor A, Tonkins M, Goodacre S, Sworn K, Clowes M, Griffin XL, Holland M, Hunt BJ, de Wit K, Horner D. Risk assessment models for venous thromboembolism in hospitalised adult patients: a systematic review. *BMJ open*. 2021 Jul 1;11(7):e045672.
4. Stuck AK, Spirk D, Schaudt J, Kucher N. Risk assessment models for venous thromboembolism in acutely ill medical patients. *Thrombosis and haemostasis*. 2017;117(04):801-8.

identified LITERATURE BIAS

Heterogeneous clinical vs lab thrombosis detection outcome measure in the different studies.

SUGGESTED NEXT LINES OF RESEARCH

VTE risk assessment in non-hospitalized patients without cancer, VTE risk assessment in outpatients undergoing minor procedures