

EVIDENCE BASED STATEMENT

DOMAIN **01**, Statement **07**
TOPIC: “age-related thrombotic risk”

SEARCH TERMS & SOURCES

(venous ulcer) AND burden

INCLUSION CRITERIA

- Lower limb only
- Reviews
- Publication < 10 years, only ENG

SEARCH RESULT BEFORE - AFTER SELECTION

84/9

PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Eichinger S, Kyrle PA. Sex, age and venous thrombosis-Are men and women indeed from different planets? *Eur J Intern Med.* 2021 Feb;84:16-17.
2. Yuan X, Tong X, Wang Y, et al. Coagulopathy in elderly patients with coronavirus disease 2019. *Aging Med (Milton).* 2020 Dec 29;3(4):260-265.
3. Barco S, Klok FA, Mahé I, et al. Impact of sex, age, and risk factors for venous thromboembolism on the initial presentation of first isolated symptomatic acute deep vein thrombosis. *Thromb Res.* 2019 Jan;173:166-171
4. Montagnana M, Favaloro EJ, Franchini M, et al. The role of ethnicity, age and gender in venous thromboembolism. *J Thromb Thrombolysis.* 2010 May;29(4):489-96.
5. Engbers MJ, van Hylckama Vlieg A, Rosendaal FR. Venous thrombosis in the elderly: incidence, risk factors and risk groups. *J Thromb Haemost.* 2010 Oct;8(10):2105-12.
6. Cushman M. Epidemiology and risk factors for venous thrombosis. *Semin Hematol.* 2007;44(2):62–69.

EVIDENCE BASED STATEMENT

Domain 1; Statement 7

IDENTIFIED REFERENCES

1. Molnár AÁ, Nádasy GL, Dörnyei G, et al. The aging venous system: from varicosities to vascular cognitive impairment. *Geroscience*. 2021 Dec;43(6):2761-2784.
2. Faria AVS, Andrade SS, Peppelenbosch MP, et al. Platelets in aging and cancer-"double-edged sword". *Cancer Metastasis Rev*. 2020 Dec;39(4):1205-1221.
3. Wang Q, Zennadi R. Oxidative Stress and Thrombosis during Aging: The Roles of Oxidative Stress in RBCs in Venous Thrombosis. *Int J Mol Sci*. 2020 Jun 15;21(12):4259.
4. Tzoran I, Hoffman R, Monreal M. Hemostasis and Thrombosis in the Oldest Old. *Semin Thromb Hemost*. 2018 Oct;44(7):624-631.
5. Bethishou L, Gregorian T, Won K, et al. Management of Venous Thromboembolism in the Elderly: A Review of the Non-Vitamin K Oral Anticoagulants. *Consult Pharm*. 2018 May 1;33(5):248-261.
6. Byrnes JR, Wolberg AS. New findings on venous thrombogenesis. *Hamostaseologie*. 2017 Jan 31;37(1):25-35.
7. Bochenek ML, Schütz E, Schäfer K. Endothelial cell senescence and thrombosis: Ageing clots. *Thromb Res*. 2016 Nov;147:36-45.
8. Ko D, Hylek EM. Anticoagulation in the older adult: optimizing benefit and reducing risk. *Semin Thromb Hemost*. 2014 Sep;40(6):688-94.
9. Favaloro EJ, Franchini M, Lippi G. Aging hemostasis: changes to laboratory markers of hemostasis as we age - a narrative review. *Semin Thromb Hemost*. 2014 Sep;40(6):621-33.

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TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 01, Statement 7 , TOPIC: “age-related thrombotic risk”

Venous thromboembolism (VTE) prevalence clearly changes with age: it has been reported to vary nearly 90 fold from <15 to >80 years old.

[Montagnana M, Favaloro EJ, Franchini M, et al. The role of ethnicity, age and gender in venous thromboembolism. J Thromb Thrombolysis. 2010 May;29(4):489-96].

The phenomenon is in line with the pro-inflammatory and pro-thrombotic phenotype expression changes found in the red cells, platelets and on the endothelium of the aging population.

***[Tzoran I, Hoffman R, Monreal M. Hemostasis and Thrombosis in the Oldest Old. Semin Thromb Hemost. 2018 Oct;44(7):624-631]**

The observation is in line with a reported incidence of VTE that is increasing sharply with the age, being extremely rare in the young (<1 per 10,000 per year) but increasing to ~ 1% per year in the over 60 yo.

Between 25–30 years old, VTE is reported in about 1 per 10.000 patients, while at 85 years old it is found in 8 per 1000 subjects.

The life-time risk of VTE at age 90 years old was demonstrated to be 15%.

Therefore, aging is a major risk factor for VTE: a concept of particular importance considering the constantly increasing lifespan of the population.

Immobilization has been identified among the main factors increasing the thrombotic risk in the elderly. Proper action should be taken to stimulate proper physical activity in the aging population.

[Engbers MJ, van Hylckama Vlieg A, Rosendaal FR. Venous thrombosis in the elderly: incidence, risk factors and risk groups. J Thromb Haemost. 2010 Oct;8(10):2105-12].

COVID related thrombotic risk has also shown an age difference, with the over 65 years old presenting hypercoagulable states and excessive systemic inflammation compared to the younger population.

[Yuan X, Tong X, Wang Y, et al. Coagulopathy in elderly patients with coronavirus disease 2019. Aging Med (Milton). 2020 Dec 29;3(4):260-265].

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STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

DOMAIN 01, Statement 7

“The venous thrombosis risk increases rapidly with the age”

SELECTED REFERENCES

1. Montagnana M, Favaloro EJ, Franchini M, et al. The role of ethnicity, age and gender in venous thromboembolism. *J Thromb Thrombolysis*. 2010 May;29(4):489-96.
2. Tzoran I, Hoffman R, Monreal M. Hemostasis and Thrombosis in the Oldest Old. *Semin Thromb Hemost*. 2018 Oct;44(7):624-631
3. Engbers MJ, van Hylckama Vlieg A, Rosendaal FR. Venous thrombosis in the elderly: incidence, risk factors and risk groups. *J Thromb Haemost*. 2010 Oct;8(10):2105-12
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identified LITERATURE BIAS

Study populations including different comorbidities

SUGGESTED NEXT LINES OF RESEARCH

Age related thrombotic risk calculation in homogenous study populations excluding confounding factors such as comorbidities