EDITORIAL

# Personalised anticoagulation therapy: towards a multidisciplinary approach in integrated antithrombotic care

**M.B. Mulder [1]*, N.G.M. Hunfeld [1,2]**

Departments of [1]Hospital Pharmacy, [2]Intensive Care, Erasmus MC, University Medical Center Rotterdam, Rotterdam, the Netherlands. *Corresponding author: m.b.mulder@erasmusmc.nl

For decades, vitamin K antagonists (VKAs) were the cornerstone for the prevention and treatment of venous and arterial thrombosis. VKAs show a high variability in patient response, primarily genetic polymorphisms in CYP2C9 and VKORC1.[1] By determining a pharmacogenetic profile, anticoagulation therapy could be initiated based on a personalised advice. Currently, direct oral anticoagulants (DOACs) and low-molecular weight heparins (LMWHs) are frequently used. LMWHs in therapeutic doses are mainly used for bridging during perioperative interruption of VKA treatment, initial treatment of venous thrombo-embolism (VTE), and cancer-associated VTE. Current guidelines recommend monitoring anti-Xa levels in patients with renal insufficiency, pregnancy, and obesity.[2] However, is it feasible in clinical practice to monitor every patient and obtain reliable results?

In the current issue of the journal, van Bergen et al. assessed compliance of adequate monitoring anti-Xa levels in their hospital. They show that monitoring anti-Xa levels is challenging and difficult to implement in a clinical setting. Furthermore, based on a study by Smit et al., lowering the LMWH dose in accordance with current guidelines results in subtherapeutic anti-Xa levels after the first measurement in many patients.[3] Therefore, introducing and implementing good protocols for monitoring LMWHs will be needed in order to optimise and personalise LMWH therapy.

The Dutch guideline on integrated antithrombotic care ('Landelijke Standaard Ketenzorg Antistolling') provides a standard for anticoagulant therapy. Recently, Dreijer et al. studied the effect of a multidisciplinary antithrombotic team on bleeding complications and thrombotic events and adherence to anticoagulant guidelines among prescribing physicians.[4,5] They show that introduction of a multidisciplinary antithrombotic team leads to a significantly higher overall adherence to anticoagulant guidelines among prescribing physicians, primarily based on the improvement of LMWH dosing. Two recommendations in the thesis of Dreijer for clinical practice are:[6] a multidisciplinary antithrombotic team focusing on education, medication reviews by hospital pharmacists, drafting of local anticoagulant therapy guidelines, patient counselling and medication reconciliation at admission and discharge, which increases the effect and safety of antithrombotic therapy; and introducing a clinical rule, based on one nationally adapted guideline, combining the renal function and bodyweight of the hospitalised patient with the prescribed LMWH could be useful to further improve adherence and implement adequate anti-Xa level monitoring.

We hope we inspired you to take up the challenge and start implementing a multidisciplinary antithrombotic team in your hospital.

## REFERENCES

1. Sconce EA, Khan TI, Wynne HA, et al. The impact of CYP2C9 and VKORC1 genetic polymorphism and patient characteristics upon warfarin dose requirements: proposal for a new dosing regimen. Blood. 2005;106:2329-33.
2. Nederlandse Internisten Vereniging. Richtlijn Antithrombotisch beleid [Dutch guideline on Antithrombotic policy]. 2015 Available from: https://internisten.nl/files/Richtlijn%20Antitrombotisch%20beleid_def.pdf.
3. Smit R, van Marum RJ, Pequeriaux NC, et al. Prevalence of correct anti-Xa levels in renally impaired patients who are on therapeutic nadroparin. Eur J Clin Pharmacol. 2018;74:139-40.
4. Dreijer AR, Kruip MJ, Diepstraten J, et al. Antithrombotic stewardship: a multidisciplinary team approach towards improving antithrombotic therapy outcomes during and after hospitalisation: a study protocol. BMJ Open. 2016;6:e011537.
5. Dreijer AR, Diepstraten J, Leebeek FWG, Kruip M, van den Bemt P. The effect of hospital-based antithrombotic stewardship on adherence to anticoagulant guidelines. Int J Clin Pharm. 2019;41:691-9.
6. Dreijer AR. Antithrombotic Stewardship 2019 [Dissertation]. Rotterdam: Erasmus University Rotterdam; 2019 [cited 2019-12-02]. Available from: http://hdl.handle.net/1765/120101.