Prescribing of direct oral anticoagulants (DOACs) following a venous thromboembolism: a retrospective audit study

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Introduction: Patients with confirmed venous thromboembolism (VTE) are often managed with oral anticoagulation. There have been reports of prescribing, particularly dose-related, administration, and dispensing errors associated with direct oral anticoagulants (DOACs), with error rate ranging from 5.3% to 37.3% (1). The evidence on the appropriate prescribing of DOACs post completion of VTE treatment period is lacking as most studies review prescribing errors in patients with atrial fibrillation.

Aim: To evaluate prescribing practice of DOACs for patients with confirmed VTE following a discharge from a large teaching hospitals Trust in the North of England.

Methods: This retrospective audit covered a period from 1st April 2020 to 31st March 2021. Electronic medical records of adult patients with confirmed VTE, admitted to a large Teaching hospitals Trust, and newly prescribed DOAC on discharge were included. Extracted pseudo-anonymised data was analysed descriptively using Microsoft Excel. Creatinine clearance (CrCl) was calculated using the Cockcroft-Gault equation for patients with recorded weight.

Results: The initial list of patients diagnosed with VTE included 1119 entries, which after cleansing was reduced to 502 unique patients meeting the eligibility criteria. The mean age (±standard deviation) was 66±16 years (range 20-99) and 52% (n=260) were male. Documented diagnosis included PE (85%, n=428), DVT (10%, n=49), DVT with PE (4%, n=21), and no clear diagnosis (<1%, n=4). The weight was recorded and CrCl was possible to calculate for 67% (n=334). Out of these, 98% (n=328) had appropriate doses for their level of renal function. Treatment duration was clearly documented for 81% (n=406) patients and 22% (n=108) were planned for a long-term prophylaxis on discharge. Out of all patients, 37% (n=187) had treatment stopped after completing the treatment period (3 or 6 months), 23% (n=113) continued treatment dose following completion of treatment period without other comorbidity warranting the treatment dose to continue, 21% (n=104) were changed to recommended prophylaxis dose, 15% (n=76) were excluded due to missing data or dying within six months of admission, and 4% (n=22) had atrial fibrillation and continued on an appropriate dose.

Conclusion: Our study highlighted that potentially inappropriate treatment dose use after completing the planned treatment period (3 or 6 months) was prevalent in nearly a quarter of patients. The potentially unnecessary continuation of treatment dose of DOAC can increase the risk of bleeding events, add to medicine expenditure costs, and contribute to waste in the healthcare system. Education of prescribers in primary and secondary care on VTE treatment and prophylaxis management, harnessing the pharmacist's role in primary and secondary care, and including explicit dosing and duration of DOAC use in hospital discharge letters could improve patient safety and reduce non-recommended DOAC use. The main strengths

of the study included the use of patients' routine data and a relatively large sample size. The data generalisability and analysis were limited by the accuracy of the electronic patients' care records and using data from one NHS Trust.

References:

(1) Al Rowily A, Jalal Z, Price MJ, Abutaleb MH, Almodiaemg H, Almmari MA, and Paudyal V. Prevalence, contributory factors and severity of medication errors associated with direct-acting oral anticoagulants in adult patients: systematic review and meta-analysis. *Pharmacoepidemiology and Prescription.* 2022; 78: 623-645.